A465 Blaenau'r Cymoedd
Adrannau 5 + 6: Dowlais Top – Hirwaun

A465 Heads of the Valleys
Sections 5 + 6: Dowlais Top – Hirwaun

Llywodraeth Cymru
Welsh Government

www.cymru.gov.uk

A465 Heads of the Valleys Sections 5 and 6: Dowlais Top to Hirwaun

Environmental Statement Volume 2: Appendices —July 2017

Volume 2: Appendices

Appendices accompanying Chapter 1: Introduction

None

Appendices accompanying Chapter 2: Policy Context

None

Appendices accompanying Chapter 3: Need for Proposed Scheme

None

Appendices accompanying Chapter 4: Design Developments and Alternatives

None

Appendices accompanying Chapter 5: Proposed Scheme

None

Appendices accompanying Chapter 6: Consultations

Appendix 6A	ELG Meeting Minutes
Appendix 6B	Environmental TWG Actions

Appendices accompanying Chapter 7: Environmental Assessment Methodology

None

Appendices accompanying Chapter 8: Air Quality

Appendix 8A	Construction Phase Assessment
Appendix 8B	Baseline Monitoring
Appendix 8C	Air Dispersion Model Process
Appendix 8D	Air Quality Human Receptor Results
Appendix 8E	Designated Site Assessment

Appendices accompanying Chapter 9: Cultural Heritage

Appendix 9A	Legislative and Policy Background
Appendix 9B	Cultural Heritage Gazetteer
Appendix 9C	Regional Research Framework

Appendix 9D	Assessment of the Significance of the Impact of Development on the Historic Landscape (ASIDOHL)
Appendix 9E	Archaeological Fieldwork Reports

Appendices accompanying Chapter 10: Landscape and Visual Impact

Appendix 10A	Landscape and Visual Impact Assessment Criteria (IAN 135/10 W)
Appendix 10B	Zone of Theoretical Visibility (ZTV) Methodology
Appendix 10C	National and County Borough Landscape Character Area Summary Descriptions
Appendix 10D	LANDMAP Evaluation
Appendix 10E	Visual Effects Schedule: People in Residential Properties
Appendix 10F	Visual Effects Schedule: Users of Public Rights of Way and Open Access Land
Appendix 10G	Visual Effects Schedule: People at Public Facilities and Spaces
Appendix 10H	Visual Effects Schedule: People at Work
Appendix 10I	Landscape Assessment
Appendix 10J	Night Skies Assessment
Appendix 10K	Indicative Plant Schedule
Appendix 10L	Tree Survey Report

Appendices accompanying Chapter 11: Nature Conservation

Appendix 11A	Site of Special Scientific Interest Legislative Compliance report
Appendix 11B	Compliance with Protected and Controlled Species Legislation Report (PSCR)
Appendix 11C	Environment (Wales) Act - Section 7 Compliance Report
Appendix 11D	Trunk Road Estate Biodiversity Action Plan (TREBAP) Compliance Report
Appendix 11E	Jacobs Winter 2015 Ecology Survey Results - **CONFIDENTIAL**[1]
Appendix 11F	Jacobs Summer 2015 Ecology Survey Results - **CONFIDENTIAL** [1]
Appendix 11G	Jacobs Summer 2016 Ecology Survey Results - **CONFIDENTIAL** [1]
Appendix 11H	Jacobs 2016 Bat Survey Results - **CONFIDENTIAL** [1]
Appendix 11I	Marsh Fritillary Year 9 Monitoring Programme
Appendix 11J	Statutory Designated Site Citations

[1] Please note that this appendix is confidential as it contains sensitive information regarding protected species. Should you require an electronic copy of this document then please make your request to Welsh Government.

Appendix 11K	Non-Statutory Designated Site Citations
Appendix 11L	Scoping Matrix
Appendix 11M	Design Mitigation
Appendix 11N	Outline Mitigation Strategy - Llwydcoed Slopes
Appendix 11O	Outline Management Strategy - Croesbychan Ancient Woodland Mitigation Site
Appendix 11P	Outline Management Strategy – Blaencarno Lapwing

Appendices accompanying Chapter 12: Geology and Soils

Appendix 12A	Quantum Geotechnical Phase II Ground Investigation Factual Report (May 2016)
Appendix 12B	Potential Sources of Contamination
Appendix 12C	Coal Authority Mining Report

Appendices accompanying Chapter 13: Materials

Appendix 13A	Carbon Footprint Assessment of the Construction Phase
Appendix 13B	Active Coal Extraction Sites and Landfills along the Proposed Scheme
Appendix 13C	Outline Materials Management Plan (MMP)

Appendices accompanying Chapter 14: Noise and Vibration

Appendix 14A	Acoustic Context and Definitions
Appendix 14B	Assessment Approach
Appendix 14C	Noise Monitoring Results
Appendix 14D	Calibration Certificates
Appendix 14E	Estimated Construction Plant Numbers
Appendix 14F	Predicted Operational Noise Levels at Receptors

Appendices accompanying Chapter 15: Effects on All Travellers

Appendix 15A	Relevant Planning Policy for “All Travellers” Topic
Appendix 15B	Non-motorised User Survey Metadata and Results
Appendix 15C	Full Baseline Characterisation for Public Rights of Way and other Non-motorised Users (NMU) Routes
Appendix 15D	Full Assessment Results for Public Rights of Way and other Non-Motorised User (NMU) Routes
Appendix 15E	Effects on Public Transport

Appendices accompanying Chapter 16: Community and Private Assets

None

Appendices accompanying Chapter 17: Road Drainage and the Water Environment

Appendix 17A	Water Framework Directive Compliance Assessment
Appendix 17B	Detailed Description of Baseline Assessment
Appendix 17C	Surface Water Quality Monitoring Report
Appendix 17D	Natural Resources Wales Water Framework Directive Information
Appendix 17E	Nant Hir Reservoir Correspondence Information
Appendix 17F	HAWRAT Assessment Data
Appendix 17G	DMRB Spill Assessment
Appendix 17H	Good Construction Practice
Appendix 17I	Proposed Site Compounds Flood Risk Summary
Appendix 17J	Detailed Assessment Methodologies

Appendices accompanying Chapter 18: Cumulative Effects and Impact Interactions

None

Appendices accompanying Chapter 19: Summary and Conclusions

None

Appendix 6A – Environmental Liaison Group (ELG) Meeting Minutes

The following ELG minutes are displayed in chronological order:

- 1 December 2015 – ELG 1
- 29 March 2016 – ELG 2
- 28 February 2017 – ELG 3

See the following page.

Meeting Minutes

Churchill House
Churchill Way
Cardiff, CF10 2HH
United Kingdom
T +44 (0)29 2035 4200
F +44 (0)29 2035 3222
www.jacobs.com

Purpose	**A465 Section 5 and 6 - Environmental Liaison Group Meeting (ELG) 1**		
Prepared by	Amy Davies		
Location	Cardiff Office	**Date/Time**	1 December 2015 10:00
Participants	See Appendix A	**Apologies**	None Received

1 **Welcome and Introduction**

WB welcomed and thanked everyone for attending first Environmental Liaison Group (ELG) for the A465 Sections 5 and 6. The aim of the meeting was for everyone to gain a better understanding of the scheme. Everyone around the table introduced themselves. Wendy Bateman is the Environmental Coordinator for the scheme, Gareth Protheroe is the Project Manager and Sarah Simons is the Principal Ecologist.

2 **Health and Safety Moment**

Two health and safety issues were highlighted:

(i) When preparing the meeting it was noticed that the staples used to staple the handouts together were a potential hand injury risk by as they were too big for the paper. It was subsequently ensured the handouts were re stapled to reduce the risk.

(ii) A weather related incident was described whereby a colleague was waiting for a train and saw a person rushing for their train who slipped almost into the train path. The lesson learned is not to rush especially in bad weather and to be careful as the saying goes it is better late than never.

3.0 **Presentation by the Project Team**

3.1 A copy of the slides used for the presentation is included in Appendix B

It was explained that the scheme is a not for profit distribution (NPD) design build finance and operate (DBFO). It was clarified that with an ECI scheme, which has been the procurement model adopted to deliver previous sections of the A465 Heads of the Valleys Dualling, it is the designer and contractor that would commit to the scheme construction and delivering what is outlined in the Environmental Statement (ES). In the case of the NPD PPP model, the ES mitigation and environmental commitments will be included in the contract set up with the 'special purpose vehicle' company appointed to construct, operate and maintain the new road.

3.2 The Key Stage 3 programme was discussed and key milestone dates highlighted.

This is would be the third major Welsh Highway scheme in 10 years delivered by the Jacobs Cardiff team. The scheme will be taken to the Design Commission for Wales in early 2016 and the draft Environmental Statement is due to be published for consultee comment in May 2016.

3.3 The forthcoming December 2015 Public Information Exhibitions were mentioned. These would be held as per below:

Venue	Date	Time	Address
St Leurwg's Church Hall	Monday 7 December 2015	Open 12.00-21.00	St Lleurwg's Church Hall, Hirwaun, Station Road, Aberdare, CF44 9TA
Cefn coed Community Centre	Tuesday 8 December 2015	Open 12.00-21.00	Cefn coed Community Centre, New Church St, Cefn-coed-y-cymmer, Merthyr Tydfil CF48 2NA
Dowlais Community Centre	Friday 11 December 2015	Open 12.00-21.00	Dowlais Community Centre, Station Rd, Merthyr Tydfil, Mid Glamorgan CF48 2NB
Cefn coed Community Centre	Saturday 12 December 2015	Open 09.00-13.00	Cefn coed Community Centre, New Church St, Cefn-coed-y-cymmer, Merthyr Tydfil CF48 2NA

3.4 *Post Meeting Note:*

ELG attendees that receive general enquiries from members of the public should direct them to the following contacts:

Information about the project is available on the Welsh Government website:
http://gov.wales/a465section5and6
You can let us know your views or questions by contacting the project team by:
Email *A465PLO@Jacobs.com*
Phone *07497 894081*
Post *: A465 Public Liaison Officer, Chris Meredith, Jacobs UK Limited, Churchill House, Churchill Way,*
Cardiff, CF10 2HH

3.5

3.6 JA advised that Jacobs may need to factor in extra meetings for Design Commission for Wales.

Minutes of this meeting will be included in the ES. Any concerns about the scheme are to be raised as early as possible. Where necessary, issues will be taken forward to be discussed in more detail at technical working groups (TWGs). The current proposed list of TWGs is as follows. All will be held at the Jacobs Office in Cardiff and Outlook Calendar invitations will be issued in due course.

3.7

Proposed TWGs and Invitees

1. *Landscape*

Invitees – Merthyr LA, RCT LA, BBNP, Olwen Maidment (NRW), Jacobs - Highways, Wendy Bateman, Cath Walker, Kathy Ronald, Lucy Emery, Sarah Simons, Lindis Danson, Rupert Lovell,
Timing – January 2016

2. *Flood risk, structures and highways design*

Invitees – Jacobs Highways, Jackie Walters (NRW) TBC (NRW), Jacobs - Dan Watson, Wendy Bateman, Cath Walker, Jon Barnes,
Timing – January 2016

3. *Land Quality/GI*

Invitees – Merthyr LA, RCT LA, Kay Roberts (NRW), Jacobs - Hugh Masters-Williams, Alan Dishington, Wendy Bateman, Cath Walker, Highways, Tony Kernon,
Timing – TBC

4. *Marsh Fritillary Butterfly*

Invitees – Richard Wistow (RCT), Rolf Brown (Merthyr), Scott Hand (NRW), Khalid Aazem (NRW) Jacobs - Wendy Bateman, Cath Walker, Sarah Simons, Lucy Emery , Laura Gore, Highways

3.8 Further TWGs will be arranged throughout KS3 as required.

3.9 The Highways Act (1980) process was summarised, highlighting that enhancement is not an easy thing to justify

3.10 The public liaison officer will deal with complaints

4.0 JA stated that monthly meetings with stakeholders are beneficial. The Orders Exhibition will be in late 2016 and will take place in similar locations to the public information exhibitions. LC stated the ES is a legal document. By the Public Inquiry (PI), ideally all issues raised by statutory consultees will have already been addressed through the ELGS and TWGs in KS3, and captured in the ES and Register of Environmental Commitments.

4.1 **Presentation of Draft Environmental Mitigation Measures 1**

4.2 WB presented the draft Environmental Masterplan (EMP) based on the 1997 proposed scheme design.

4.3 Air quality: WB stated that Jacobs are building a traffic model of the proposed scheme.

Landscape and visual: the scheme weaves along the edge of the Brecon Beacons National Park. Lighting will be mainly restricted to junctions and wherever possible, where safety in design standards permit, the intention is that the main sections of

4.4	the scheme will be unlit.	
4.5	Nature conservation: sites potentially affected include Blaen Cynon SAC, SSSIs and SINCs. Protected species may also be impacted. No bat tree roosts have been identified to date, however building roosts have been confirmed.	Jacobs
4.6	RB stated that if the Swansea road junction was stopped up it would be an issue for local road users. MD stated the junction strategy is under review. Best access to Prince Charles Hospital is to be considered. There are issues at Dowlais Top with PROW conflicts, and many recent road accidents involved pedestrians crossing the existing A465 in that area.	
4.7	The overall preferred route corridor of the proposed scheme is fixed but there will be minor alterations as the scheme design is not compliant with current standards.	
4.8	CE queried how the visual and landscape impacts will be presented. WB said that the structures will be in the form of artists impression. Jacobs will produce a 3D model during KS3. GP will determine how far we can take the viewpoint on model.	Jacobs
4.9	CL stated that good practice could be taken from the A465 Sections 2 and 3. JA stated that this will be relevant to the Merthyr Junction as this is the gateway to the Brecon Beacons National Park (BBNP). RB raised point that golf courses and Morlais Castle provide good views. A landscape TWG will be arranged for January 2016. The proposed scheme has to be buildable within existing constraints. CL queried the use of soil nailing. JA stated that there is a lesson learned in relation to Section 2 and ideally would not like soil nailing to be used.	
4.10	LC had attended a lessons learned meeting for Section 3. One of the outcomes was consideration of including a risk element into land take parameters in order to ensure sufficient land to deliver environmental requirements in the event there is incompetent rock or other unexpected issues encountered at construction stage.	
5.0		
5.1	**Marsh Fritillary Butterfly draft mitigation strategy presentation –SS**	
5.2	See slide presentation in Appendix B.	
	The Blaen Cynon SAC is to be taken forward to Stage 2 Appropriate Assessment. Other European sites have been screened out at Stage 1 of the Assessment of Implications on European Sites (AIES) process due distance from the proposed scheme. RW stated that habitat is important to butterfly conservation. There are options to obtain land for essential mitigation. WB stated that in the AIES process it	

5.3	is essential to show how we do this. GP stated that Welsh Government could take land so environmental mitigation is functional. WB stated that the habitat has to be up to standard but not proven to be in use. RW stated that need to consider the existing work with marsh fritillary mitigation in the area and integrate with this. LC raised the possibility of combining the proposed mitigation area with the RCT area. Jacobs is proposing a corridor north of the proposed scheme road and RCT are delivering a corridor south of the road. RW explained that south of the road, there are a number of developments at differing stages of completion.
5.4	Marsh Fritillary Butterfly Mitigation TWG to be arranged for January 2016.
5.5	GP queried how long it takes to make an area of land suitable for marsh fritillary. SS stated that it depends on what the land is like to start with. RW stated the structure of the vegetation needs to be correct with loci of devils bit scabious. It may take 1 to 2 years for overgrazed areas to become suitable. LC queried whether we are looking to improve dispersal ability of meta populations. SS confirmed that we are.
5.6	There will be loss of SSSI and SINC habitats with the proposed scheme therefore proposed essential mitigation areas will serve a dual purpose. RW queried possibility as of growing devil's bit scabious from local nurseries. Further details will be discussed at the TWG in January 2016.
6.0	CL stated that there is an area of species rich grassland of interest at Hirwaun west of the roundabout and whether there was the capacity to translocate. CL also asked whether it would be possible to relocate or translocate dry stone walls within the proposed scheme. SS confirmed that we will consider this and that these types of grasslands are being looked at.
6.1	**Presentation of Draft Environmental Mitigation Measures 2**
6.2	JM queried the status of great crested newts (GCN) and what the impacts may be. The proposed scheme will not involve the loss of any GCN breeding ponds. eDNA surveys were undertaken in 2015 within the study area of the proposed scheme which confirmed absence of GCN in all ponds surveyed. The proposed scheme will result in a small amount of direct GCN terrestrial habitat loss.
6.3	JM queried why the Usk bat SAC sites was screened out based on distance alone as he does not think this would be robust. WB stated that WG are currently reviewing the AIES Stage 1 Screening report and Jacobs are awaiting comments. There will be an opportunity for NRW to review and comment on the AIES Stage 1 screening document once this process has been completed.
	Community and private assets - LC stated it is important to get public liaison officer involved as soon as possible. CL said that on the eastbound approach to Baverstocks there is a memorial tree where there have been fatalities in 2008. This may be mentioned at public inquiry and the public may want more lighting in this area. CL asked whether the tree could be transplanted. Tree is not mature and therefore could be transplanted. SUSTRANS sent a letter of congratulation to section 3 for improving cycle strategy. RB stated that the Merthyr Tydfil cycle path

6.4	has scope for improvement.
6.5	Road drainage and water environment: mitigation is based on construction phase controls. LC asked how the WFD requirements will be included in the process. WB confirmed that the WFD will be included in compliance report as appendix to the Road Drainage and Water Environment chapter of the ES.
7.0	CEEQUAL. MD stated that there may be new guidelines in 2017.

Next Meeting

ELG 2 will take place at the Jacobs office on 29th March 2016.

Meeting Minutes

A465 Section 5 and 6 - Environmental

Liaison Group Meeting (ELG) 1

1 December 2015 10:00

Appendix A – Attendee List

Wendy Bateman (WB) – chair,

Khalid Aazem - Natural Resources Wales (KA)

Julian Atkins - Brecon Beacons National Park Authority (JA)

Rolf Brown - Merthyr Tydfil County Borough Council (RB)

Luci Collinwood - Welsh Government (LA)

Amy Davies – Jacobs (AD)

Petra Davies - South Wales Trunk Road Agent (PD)

Mark Dixon - Welsh Government (MD)

Chris Engel – Blaenau Gwent County Borough Council (CE)

Laura Gore – Jacobs (LG)

Scott Hand - Natural Resources Wales (SH)

Cameron Lewis - South Wales Trunk Road Agent (CL)

Fran Lynn - Jacobs (FL)

Olwen Maidment - Natural Resources Wales (OM)

John Messenger - Natural Resources Wales (JM)

Chris Nutt - Natural Resources Wales (CN)

Gareth Protheroe – Jacobs (GP)

Huw Roberts - Merthyr Tydfil County Borough Council (HR)

Kay Roberts - Natural Resources Wales (KR)

Sarah Simons - Jacobs (SS)

Tim Stephens - Caerphilly County Borough Council (TS)

Cath Walker – Jacobs (CW)

Jackie Walters - Natural Resources Wales (JW)

Richard Wistow - Rhondda Cynon Taff County Borough Council (RW)

Meeting Minutes

Churchill House
Churchill Way
Cardiff, CF10 2HH
United Kingdom
T +44 (0)29 2035 4200
F +44 (0)29 2035 3222
www.jacobs.com

Purpose	**A465 Section 5 and 6 - Environmental Liaison Group Meeting (ELG) 2**		
Prepared by	Sarah Denne		
Location	Jacobs, Cardiff Office	**Date/Time**	29 March 2016 10:00
Participants	See Appendix A	**Apologies**	Richard Wistow, Petra Davies, Tim Stephens

1.0 Welcome and Introduction

WB welcomed and thanked everyone for attending the second Environmental Liaison Group (ELG) for the A465 Sections 5 and 6. Everybody around the table introduced themselves (see appendix A for participants list). The aim of the meeting was for everyone to gain a good understanding of the scheme and the design developments that have taken place since ELG 1.

2.0 Health and Safety Moment

One health and safety issue was discussed:

i. It was highlighted that care should be taken whilst undertaking any DIY, especially if using power tools. It is easy to become complacent when working at home where more risks may be taken and necessary PPE is not worn.

3.0 Presentation by the Project Team

3.1 WB provided an update. It was explained that the Key Stage 3 phase of the scheme is currently at week 25 of the 51 week programme with the draft orders, Statement to Inform the Appropriate Assessment (SIAA) and Environmental Statement (ES) due to be published in September 2016. The scheme was summarised as online widening, to dual 2 – lane, of the westernmost 16km of the 40km section of the A465 Heads of the Valleys road between Abergavenny and Hirwaun (Sections 5 and 6). The other 34km, between Abergavenny and Dowlais Top, has either already been dualled or is in the process of being dualled (construction work ongoing in Section 2 – Gilwern to Brynmawr).

3.2 The proposed delivery programme was shown. It was highlighted that the scheme falls under the Highways Act 1980 statutory process, (not under Town and Country Planning). It was explained that draft orders will be published in September 2016, which indicate the end of Key Stage 3. Key stage 4 then follows, which includes a Public Inquiry (PI) likely to take place in spring 2017. This would be followed by the Minister's Decision to proceed in summer/autumn 2017. Further explanation was given about Key Stage 5 (lasting 12 months) ending with the appointment of a special purpose vehicle (SPV) that will design, build, finance and operate (DBFO) the scheme. It was confirmed that the Key Stage 6 construction phase would take approximately 3 years with the operation and maintenance tbc but probably spanning a circa 30 year period.

3.3 GP then highlighted the updates to the scheme design (since ELG 1 in December 2015) with regard to the following junctions:

Hirwaun: proposed to be a grade separated junction.

Trewaun – an overbridge connecting Hirwaun to the Cynon Valley as this had least environmental impact

Croesbychan: new junction included to be linked with the east of Hirwaun and Cynon Valley Gateway It will tie in with RCT aspirations for Aberdare bypass (now named Cynon Valley Gateway).

Baverstocks: grade separated junction which has increased in footprint as it contains a link to and from Swansea Road access.

A470/ A465: shown on 3D polystyrene model. A number of options have been looked at. GP stated that Highways design team had made every effort to reduce the number of structures across this valley. Having spent weeks looking at alternatives, however, they were discarded due to cost and greater environmental impact. The 1996 design has been reverted back to, which makes use of the existing A465.

Gurnos junction removal: The previous scheme had half junctions at Gurnos which have now been removed.

Galon Uchaf: a full movement junction which ties in with existing access roads. It continues east and ties in at DowlaisTop.GP stated that there were numerous structures which time did not allow him to detail.

3.4 CL queried if Pant Viaduct would be retained. GP confirmed it would not be as the existing structure is not up to current standards. It will be demolished and replaced with a shorter span bridge. There are ongoing discussions with neighbouring businesses at the present regarding the impact of the structure.

3.5 CL queried if access has been worked out yet for the balancing ponds. WB explained that the drainage design has not yet been finalised nor has the easements/maintenance access been looked at yet. GP confirmed that the drainage design would be finished as soon as possible with some online attenuation, with attenuation ponds located as near to the highway as possible.

3.6 **Programme**

WB reminded people that this ELG was an opportunity to raise any issues instead of waiting for the draft ES, due to be issued for consultee comment in June 2016. WB explained that the programme was challenging, with Welsh Government having committed to starting construction in late 2018. Timely feedback would be appreciated to understand constraints avoiding surprises in the consultee responses to the draft ES.

3.7 A summary of the Highways Act (1980) statutory process was given. It was

explained that land take can only be argued for essential mitigation. WB will have to justify land take at the PI in front of the minister. If no sound reason for acquiring land under CPO then will not be able to have it.

3.8 **Summary of issues and proposed environmental mitigation strategies**

It was explained that there were no developments since ELG 1 for air quality and noise due to the traffic model having not been completed yet. Each technical topic was summarised.

3.9 LC queried if the communities and private assets chapter was missed in the presentation. WB confirmed it had been combined with non-motorised users (NMUs) and that the Agricultural land quality specialist was in process of completing farm questionnaires.

3.10 **Format of ES**

It was explained that the format of the ES was based on the guidance within the Design Volume for Roads and Bridges (DMRB) Volumes 10 and 11 and associated Interim Advice notes (IANs). Some IANs are out of date so more recent guidelines have been referred to. It was added that assessment methodologies had been taken from Volume 11 (DMRB).

3.11 It was pointed out that only significant effects will be included in the text of Volume 1. Any other issues will be addressed in individual reports that will be appended.

3.12 **Design Commission for Wales (DCfW)**

It was confirmed that Jacobs is in dialogue with DCfW. The first session was held in February 2016 and included a 3D polystyrene model of the A470 junction showing an alternative option, which was met with positive feedback. A similar model of the Baverstocks junction was requested by DCfW and will be provided by the team for the next session. It was explained that the second session with DCfW was planned for the 19th of May 2016.

4.0 **Draft Environmental Masterplan (EMP) presentation**

LE stated that Section 6 had been kept open with good views, Section 5 is much less open within MTCBC as there are residential areas, schools, industrial estates, businesses and other built up areas immediately abutting the scheme. There is a general principle to keep section 6 as open as possible to maximise driver views of surrounding countryside.

4.1 LE explained that existing woodland was shown to fit in with new planting, maximising views where possible.

4.2 LE explained that culverts were shown as lines on the EMP with specific dialogue for each culvert as they all have different issues.

4.3 LE explained that the noise barriers were only indicative at present, due to the lack of traffic data. GP mentioned the scheme shown in room had not been trimmed and therefore correct earthworks spill not shown.

4.4 It was explained that the ecological mitigation is still fluid due to continual junction design changes e.g. Croesbychan junction.

4.5 JW asked when the EMP will be finalised. WB confirmed it would be at the time of ES publication. LE explained that the EMP was an iterative process. There may be some conflict with bat mitigation and desire to maximise the views in section 6.

4.6 LE added that the attenuation ponds would alter and drainage ditches need to be added also.

4.7 LE also said the NMU and Public Rights of Way (PRoW) had been finalised and were shown on a separate drawing with the purple indicating new routes. There has been consultation with local authorities and a pedestrian over bridge will be provided where the PRoW surveys have indicated the most need for.

4.8 GP confirmed a contractor is working with Jacobs regarding buildability. He explained the key buildability challenges as follows:

i. Building Trewaun junction whilst keeping the A465 open.

ii. Nant Hir reservoir structure – discussions with Welsh Water have confirmed that temporary piling in reservoir is possible in reservoir in winter as it a reserve used to cover summer supplies. Widening sections in steel are required on either side of the existing structure.

iii. High Street overbridge at Cefn Coed – very constrained and close to domestic properties

iv. Taf Fechan structure, highly environmentally sensitive and spatially constrained

v. Nursing home (sensitive receptor) near large cutting at Baverstocks.

4.9 WB confirmed that no further ELG meetings are proposed, but suggested that individual meetings could take place with consultees in July after they have reviewed the draft ES. WB asked if 4 to 5 weeks would be enough time for comments from consultees.

5.0 **Discussion**

5.1 OM queried the reasoning behind the Croesbychan junction arrangement. WB confirmed that Croesbychan was needed to prevent significant congestion issues within Hirwaun and also ties up with RCT's LDP with regards to the Cynon Valley Gateway.

5.2 SJ asked about new housing estates at Hirwaun that have been developed since the original 1990s scheme. GP explained that with the original scheme the traffic figures did not warrant a full movement junction at the Croesbychan location. Since then there have been a lot of new housing developments. Feedback from the public information event (PIE) in December 2015 confirmed that the 1990s proposals would result in traffic redirecting through Hirwaun village, exacerbating the existing congestion issues there.GP also stated that there is potentially suppressed demand for the junction as the current junction design on A465 is considered dangerous by road users. It was clarified that the Cynon Valley gateway is not being promoted as part of this scheme, however the provision of the Croesbychan junction, and its design, would facilitate the link should there be future development of the Cynon Valley scheme by RCT.

5.3 SH stated that RCT had advanced the Cynon Valley Gateway through initial stages but had put the project on hold due to financial constraints.

LC queried the project objectives including the environmental design objectives in

5.4	relation to the Futures Generation Act (FGA) and new Historic Environment (Wales) Act 2016. WB stated that DCfW went through the environmental design objectives and provided positive feedback to this project. LC suggested a clear statement could be produced showing how goals of Futures Generation Act (FGA) are being achieved. CW queried where the FGA was in process of completing consultation to confirm what indicators were to be used. LC confirmed achievement of all 7 goals does not need to be shown, only need to show how achieving 3 to 4 goals.	
5.5.	LC stated the Historic Environment Act came in last week. More emphasis is placed on SAM setting now. WB stated that effects on settings have been considered. GP asked that everyone keeps Jacobs Cultural Heritage team in the loop regarding any design changes.	
5.6	**Scheduled Ancient Monuments (SAMs)** JB stated that cranes and SAMs should be discussed as a separate meeting re Taf Fechan structure and Gurnos Trackway and Leat SAM.	
5.7	GP and WB are to discuss buildability with Nick Henry (Jacobs Buildability lead) and JB. SH asked if NRW attendance at this was necessary due to the SSSI as well as the contracting team and Nick Henry. GP stated a list of options of how to build structure can be developed. RB stated that he had got some experience in construction in that area due to work done that he was involved with when repairs were made to the SAM. GP explained that as the design is developed it has become an issue and needs looking at soon, within 2 weeks. *Post meeting note: Buildability meeting regarding Taf Fechan structure held on 19th April 2016.*	Jacobs to arrange a TWG re Taf Fechan Buildability and constraints
5.8	**Lighting** LC enquired about the tranquillity and lighting with regard to bats. WB confirmed the objective was to light junctions only to decrease light spillage. LE talked about the planting at junctions also being used as visual screening to decrease spillage. GP stated that there is no longer a need for the road to light all the way between Gurnos and the A470 junction.	
5.9	**Rock slopes** LC stated that on recent projects there had been a shift from rock slopes to soil nailing. GP explained that on A465 Section 2 there were issues with this. Boreholes were undertaken at 20m intervals but due to the complex geology the contractor was having issues with lack of consistent rock. A 60^{o} slope is currently proposed at Baverstocks. The Jacobs Geotechnical design team are looking at this now. The project risk register includes the rock at Baverstocks and Cefn Coed (High Street). The east side of High Street the rock is exposed and the west side the rock is 20m below ground level. There is a construction risk as it is very close to local properties. CL asked if the compulsory purchase order (CPO) line in Cefn could be extended for this. GP explained that it was not the intention to extend the CPO as any further land take would impact on residential gardens and this would be a last resort.	
5.10	CL queried if there had been an audit of the scheme for operational maintenance design. GP answered that Jacobs have the duty to design with a view to maintenance. Once the design is fixed there will be an internal technical working	

	group regarding operational maintenance which will include to CPO land required.	
5.11	LC stated that with Active Travel Measures Act she anticipated that more improvements and enhancements would be made, especially for cyclists. GP explained that the NMU context report was completed recently and the majority of the measures suggested in the report were incorporated.	
5.12	RB stated that Sustrans were going to comment on the entire scheme. RB enquired about the lack of connection of the N46 cycle trail between RCT and MT. GP explained that Jacobs have met MTCBC, RCTCBC and Sustrans and comments had been taken into account. LE stated that straighter cycle routes had been asked for.	
5.13	LC directed a query to SJ regarding the PPG being removed in December 2015 and asking what replaces these. SJ confirmed they are currently directing people to the EA guidance.	
5.14	LC asked for this to be confirmed in writing by NRW regarding the policy for the replacement of PPGs. JW agreed that NRW will produce confirmation of protocol in writing regarding the PPGs.	
5.15	CL queried if, at Hirwaun West, the dry stone walls and grassland features could be incorporated. LE stated these features will be incorporated into proposed scheme.	
5.16	JB highlighted that the Historic Environment (Wales) Act had recently come into force (March 2016). There is a 2 year implementation period for provisions in Act but Jacobs's project team are to be aware of it. New legislation and policy revised chapter 6. TAN 24 replaces existing Welsh government circulars and will be published soon. There will be a suite of new guidance for example: impact of setting of SAM.	
5.17	It was highlighted that on the M4 CAN, in a late development, that WG recognised the need for an independent Archaeological Curator to look at archaeological reports. This was part of good practice for archaeologists in KS3 An informed archaeological curator such as from Glamorgan Gwent Archaeological Trust (GGAT). JB therefore recommended that GGAT was engaged with.	
5.18	GP raised this issue with MD regarding the requirement for an independent Archaeological Curator. MD to advise.	MD
5.19	JB confirmed that GGAT are an educational charity with Trusted Partner Status that provides planning advice to Local Authorities. GP asked who employs GGAT. JB stated he assumed they are appointed by WG when impartial advice is needed.	
5.20	GP queried whether the archaeological impacts on the M4 CAN project had been large. JB stated that the role of the independent impartial individual was to look at and sign off the Archaeological reports to provide comfort during the PI. GP explained that the A465 risk with regards to archaeological remains was relatively low risk. JB highlighted impacts on non-designated historic environment assets, stating that GGAT could give the most up to date data regarding these.	
5.21	JA asked if there was anything to explain how the risk of soil nailing will be handled in the ES. GP explained that rock cutting is only proposed at Baverstocks	

	and the A470 junction with most rock slopes at 60^{o}. JA stated that soil nailing should be kept to a minimum and mentioned that at ELG 1 there was talk of looking at a dumbbell alternative for the A470 junction. GP agreed that this had been looked at, has had various other junction configuration options. GP confirmed that a lot of time and effort had gone into proving the 1996 design is the best solution.	
5.22	JA queried progress on the proposal for the A470 being a gateway for the Brecon Beacons National Park. GP explained using the structures as the gateway feature had been looked but had to be discarded. Now looking at a piece of public art. WB added that the design and CPO land take were being developed and that do not want to be prescriptive at this stage so to give scope for the SPV to come in with options. Need to ensure sufficient land take to be able to set the art work suitably. JA stated he is happy to work with Jacobs through design development.	
5.23	GP stated that there will be minor junction improvements to the A470/High street junction (north of the scheme) which will be within the existing Highway boundary. WB added that it was unlikely that additional land will need to be CPO`d at this location.	
5.24	JA asked about the Taf Trail in relation to improvements north to south. JA also stated that the Forest Fawr Geopark is now UNESCO site and needs to be incorporated in ES.	
5.25	GP replied that the Taf trail link would be maintained with a straighter bridge. There is an underpass under the existing road, but is substandard.	
5.26	LC asked when the traffic model was due to be completed to allow the air quality assessment to proceed. GP explained that the traffic model was 80% convergent now, mobile phone data needed to supplement with road side interviews. GP confirmed a TWG was due to be held with the WG Traffic team week commencing 4th April. LC stated that air quality is very important issue at present. *Post Meeting Note: The noise and air quality chapters will not be included in the draft ES that is circulated for Statutory Environmental Body and WG comment in June 2016; they will follow in July/Aug 2016.*	Jacobs to review
5.27	GP stated that, once the design is fixed, a 3D fly through model will be created where viewer can examine the proposed scheme from a variety of viewpoints.	

Appendix A – Attendee List

Wendy Bateman (WB) – chair

Khalid Aazem - Natural Resources Wales (KA)

Julian Atkins - Brecon Beacons National Park Authority (JA)

Jon Berry – CADW (JB)

Rolf Brown - Merthyr Tydfil County Borough Council (RB)

Luci Collinwood - Welsh Government (LC)

Mark Dixon - Welsh Government (MD)

Lucy Emery – Jacobs (LE)

Sarah Jones – Natural Resources Wales (SJ)

Cameron Lewis - South Wales Trunk Road Agent (CL)

Olwen Maidment - Natural Resources Wales (OM)

John Messenger - Natural Resources Wales (JM)

Chris Nutt - Natural Resources Wales (CN)

Kay Roberts - Natural Resources Wales (KR)

Cath Walker – Jacobs (CW)

Jackie Walters - Natural Resources Wales (JW)

Scott Hand - Natural Resources Wales (SH)

JACOBS

Meeting Minutes

Churchill House
Churchill Way
Cardiff, CF10 2HH
United Kingdom
T +44 (0)29 2035 3200
F +44 (0)29 2035 3222
www.jacobs.com

Subject	**A465 Section 5 and 6 - Environmental Liaison Group Meeting (ELG) 3**		
Project	A465 Heads of the Valleys Dualling Scheme - Section 5 and 6 - Hirwaun to Dowlais Top		
Project No.	B2191100		
Prepared by	Sarah Denne	**Date/Time**	28 February 2017 11:00 am
Location	Jacobs, Cardiff Office	**Apologies**	See Appendix A
Participants	See Appendix A		

Notes		Action
1.0	**Welcome and Introduction** WB welcomed and thanked everyone for attending the third Environmental Liaison Group (ELG) for the A465 Section 5 and 6. Everybody around the table introduced themselves (see Appendix A for participants list). The aim of the meeting was to provide an update on scheme progression since ELG 2 in March 2016. .	
2.0	**Health and Safety Moment** Two health and safety moments were raised by WB. 1) It was highlighted that care should be taken when going out for any exercise activities. A colleague slipped on their stairs, whilst running down in their socks, before going out for a run. 2) Everyone was reminded to take care in the changeable weather conditions we are experiencing, making sure we are prepared with winter car travel kits, sunglasses and rations in our vehicles.	
3.0	**Programme** WB highlighted that the scheme falls under the Highways Act 1980 statutory process, (not under Town and Country Planning). It was explained that the draft orders will be published at the same time as the Environmental Statement (ES) and Statement to Inform Appropriate Assessment (SIAA) in Key Stage 3. Under this process land can only be acquired by Compulsory Purchase Order (CPO) for “essential mitigation”. Key Stage 4 follows with a Public Local Inquiry (PLI) held by an Inspector appointed by the Planning Inspectorate. The Inspectors prepares a report for the Minister who makes the final Decision on whether to proceed with the scheme. If the Minister’s Decision is in support the orders are then made and, once the challenge period has expired, the land can be entered. WB then summarised the remaining Key Stage 3 programme, which is currently at week 73 of 86 weeks. The draft ES and SIAA will be published for	

Notes		Action
	comment to Welsh Government and Statutory Environmental bodies at week 76 (24 March 2017). The ES, SIAA and draft orders are then due to be published week 86 (6 June 2017). Key Stage 4 then immediately follows with the PLI (if needed) likely to take place in Autumn 2017.This would be followed by the Minister's Decision to proceed in Spring 2018. Key Stage 5 would then run until October 2019, which would end with the appointment of a special purpose vehicle (SPV) company that would design, build, finance and operate (DBFO) the scheme. It was confirmed that the Key Stage 6 construction phase would take approximately 3 years (2019 to 2022) with the operation and maintenance period spanning 30 years (2023 to 2053).	
4.0	**Highways Scheme Design Update** JT then highlighted the updates to the scheme design (since ELG 2 in March 2016) as follows (west to east): • *Hirwaun junction:* still grade separated with the mainline over the existing road. Slight reconfiguration due to the high position of a high pressure gas main. • *Pentwyn footbridge:* added in for Non-motorised user (NMU) provision • *Court Lodge:* overbridge now an underbridge • *Croesbychan junction:* mainline was proposed to go under junction creating large embankments, but now reconfigured and pushed down so mainline goes over junction; junction now has a decreased footprint overall. • *Nant Moel:* overbridge now an underbridge • *Nant Hir reservoir:* now a split structure to remove blended liabilities. New structure to be built to the north. • *Baverstock junction:* reconfigured slightly to remove B4276 Merthyr road connection. This is now connected via the proposed Swansea Road reconfiguration. • *A470 and High St. junction:* reconfiguring of the junction within the highway boundary to provide safer access to and from A470. • *Taff Trail footbridge:* straightened perpendicular to the proposed A465. • *Gurnos Farm:* now served by an underpass • *Prince Charles Hospital junction* (formerly Galon Uchaf): reconfigured significantly as a one full movement junction to accommodate connectivity between residential, retail, industrial estate, school, hospital and NMU needs. Mainline is underneath junction. • *Bryniau Road:* new overbridge to maintain localised vehicular and NMU connectivity.	
4.1	JT highlighted the provision for NMUs at all junctions would be improved through the scheme. Further NMU routes would be incorporated into access tracks for attenuation ponds.	
4.2	JT confirmed that vertical concrete barriers would be used in the central reserve and steel barriers provided as verge side road restraints. A total of eighteen culverts would be improved as part of the scheme (some widened and some with mammal ledges to be added). The scheme currently includes five	

Notes		Action
	variable message boards. Lay-bys have been included in the current scheme design although these are tightly constrained.	
4.3	JA queried if there was assurance the Brecon Beacon Gateway feature would be delivered. WB confirmed that the feature would be included on the Environmental Masterplan (EMP) and the Register of Environmental Actions and Commitments (REAC) ensuring the SPV is under contract to deliver the feature and consult with Brecon Beacons National Park Authority regarding the final design.	Jacobs to include in REAC
4.4	JA queried whether the underpass carrying footpath 111/43 (east of A470 junction) was being kept open to keep connectivity of a rough trail north to south. JT confirmed that this underpass was being closed up with a diversion north of the proposed scheme.	
4.5	RW queried whether the Croesbychan junction had been designed to later accommodate an Aberdare Cynon Gateway bypass. JT explained that there were no firm plans for any bypass and there would unlikely be any before construction of Section 5 and 6.	
4.6	LC queried whether the ES adequately assesses site compounds and other temporary work areas associated with the proposed scheme. WB explained that some of these areas are recorded in the constructability report and they will be covered in the ES. WB also explained that as the road is currently three lanes for most of the widening, only one lane would be closed and used as a haul route during construction. The other two lanes would remain open. The majority of the main works would, therefore, be at junctions. WB also stated the works would start at various locations across the scheme, not from one particular end therefore reducing the distance material being moved.	
5.0	**Structures strategy** WB highlighted the three tier approach that had been taken with developing the structure designs: special (bespoke) solutions; enhanced (modular) solutions; or essential developments requiring minimal work such as culverts or retaining walls. Six junctions / crossings have been designed as special structures: Hirwaun junction, Croesbychan junction, A470 junction, Cefn Coed High Street overbridge, Prince Charles Hospital junction and Dowlais junction.	
5.1	LC queried what material the noise barriers were proposed to be made out of as plastic is often used, which can lack visual aesthetics and doesn't soften over time. WB explained this had not been confirmed yet, but there was potential for using a plastic / composite mix or a wooden and clear mixture. Ultimately the Environmental Masterplan will include a commitment to ensure the design achieves a certain aesthetic requirement.	Jacobs to include in EMP
5.2	**ES topics** WB provided an update of each of the topic chapters.	

Notes		Action
5.3	*Cultural Heritage* WB explained that the significant effects still remained with the Cefn Coed Cemetery and Jewish Burial Ground, which would be mitigated through screen planning and a Landscape survey. There would be no significant impact on the Gurnos Leat during construction of the widened Taf Fechan structure as it is proposed to be built by a temporary cable stay method where no work on the bed of the valley is required. LC stated the works done at Bryn Glas tunnels site to protect the SAC were very successful and should be considered for Taf Fechan also. The Farmhouse and Lofted Cow Shed on Coed Meurig Farm would be lost as part of the proposed scheme with mitigation including Level 4 historic building and photographic surveys of the asset	
5.4	*Landscape and Visual Impact* WB explained the key strategy was to minimise the loss of existing screening vegetation and then add in plant screening where needed. In the central section of the scheme minimal planting is required to keep open views of the surrounding landscape. RW confirmed this would be beneficial for marsh fritillary butterflies as well. WB explained that lighting would be kept to a minimum, mainly located only on the junction slips. At Baverstock junction there is the possibility of exposing existing geology creating drama and providing retaining edges and slope finishes. All design of structures, walls and fences is to reflect local landscape character and pattern.	
5.5	*Nature Conservation* WB explained that a focus was to minimise land take with environmental mitigation achieved by scheme design, standard construction practices and further mitigation to prevent offences under protected species legislation. LC queried whether landscape design would link with ecology in facilitating movement of species towards culverts / tunnels. WB confirmed this was the case with funnelling achieved using planting as much as possible.	
5.6	<u>Marsh Fritillaries</u> WB explained that suitable habitat loss for marsh fritillary was now approximately 7.96 ha, which was 4.81 ha less than was presented at ELG 2 in March 2016. LG replied to a query from SH regarding where this reduction came from. LG confirmed this was due to scheme design development (such as the reduced footprint of Croesbychan junction. Also a more detailed botanical survey has been undertaken which superseded the original Phase 1 habitat survey upon which the ELG 2 habitat loss calculation was based. Approximately 14.4 ha of land will be acquired for mitigation. RW queried the size of the suitable habitat areas to be lost suggesting if small areas remain, but cannot be managed due to accessibility restrictions, they would also be lost. *Post Meeting note: Small, unmanageable, parcels of land would not be created due to the proposed scheme.* RW suggested management of the soft estate could produce stepping stones for marsh fritillary butterflies. WB confirmed that nectar plants would be planted in some sections of the soft estate, but this would not be counted as mitigation.	Jacobs to organise meeting

Notes		Action
	RW queried whether there would be enough access for maintenance to these sections. WB confirmed that this would be considered within the CPO land plans. *Post Meeting note: Figure 8 in the SIAA shows the Marsh Fritillary habitat loss*	
5.7	Ancient Woodland WB explained that the scheme footprint affecting ancient woodland had been reduced as much as possible. Creation and management of approximately 5 ha of new woodland with ancient woodland topsoil salvage would be undertaken to ensure no net loss of woodland. *Post Meeting note: Tree seed collection and propagation will be carried out for the ancient woodland mitigation.* RW stated the importance of natural regeneration with the addition of screening where needed. RB reiterated that long term management was important. LC explained that during the operation and aftercare period (30 years following construction) it would be made sure that the landscape and environmental objectives were met. After this time the objectives would be passed down to the Trunk Road Agents. The environmental design was future proof and had taken into account the inevitable ongoing fluctuations in the amounts of money available for management. RW explained that there were existing partnership and grazing schemes in place (PONT), which should be looked at as an approach to long term management. FP asked for RW to provide information on this and then in due course have a meeting to see if it could potentially feed into the contract. LM asked that GGAT are represented at that meeting.	RW provide information. Jacobs to organise meeting
5.8	Bats Proposed mitigation includes timing of construction work and pipe roosts being fitted in structures. The 18 culverts being enhanced would provide suitable passage for bats beneath the scheme.	
5.9	Lapwing WB explained there have been 12 nesting pairs found next to the proposed scheme. A lapwing mitigation area has been proposed with planting discouraging them from remaining in their current location.	
5.10	Enhancements WB explained that the SuDS based drainage design for the road would result in minimal pollution risks to watercourses compared to the existing baseline. Water would drain from the road into attenuation ponds which would pass into watercourses at a greenfield rate. The attenuation ponds and the associated proposed planting around them would make them suitable for wildlife.	

Notes		Action
	WB mentioned exposing rock slopes at Baverstocks and A470 junctions would provide rock face habitats, in line with TREBAP objectives. RW raised that where topsoil retention is used, management can be more important rather than seeding with wildflower mixes. Natural regeneration of the natural seed bank in soil can be very successful. LC confirmed that using topsoil sometimes has not achieved the desired result, whereas seeded subsoil has. SH explained that burying topsoil and using subsoils can be effective. RB suggested there was no need to specify expensive seeding.	
5.11	*Geology and Soils, Materials* WB explained the importance of striking an earthworks balance, particularly at Baverstock junction. Further ground investigation work is due to take place in Key Stage 5. A draft Materials management plan will be issued with the ES and then refined by the Contractor following his appointment.	
5.12	*Noise and Vibration* WB explained the main locations for potential noise issues are where piling works, bridge works at Cefn Coed and rock / concrete breaking would occur (low noise breaking techniques are being considered). However, there was significant potential for disruption to local residents during the construction phase at these locations.	
5.13	*Effects on All Travellers* WB discussed the provision for new and safer NMU facilities and crossings that would be provided. The Construction Environmental Management Plan (CEMP) will include ways in which dust and noise will be managed during construction. Also, where possible, views of surrounding landscape will be opened up,	
5.14	*Communities and Private Assets* WB highlighted that access and signage for businesses, farms and community facilities would be maintained during construction. A total of seven residential properties, some already in Welsh Government ownership, would need to be demolished. Two properties may not need to be demolished, but would be acquired.	
5.15	*Road Drainage and the Water Environment* WB highlighted that SuDS principles had been applied to the proposed drainage design, clear spanning bridges had been incorporated where possible and culvert expansions were being maximised to reduce flood risk impacts where applicable.	
5.16	*Taf Fechan* LM queried whether any tree clearance work could be done surrounding the	

Notes		Action
	Leat at Taf Fechan as mitigation. WB explained that as there was no significant effect at this location (due to proposed bridge construction via temporary cable stays) and, hence, there would be no mitigation here. It was suggested that LM should discuss with RB about getting this work done given the land is owned by MTCBC.	
6.0	**Format of ES**	
	WB confirmed the layout of the ES would be Volume 1, Main text and significant effects, Volume 2 the Appendices, Volume 3 the Figures and Volume 4 the Environmental Masterplan (EMP).	
	OM queried the level of detail that would be given in this draft of the ES. WB confirmed significant detail would be contained with sketches of proposed landscape features included in the EMP.	
7.0	**Any Other Business**	
	SH queried whether there was still an attenuation pond proposed to be on Tir Mawr a Dderi Hir, Llwydcoed SSSI. WB confirmed it was still incorporated due to local topography in this area.	
	The meeting closed at approximately 1.15pm.	

Churchill House
Churchill Way
Cardiff, CF10 2HH
United Kingdom
T +44 (0)29 2035 3200
F +44 (0)29 2035 3222
www.jacobs.com

Appendix A – Attendee List

Wendy Bateman (WB) – chair

Julian Atkins - Brecon Beacons National Park Authority (JA)

Gemma Beynon – Natural Resources Wales (GB)

Rolf Brown - Merthyr Tydfil County Borough Council (RB)

Luci Collinwood - Welsh Government (LC)

Sarah Denne – Jacobs (SD)

Lucy Emery – Jacobs (LE)

Laura Gore – Jacobs (LG)

Scott Hand - Natural Resources Wales (SH)

Olwen Maidment - Natural Resources Wales (OM)

Louise Mees – Cadw (LM)

John Messenger - Natural Resources Wales (JM)

Filipe Pamment – Welsh Government (WG)

Jonathan Thirkettle – Jacobs (JT)

Cath Walker – Jacobs (CW)

Richard Wistow – Rhondda Cynon Taf County Borough Council (RW)

Apologies List

Jonathan Berry - Cadw

Petra Davies - South Wales Trunk Road Agency

Cameron Lewis – South Wales Trunk Road Agency

Mark Dixon – Welsh Government

Claudine Gerrard – Glamorgan Gwent Archaeological Trust

Tim Stephens - Caerphilly County Borough Council

Appendix 6B – Environmental Technical Working Group Actions

The following TWG Actions are displayed in chronological order:

- 13 January 2016 - Land Quality and Ground Investigation
- 19 January 2016 - Landscape
- 27 January 2016 - Flood and drainage
- 3 February 2016 - Nature conservation – Marsh fritillary
- 9 March 2016 - Nature conservation – Marsh fritillary
- 29 March 2016 - Nature conservation – Marsh fritillary and lesser horseshoe bat
- 19 April 2016 - Taf Fechan Buildability
- 23 November 2016 – Nature conservation
- 29 November 2016 – Flooding

See the following pages.

Meeting Minutes

Churchill House
Churchill Way
Cardiff, CF10 2HH
United Kingdom
T +44 (0)29 2035 4200
F +44 (0)29 2035 3222
www.jacobs.com

Purpose	**A465 Section 5 & 6 TA role – Land Quality and GI TWG**		
Project	A465 S5 & 6		
Prepared by	Amy Davies		
Location	Conference Room 4 8th Floor, Cardiff Office, Churchill House, Churchill Way	**Date/Time**	13th January 2016, 10:00
Participants	Wendy Bateman, Amy Davies, Mark Dixon (WG), Lucy Emery, Anthony John, Tony Kernon, Huw Masters-Williams, Gareth Protheroe, Kay Roberts (NRW), Sarah Simons, Hannah Thomas, Cath Walker, Jackie Walters (NRW), Adam Ward (NRW).	**Apologies**	Allan Dishington, Simon Gale (RCTCBC)

Action		**Owner**
1	Send proposed GI work taking place over the next few weeks including borehole locations to JW, KR and AW (NRW). Arrange meeting for w/c 25th Jan – NRW, HMW and AJ.	HMW/CW
2	*Post Meeting Note:Scope and location sent 20th January. NRW have issued comments 25th January on scope of GI works. If comments dealt with by Jacobs then meeting will not be needed*	
3	Arrange for the flood risk and drainage team to produce an input statement to show Jacobs' approach and to inform the discussion at the flood TWG. *PM: issued 26th January*	WB/CW
4	Arrange meeting with AW and other relevant NRW staff to discuss MMP.	HMW
	Inform TK if any offline areas cross any major gas/water pipes.	GP

Meeting Minutes

Churchill House
Churchill Way
Cardiff, CF10 2HH
United Kingdom
T +44 (0)29 2035 4200
F +44 (0)29 2035 3222
www.jacobs.com

Purpose	**A465 Section 5 & 6 TA role – Landscape Technical Working Group**		
Project	A465 S5 & 6 TA role		
Prepared by	Sarah Denne		
Location	Cardiff Office, Churchill House	**Date/Time**	19th January 2016
Participants	Cath Walker (CW), Rupert Lovell (RL), Kathy Ronald (KR), Lindis Danson (LD) Ruth Coulthad (RC), Jackie Walters (JW), Olwen Maidment (OM), Raymond Edwards (RE), Mark Dixon (MD), Wendy Bateman (WB), Fran Lynn (FL), Lucy Emery (LE), Gareth Protheroe (GP), Jonathan Thirkettle (JT).	**Apologies**	Tom Bramley (TB)

	Action	**Owner**
	3-Review of Baseline	
1	Jacobs landscape team to circulate landscape policy overview, so attendees can double check no essential policy missed.	Jacobs landscape team
2	OM to forward LANDMAP cultural landscape guidance note which the team have not been able to obtain and LANDMAP Geology guidance note.	OM
3	RE to forward/ loan team a copy of RCT LANDMAP study.	RE
4	RE and BBNP attendees to follow up and forward a copy of the boundary of the Brecon Beacons National Park report to the team. *PMN: BBNP origins report received 20th January*	RE and LC
5	Determine if following webpage shows descriptions from the report that was referred to in action 4: http://www.beacons-npa.gov.uk/environment/planning-access-and-row/boundary/.	Jacobs landscape team
	4 – Key Viewpoints	

6	• Key viewpoints recommended at the meeting:
	  ○ View from Mynydd-y-glog
	  ○ View from Moel Penderyn
	  ○ View from Hirwaun Common (important cairn)
	• Key views received by e-mail from Tom Bramley (MT CBC):
	  ○ View from A4060 to approaches to Dowlais.
	  ○ Views (from the A465?) looking to the Pant Industrial Estate, looking north.
	Views towards Gurnos looking east (the Graig is visible here) – *Unclear if this is describing the view from the A465 or generally views towards Gurnos looking east? Assume reference to the Graig refers to the woodland 'Y Graig'*
		Jacobs landscape team

7	RC to provide dark sky quality data. *PMN: RC provided link to data 20th January 2016*	RC
8	Jacobs to provide material to help visualise alternative A470/A465 junction option, in particular in relation to visualising extent of impact within the BBNP.	GP
9	RE to meet TB Friday 22nd January re key viewpoints. Feedback to Jacobs following this meeting.	RE
	5 – Brecon Beacons gateway – A470 and A4059	
10	RC to circulate ideas relating to A470 gateway.	RC
11	Jacobs and Welsh Government to further discuss possible engagement with public artist in relation to A470 gateway.	Jacobs/WG
12	Jacobs to explore inclusion of low key/ low maintenance A4059 gateway feature, similar to the existing stone wall at the roundabout.	Jacobs landscape team
	5A – A465 / Brecon Road / Hirwaun Road junction optioneering	
13	Over option with road on embankment negative response NRW, WB and RE re visual impact, air quality, noise and increased sense of severance. GP request memo from KR re wide street scape bridge to promote connectivity between Hirwaun and Penywaun.	KR
14	Confirm status of optioneering for this junction.	GP
	6 – Enhancements to Taff Trail cycle route	
15	Adam Priestly (AP) to follow up with Sustrans to confirm the official route of the Taff Trail and check the status of the route through the underpass with Merthyr Tydfil CBC.	AP
16	Jacobs engineers to look at this location in relation to development of A470 junction option.	JT
17	Jacobs to follow up re positioning of the link, in case this may help with access.	JT
	7 – Tree Survey	
18	Scope: localised surveys including ancient woodland, TPOs affected by scheme and important mature vegetation will be undertaken.	WB/CW
19	In relation to discussion regarding replacement planting, RE stated that RCT CBC's management objective is to emphasise existing grassland and avoid planting of trees. Jacobs landscape team to take account of this in development of the environmental masterplan, whilst balancing the need for essential visual screening and bat mitigation	Jacobs landscape team,/WB/LE

20	**8 – Potential mitigation** Jacobs landscape team to note comments from RE in relation to: • preference for natural regeneration of grassland (no wildflower seeding) or turf relocation – respreading existing topsoil/creation of more impoverished topsoil helpful in relation to this • preference for stone wall details incorporating round stones (typical local detail, as per existing A4059 roundabout) • allowing sufficient space for mowers on roundabouts, as well as somewhere to store the cutting on the roundabout • timber noise fences must comply with BS	
21	Jacobs landscape team to explore visual screening of Pant Industrial Estate from the A465, further to TBs e-mailed comments.	Jacobs landscape team
22	Internal meeting landscape and noise specialists re siting and specification of noise barriers.	CW
23	**9 - DCfW Statutory Environmental Body attendance**The 1st DCfW session will be held at the DCfW at Cardiff Bay on the 18th Feb at 15:30. Clarify protocol of SEB attendance *Post Meeting Note: The DCfW have stated that they will contact the Local Authorities with an invitation to attend and a request for background information and the planning context.*	WB
	10 – AOB	
24	Include amenity stopping points in design	GP
25	GP to confirm who is responsible for maintaining the drainage system of the road	GP
26	Jacobs to include discussion of SUDS for landscape and ecological benefits into TWG related to drainage to be held next week.	Jacobs

JACOBS

Meeting Minutes

Churchill House
Churchill Way
Cardiff, CF10 2HH
United Kingdom
T +44 (0)29 2035 3200
F +44 (0)29 2035 3222
www.jacobs.com

Subject	**Flood and Drainage Technical Working Group**		
Project	A465 S5 & S6 Technical Advisor Role	**Project No.**	B2191100
Prepared by	Sarah Denne	**Phone No.**	02920355538
Location	Cardiff Office, Churchill Way	**Date/Time**	27 January 2016
Participants	See Appendix A	**Apologies**	N/A

Notes		Action
1	**Review Constraints**	
	GP: We need to clearly demonstrate why we do not think there will be a significant effect on designated areas.	DW
	DW: NRW to provide model of Afon Cynon to Jacobs to allow flood models to be run showing effects of different structure options.	DW/JW
	JW: Any Jacobs' model changes to be agreed by NRW.	DW/JW
	JW: NRW would need to review flood extents if structure is altered.	DW/JW
	JW: Jacobs need to clearly show why other options were not chosen if exacerbating upstream or downstream flood risk e.g. providing a new clear span bridge.	DW
2	**Construction phase drainage**	
	KD: Target should be greenfield run off along whole length if possible.	GP
3	**Drainage design – highways**	
	KD/JW: There should be no transfer of water between catchments.	GP/DW
	KD/AP: Need to assess Morlais culvert strength. Drawings with KD. Arrange for Jacobs to have a look next week.	KD
	GP/WB: Will include in the ES that contractors will	

Notes		Action
	require relevant NRW consents for silt control. SPV project company will be applying for permits.	DW/WB
4	**Drainage design – environmental**	
	AS: Drainage designs need to follow design standards.	JP
	JW: Will find out if NRW can set hydrocarbon limits.	JW
	DW: Need to alter HAWRAT model. DW to e-mail JW with what we are proposing.	DW
	GP: Discharge water quality limit that is standard for all consents in Heads of the Valley area needed from NRW.	SJ
	DW: Need to find out from welsh water where water is being discharged for Nant Hir reservoir.	DW
5	**Structures – bridge/culverts**	
	GP: Could have a meeting Jacobs with RCT/MT to talk through any current known constraints?	GP
6	**Flood assessment**	
	AP/KD: meeting with Welsh Water next week regarding sewer. AP to send agenda point regarding flood assessment to JT for next week.	AP
7	**Climate change**	
	No Actions other than apply good design in accordance with CIRIA guidance etc	GP
8	**AOB:**	
	Jacobs to talk to the RCT planning team and NRW regarding Tower Regeneration development (re ES cumulative impacts chapter).	WB/GP

APPENDIX A: List of Attendees

Gareth Protheroe (GP) Jacobs, Project Manager
Kevin Davies (KD) MTCBC
Gerald Coughlan (GC), MTCBC
Scott Hand (SH), NRW, Invertebrate Specialist
Jackie Walters (JW), NRW, Planning Co-ordination officer
Fraser Pullin (FP), Jacobs Engineer
Wendy Bateman (WB), Jacobs Environmental Coordinator
Mark Dixon (MD), WG, Project Director
Sarah Jones (SJ), NRW, Water Quality/Consents
John Thirkettle (JT), Jacobs, Engineer
Laura Gore (LG), Jacobs, Principal Ecologist
Chris Nutt (CN), NRW, Flood Defence Officer
Daniel Watson (DW), Jacobs, Road drainage ES lead
Andrew Stone (AS), RCTCBC
Frank Klaptocz (FK), Jacobs, Structures
Alex Perryman (AP), Jacobs, Flood Modelling
Jonathan Price (JP, conference call) Jacobs, Drainage Design Lead
Sarah Denne (minutes) Jacobs

Meeting Minutes

Churchill House
Churchill Way
Cardiff, CF10 2HH
United Kingdom
T +44 (0)29 2035 4200
F +44 (0)29 2035 3222
www.jacobs.com

Purpose	**A465 Section 5 & 6 TA role – Marsh Fritillary Butterfly TWG**		
Project	A465 S5 & 6	**Project No.**	B2191100
Prepared by	Cath Walker	**Phone No**	02920 353200
Location	Conference Room 4 8th Floor, Cardiff Office, Churchill House, Churchill Way	**Date/Time**	3rd February 2016, 10:00
Participants	Wendy Bateman, Mark Dixon (WG), Lucy Emery, Laura Gore, Gareth Protheroe, Sarah Simons, Cath Walker, Jackie Walters (NRW), Scott Hand (NRW), Khalid Aazem (NRW), Richard Wistow (RCT CBC), Rolf Brown (MT CBC),	**Apologies**	N/A

Action		**Owner**
1	Blaen Cynon SAC conservation objectives under review. Confirmation of completion date.	SH
2	How does NRW monitor conservation objectives? Especially within wider SAC area.	SH
3	Consensus that a ratio of approximately 1:2 habitat mitigation would be appropriate mitigation for the direct loss of habitats within the 2 km SAC core metapopulation area and the wider functional landscape.	N/A
4	Blaen Cynon SAC MF meta-population is one of the most successful populations in UK (RW). Therefore extra onus on maintaining this success.	All
5	Improve junction strategy to reduce queuing traffic by Tir Mawr a Dderi Hir SSSI to improve air quality.	GP
6	Examine evidence / best practice of other schemes creating MF habitat.	LG/LE
7	Further survey of suitable habitat within 2km of Blaen Cynon SAC needed to determine if 50ha of suitable habitat present or not. Requested by SH.	SS
8	Draft SIAA will need to have two mitigation options stated.	LG
9	Summary memo to be sent to NRW for comment.	LG

Meeting Minutes

A465 Section 5 & 6 TA role – Marsh

Fritillary Butterfly TWG

3rd February 2016, 10:00

	PMN: Memo issued to NRW 5th February 2016	
10	List of suitable organisations to grow on DBS plants to be sent to Jacobs to collate.	SH/RB/RW
11	Contact National Botanic re DBS propagation.	LE
12	Density of plants and number of plants required to be calculated. Discussed using good condition assessment criteria or DAFOR scale %.	LE
13	NRW to supply Jacobs with all existing MFB habitat survey work they have undertaken to date.	SH
14	Letter to be sent to JW (NRW) who will pass on to relevant species officer in regards to requirement for licensing (to translocate marsh fritillary).	LG
	PMN: letter issued 5th February to NRW	
15	2 no. Jacobs/NRW meetings to set up during period of determination of SIAA screening and stage 2 report	SS/JW
16	General principle of land CPOd for mitigation purposes – bigger blocks not small scattered sites.	Jacobs
17	Taf Fechan overbridge. If access/works carried out from gorge (SSSI and SAM) then site visit needed with NRW/CADW/Jacobs. Highways to confirm.	GP/WB/JW

Meeting Minutes

Churchill House
Churchill Way
Cardiff, CF10 2HH
United Kingdom
T +44 (0)29 2035 4200
F +44 (0)29 2035 3222
www.jacobs.com

Purpose	**A465 Section 5 & 6 TA role – Marsh Fritillary Butterfly mitigation meeting with Butterfly Conservation**		
Project	A465 S5 & 6	**Project No.**	B2191100
Prepared by	Cath Walker	**Phone No**	02920 353200
Location	Conference Room 4 8th Floor, Cardiff Office, Churchill House, Churchill Way	**Date/Time**	9th March 2016, 12:00
Participants	Wendy Bateman, Lucy Emery, Laura Gore, Gareth Protheroe, Cath Walker, Len Wyatt (WG), Russell Hobson (BC)	**Apologies**	Mark Dixon, Luci Collinwood, Sarah Simons

Action		**Owner**
1	LW requested a meeting pre the week 28 1: 2500 presentation to discuss the scheme and environmental masterplan *Post Meeting Note: meeting arranged for 11th April 2016 (week 27). 10:00, Jacobs office*	WB/CW LW/RH
	Relevant references and past mitigation programmes to be forwarded Jacobs *Post Meeting Note: Response from RH received on 11th March 2016 as follows:* • *M40 scheme - Bickmore, C.J. 1992. M40 Waterstock – Wendlebury: planning, protection and provision for wildlife. Proceedings - Institution of Civil Engineers Municipal Engineer.* ***93****: 75-83* • *Twyford DBS planting - Snazell, R.G. 1998. Ecology & Twyford Down. I.T.E. Wareham* • *Munguira, M.L. & Thomas, J.A. 1992. Use of road verges by butterfly and burnet populations, and the effect of roads on adult dispersal. Journal of Applied Ecology.* ***29****:316-329* • *A30 – Spalding. 2005. The butterfly Handbook. English Nature* • *'roads' in Dennis, R.L.H. 2010. A resources-based habitat view for conservation: Butterflies in the British Landscape. Wiley-Blackwell* • *Least cost modelling at Cross Hands –contact Lindsey Rendle at Carmarthenshire Council LRendle@carmarthenshire.gov.uk* • *English Ball Clays turf translocation report (it covered 14 years) and the Sweden road and butterfly paper to follow*	
	Low cost flight modelling published work to be reviewed to determine if proposed scheme will affect MFB flight options to cross road	LE/LG
	RH advised: • move larval webs as short a distance as possible from original site; • it is not practical to monitor translocated larval webs. Remove from success criteria.	LE/LG

	RH advised that mitigation effort should be concentrated on translocating turves rather than planting of devils bit scabious (DBS) plants	LG/LE
	Agreed that Jacobs should investigate outcome of DBS propagation at National Botanical Garden of Wales where mixed seeds from different areas have been propagated to increase genetic diversity of plants	LE/LG
	RH advised that after site clearance phase, areas previously identified as positive for larval webs to be kept strimmed to ensure they are not recolonised by marsh fritillary butterfly (MFB).	WB/CW
	RH advised there should be no compaction of retained and translocated top soil as this encourages rush (*Juncus* spp.) regrowth. Contract should specify to manage by avoiding use of heavy plant/machinery. Allow natural regrowth of vegetation.	WB/CW
	Long term maintenance of mitigation sites – agreed there should be an outcome led specification allowing flexibility for how performance achieved and to allow any adjustment in the maintenance regime with time to respond to changes in best practice as they arise. Guidance for management to be included in specification plus details of financial penalties for failures in reporting or achieving management outcomes.	LG/LE/WB/CW
	RH confirmed that BC has received Section 106 mitigation monies to start mitigation project in 2019 which will require a grazing regime for habitat management. A copy of the relevant Section 106 agreement was provided by RH for information.	n/a

Meeting Minutes

Churchill House
Churchill Way
Cardiff, CF10 2HH
United Kingdom
T +44 (0)29 2035 4200
F +44 (0)29 2035 3222
www.jacobs.com

Purpose	**A465 Section 5 & 6 TA role – NRW SIAA meeting**		
Project	A465 S5 & 6	**Project No.**	B2191100
Prepared by	Cath Walker	**Phone No**	02920 353200
Location	Conference Room 4 8th Floor, Cardiff Office, Churchill House, Churchill Way	**Date/Time**	29th March 2016, 13.30
Participants	Wendy Bateman, Mark Dixon (WG), Laura Gore, Gareth Protheroe, Cath Walker, Jackie Walters (NRW), Scott Hand (NRW), Khalid Aazem (NRW), John Messenger (NRW), Luci Collinwood (WG), Rolf Brown (MT CBC)	**Apologies**	N/A

Action		**Owner**
1	Blaen Cynon SAC Conservation Objectives (CO) under review as were first compiled in 1998. SH requested email from Jacobs detailing approach and concerns to programme with uncertainty of timescale of CO review. Email to be sent via MD. *Post meeting note: in subsequent project meeting on 11th April 2016, it was instructed by WG that the 1998 CO are to be adhered to in the SIAA.*	N/A
2	JM suggestion of temporary management of MFB land to be added to agenda at next NRW/Jacobs meeting	JM
3	JM to provide clarification of requirement/not for MFB translocation licence by w/c 4th April.	JM
4	*Post Meeting Note: letter clarifying requirements received from NRW 22th May 2016.*	
5	RB to forward windfarm bat survey data to Jacobs.	RB
6	Jacobs to assess suitability of structures for LHB roosts	LG/WB/CW
7	Collate bat survey results and resubmit Stage 1 Screening Report to screen in Usk Bat Sites to Stage 2	WB/CW
8	Section 2 Air quality advice note created by KA to be forwarded to	WB KA/JW

	Jacobs/WG. Note will be for information only and does not need to be included in assessment. *Post Meeting Note Section 2 Air quality scoping advice note received 4th May 2016.*	

Meeting Minutes

Churchill House
Churchill Way
Cardiff, CF10 2HH
United Kingdom
T +44 (0)29 2035 4200
F +44 (0)29 2035 3222
www.jacobs.com

Purpose	**Taf Fechan Buildability meeting minutes**
Prepared by	Leanne Smith
Location	Cardiff Office **Date/Time** :11am
Participants	Wendy Bateman (WB), Cath Walker (CW), Gareth Protheroe (GP), Dexter Mansell (DM), Scott Hand (SH), Rolf Brown (RB), Filipe Pamment (FP), Andy Findlater (AF), Sam Kenward (SK), John Thirkettle (JT), Mark Dixon (MD), Adam Brossler (AB), Jon Berry (JB), Russel Cryer (RC) & Leyton Davies (LD).

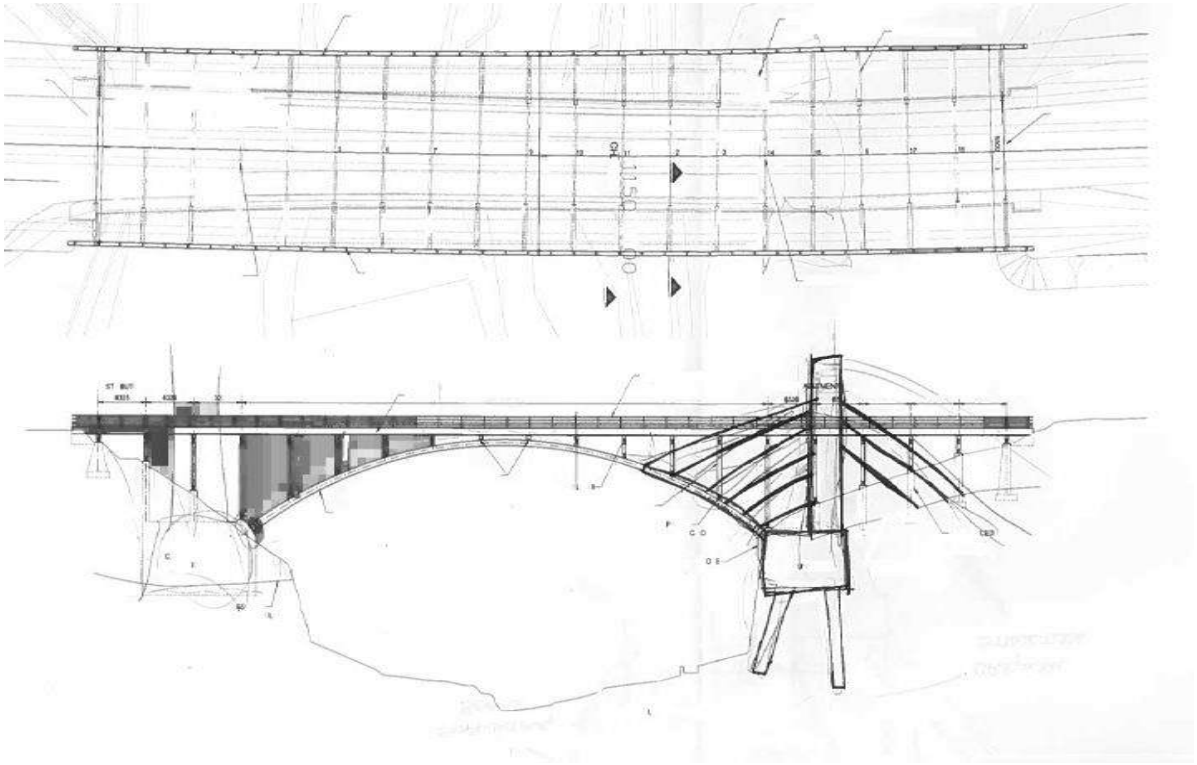
Notes		Action
1	**Health and safety moment:** Provided by Wendy Bateman – She raised an issue from a previous experienced. A taxi driver dropped her off outside the Angel hotel on double yellow lines and on a busy junction; the taxi driver stopping at this unsafe point also caused a traffic jam. The action from this event would be, if you find yourself in a similar situation please ask your taxi driver to drop you off in a safe area before your journey, and if you are not happy where they have dropped you off, please don't hesitate and ask them to move to a safer area.	
2	**Key Actions from meeting** • To develop all options – Surveys need to be completed to determine our best option and collect the required resources to evidence each option. - Topography survey - Geological survey of the valley's bank to determine its stability - Lower plant and bryophytes survey - Bat activity and endoscope survey - Peregrine survey - Otter survey - Environmental Impact assessment - Structural assessment - Arrange access to carry out these surveys • Contact other organisations that may have issues with the	All

Notes	Action
construction. They may have areas that they class as important, and may be able to discuss other options and solutions i.e. Wales archaeology society. • Need to assess the impact on the tram way and leat – How the vibration of construction will impact these structures. • Contact CADW and request access to their report ?????? • Contact Archaeology society to request access to their GIS information on the location of the sleeper cells. • GP to ask Chris to go to site to take photos before the leaves come out. • Contact Roadbridge re alteration of SAM on Red Roses scheme.	GP CW
3. **Environmental constraints discussed in meeting** • Scheduled Ancient Monument (SAM) JB and meeting attendees discusses that the Tramway and its association with cultural heritage. JB explains appealing to CADW has three possible outcomes either Yes, Yes with constraints or No. He discussed that CADW have a target to get 90% of all requests processed within 30 days of application. Additionally, he discussed that for an application to be successful, CADW would need all information such as the environmental statement, details of any requested modification of the structure, if all options have been considered, if other organisation have been consulted on the planned construction. As part of the application process, CADW may have consultation with these organisation to discuss Jacobs application, and a method statement how you would preserve the structure after work has been completed would be required. - JB available for pre-application advice • SSSi - LW- Placed anabats outside the known caves and we found there was Lesser Horseshoe bat activity and small amount of activity from Great Horseshoe bats. - We need to complete a lower plant and bryophytes survey but access to the bottom of the valley will be extremely difficult.	

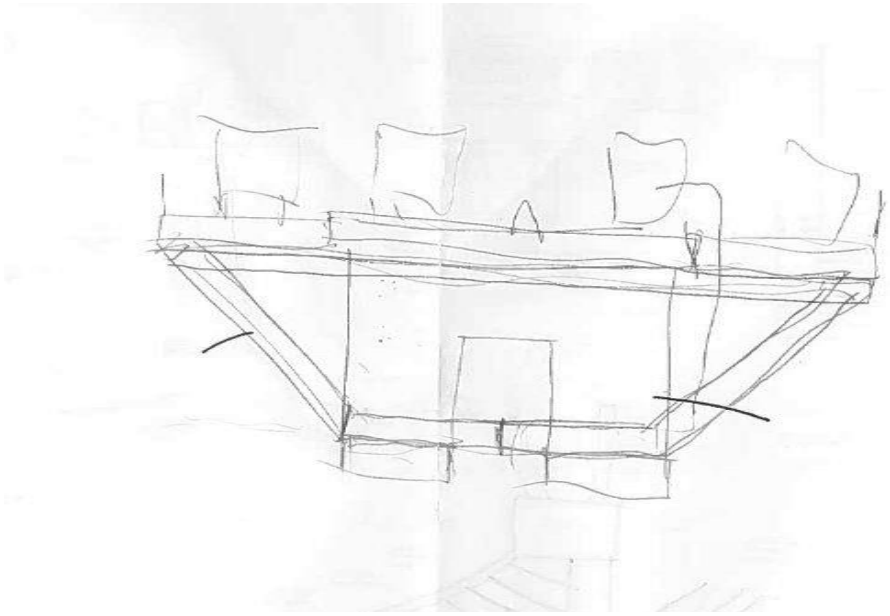
Notes	Action
- RB – We could make a reasonable judgement on whether the specific plants identified in the SSSi would be present in the valley, we could look at the ideal conditions and substrate of the plants. - We need to have a risk assessment on the implications of construction on the bats i.e. excessive light and noise. - Currently we can't access the bridge to check if bats use the crevices as roosts. 4. **Structure Buildability options and constraints** • Structure buildability option 1 - Destruction of bridge and erect a new bridge in its place. • Structure buildability option 2 - (see appendix 1 for diagram) • Structure buildability option 3 – Symmetrical extension of bridge (See appendix 2 for diagram) • Structure buildability option 4 – Asymmetrical extension of bridge 5. **Building Constraints** - AB raises the discussion of constraints of the tramway. First is a protected schedule one structure, it is really narrow which limits access. It connects directly with the leat, SSSi and river there for space is even more limited in the valley below the structure. - RB raises his concerns about the width of the structure. It is small. It also causes issues getting equipment down to the valley floor. The valley sides are fragile and may causes collapses if heavy equipment is placed on top. - - RB - it's a functioning structure and this needs to be taken into account during the planning stage. - JB states exposing the sleeper stones may cause the structure to become fragile. - AF raises the question of the equipment needed to do the job is limited due to the limited space of the valley, weather conditions will also limit what equipment they can use. - Traffic issue during construction- May causes serious disruptions in Merthyr if the road has to be closed during construction, but a road closure would allow more freedom on the work that can be done to the structure. Additionally, we	

Notes	Action
could limit traffic to one lane but this has safety issues with construction equipment and the public, safety zones would be an issue, and the space available for construction equipment would be limited. - WB raises the issue that the construction window is limited and this needs to be taken into account during planning. Construction will take longer than one summer which causes issues with the Lesser Horseshoes located in the nearby caves. - WB- We still don't know the entire cave structure, we do not know how it is interconnected which may causes additional implications. - SSSi noted species and habitats need to be taken into account during planning and construction. - WB – Raises the issue that if we have to continuously re-visit the structure for maintenance for example that will cause other issues. 6. **Conclusions of meeting** - More surveys are needed to research the area further. - Without a construction plan it is difficult to discuss the impact construction will have on protected species, the SAM, and the surrounding SSSi. - A future meeting needs to be planned.	

Appendix 1



Appendix 2



Meeting Action List

Churchill House
Churchill Way
Cardiff, CF10 2HH
United Kingdom
T +44 (0)29 2035 4200
F +44 (0)29 2035 3222
www.jacobs.com

Purpose	**A465 S5 & 6 - Ecology TWG**		
Project	A465 Section 5 & 6	**Project No.**	B2191100
Prepared by	Cath Walker	**Phone No**	02920 353200
Location	Conference Room 3 and 4 8th Floor, Cardiff Office, Churchill House, Churchill Way	**Date/Time**	23 November 2016, 10:00 to 16:00
Participants	Jacobs - Wendy Bateman (WB), Cath Walker (CW), Laura Gore (LG), Dave Sallis (DS) Welsh Government - Mark Dixon (MD), Luci Collinwood (LC), Len Wyatt (LW) Rhondda Cynon Taff Council - Richard Wistow (RW) Merthyr Tydfil County Borough Council - Rolf Brown (RB) Natural Resources Wales – Gemma Beynon (GB), John Messenger (JM) Butterfly Conservation George Tordoff (GT) South and West Wales Wildlife Trust - Carys Solman (CM) Mott MacDonald – Ellen Campbell (EC), Joanne Bates (JB)	**Apologies**	Lucy Emery, Russell Hobson, Tom Eyles, Veronika Brannovic, Gareth Protheroe, John Byrne

	Action	**Owner**
	Taf Fechan SSSI	
1	WB stated that as the A465 Section 5 and 6 is DBFO procurement, not ECI there is no contractor currently on board to develop a detailed Kaarst protocol. Jacobs will produce a Performance Specification using similar principles as A465 section 2.	n/a
2	WB confirmed 8 month construction period for the widening of the existing structure with no works that may disturb hibernating bats during the 3.5 winter months (1 December to 15 March inclusive). JM agreed this timescale.	WB
3	CS noted existing key access to Taf Fechan SSSI used by SWW WT will be affected by proposed scheme. Jacobs to review land ownership and access provision around proposed attenuation ponds (north side, chainage approx. 12260).	WB
	Lapwing Mitigation at Dowlais	
4	Confirm ownership of proposed mitigation site to South of Dowlais Top junction further to RB comments that it is potentially included in the emerging MTCBC strategic plan as an employment site.	RB/WB

5	Jacobs to undertake further work, and consultation with Tom Eyles, Gwent WT, to confirm details of barriers to ground based predators, disturbance etc. for proposed mitigation site. Landscaping design to ensure no trees in vicinity to attract corvids.	LG
6	KS6 Construction works in Dowlais Top area to be timed so as to not disturb nesting lapwing.	WB/DS
	Lesser Horseshoe Bats	
7	No lighting proposed at Taf Fechan mainline structure and strip/spot LED lighting on Taf Fechan NMU structure only to ensure no light spill into gorge.	CW
8	JM confirmed that Jacobs survey effort to date with regard to Lesser Horseshoe bats is sufficient and is happy with conclusion of no significant effects on Usk Bat Sites in SIAA.	LG
9	JM recommended the optimisation of proposed pipe roost locations in structures so that they are located independently of the road and avoid areas of low probability of use or where there would be complex maintenance or H&S access issues.	LG
	Great Crested Newt	
10	GCN surveys will be updated in KS5 to inform licencing process.	LG
11	JM comments regarding a conservation strategy for the GCN metapopulation across the scheme to be considered by Jacobs for inclusion in ES.	LG
12	Proposed culvert at chainage 9300 (nearest to confirmed GCN breeding ponds at Winch Fawr SINC) to be upgraded to be suitable as multi mammal crossing point + vegetation as guide.	LG
	Marsh Fritillary Butterfly	
13	Consensus between those present (RW/GT/RB) that ‘do nothing’ option i.e. provision of 0 ha of mitigation land is not acceptable.	n/a
14	NRW to provide statement detailing why existing land designated within SAC cannot be used for mitigation under current legislation.	GB
15	Consensus between those present (that preferred site of land for mitigation is to SW of Baverstocks junction as this land improves connectivity between SSSIs and within the wider functional landscape area. This location is also situated near to existing plots managed for marsh fritillary in the area by RCT/BC. This proposed mitigation land is approximately 17 ha in total.	All
16	Consensus between those present that the eventual quality of the mitigation land provided should exceed that which it is mitigating for. i.e. 2.2 ha of “good quality” habitat would be lost to the scheme. Therefore at least 2.2 ha of good quality habitat should be provided.	LG
17	RW to confirm (provide plans etc.) which areas RCT are already managing in conjunction with BC for conservation of MFB e.g. Tower Colliery and Enviroparks. This will be with a view to ensure the scheme proposals align with the long term strategy for managed grazing across the landscape.	RW

18	LW commented that in SIAA need to demonstrate beyond scientific doubt that integrity of Blaen Cynon SAC will not be affected	WB/LG

Meeting Minutes

Churchill House
Churchill Way
Cardiff, CF10 2HH
United Kingdom
T +44 (0)29 2035 4200
F +44 (0)29 2035 3222
www.jacobs.com

Purpose	**A465 Flood Technical Working Group Meeting**		
Project	A465 Section 5 & 6	**Project No.**	B2191100
Prepared by	Sarah Denne	**Phone No**	02920 353200
Location	Conference Room 3 and 4 8th Floor, Cardiff Office, Churchill House, Churchill Way	**Date/Time**	29th November 2016, 10:00-12:00
Participants	Welsh Government: Mark Dixon (MD) MTCBC: Kevin Davies (KD), Gerald Coughlan (GC) RCTCBC: Ian Woodland (IW), Owen Griffiths (OW) Natural Resources Wales: Gemma Beynon (GB), Carl Llewellyn (CL) Jacobs: Dave Sallis (DS), Kim Longman (KL) Phil Raynor (PR), Cath Walker (CW), Sarah Denne (SD)	**Apologies**	Wendy Bateman, Gareth Protheroe, Christopher Nutt (NRW), Sarah Jones (NRW), Andrew Stone (RCT CBC), Fil Pamment (WG)

	Action	**Owner**
1	<u>Flood Modelling</u> *Afon Cynon* PR - Model based on existing NRW 2012 ESTRY model, but has been run in Flood Modeller Pro which accommodates potential changes to the watercourse as a result of structure amendments. Current proposal is to increase the efficiency of the current structure allowing all flow to pass. This would increase flood risk for up to 130m downstream (14cm water level rise), but decrease flood risk up to 200m upstream (14cm water level fall). **CL – NRW require more detail of what this will mean before giving advice on whether compensation is required. This detail to be provided in the FCA.** *Nant y Bwlch* PR – New model produced using FEH statistical method. An increase in capacity to allow passage of all flow is proposed (expansion of culvert). This would reduce flood risk over the wide area, but increase flood risk in a small number of gardens. *Nant Melyn* PR - New model produced using FEH statistical method. Due to the steep nature of the channel, the water flow remains in the channel with no scheme impacts on the flood risk.	PR

	GB/CL – Requested that NRW will need to receive flood modelling report before Christmas to allow time for review before end of required KS3 deadline (end of February 2017)	PR
2	Other watercourses PR - Assessment on simple culverts/watercourses was based on spread-sheet tool which uses the CIRIA C689 method. More complex culvert arrangements required modelling (HEC-RAS 5.0.1). The proposed scheme requires need for some existing pipes/culverts to be extended, some existing pipes/culverts to be replaced by larger, or new culverts to be added in some locations. One culvert (4424) may require the watercourse bed to be lowered to allow for more headroom between the culvert and the road surface. **KD – Requested that LA' will need to receive culvert assessing spreadsheet before Christmas to review before end of required KS3 deadline (end of February 2017).**	PR/KL
3	Water Framework Directive (WFD) PR – Eleven watercourses have been determined as medium (9) or high (2) vulnerability. PR – The WFD is not expected to change significantly from the draft that was issued to WG in June 2016 but was not issued to NRW and LPAs for comment at the time. **Jacobs to issue draft WFD to NRW and LPAs, highlighted with expected changes.**	CW/PR
4	Flood compensation storage area (option for Afon Cynon) **PR to include as a possibility with detail of consequences being tabulated in the Flood Compensation Assessment.** **Jacobs to remodel Afon Cynon with the storage area included.**	PR PR
5	AOB **KD – Requested that Jacobs should investigate any impacts of the Trunk sewer near to Afon Cynon.** **IW - Requested copy of presentation slides showing difference in flooding levels in Hirwaun from present situation vs larger culvert at Nant – y - Bwlch**	DS CW

Appendix 8A – Construction Phase Assessment

8A.1 Introduction

This technical appendix supports Chapter 8: Air Quality of the Environmental Statement (ES) and outlines criteria developed by the Institute of Air Quality Management (IAQM, 2014) for the assessment of air quality impacts arising from construction activities. The assessment procedure is comprised of five steps. The following sections outline the methodology and the construction dust assessment.

8A.2 Assessment Methodology

8A.2.1 Step 1: Identify the need for a detailed assessment

An assessment would normally be required where there is:

- a human receptor within 350 m of the proposed scheme and / or within 50 m of the access route(s) used by construction vehicles on the public highway, up to 500 m from the study area site entrance(s); and / or
- an ecological receptor within 50 m of the proposed scheme and / or within 50 m of the access route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).

A human receptor refers to any location where a person or property may experience the adverse effects of airborne dust or dust-soiling, or exposure to particulate matter (PM10) over a period relevant to the air quality objectives.

An ecological receptor refers to any sensitive habitat affected by dust soiling. For locations with a statutory designation, such as a Site of Specific Scientific Interest (SSSI), Special Area of Conservation (SACs) and Special Protection Areas (SPAs), consideration should be given as to whether the particular site is sensitive to dust. Some non-statutory sites may also be considered if appropriate, such as a Site of Importance for Nature Conservation (SINC).

Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is 'negligible' and any effects would be 'not significant'.

8A.2.2 Step 2: Assess the risk of dust impacts

A site is allocated to a risk category on the basis of the scale and nature of the works (Step 2A) and the sensitivity of the area to dust impacts (Step 2B). These two factors are combined in Step 2C to determine the risk of dust impacts before the implementation of mitigation measures. Risks are described in terms of there being a low, medium or high risk of dust impacts for each of the four separate potential activities (demolition, construction, earthworks and trackout). Site-specific mitigation would be required, proportionate to the level of risk.

8A.2.2.1 Step 2A: Define the potential dust emission magnitude

The potential dust emission magnitude is based on the scale of the anticipated works and should be classified as small, medium or large. Table 8A.1 presents the dust emission criteria outlined for each construction activity.

Table 8A.1 : Potential dust emission magnitude criteria

Construction activity	Large	Medium	Small
Demolition	Total building volume >50,000 m^3, potentially dusty construction material (such as concrete), on-site crushing and screening, demolition activities >20 m above ground level.	Total building volume 20,000 m^3 – 50,000 m^3, potentially dusty construction material, demolition activities 10-20 m above ground level.	Total building volume <20,000 m^3, construction material with low potential for dust release (such as metal cladding or timber), demolition activities <10 m above ground, demolition

			during wetter months.
Earthworks	Total site area >10,000 m^2, potentially dusty soil type (such as clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100,000 tonnes.	Total site area 2,500 m^2 – 10,000 m^2 , moderately dusty soil type (such as silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 4 m – 8 m in height, total material moved 20,000 tonnes – 100,000 tonnes.	Total site area <2,500 m^2, soil type with large grain size (such as sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height, total material moved <20,000 tonnes, earthworks during wetter month.
Construction	Total building volume >100,000 m^3, on site concrete batching, sandblasting.	Total building volume 25,000 m^3 – 100,000 m^3, potentially dusty construction material (such as concrete), on site concrete batching.	Total building volume <25,000 m^3, construction material with low potential for dust release (such as metal cladding or timber).
Trackout	>50 HDV (>3.5 t) outward movements[1] in any one day[2], potentially dusty surface material (such as high clay content), unpaved road length >100 m.	10-50 HDV (>3.5 t) outward movements[1] in any one day[2], moderately dusty surface material (such as high clay content), unpaved road length 50 m – 100 m.	<10 HDV (3.5 t) outward movements[1] in any one day[2], surface material with low potential for dust release, unpaved road length <50 m.

1 A vehicle movement is a one way journey. i.e. from A to B, and excludes the return journey.
2 HDV movements during a construction project vary over its lifetime, and the number of movements is the maximum not the average.

8A.2.2.2 Step 2B Define the sensitivity of the area

The sensitivity of the area is described as low, medium and high takes into account of a number of factors:

- the specific sensitivities of receptors in the area;
- the proximity and number of those receptors;
- the local background PM_{10} concentrations; and
- site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Table 8A.2 presents indicative examples of classification groups for the varying sensitivities of people to dust soiling effects to the health effects of PM_{10}; and the sensitivities of receptors to ecological effects. A judgement is made at the site-specific level where sensitivities may be higher or lower, for example a soft fruit business may be more sensitive to soiling than an alternative industry in the same location. Box 6, Box 7 and Box 8 within IAQM (IAQM, 2014) outlines more detailed guidance for defining sensitivity.

Table 8A.2 : Indicative examples of the sensitivity of different types of receptors

Sensitivity of receptor	Sensitivities of people and ecological receptors		
	Dust soiling effects [1]	Health effects of PM_{10} [2]	Ecological effects [3]
High	Dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms.	Residential properties, hospitals, schools and residential care homes.	Locations with an international or national designation and the designated features may be affected by dust soiling (such as SAC/SPA/Ramsar). Locations where there is a community of a particularly dust sensitive species such as vascular

			species included in the Red Data list for Great Britain.
Medium	Parks, places of work.	Office and shop workers not occupationally exposed to PM_{10}.	Locations where there is a particularly important plant species, where dust sensitivity is uncertain or unknown. Locations with a national designation where the features may be affected by dust deposition (such as SSSIs).
Low	Playing fields, farmland, footpaths, short-term car parks and roads.	Public footpaths, playing fields, parks and shopping streets.	Locations with a local designation where the features may be affected by dust deposition (such as local nature reserves).

1 People's expectations would vary depending on the existing dust deposition in the area.
2 This follows the Department for Environment, Food and Rural Affairs (Defra, 2016) guidance as set out in Local Air Quality Management Technical Guidance (LAQM.TG (16)). Notwithstanding the fact that the air quality objectives and limit values do not apply to people in the workplace, such people can be affected to exposure of PM_{10}. However, they are considered to be less sensitive than the general public as a whole because those most sensitive to the effects of air pollution, such as young children are not normally workers. For this reason workers have been included in the medium sensitivity category.
3 Only if there are habitats that might be sensitive to dust. A Habitat Regulation Assessment of the site may be required as part of the planning process if the site lies close to an internationally designated site i.e. Special Conservation Areas (SACs), Special Protection Areas (SPAs) designated under the Habitats Directive (92/43/EEC) and RAMSAR sites.

The IAQM guidance advises consideration of the risk associated with the nearest receptors to each phase of work. The A465 construction will be split into the following phases:

- Phase 1 Stage 1 – Hirwaun and Trewaun and Wind Farm Access;
- Phase 1 Stage 2 – Hirwaun Junction, Trewaun Roundabout and structures to River Cynon Bridge;
- Phase 1 Stage 3 – Nant Melyn Viaduct and Croesbychan Junction;
- Phase 1 Stage 4 – Vale of Neath Railway and Court Farm Underpass;
- Phase 2 Stage 1 – Opening Main Cut at Baverstock Junction and new Swansea Road;
- Phase 2 Stage 2 – Taf Fawr Viaducts, Junctions and Approaches;
- Phase 2 Stage 3 – Online Widening to Nant Ffrwd and associated Crossing;
- Phase 2 Stage 4 – Baverstock Junction and Approaches;
- Phase 2 Stage 5 – Nant Hir Crossing and Nant Moel Reservoir;
- Phase 3 Stage 1 – Dowlais Junction;
- Phase 3 Stage 2 – Cefn-Coed High Street Bridge to Taf Fechan;
- Phase 3 Stage 3 – Pant Road Viaduct and Pen-Y-Werrn Bridge;
- Phase 3 Stage 4 – Taf Fawr Viaducts, Junctions and Approaches; and
- Phase 3 Stage 5 – Prince Charles Hospital Junction.

Where there are multiple receptors in a single location, a worst case representative receptor location is considered and the highest risk applicable is allocated.

The receptor sensitivity and distance are then used to determine the potential dust risk for each dust effect for each construction activity as shown in Table 8A.3, Table 8A.4 and Table 8A.5. It is noted that distances are to the dust source and so a different area may be affected by trackout than by on-site works.

For trackout, the distances should be measured from the side of the roads used by construction traffic. Without site specific mitigation, trackout may occur from roads up to 500 m from large sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road.

Table 8A.3 : Sensitivity of the area to dust soiling effects on people and property[1]

Receptor sensitivity	Number of receptors	Distance from the source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

1 Estimate the total number of receptors within the stated distance. Only the highest level of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors <20 m of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors <50 m is 102. The sensitivity of the area in this case would be high.

Table 8A.4 : Sensitivity of the area to human health impacts[123]

Receptor sensitivity	Annual mean PM_{10} concentration	Number of receptors	Distance from the source (m)				
			<20	<50	<100	<200	<350
High	>32 µg/m^3	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m^3	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m^3	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m^3	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m^3	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low	Low

1 Estimate the total within the stated distance (such as the total within 350 m and not the number between 200 and 350 m), noting that only the highest level of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors <20 m of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors <50 m is 102. If the annual mean PM_{10} concentration is 29 µg/m^3, the sensitivity of the area would be high.

2 Most straightforwardly taken from the national background maps, but should also take account of local sources. The values are based on 32 µg/m^3 being the annual mean concentration at which an exceedance of the 24-hour objective is likely in Wales.

3 In the case of high sensitivity receptors with high occupancy (such as schools or hospitals) approximate the number of people likely to be present. In the case of residential dwellings, just include the number of properties.

Table 8A.5 : Sensitivity of the area to ecological impacts[1]

Receptor sensitivity	Distance from the source (m) [1]	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

1 Only the highest level of area sensitivity from the table needs to be considered

8A.2.2.3 Step 2C Define the risk of impacts

The dust emission magnitude is then combined with the sensitivity of the area to determine the overall risk of impacts with no mitigation measures applied. The matrices in Table 8A.6 provide a method of assigning the level of risk for each activity. These can then be used to determine the level of mitigation that is required.

Table 8A.6 : Risks of dust impacts

Receptor sensitivity	Dust emission magnitude		
	Large	Medium	Small
Demolition			
High	High risk	Medium risk	Medium risk
Medium	High risk	Medium risk	Low risk
Low	Medium risk	Low risk	Negligible risk
Earthworks			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible risk
Construction			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible risk
Trackout			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Low risk	Negligible risk
Low	Low risk	Low risk	Negligible risk

8A.2.2.4 Step 3 Site specific mitigation

Step three of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to whether the site is a low, medium or high risk site. The highest risk category of a site (of all activities being undertaken) is recommended when considering appropriate mitigation measures for the site. Where risk is assigned as ‘negligible’, no mitigation measures beyond those required by legislation are required. However, additional mitigation measures may be applied as good practice.

A selection of these measures have been specified for Low risk to High risk sites in the IAQM guidance (IAQM, 2014) as measures suitable to mitigate dust emissions from activities.

8A.2.2.5 Step 4 Determine significant effects

Following Step 2 (definition of the proposed scheme and the surroundings and identification of the risk of dust effects occurring for each activity), and Step 3 (identification of appropriate site-specific mitigation), the significance of the potential dust effects can be determined. The recommended mitigation measures should normally be sufficient to reduce construction dust impacts to a not significant effect.

The approach in Step 4 of IAQM dust assessment guidance has been adopted to determine the significance of effects with regard to dust emissions. The guidance states the following:

"For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be 'not significant."

IAQM guidance also states that:

"Even with a rigorous DMP [Dust Management Plan] in place, it is not possible to guarantee that the dust mitigation measures will be effective all the time, and if, for example, dust emissions occur under adverse weather conditions, or there is an interruption to the water supply used for dust suppression, the local community may experience occasional, short-term dust annoyance. The likely scale of this would not normally be considered sufficient to change the conclusion that with mitigation the effects will be 'not significant'."

Step 4 of IAQM guidance recognises that the key to the above approach is that it assumes that the regulators ensure that the proposed mitigation measures are implemented. The management plan would include the necessary systems and procedures to facilitate on-going checking by the regulators to ensure that mitigation is being delivered, and that it is effective in reducing any residual effect to 'not significant' in line with the guidance.

8A.3 Construction Dust Assessment

8A.3.1 Step 1 Identify the need for a detailed assessment

An assessment of potential demolition and construction impacts was undertaken in accordance with the IAQM methodology described earlier and as set out in section 3. The first step is Step 1, where the need for a detailed assessment is determined based on the location of receptors within the vicinity of the study area.

8A.3.1.1 Human receptors

Human receptors include locations where people spend time and where property may be impacted by dust. They may have a high, medium or low sensitivity to dust soiling and human health effects in accordance with IAQM guidance. There are human receptors within 350 m of the study area; therefore, further assessment is required. A count of the 'High' sensitive relevant human receptors within the specified assessment bands for each phase of the proposed scheme was carried out as recommended in IAQM guidance (IAQM, 2014), the results of which are set out in Table 8A.7. The receptors have been identified for each of the different phases in line with Step 2B. Medium and low sensitivity receptors were also identified e.g. The Beacons Park natural burial ground at upper High Street, Merthyr Tydfil.

IAQM guidance (IAQM, 2014) recommends a Trackout count (i.e. those receptors within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s)) be undertaken. Site access / egress points and haul routes are to be finalised. However, based on available drawings at the time of writing, sensitive receptors (i.e. residential properties or commercial premises, etc.) have been identified. These receptors are set out in Table 8A.7.

Table 8A.7 : Dust soiling and human health receptor count

Construction activity and distance		Receptor count		
		Phase 1	Phase 2	Phase 3
Demolition, earthworks and construction				
Distance to construction boundary	< 20 m	54	13	107
	< 50 m	159	56	446
	< 100 m	372	203	1,111
	< 350 m	2,300	1,110	5,406
Trackout		**Phase 1**	**Phase 2**	**Phase 3**
Distance from roads up to 500 m from the site entrance	< 20 m	115	2	149
	20 m – 50 m	57	1	57

8A.3.1.2 Ecological receptors

The effect of construction dust on ecological sites has also been considered. There are 41 ecological receptors within 50 m of the proposed scheme site boundary. There are no ecological receptors within 50 m of the local road network up to 500 m from the site entrance, which would likely be utilised during the works associated with the construction of the proposed scheme.

The ecological receptors considered in this assessment are displayed in Table 8A.8. The vegetation type present at each site was obtained from the UK Air Pollution Information System (APIS) website which is published by the Centre for Ecology and Hydrology. Where this information was not available, advice was sought from Jacobs ecologists. The ecological receptors were then categorised into a dust deposition sensitivity class of Low, Medium or High taking into account the likely effect and the value of the sites ecological assets as recommended in the IAQM construction dust guidance (IAQM, 2014) and the likely sensitivity to dust soiling and smothering of the vegetation within each site.

Table 8A.8 : Ecological receptor identification and sensitivity

Ecological receptor	Sensitivity to dust deposition	Reason for sensitive classification
Ancient Semi Natural Woodland (12372)	Low	Primary vegetation type is broadleaved, mixed and yew
Ancient Semi Natural Woodland (13684)	Low	Primary vegetation type is broadleaved, mixed and yew
Ancient Semi Natural Woodland (13688)	Low	Primary vegetation type is broadleaved, mixed and yew
Ancient Semi Natural Woodland (13689)	Low	Primary vegetation type is broadleaved, mixed and yew
Ancient Semi Natural Woodland (18501)	Low	Primary vegetation type is broadleaved, mixed and yew
Ancient Semi Natural Woodland (18509)	Low	Primary vegetation type is broadleaved, mixed and yew
Ancient Semi Natural Woodland (18514)	Low	Primary vegetation type is broadleaved, mixed and yew
Ancient Semi Natural Woodland (7347)	Low	Primary vegetation type is broadleaved, mixed and yew

Ecological receptor	Sensitivity to dust deposition	Reason for sensitive classification
Ancient Semi Natural Woodland (7392)	Low	Primary vegetation type is broadleaved, mixed and yew
Ancient Semi Natural Woodland (8800)	Low	Primary vegetation type is broadleaved, mixed and yew
Ancient Semi Natural Woodland (8801)	Low	Primary vegetation type is broadleaved, mixed and yew
Ancient Semi Natural Woodland (8804)	Low	Primary vegetation type is broadleaved, mixed and yew
Cwm Taf Fechan Woodlands SSSI	Medium	Primary vegetation is broadleaved, mixed and yew. Medium sensitivity assigned as per IAQM guidance (IAQM, 2014)
Cwm Taf Fechan Woodlands LNR	Low	Primary vegetation type is broadleaved, mixed and yew
Habitats supporting the Marsh Fritillary butterfly	High	Blaen Cynon SAC to the north of the proposed scheme (areas within designated SAC boundary not considered in this assessment) is designated for this mobile species and as such, those areas of marshy grassland or rhos pastures and purple moor grass likely to support Marsh Fritillary have been assigned the same sensitivity as an SAC (i.e. High) as per IAQM guidance (IAQM, 2014).
Plantation on Ancient Woodland Site (39415)	Low	Primary vegetation type is broadleaved, mixed and yew
Plantation on Ancient Woodland Site (39606)	Low	Primary vegetation type is broadleaved, mixed and yew
Restored Ancient Woodland Site (11374)	Low	Primary vegetation type is broadleaved, mixed and yew
Restored Ancient Woodland Site (11376)	Low	Primary vegetation type is broadleaved, mixed and yew
Restored Ancient Woodland Site (21421)	Low	Primary vegetation type is broadleaved, mixed and yew
Restored Ancient Woodland Site (21422)	Low	Primary vegetation type is broadleaved, mixed and yew
Restored Ancient Woodland Site (21423)	Low	Primary vegetation type is broadleaved, mixed and yew
Pan March and Traed y Milwyr, Llechryd (SINC 001)	Low	Primary vegetation type is acid grassland
Y Graig (SINC 64)	Low	Primary vegetation type is acid grassland
Winchfawr West (SINC 72)	Low	Primary vegetation type is fen, marsh and swamp
Coed Meirig Pastures (SINC 74)	Low	Primary vegetation type is acid grassland
Cwm Taf Fawr (SINC 79)	Low	Primary vegetation type is broadleaved, mixed and yew
Bryniau (SINC 89)	Low	Primary vegetation type is acid grassland
Cwm Ffrwd (SINC 151)	Low	Primary vegetation type is broadleaved, mixed and yew

Ecological receptor	Sensitivity to dust deposition	Reason for sensitive classification
Proposal - Hirwaun Industrial Estate (SINC 214)	Low	Primary vegetation type is fen, marsh and swamp
Proposal - Hirwaun Ponds (SINC 216)	Low	Primary vegetation type is fen, marsh and swamp
Proposal - Hirwaun Common (SINC 217)	Low	Primary vegetation type is acid grassland
Proposal - Hirwaun Ponds North (SINC 219)	Low	Primary vegetation type is fen, marsh and swamp
Proposal - Hirwaun Iron works (SINC 220)	Low	Primary vegetation type is neutral grassland also broadleaved, mixed and yew woodland
Proposal - Upper Cynon Floodplain (SINC 222)	Low	Primary vegetation type is fen, marsh and swamp also broadleaved, mixed and yew woodland
Proposal - Nant Hir Valley & Reservoir (SINC 223)	Low	Primary vegetation type is broadleaved, mixed and yew woodland
Proposal - Llwydcoed slopes (SINC 225)	Low	Primary vegetation type is fen, marsh and swamp
Proposal - Bryn-defaid Heath (SINC 226)	Low	Primary vegetation type is dwarf shrub heath
Proposal - Aberdare mountain (SINC 236)	Low	Primary vegetation type is acid grassland
Cwm Taf Fechan (SINC 241)	Low	Primary vegetation type is broadleaved, mixed and yew
Tir Mawr A Dderi Hir, Llwydcoed SSSI	Medium	Primary vegetation type is Acid Grassland. Medium sensitivity assigned for a SSSI as per IAQM guidance (IAQM, 2014)

8A.3.2 Step 2 Assess the risk of dust impacts

8A.3.2.1 Step 2A Define the potential dust emission magnitude

The activities associated with the construction of the proposed scheme will be split into three stages, which could potentially involve different periods of demolition, earthworks, construction and trackout, and activity levels of which will not necessarily peak simultaneously.

8A.3.2.2 Dust emission magnitude summary

The dust emission magnitudes of each activity for each phase is summarised in Table 8A.9.

Table 8A.9 : Dust emission magnitude

Construction programme	Demolition	Earthworks			Construction		Trackout	
	Dust emission magnitude	Vehicles active at any one time	Total earthworks (m^3)	Dust emission magnitude	Construction volume (m^3)	Dust emission magnitude	Max vehicle movements in any one day	Dust emission magnitude
Phase 1 between Hirwaun Ponds and Nant Melyn.								
Phase 1 Stage 1	Large	14	600,216	Large	52,452	Medium	146	Large
Phase 1 Stage 2	Large	11	63,699	Large	15,736	Small	68	Large
Phase 1 Stage 3	Large	12	593,608	Large	37,591	Medium	124	Large
Phase 1 Stage 4	Large	7	0	Large	0	N/A[1]	45	Medium
Phase 2 between Nant Melyn Mainline Viaduct and the A470 junction.								
Phase 2 Stage 1	Large	4	0	Large	30,597	Medium	36	Medium
Phase 2 Stage 2	Medium	11	238,608	Large	11,365	Small	79	Large
Phase 2 Stage 3	Medium	7	244,625	Large	19,232	Small	57	Large
Phase 2 Stage 4	Large	10	373,456	Large	0	N/A[1]	80	Large
Phase 2 Stage 5	Large	15	318,106	Large	27,974	Medium	169	Large
Phase 3 between the A470 junction and Dowlais junction.								
Phase 3 Stage 1	Medium	7	225,721	Large	45,633	Medium	114	Large
Phase 3 Stage 2	Large	6	3,235	Medium	4,371	Small	28	Medium
Phase 3 Stage 3	Large	7	106,293	Large	14,687	Small	55	Large
Phase 3 Stage 4	Large	14	114,699	Large	36716	Medium	100	Large
Phase 3 Stage 5	Large	9	143,693	Large	13,113	Small	55	Large

1 Construction activities not anticipated.

8A.3.3 Step 2B Define the sensitivity of the area

The proposed scheme bypasses the communities of Hirwaun, Cefn Coed, Gurnos, Penbryn, Dowlais and Pant which includes a number of residential / commercial properties and a number of schools including Hirwaun Primary School, Ysgol-y-Graig Primary School and Pen-Y-Dre High School.

The Beacons Park natural burial ground at upper High Street, Merthyr Tydfil is adjacent to the proposed scheme (Phase 3) and would be considered a medium sensitivity receptor in accordance with IAQM guidance. This site was included in the sensitivity assessment.

Table 8A.10 displays the sensitivities of the surrounding area to demolition, earthworks, construction and trackout based on the criteria set out in Table 8A.3 and Table 8A.4. For trackout activities, the overall sensitivity determined for each Phase has been assigned to each stage within the relevant phase. The ecological receptors presented in Table 8A.10 represent the most sensitive ecological receptor considered within each stage.

Table 8A.10 : Sensitivity of the proposed scheme area

Potential impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Phase 1 between Hirwaun Ponds and Nant Melyn.				
Phase 1 Stage 1 Hirwaun and Trewaun and Wind Farm Access.				
Dust Soiling	Medium	Medium	Medium	High
Human Health	Low	Low	Low	Low
Ecological (Marsh Fritillary habitat[2])	High	High	High	High
Phase 1 Stage 2 Hirwaun Junction, Trewaun Roundabout and structures to River Cynon Bridge.				
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Low
Ecological (Marsh Fritillary habitat[2])	High	High	High	High
Phase 1 Stage 3 Nant Melyn Viaduct and Croesbychan Junction.				
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Low
Ecological (Marsh Fritillary habitat[2])	High	High	High	High
Phase 1 Stage 4 Vale of Neath Railway and Court Farm Underpass.				
Dust Soiling	Medium	Medium	N/A[1]	High
Human Health	Low	Low		Low
Ecological (Marsh Fritillary habitat[2])	High	High	High	High
Phase 2 between Nant Melyn Mainline Viaduct and the A470 junction.				
Phase 2 Stage 1 Opening Main Cut at Baverstock Junction and new Swansea Road.				
Dust Soiling	Low	Low	Low	Medium
Human Health	Low	Low	Low	Low

Potential impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Ecological (Marsh Fritillary habitat[2])	High	High	High	High
Phase 2 Stage 2 Taf Fawr Viaducts, Junctions and Approaches.				
Dust Soiling	High	High	High	Medium
Human Health	Low	Low	Low	Low
Ecological (SINC 79. Cwm Taf Fawr)	Low	Low	Low	Low
Phase 2 Stage 3 Online Widening to Nant Ffrwd and associated Crossing.				
Dust Soiling	Medium	Medium	Medium	Medium
Human Health	Low	Low	Low	Low
Ecological (Marsh Fritillary[2])	High	High	High	High
Phase 2 Stage 4 Baverstock Junction and Approaches.				
Dust Soiling	Low	Low	N/A[1]	Medium
Human Health	Low	Low		Low
Ecological (SINC 72. Winchfawr West)	Low	Low	Low	Low
Phase 2 Stage 5 Nant Hir Crossing and Nant Moel Reservoir.				
Dust Soiling	Medium	Medium	Medium	Medium
Human Health	Low	Low	Low	Low
Ecological (Marsh Fritillary habitat[2])	High	High	High	High
Phase 3 between the A470 junction and Dowlais junction.				
Phase 3 Stage 1 Dowlais Junction.				
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Low
Ecological (SINC 001. Pan March and Traed y Milwyr, Llechryd)	Low	Low	Low	Low
Phase 3 Stage 2 Cefn-Coed High Street Bridge to Taf Fechan.				
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Low
Ecological (SINC 241. Cwm Taf Fechan)	Low	Low	Low	Low
Phase 3 Stage 3 Pant Road Viaduct and Pen-Y-Werrn Bridge.				
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Low

Potential impact	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Ecological	N/A			
Phase 3 Stage 4 Taf Fawr Viaducts, Junctions and Approaches.				
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Low
Ecological (Cwm Taf Fechan Woodlands SSSI)	Medium	Medium	Medium	Medium
Phase 3 Stage 5 Prince Charles Hospital Junction.				
Dust Soiling	High	High	High	High
Human Health	Low	Low	Low	Low
Ecological (SINC 89. Bryniau)	Low	Low	Low	Low

1 Construction activities not anticipated.
2 As discussed previously, Blaen Cynon SAC to the north of the proposed scheme (not considered in this assessment) is designated for the Marsh Fritillary butterfly. As a mobile species, those areas of marshy grassland or rhos pastures and purple moor grass likely to support Marsh Fritillary have been assigned the same sensitivity as an SAC (i.e. High) as per IAQM guidance (IAQM, 2014).

8A.3.4 Step 2C Define the risk of impacts

8A.3.4.1 Human receptors

Using the dust emission magnitudes for the various activities in Table 8A.9 and the sensitivity of the area provided in Table 8A.10, the definition of the risks for each activity are provided in Table 8A.11 for dust soiling, human health impacts and impacts on ecological sites.

Table 8A.11 : Dust risk at human ecological receptors

Potential impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Phase 1 between Hirwaun Ponds and Nant Melyn.				
Phase 1 Stage 1 Hirwaun and Trewaun and Wind Farm Access.				
Dust Soiling	High Risk[1]	Medium Risk	Medium Risk[1]	High Risk[1]
Human Health	Medium Risk	Low Risk	Low Risk	Low Risk
Ecological (Marsh Fritillary habitat)	High Risk[1]	High Risk[1]	Medium Risk[1]	High Risk[1]
Phase 1 Stage 2 Hirwaun Junction, Trewaun Roundabout and structures to River Cynon Bridge.				
Dust Soiling	High Risk[1]	High Risk[1]	Low Risk[1]	High Risk[1]
Human Health	Medium Risk	Low Risk	Negligible Risk	Low Risk
Ecological (Marsh Fritillary habitat)	High Risk[1]	High Risk[1]	Low Risk[1]	High Risk[1]
Phase 1 Stage 3 Nant Melyn Viaduct and Croesbychan Junction.				
Dust Soiling	High Risk[1]	High Risk[1]	Medium Risk[1]	High Risk[1]

Potential impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Human Health	Medium Risk	Low Risk	Low Risk	Low Risk
Ecological (Marsh Fritillary habitat)	High Risk[1]	High Risk[1]	Medium Risk[1]	High Risk[1]
Phase 1 Stage 4 Vale of Neath Railway and Court Farm Underpass.				
Dust Soiling	High Risk[1]	Medium Risk	N/A[2]	Medium Risk[1]
Human Health	Medium Risk	Low Risk		Low Risk
Ecological (Marsh Fritillary habitat)	High Risk[1]	High Risk[1]		Medium Risk[1]
Phase 2 between Nant Melyn Mainline Viaduct and the A470 junction.				
Phase 2 Stage 1 Opening Main Cut at Baverstock Junction and new Swansea Road.				
Dust Soiling	Medium Risk	Low Risk	Low Risk	Low Risk
Human Health	Medium Risk	Low Risk	Low Risk	Low Risk
Ecological (Marsh Fritillary habitat)	High Risk[1]	High Risk[1]	Medium Risk[1]	Medium Risk[1]
Phase 2 Stage 2 Taf Fawr Viaducts, Junctions and Approaches.				
Dust Soiling	Medium Risk[1]	High Risk[1]	Low Risk[1]	Medium Risk[1]
Human Health	Low Risk	Low Risk	Negligible Risk	Low Risk
Ecological (SINC 79 - Cwm Taf Fawr)	Low Risk	Low Risk	Negligible Risk	Low Risk
Phase 2 Stage 3 Online Widening to Nant Ffrwd and associated Crossing.				
Dust Soiling	Medium Risk[1]	Medium Risk	Low Risk[1]	Medium Risk
Human Health	Low Risk	Low Risk	Negligible Risk	Low Risk
Ecological (Marsh Fritillary habitat)	Medium Risk[1]	High Risk[1]	Low Risk[2]	High Risk[1]
Phase 2 Stage 4 Baverstock Junction and Approaches.				
Dust Soiling	Medium Risk[1]	Low Risk[1]	N/A[2]	Medium Risk[1]
Human Health	Medium Risk[1]	Low Risk[1]		Low Risk
SINC 72. Winchfawr West	Medium Risk[1]	Low Risk[1]		Low Risk
Phase 2 Stage 5 Nant Hir Crossing and Nant Moel Reservoir.				
Dust Soiling	High Risk[1]	Medium Risk	Medium Risk[1]	Medium Risk
Human Health	Medium Risk	Low Risk	Low Risk	Low Risk
Ecological (Marsh Fritillary habitat)	High Risk[1]	High Risk[1]	Medium Risk[1]	High Risk[1]
Phase 3 between the A470 junction and Dowlais junction.				
Phase 3 Stage 1 Dowlais Junction.				
Dust Soiling	Medium Risk[1]	High Risk[1]	Medium Risk[1]	High Risk[1]

Potential impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Human Health	Low Risk	Low Risk	Low Risk	Low Risk
Ecological (SINC 001 - Pan March and Traed y Milwyr, Llechryd)	Low Risk	Low Risk	Low Risk	Low Risk
Phase 3 Stage 2 Cefn-Coed High Street Bridge to Taf Fechan.				
Dust Soiling	High Risk[1]	High Risk[1]	Low Risk[1]	Medium Risk[1]
Human Health	Medium Risk	Low Risk	Negligible Risk	Low Risk
Ecological (SINC 241 - Cwm Taf Fechan)	Medium Risk	Low Risk	Negligible Risk	Low Risk
Phase 3 Stage 3 Pant Road Viaduct and Pen-Y-Werrn Bridge.				
Dust Soiling	High Risk[1]	Medium Risk[1]	Low Risk[1]	High Risk[1]
Human Health	Medium Risk	Low Risk	Negligible Risk	Low Risk
Ecological	N/A[3]			
Phase 3 Stage 4 Taf Fawr Viaducts, Junctions and Approaches.				
Dust Soiling	High Risk[1]	High Risk[1]	Medium Risk[1]	High Risk[1]
Human Health	Medium Risk	Low Risk	Low Risk	Low Risk
Ecological(Cwm Taf Fechan Woodlands SSSI)	High Risk[1]	Medium Risk	Medium Risk[1]	Medium Risk
Phase 3 Stage 5 Prince Charles Hospital Junction.				
Dust Soiling	High Risk[1]	Medium Risk[1]	Low Risk[1]	Medium Risk[1]
Human Health	Medium Risk	Low Risk	Negligible Risk	Low Risk
Ecological (SINC 89 - Bryniau)	Medium Risk	Low Risk	Negligible Risk	Low Risk

1 Denotes highest risk.
2 Construction activities not anticipated.
3 No ecological receptors considered

For the construction phase associated with Phase 1, Phase 2 and Phase 3 the results in Table 8A.11 indicate that the highest level of dust risk is High risk for demolition, earthworks and trackout and Medium risk for construction activities. However, for some of the stages within each phase the dust risks are lower.

8A.3.5 Step 3 Site-specific mitigation

8A.3.5.1 Recommended mitigation measures

The results in Table 8A.11 indicate that activities associated with the proposed scheme ranges from Low risk to High risk at some stages of the proposed scheme. Mitigation measures would be needed to reduce the potential for significant effects of dust emissions in the vicinity of the proposed scheme. The suggested mitigation measures, based on the risk level identified for each phase, which should be adopted for the proposed scheme, are set out below.

The mitigation measures are those specified in the IAQM guidance (IAQM, 2014) and are suitable to mitigate dust emissions generated by the proposed scheme. Measures such as those specified in the guidance would normally be sufficient to reduce construction dust nuisance, risk to human health or effects on ecological sites to

a ‘not significant’ effect. These measures are listed in Table 8A.12 to Table 8A.17 with a recommendation as to whether or not they should be applied based on the highest risk level identified in the dust assessment for each phase and stage. Some specific comments or observations have been added where appropriate. Some of the mitigation measures listed within the IAQM guidance for trackout (mitigation numbers 44 to 48) were considered to represent general on-site activities and operation of haul roads and were moved to the ‘Operations’ section of the general mitigation measures required for all sites. The general mitigation measures were specified based on the highest risk category for each individual stage of each phase as recommended by the IAQM guidance (IAQM, 2014).

As discussed previously, the measures to control dust emissions and monitor the effectiveness of the mitigation would be agreed formally with the respective local authority and potentially key stakeholders as part of a dust and air quality management plan (DMP) which would form part of the construction environmental management plan (CEMP). It is anticipated that this would be achieved through the setting of an appropriate condition or requirement through the environmental impact assessment (EIA) process.

Key: H – Highly recommended D – Desirable N – Not required

Table 8A.12 : Mitigation for all sites: communications

Mitigation measure	Phase 1				Phase 2					Phase 3				
	S1	S2	S3	S4	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
1. Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
2. Display the name and contact details of person(s) accountable for air quality (including dust and odour) issues on the site boundary. This may be the environment manager / engineer or the site manager.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
3. Display the head or regional office contact information.	H	H	H	H	H	H	H	H	H	H	H	H	H	H

H – Highly recommended D – Desirable N – Not required

Table 8A.13 : Mitigation for all sites: dust management

Mitigation measure	Phase 1				Phase 2					Phase 3				
	S1	S2	S3	S4	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
4. Develop and implement a DMP, which may include measures to control other emissions, approved by the relevant local authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this assessment. The desirable measures should be included as appropriate for the site in question.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Site Management														

Mitigation measure	Phase 1				Phase 2					Phase 3				
	S1	S2	S3	S4	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
5. Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner and record the measures taken.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
6. Make the complaints log available to the local authority when asked.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
7. Record any exceptional incidents that cause dust and/or air emissions, either on-site or off-site, and the action taken to resolve the situation in the log book.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
8. Hold regular liaison meetings with other high-risk construction sites within 500 m of the proposed scheme, to ensure plans are coordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.	H	H	H	H	H	H	H	N	H	H	H	H	H	H
Monitoring														
9. Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust and record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of the proposed scheme, with cleaning to be provided if necessary.	H	H	H	H	H	H	H	D	H	H	H	H	H	H

Mitigation measure	Phase 1				Phase 2					Phase 3				
	S1	S2	S3	S4	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
10. Carry out regular site inspections to monitor compliance with the DMP, record inspection results and make an inspection log available to the local authority when asked.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
11. Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
12. Agree dust deposition, dust flux or real-time PM_{10} continuous monitoring locations with the local authority. Where possible, commence baseline monitoring at least three months before work commences on site or, if at a large site, before work on a phase commences. Further guidance is provided by IAQM (IAQM, 2012) on monitoring during demolition, earthworks and construction.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Preparing and maintaining the site														
13. Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
14. Erect solid screens or barriers around dusty activities, or the proposed scheme site boundary, which are at least as high as any stockpiles on site.	H	H	H	H	H	H	H	H	H	H	H	H	H	H

Mitigation measure	Phase 1				Phase 2					Phase 3				
	S1	S2	S3	S4	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
15. Fully enclose site or specific operations where there is a high potential for dust production and the proposed scheme site is active for an extensive period.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
16. Avoid site runoff of water or mud.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
17. Keep site fencing, barriers and scaffolding clean using wet methods.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
18. Remove materials that have a potential to produce dust from the proposed scheme site as soon as possible, unless being re-used on site. If they are being re-used on-site, cover as described below.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
19. Cover seed or fence stockpiles to prevent wind whipping.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Operating vehicle/machinery and sustainable travel														
21. Ensure all vehicles switch off engines when stationary - no idling vehicles.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
22. Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
23. Impose and signpost a maximum speed limit of 15 mph on surfaced, and 10 mph on unsurfaced, haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).	H	H	H	H	H	H	H	D	H	H	H	H	H	H

Mitigation measure	Phase 1				Phase 2					Phase 3				
	S1	S2	S3	S4	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
24. Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
25. Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking and car sharing).	H	H	H	H	H	H	H	D	H	H	H	H	H	H
Operations														
26. Only use cutting, grinding or sawing equipment fitted, or in conjunction, with suitable dust suppression techniques such as water sprays or local extraction, such as suitable local exhaust ventilation systems.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
27. Ensure an adequate water supply on the proposed scheme site for effective dust/particulate matter suppression / mitigation, using non-potable water where possible and appropriate.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
28. Use enclosed chutes and conveyors and covered skips.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
29. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
30. Ensure equipment is readily available on-site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
44. Avoid dry sweeping of large areas.	H	H	H	H	H	H	H	H	H	H	H	H	H	H

Mitigation measure	Phase 1				Phase 2					Phase 3				
	S1	S2	S3	S4	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
45. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
46. Inspect on-site haul routes for integrity and instigate any necessary repairs to the surface as soon as reasonably practicable.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
47. Record all inspections of haul routes and any subsequent action in a site log book.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
48. Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers, and regularly cleaned.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Waste management														
31. Avoid bonfires and burning of waste materials.	H	H	H	H	H	H	H	H	H	H	H	H	H	H

H – Highly recommended D – Desirable N – Not required

Table 8A.14 : Mitigation measures specific to demolition

Mitigation measure	Phase 1				Phase 2					Phase 3				
	S1	S2	S3	S4	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
32. Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	H	H	H	H	H	D	D	D	H	D	H	H	H	H

Mitigation measure	Phase 1				Phase 2					Phase 3				
	S1	S2	S3	S4	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
33. Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment, as the water can be directed to where it is needed. In addition, high-volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
34. Avoid explosive blasting, using appropriate manual or mechanical alternatives.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
35. Bag and remove any biological debris or damp down such material before demolition.	H	H	H	H	H	H	H	H	H	H	H	H	H	H

H – Highly recommended D – Desirable N – Not required

Table 8A.15 : Mitigation measures specific to earthworks

Mitigation measure	Phase 1				Phase 2					Phase 3				
	S1	S2	S3	S4	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
36. Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.	H	H	H	H	H	H	H	N	H	H	H	D	H	D
37. Use hessian fabric, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.	H	H	H	H	H	H	H	N	H	H	H	D	H	D
38. Only remove the cover in small areas during work and not all at once.	H	H	H	H	H	H	H	N	H	H	H	D	H	D

H – Highly recommended D – Desirable N – Not required

Table 8A.16 : Mitigation measures specific to construction

Mitigation measure	Phase 1				Phase 2					Phase 3				
	S1	S2	S3	S4	S1	S2	S3	S4	S5	S1	S2	S3	$4	S5
39. Avoid scabbling (roughening of concrete surfaces) if possible.	D	D	D	N/A	D	D	D	N/A	D	D	D	D	D	D
40. Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	H	D	H	N/A	H	D	D	N/A	H	H	D	D	H	D
41. Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	D	N	D	N/A	D	N	N	N/A	D	D	N	N	D	N
42. For smaller supplies of fine powder materials, ensure bags are sealed after use and stored appropriately to prevent dust.	D	N	D	N/A	D	N	N	N/A	D	D	N	N	D	N

H – Highly recommended D – Desirable N – Not required N/A – Not applicable

Table 8A.17 : Mitigation measures specific to trackout

Mitigation measure	Phase 1				Phase 2					Phase 3				
	S1	S2	S3	S4	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
43. Use water-assisted dust sweeper(s) on the access and local roads to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.	H	H	H	H	H	H	H	H	H	H	H	H	H	H

Mitigation measure	Phase 1				Phase 2					Phase 3				
	S1	S2	S3	S4	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
49. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	H	H	H	H	H	H	H	H	H	H	H	H	H	H
50. Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.	H	H	H	H	H	H	H	H	H	H	H	H	H	H
51. Access gates to be located at least 10 m from receptors where possible.	H	H	H	H	H	H	H	H	H	H	H	H	H	H

H – Highly recommended D – Desirable N – Not required

Page left intentionally blank

Appendix 8B – Baseline Monitoring

8B.1 Introduction

In order to characterise the environmental baseline within the study area NO_2 diffusion tube monitoring was undertaken by Jacobs over a six month period between July 2015 and February 2016. This included co-location with the automatic NO_2 analyser at Broadway, Pontypridd. Results of the Jacobs monitoring survey were adjusted to estimate annual mean concentration using the approach set out in Box 7.9 of DEFRA guidance LAQM.TG16 (DEFRA, 2016).

8B.2 Monitoring Site Locations

NO_2 diffusion tube monitoring was undertaken at 24 sites (with three tubes co-located at site 24) within the study area. The Location of these sites is provided in Section 8.4.3 of the ES Chapter (Air Quality) and shown in Figure 8.2.

8B.3 Annualisation of Monitoring Results

The AQOs are all based upon concentrations measured over a calendar year and, ideally, periods of monitoring data should be consistent with this. However, it is possible to use data from a shorter period of monitoring to provide an indication of whether exceedances of the annual mean objective are likely.

Monitoring data from the six month survey were annualised following the approach set out in Box 7.9 of DEFRA guidance LAQM.TG16 (DEFRA, 2016) and bias adjusted using a local bias adjustment factor of 1.03. A summary of adjusted results is presented in Table 8B.1.

Table 8B.1 : Diffusion tube study

Site ID	P1	P2	P3	P4	P5	P6	Period mean (PM) (µg/m^3)	Adjusted ST to LT mean (µg/m^3)	Data capture (%)	Bias adjusted NO2 results	Distance from kerb (m)	Relevant exposure?
1	29.2	30.5	36.3	26.2	26.0	27.9	29.4	30.6	100	31.5	6.0	Yes
2	28.9	31.6	43.3	31.7	19.5	34.9	31.7	33.0	100	34.0	0.6	Yes
3	18.5	19.3	25.9	16.0	13.2	21.4	19.1	19.8	100	20.4	10.0	Yes
4	22.0	23.4	26.7	0.0	12.9	22.8	21.6	22.5	83	23.1	n/a	Yes
5	12.4	13.0	18.1	21.1	13.3	22.3	16.7	17.4	100	17.9	0.5	Yes
6	0.0	0.0	37.3	39.1	25.1	34.4	34.0	35.4	67	36.4	1.7	Yes
7	19.5	23.9	30.3	0.0	22.1	25.8	24.3	25.3	83	26.1	16.5	Yes
8	25.9	29.9	37.2	22.2	18.0	21.9	25.9	26.9	100	27.7	2.5	No
9	16.2	16.8	20.0	21.5	19.6	22.5	19.4	20.2	100	20.8	3.0	Yes
10	19.0	21.2	25.4	22.4	14.1	22.2	20.7	21.6	100	22.2	0.5	Yes
11	0.0	10.9	14.3	14.5	12.5	11.0	12.6	13.2	83	13.6	0.3	Yes
12	10.7	12.2	17.1	8.9	4.7	5.4	9.8	10.2	100	10.5	3.0	Yes
13	57.6	57.3	30.9	29.7	22.7	46.2	40.7	42.4	100	43.7	2.5	No
14	28.7	31.6	43.2	33.4	25.8	33.8	32.8	34.1	100	35.1	18.0	Yes
15	26.7	29.5	14.8	9.3	7.3	27.6	19.2	20.0	100	20.6	2.5	Yes
16	10.3	0.0	29.7	19.6	16.5	12.0	17.6	18.4	83	18.9	0.0	No
17	16.3	21.9	29.5	17.4	19.3	28.2	22.1	23.0	100	23.7	0.5	Yes
18	23.6	23.9	27.6	23.5	20.1	21.6	23.4	24.4	100	25.1	5.0	Yes
19	24.7	24.0	12.7	15.4	16.8	29.8	20.6	21.4	100	22.1	15.8	Yes

Site ID	P1	P2	P3	P4	P5	P6	Period mean (PM) (µg/m^3)	Adjusted ST to LT mean (µg/m^3)	Data capture (%)	Bias adjusted NO2 results	Distance from kerb (m)	Relevant exposure?
20	15.1	16.2	22.0	12.5	12.7	20.8	16.6	17.2	100	17.8	48.9	Yes
21	14.9	13.0	17.7	13.8	13.1	0.0	14.5	15.1	83	15.6	42.0	Yes
22	16.4	15.4	23.8	16.9	16.7	18.6	18.0	18.7	100	19.3	0.3	Yes
23	20.2	19.0	60.0	49.1	48.9	22.2	36.6	38.1	100	39.2	0.5	Yes
24A	24.0	27.5	34.1	28.9	28.9	36.6	30.0	31.2	100	32.2	5.0	Yes
24B	25.5	27.3	33.6	0.0	28.6	38.7	30.7	32.0	83	33.0	5.0	Yes
24C	24.9	26.4	31.0	27.4	31.9	33.1	29.1	30.3	100	31.2	5.0	Yes

Page left intentionally blank.

Appendix 8C – Air Dispersion Model Process

8C.1 Introduction

The ADMS-Roads model has been developed by Cambridge Environmental Research Consultants Ltd (CERC) and is a version of an atmospheric modelling system that focuses on road traffic as a source of pollutant emissions. Version 4.0 has been used for this study.

The modelling system takes into account the emissions produced by light duty and heavy duty vehicles travelling at a certain speed along a section of road over an average hour and predicts the dispersion of these emissions using appropriate historical meteorological data. The effect of meteorological conditions on dispersion is given a complex treatment within the model. The most significant factors are wind speed and direction and the boundary layer height which is the calculated mixing depth of the lower atmosphere.

8C.2 Assessment Scenarios

In order to quantify the air quality impact of the proposed development, the pollutant concentrations resulting from the emissions from existing road traffic on local roads have been compared to those resulting from predicted traffic emissions with the proposed scheme in place.

This study assesses the proposed dualling of the A465. Committed developments for the opening year (2022) were considered and are included in the traffic predictions for the proposed scheme.

The traffic flow data for the model was prepared by Jacobs. The following scenarios were modelled:

- baseline 2014;
- Do Minimum (DM) 2022; and
- Do Something (DS) 2022.

In addition to these, Design Year scenarios 15 years after opening (2037) were considered for regional emissions. The assessment covers different pollutants, as follows:

- local air quality, focusing only on the pollutants NO_2 and PM_{10}; and
- regional air quality, focusing on NOx, PM_{10} and CO_2 emissions.

8C.3 Background concentrations

The background concentrations across the study area have been defined using the national pollution maps published by DEFRA[1]. These cover the whole country on a 1x1 km grid and are published for each year from 2013 until 2030. The mapped background concentrations were compared with the measured background values from the automatic monitoring stations and network of passive diffusion tubes within the administrative boroughs of Merthyr Tydfil County Borough Council (MTCBC) and Rhondda Cynon Taf County Borough Council (RCTCBC). To provide a more robust assessment, a further NO_2 monitoring survey was undertaken by Jacobs across the study area between July 2015 and February 2016.

The total NOx was calculated using the Defra 'NOx to NO_2 calculator v5.1'. This process identified that the Defra maps were under reporting NOx, and an uplift factor of 1.164 was applied as shown in Table 8C.1.

[1] Department for Environment Food and Rural Affairs, https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html. [Accessed 13 March 2017]

Table 8C.1 Total NOx Adjustment factor

Source	Site	X	Y	Site Type	Comments	Measured NOx ($\mu g/m^3$)	Measured NO_2 ($\mu g/m^3$)	NO_2 Data Capture (months)	NO_2 Data Capture (%)	Mapped NOx ($\mu g/m^3$)	Mapped NO_2 ($\mu g/m^3$)	Ratio (Measured/Mapped) NOx	Ratio (Measured/Mapped) NO_2
Merthry Tydfil CBC	Civic Centre (WAQF2)	304743	206261	Urban background	Close urban centre (not representative of background) – EXCLUDED	31	19.4	11	92 %	16.4	12.1	-	-
Merthry Tydfil CBC	Twynyrodyn Infants School (WAQF3)	305832	205941	Suburban	N/A	18	12.4	11	92%	15.5	11.4	1.162	1.088
Merthry Tydfil CBC	Victoria Street (WAQF15)	304866	206137	Urban Centre	Next to a bus station and low data capture - EXCLUDED	41	24.3	8	67 %	16.4	12.1	-	-
Merthry Tydfil CBC	Six Bells Estate (WAQF16)	303525	206388	Suburban	N/A	16	11.4	12	100 %	13.7	10.2	1.165	1.117
Merthry Tydfil CBC	4 Erw Las (WAQF31)	303360	206822	Suburban	N/A	16	11.5	12	100 %	13.7	10.2	1.165	1.127
Jacobs DT Survey	Site 16	295089	205532	Background	Poor data capture - EXCLUDED	30	18.9	5	83 %	12.1	9.1	-	-
									Average adjustment factor			**1.164**	**1.110**

The DEFRA background NO_2 maps were then recalculated from the adjusted NOx concentrations, using the 'NO_2 Adjustment for NOx Sector Removal Tool v5.1'. The adjusted NO_2 concentrations showed good agreement with the measured NO_2 concentrations and no further adjustment was necessary'.

A summary of the monitoring results are detailed in Table 8.10 of the ES Chapter 8: Air Quality.

8C.4 Model parameters

Road Links

ADMS Roads requires lengths of road of equal width (and height if specified as a canyon) to be input into the model. Roads can be split into several 'links' to allow for bends and curves in the road layout. Road alignment and width were determined using the Ordnance Survey Mastermap 1:1,250 scale data.

Traffic Emissions

The traffic flow data for the model was prepared by Jacobs. Traffic data for the modelling scenarios has been provided from the Saturn traffic models produced by Jacobs on behalf of the Welsh Government. The base year air quality modelling uses traffic data, pollution measurements and meteorological measurements from 2014.

Traffic data which represents the average conditions occurring in specific time periods was provided for the periods specified in Table 8C.2.

Table 8C.2 Traffic data parameters used in the modelling

Traffic Period	Time Period
Annual Average Daily Traffic (AADT)	00:00 – 23:00
Annual Average Weekday Traffic (AAWT)	00:00 – 23:00
AAWT AM Peak (AM)	07:00 – 10:00
AAWT Inter-Peak (IP)	10:00 – 16:00
AAWT PM Peak (PM)	16:00 – 19:00
AAWT Off Peak (OP)	19:00 – 07:00

For each time period, the following traffic data parameters were provided:

- total traffic flow, defined as average vehicles / hour;
- percentage heavy duty vehicles (HDV); and
- vehicle speed, in kilometres per hour (kph).

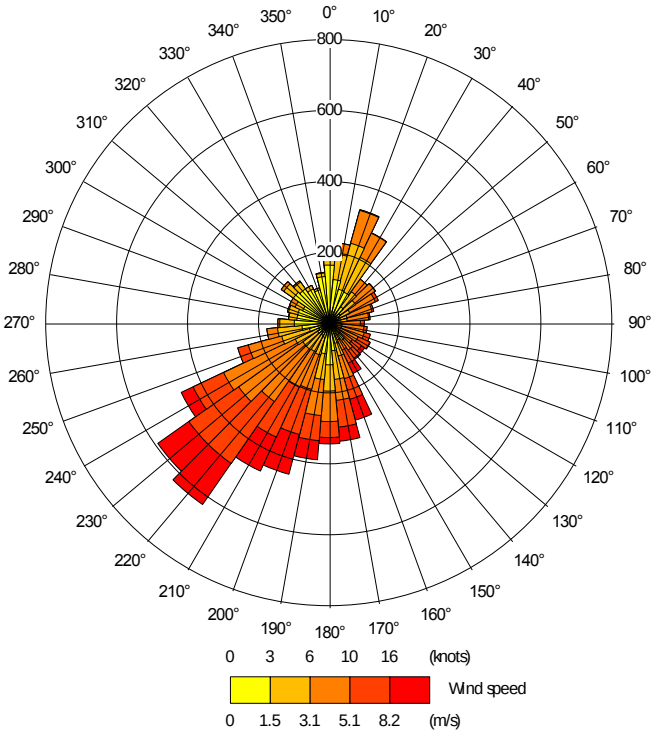
Emission rates representing links in the traffic model were calculated based on the traffic flow, HDV composition, average link speed, and the road type. The emissions were calculated for the AM Peak (AM), Inter-Peak (IP), PM Peak (PM) and Off Peak (OP) periods, and these were then controlled within ADMS using a time varying emission (.fac file) which allows the emission rates to be turned on and off at the times they represent e.g. AM average hour emission rate is emitted between observations made in the meteorological data between 7 am and 10 am.

Meteorological Data

In order to assess the impact of the proposed scheme upon local air quality using a dispersion model, it is important to use representative meteorological data. In simple terms, meteorology is the next most significant factor in determining ambient pollutant levels, after emissions.

Meteorological data for the dispersion modelling assessment was taken from Sennybridge, Powys which is located approximately 13 miles north northwest of the proposed scheme and is considered to be the most representative source for the study area. The windrose for 2014 is presented in Figure 8C.1

Figure 8C.1 Sennybridge, Powys windrose 2014



Surface Roughness

The surface roughness represents the aerodynamic effects of surface friction. This value is an important parameter used to interpret the vertical profile of wind speed and estimate friction velocities which are, in turn, used to define heat and momentum fluxes and turbulence levels. The surface roughness is related to the height of surface elements; typically, the surface roughness is approximately 10% of the height of the main surface features in the preceding kilometre. The greater the surface roughness value used the more mixing of pollutants will occur. For example, the ADMS model suggests a surface roughness of one for cities or wooded areas and 0.5 for open suburbia.

Surface roughness varies across the study area. A surface roughness length of 1.0 m was used in this assessment to represent the meteorological data site and the air quality study area.

Monin Obukhov Length

ADMS models use the Monin Obukhov length as a parameter to describe the turbulent length scale which is dependent on meteorological conditions. Given the nature of the majority of the study area tends to be relatively open and its surrounding districts, a minimum Monin Obukhov length of 10 m was set. A minimum length can be used to account for the urban heat island effect, whereby retained heat in cities causes convective turbulence, which prevents the formation of a very shallow boundary layer at night.

Terrain

The terrain has an effect on the flow field in the air above it. It is recommended that the effect of terrain is incorporated into ADMS-Roads where gradients of greater than 10 % exist within the modelled area, or a short way outside of it. The effect of terrain was not included in the assessment.

Street Canyon

'Street canyons' in air pollution science are roads with continuous high buildings on either side. This arrangement tends to impede the dispersion of pollutants from the road, particularly when the wind is at right angles to it, since a vortex is created in the 'street canyon', retaining the pollution.

No road links were identified as being 'street canyons' within the study area. This feature was therefore not included within the modelling assessment.

Receptors

A total of 107 human receptors and 25 nature conservation sites were included in the assessment. The building usage was identified using an Ordnance Survey Address Base Plus data within ArcGIS 10.4. The grid reference was adjusted to represent the worst-case façade of the property. The resulting list was inserted into the model as an asp file. All representative human health receptor points were given a height of 1.5 m. All representative ecosystem receptor points were modelled at ground height or 0 m.

8C.5 Model verification and adjustment

The comparison of modelled concentrations with local monitored concentrations is a process termed 'verification'. Model verification investigates the discrepancies between modelled and measured concentrations, which can arise due to the presence of inaccuracies and / or uncertainties in model input data, modelling and monitoring data assumptions. The following are examples of potential causes of such discrepancy:

- estimates of background pollutant concentrations;
- meteorological data uncertainties;
- traffic data uncertainties;
- model input parameters, such as 'roughness length'; and
- overall limitations of the dispersion model.

Model Precision

Residual uncertainty may remain after systematic error or 'model accuracy' has been accounted for in the final predictions. Residual uncertainty may be considered synonymous with the 'precision' of the model predictions, i.e. how wide the scatter or residual variability of the predicted values compare with the monitored true value, once systematic error has been allowed for. The quantification of model precision provides an estimate of how the final predictions may deviate from true (monitored) values at the same location over the same period.

Model Performance

An evaluation of model performance has been undertaken to establish confidence in model results. LAQM.TG (16)[2] identifies a number of statistical procedures that are appropriate to evaluate model performance and assess uncertainty. The statistical parameters used in this assessment are:

- root mean square error (RMSE);
- fractional bias (FB); and
- correlation coefficient (CC).

A brief for explanation of each statistic is provided in Table 8.3 and further details can be found in LAQM.TG (16) Box 7.17.

Table 8C.3 Model performance statistics

Statistical parameter	Comments	Ideal value
RMSE	RMSE is used to define the average error or uncertainty of the model. The units of RMSE are the same as the quantities compared. If the RMSE values are higher than 25% of the objective being assessed, it is recommended that the model inputs and verification should be revisited in order to make improvements. For example, if the model predictions are for the annual mean NO_2 objective of 40 µg/m^3, if an RMSE of 10 µg/m^3 or above is determined for a model it is advised to revisit the model parameters and model verification. Ideally an RMSE within 10 % of the air quality objective would be derived, which equates to 4 µg/m3 for the annual mean NO_2 objective.	0.01
FB	FB is used to identify if the model shows a systematic tendency to over or under predict. FB values vary between +2 and -2 and has an ideal value of zero. Negative values suggest a model over-prediction and positive values suggest a model under-prediction.	0.00
CC	CC is used to measure the linear relationship between predicted and observed data. A value of zero means no relationship and a value of 1 means absolute relationship. This statistic can be particularly useful when comparing a large number of model and observed data points.	1.00

These parameters estimate how the model results agree or diverge from the observations. These calculations have been carried out prior to, and after adjustment and provide information on the improvement of the model predictions as a result of the application of the verification adjustment factors.

The verification process involves a review of the modelled pollutant concentrations against corresponding monitoring data to determine how well the air quality model has performed. Depending on the outcome it may be considered that the model has performed adequately and that there is no need to adjust any of the modelled results.

[2] Department for Environment Food & Rural Affairs, Local Air Quality Management Technical Guidance (TG16), April 2016

Alternatively the model may perform poorly against the monitoring data, in which case there is a need to check all the input data to ensure that it is reasonable and accurately represented by the air quality modelling process. Where all input data, such as traffic data, emissions rates and background concentrations have been checked and considered reasonable, then the modelled results may require adjustment to improve alignment with the monitoring data. This adjustment may be either using by a single verification adjustment factor to be applied to the modelled concentrations across the study area or a range of different adjustment factors to account for different situations in the study area.

Air Quality Monitoring Data for Verification

As discussed previously, air quality monitoring data was collected from MTCBC, RCTCBC and the project specific survey. This data was reviewed to determine the suitability of each of the monitoring locations for inclusion in the model verification process. The criteria used to determine the suitability of the monitoring data for inclusion into the verification process are outlined below:

- monitoring location required to be within 200 m of roads forming the study area;
- monitoring data in 2014 required to be >=75% complete data capture;
- monitoring data influenced by major road emissions sources which were missing from the traffic model, and hence could not be included in the dispersion model were excluded; and
- monitoring data from sites where the exact location could not be accurately identified or validated were excluded.

Verification Methodology – NOx / NO_2

The verification method followed the process detailed in LAQM.TG (16)[2]. An initial comparison of the modelled versus monitored results indicated that the model tended to under and over predict against the monitored concentrations. Additionally, there was a high degree of uncertainty or scatter in the model predictions. Model verification adjustment therefore focussed on reducing the uncertainty associated with the modelled results. This is typical in study areas covering large or diverse locations.

The first stage of verification was undertaken by comparing the modelled versus monitored Road NOx. Road NOx measured at the diffusion tubes were calculated using the latest Defra NOx to NO_2 calculator[3], because diffusion tubes only measure NO_2 and do not directly measure NOx.

Once the modelled Road NOx component had been adjusted, this value was used in the Defra NOx to NO_2 calculator[3], and the calculated Road NO_2 component was adjusted following comparison with the monitored Road NO_2.

Verification Summary – NOx / NO_2

A review was undertaken of the modelled versus monitored performance across the whole study area. It was identified that groups of monitoring sites tended to display similar Road NOx model performance. As a result a number of verification zones were defined with the intention of improving the model verification process. The description of the verification zones are presented below:

- Zone 1 – A465 Hirwaun East;
- Zone 2 – A465 West Merthyr Tydfil;
- Zone 3 – A465 Central Merthyr Tydfil;
- Zone 4 – A465 East Merthyr Tydfil; and

[3] Department for Environment Food & Rural Affairs, NOx to NO_2 calculator, Version 5.1, June 2016.

- Zone 5 – A465 Hirwaun West

In total 15 sites were used in the model verification process. The summary results and model performance statistics defined in LAQM.TG (16)[2] are provided in Table 8C.4.

Table 8C.4 Verification zone model performance – NO_2

Parameter	No Adjustment (all zones)	With Adjustment				
		Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
No of monitoring sites	15	2	3	2	3	5
NOx road adjustment factor	N/A	2.095	1.345	1.980	4.140	0.761
NO_2 road adjustment factor	N/A	1.244	1.271	1.404	1.187	1.250
RMSE	9.4	1.4	2.2	0.4	3.9	4.0
FB	0.32	-0.02	0.03	0.00	0.00	0.06
CC	0.17	1.00	1.00	1.00	0.98	0.69
No of sites within +- 25 %	5	2	3	2	3	4

The statistics support the methodology adopted. The statistics show that the RMSE and FB improve when a zonal factor is used for adjustment, when compared to the RMSE and FB for unadjusted results across the whole study area.

Verification Methodology – PM_{10}

There were no PM_{10} analysers within the study area. Therefore, the NOx Road adjustment factor has been applied to the modelled PM_{10} road contributions, following guidance in LAQM TG (16)[2].

Appendix 8D – Air Quality Human Receptor Results

This section contains the results for all modelled receptors in the study area. Receptors can be identified by postal address or grid reference. The receptors within Table 8D.1 are only relevant to human health exposure.

The receptors with a prefix of R represent existing human health receptors and contain the postal address. In some instances where there are different addresses within close proximity of each other the address may not be accurate such as terraced or semi-detached properties.

Table 8D.1 : Model results presented for receptors close to the A465 (2022) affected roads

Receptor ID	X	Y	Address	Property use	Distance (km) to scheme within DS	NO_2 (µg/m^3)				Magnitude of change	PM_{10} (µg/m^3)				Magnitude of change
						Base 2014	DM 2022	DS 2022	DS-DM 2022	NO_2	Base 2014	DM 2022	DS 2022	DS-DM 2022	PM_{10}
R001	303913	208212	19, Lupin close, Merthyr Tydfil	Residential	10.6	12.7	9.6	10.5	0.9	Small	15.2	14.4	14.5	0.1	Imperceptible
R002	304001	207925	45, Clo ver road, Merthyr Tydfil	Residential	19.2	14.1	9.9	9.5	-0.4	Imperceptible	15.2	14.3	14.2	-0.1	Imperceptible
R003	304069	206705	CASTLE VIEW BUNGALOW, Swansea road, Merthyr Tydfil	Residential	10.4	20.0	17.1	16.8	-0.3	Imperceptible	15.3	14.7	14.6	-0.1	Imperceptible
R004	304275	206938	50_0, Brecon road, Merthyr Tydfil	Residential	3.2	20.1	16.1	14.6	-1.4	Small	15.3	14.5	14.2	-0.3	Imperceptible
R005	304218	206631	1, Corona court, Merthyr Tydfil	Residential	21.2	18.6	15.6	15.3	-0.3	Imperceptible	15.2	14.5	14.4	-0.1	Imperceptible
R006	303566	206672	BRON-GELLI, Swansea road, Merthyr Tydfil	Residential	7.7	32.0	31.0	33.0	1.9	Small	16.1	15.8	16	0.2	Imperceptible
R007	303852	207641	1, Lakeside gardens, Merthyr Tydfil	Residential	10.5	15.8	12.5	11.5	-1.0	Small	15.4	14.6	14.4	-0.2	Imperceptible
R008	304274	206932	50A, Brecon road, Merthyr Tydfil	Residential	9.1	17.5	13.7	13.1	-0.7	Small	15	14.1	14	-0.1	Imperceptible
R009	292995	206883	Nantllechau farm, Halt road, Hirwaun	Residential	44.4	9.7	7.4	7.5	0.1	Imperceptible	13.3	12.5	12.5	0.0	Imperceptible
R010	308006	208447	STATION HOUSE, Rhymney common road, Merthyr Tydfil	Residential	17.8	28.4	23.8	20.5	-3.3	Medium	15.9	15.3	14.3	-1	Small
R011	297036	205530	93, Springfield gardens, Hirwaun	Residential	8.4	12.6	9.8	9.5	-0.3	Imperceptible	14	13.2	13.1	-0.1	Imperceptible

Receptor ID	X	Y	Address	Property use	Distance (km) to scheme within DS	NO_2 (µg/m^3)				Magnitude of change	PM_{10} (µg/m^3)				Magnitude of change
						Base 2014	DM 2022	DS 2022	DS-DM 2022	NO_2	Base 2014	DM 2022	DS 2022	DS-DM 2022	PM_{10}
R012	297672	205868	LYNWOOD, Croes bychan road, Aberdare	Residential	42.6	12.6	9.8	9.7	-0.1	Imperceptible	14.1	13.3	13.2	-0.1	Imperceptible
R013	296099	205088	Newlands, Johnson park, Hirwaun	Residential	25.5	15.7	7.5	6.7	-0.8	Small	16	15.2	14.9	-0.3	Imperceptible
R014	296243	205110	1, Trewaun, Hirwaun	Residential	16.8	33.7	26.3	22.5	-3.9	Medium	18.3	17.6	16.6	-1	Small
R015	299372	206676	1 MOUNTAIN VIEW, Crematorium road, Aberdare	Residential	12.4	9.1	6.8	6.9	0.1	Imperceptible	12.4	11.6	11.6	0.0	Imperceptible
R016	299084	204979	2 STATION VILLAS, Merthyr road, Aberdare	Residential	8.3	17.2	13.8	14.5	0.7	Small	14.9	14.1	14.2	0.1	Imperceptible
R017	299268	204648	18, Miners' row, Aberdare	Residential	2.4	33.3	32.0	33.3	1.3	Small	16.5	16.2	16.4	0.2	Imperceptible
R018	294127	205882	Maesglas farm, Rhigos road, Hirwaun	Residential	5.5	12.8	10.6	10.7	0.0	Imperceptible	14	13.4	13.4	0.0	Imperceptible
R019	295103	205609	7, Redhill close, Hirwaun	Residential	34.2	12.5	7.7	7.3	-0.3	Imperceptible	15.1	14.3	14.3	0.0	Imperceptible
R020	302077	207509	FFRWD ISAF FARMHOUSE, A470 from a4054 junction to llwynon, Merthyr Tydfil	Residential	106.7	10.8	8.2	8.5	0.3	Imperceptible	13.4	12.7	12.7	0.0	Imperceptible
R021	302329	207421	COED MEURIG FARM, Swansea road, Merthyr Tydfil	Residential	20.2	20.8	16.9	14.1	-2.8	Medium	14.8	14.1	13.3	-0.8	Small
R022	302285	208354	FFRWD UCHAF FARM, Ffrwd uchaf and isaf farmhouses access road, Merthyr Tydfil	Residential	45.6	9.8	7.3	7.6	0.3	Imperceptible	13.1	12.3	12.3	0.0	Imperceptible
R023	302128	207188	73, Pen y dyffryn, Merthyr	Residential	19.0	13.4	10.4	11.5	1.1	Small	13.7	12.9	13	0.1	Imperceptible

Receptor ID	X	Y	Address	Property use	Distance (km) to scheme within DS	NO_2 (µg/m^3)				Magnitude of change	PM_{10} (µg/m^3)				Magnitude of change
						Base 2014	DM 2022	DS 2022	DS-DM 2022	NO_2	Base 2014	DM 2022	DS 2022	DS-DM 2022	PM_{10}
			Tydfil												
R024	307253	207944	82, High street caeharris, Merthyr Tydfil	Residential	6.7	36.6	28.0	31.4	3.4	Medium	17	15.9	16.5	0.6	Small
R025	307685	208155	3 NEW HOUSES, High street top dowlais, Merthyr Tydfil	Residential	6.4	36.9	29.3	34.6	5.3	Large	18	17	17.9	0.9	Small
R026	301877	207220	7, Beacon heights, Merthyr Tydfil	Residential	16.3	15.3	12.0	13.6	1.7	Small	13.3	12.5	12.7	0.2	Imperceptible
R027	301467	207399	TYN-Y-COEDCAE FARM, Swansea road, Merthyr Tydfil	Residential	98.3	11.3	8.7	8.7	0.0	Imperceptible	13	12.2	12.1	-0.1	Imperceptible
R028	310278	209362	Y-CRAIG LLWYD, Nant-yr-helyg, Rhymney	Residential	99.1	18.1	14.3	14.7	0.4	Imperceptible	14.4	13.5	13.6	0.1	Imperceptible
R029	297725	205477	Gelli tarw farm, Croes bychan road, Aberdare	Residential	104.7	10.5	8.0	8.2	0.2	Imperceptible	13.8	13	13	0.0	Imperceptible
R030	305684	208416	29, Rocky road, Merthyr Tydfil	Residential	12.9	25.0	19.5	18.7	-0.9	Small	16.1	15.2	14.8	-0.4	Imperceptible
R031	305608	208653	Unit 35, Pant industrial estate, Merthyr Tydfil	Residential	7.1	20.3	13.8	17.2	3.4	Medium	15.5	14.3	14.8	0.5	Small
R032	305530	208415	39, Galon uchaf road, Merthyr Tydfil	Residential	8.2	34.3	26.1	23.9	-2.1	Medium	17.2	16.1	15.5	-0.6	Small
R033	306002	208971	7, Tai-yr-efail, Merthyr Tydfil	Residential	9.9	19.3	12.5	14.2	1.7	Small	15	13.8	14	0.2	Imperceptible
R034	305804	208290	13, Rocky road, Merthyr Tydfil	Residential	13.0	16.8	12.7	13.0	0.3	Imperceptible	15.1	14.2	14.2	0.0	Imperceptible
R035	306497	209041	Pantyscallog, Pant road,	Residential	4.0	14.3	11.1	12.3	1.2	Small	13.2	12.4	12.7	0.3	Imperceptible

Receptor ID	X	Y	Address	Property use	Distance (km) to scheme within DS	NO_2 (µg/m^3)				Magnitude of change	PM_{10} (µg/m^3)				Magnitude of change
						Base 2014	DM 2022	DS 2022	DS-DM 2022	NO_2	Base 2014	DM 2022	DS 2022	DS-DM 2022	PM_{10}
			Merthyr Tydfil												
R036	306593	208518	1 BEACONS VIEW, Beacons view, Merthyr Tydfil	Residential	13.9	30.3	24.6	26.3	1.7	Small	16.7	15.9	15.6	-0.3	Imperceptible
R037	306208	209222	2A PANT COTTAGES, Pant road, Merthyr Tydfil	Residential	7.3	17.3	10.9	12.0	1.1	Small	13.5	12.3	12.5	0.2	Imperceptible
R038	306638	208882	1_0, Road to penywern, Merthyr Tydfil	Residential	10.3	21.0	13.5	12.8	-0.7	Small	15.1	13.9	13.8	-0.1	Imperceptible
R039	306199	208802	53, Heol rhyd-y-bedd, Merthyr Tydfil	Residential	10.9	15.0	11.2	11.6	0.4	Imperceptible	14.6	13.7	13.8	0.1	Imperceptible
R040	303042	208044	105, High street, Merthyr Tydfil	Residential	7.0	22.8	20.5	21.7	1.2	Small	16.5	16.1	16.1	0	Imperceptible
R041	302927	207969	8, Maesygarreg, Merthyr Tydfil	Residential	18.4	20.9	17.5	16.5	-1.0	Small	14.8	14.2	13.8	-0.4	Imperceptible
R042	302711	208446	BEECHDENE, Upper high street, Merthyr Tydfil	Residential	5.8	11.0	8.2	8.9	0.7	Small	13.2	12.4	12.5	0.1	Imperceptible
R043	302592	207117	78, Swansea road, Merthyr Tydfil	Residential	8.0	13.8	10.9	12.1	1.2	Small	13.7	12.9	13.1	0.2	Imperceptible
R044	303262	207332	GILRAY, Tai mawr way, Merthyr Tydfil	Residential	26.0	16.5	13.2	13.5	0.3	Imperceptible	15.5	14.7	14.7	0.0	Imperceptible
R045	303012	208092	CILSANWS HOUSE, Upper high street, Merthyr Tydfil	Residential	11.3	18.5	14.9	16.0	1.0	Small	15.9	15.1	15.2	0.1	Imperceptible
R046	304645	207873	9, Almond grove, Merthyr Tydfil	Residential	13.3	14.4	10.7	9.9	-0.7	Small	15.3	14.3	14.1	-0.2	Imperceptible
R047	304754	207819	101, Ash crescent, Merthyr Tydfil	Residential	11.1	18.4	6.1	5.6	-0.5	Small	15.7	14.4	14.2	-0.2	Imperceptible

Receptor ID	X	Y	Address	Property use	Distance (km) to scheme within DS	NO_2 (µg/m^3)				Magnitude of change	PM_{10} (µg/m^3)				Magnitude of change
						Base 2014	DM 2022	DS 2022	DS-DM 2022	NO_2	Base 2014	DM 2022	DS 2022	DS-DM 2022	PM_{10}
R048	304373	209730	Aberglais inn, Vaynor road, Merthyr Tydfil	Residential	9.2	10.9	6.8	6.9	0.1	Imperceptible	13.4	12.4	12.4	0	Imperceptible
R049	304972	205720	MORLAIS COURT_FLAT 5, Caedraw road, Merthyr Tydfil	Residential	22.0	22.0	6.5	6.4	-0.1	Imperceptible	15.3	14.1	14	-0.1	Imperceptible
R050	304972	205720	MORLAIS COURT_FLAT 3, Caedraw road, Merthyr Tydfil	Residential	22.0	22.0	6.5	6.4	-0.1	Imperceptible	15.3	14.1	14	-0.1	Imperceptible
R051	304972	205720	MORLAIS COURT_FLAT 10, Caedraw road, Merthyr Tydfil	Residential	22.0	22.0	6.5	6.4	-0.1	Imperceptible	15.3	14.1	14	-0.1	Imperceptible
R052	304972	205720	MORLAIS COURT_FLAT 9, Caedraw road, Merthyr Tydfil	Residential	22.0	22.0	6.5	6.4	-0.1	Imperceptible	15.3	14.1	14	-0.1	Imperceptible
R053	304972	205720	MORLAIS COURT_FLAT 11, Caedraw road, Merthyr Tydfil	Residential	22.0	22.0	6.5	6.4	-0.1	Imperceptible	15.3	14.1	14	-0.1	Imperceptible
R054	304972	205720	MORLAIS COURT_FLAT 8, Caedraw road, Merthyr Tydfil	Residential	22.0	22.0	6.5	6.4	-0.1	Imperceptible	15.3	14.1	14	-0.1	Imperceptible
R055	304365	208624	3 GURNOS FARM COTTAGES, Gurnos ring road, Merthyr Tydfil	Residential	30.4	14.5	11.3	13.5	2.2	Medium	14.7	13.8	14.1	0.3	Imperceptible
R056	304987	207323	8, Gurnos road, Merthyr Tydfil	Residential	10.4	24.1	17.7	16.0	-1.7	Small	16.5	15.3	15	-0.3	Imperceptible
R057	304972	205720	MORLAIS COURT_FLAT 7,	Residential	22.0	22.0	6.5	6.4	-0.1	Imperceptible	15.3	14.1	14	-0.1	Imperceptible

Receptor ID	X	Y	Address	Property use	Distance (km) to scheme within DS	NO_2 (µg/m^3)				Magnitude of change	PM_{10} (µg/m^3)				Magnitude of change
						Base 2014	DM 2022	DS 2022	DS-DM 2022	NO_2	Base 2014	DM 2022	DS 2022	DS-DM 2022	PM_{10}
			Caedraw road, Merthyr Tydfil												
R058	304972	205720	MORLAIS COURT_FLAT 2, Caedraw road, Merthyr Tydfil	Residential	22.0	22.0	6.5	6.4	-0.1	Imperceptible	15.3	14.1	14	-0.1	Imperceptible
R059	304972	205720	MORLAIS COURT_FLAT 4, Caedraw road, Merthyr Tydfil	Residential	22.0	22.0	6.5	6.4	-0.1	Imperceptible	15.3	14.1	14	-0.1	Imperceptible
R060	304972	205720	MORLAIS COURT_FLAT 6, Caedraw road, Merthyr Tydfil	Residential	22.0	22.0	6.5	6.4	-0.1	Imperceptible	15.3	14.1	14	-0.1	Imperceptible
R061	304972	205720	MORLAIS COURT_FLAT 12, Caedraw road, Merthyr Tydfil	Residential	22.0	22.0	6.5	6.4	-0.1	Imperceptible	15.3	14.1	14	-0.1	Imperceptible
R062	304972	205720	MORLAIS COURT_FLAT 1, Caedraw road, Merthyr Tydfil	Residential	22.0	22.0	6.5	6.4	-0.1	Imperceptible	15.3	14.1	14	-0.1	Imperceptible
R063	304807	207825	98, Gurnos road, Merthyr Tydfil	Residential	10.9	21.1	6.4	6.0	-0.4	Imperceptible	16	14.5	14.3	-0.2	Imperceptible
R064	304831	206567	112_a, Brecon road, Merthyr Tydfil	Residential	5.4	26.2	19.4	19.9	0.5	Small	16	14.9	14.9	0.0	Imperceptible
R065	304293	208510	32, Pen gurnos, Merthyr Tydfil	Residential	11.2	22.2	17.7	20.4	2.7	Medium	15.7	14.9	15.2	0.3	Imperceptible
R066	304861	206513	GARTH NEWYDD COURT_FLAT 11, Bethesda street, Merthyr	Residential	7.1	22.8	17.0	18.3	1.3	Small	15.5	14.5	14.6	0.1	Imperceptible

Receptor ID	X	Y	Address	Property use	Distance (km) to scheme within DS	NO_2 (µg/m^3)				Magnitude of change	PM_{10} (µg/m^3)				Magnitude of change
						Base 2014	DM 2022	DS 2022	DS-DM 2022	NO_2	Base 2014	DM 2022	DS 2022	DS-DM 2022	PM_{10}
			Tydfil												
R067	304718	206655	Land adjacent to 16, Brecon road, Merthyr Tydfil	Land	7.1	26.4	20.3	20.1	-0.2	Imperceptible	16	15	14.9	-0.1	Imperceptible
R068	304953	208027	55, Laburnum close, Merthyr Tydfil	Residential	9.5	14.4	10.7	10.3	-0.4	Imperceptible	14.6	13.7	13.6	-0.1	Imperceptible
R069	304686	208603	6, Wellingtonia close, Merthyr Tydfil	Residential	13.1	17.1	13.2	16.7	3.5	Medium	15	14.1	14.7	0.6	Small
R070	304420	206499	2, Nantygwenith street, Merthyr Tydfil	Residential	12.4	16.2	12.8	13.4	0.6	Small	14.9	14.1	14.2	0.1	Imperceptible
R071	304728	207853	Ty gurnos newydd, Gurnos road, Merthyr Tydfil	Residential	14.9	14.7	9.1	8.5	-0.6	Small	15.3	14.3	14.1	-0.2	Imperceptible
R072	305058	207102	28, Gwaelodygarth, Merthyr Tydfil	Residential	6.9	22.5	16.0	14.8	-1.3	Small	16	14.8	14.6	-0.2	Imperceptible
R073	305012	208119	23, Yew close, Merthyr Tydfil	Residential	12.5	14.3	10.7	10.8	0.2	Imperceptible	14.9	14	14	0.0	Imperceptible
R074	300487	206774	BRYN GWYDDEL, Merthyr road, Aberdare	Residential	13.6	13.2	10.5	11.3	0.8	Small	13.1	12.4	12.5	0.1	Imperceptible
R075	300505	207346	Jah jireh care home, Heads of the valleys road, Merthyr Tydfil	Residential	64.3	14.4	11.5	9.5	-2.0	Small	13.4	12.6	12.2	-0.4	Imperceptible
R076	296915	205399	8, Meadow close, Hirwaun	Residential	21.7	20.0	16.1	15.7	-0.4	Imperceptible	16.7	15.9	15.5	-0.4	Imperceptible
R077	293294	206817	Fifth avenue, Hirwaun industrial estate, Hirwaun	Commercial	98.0	10.2	7.6	7.7	0.1	Imperceptible	13.4	12.6	12.6	0.0	Imperceptible
R078	296349	204957	Roseville nurseries, Hirwaun	Commercial	44.5	15.3	11.3	11.2	-0.1	Imperceptible	14.5	13.8	13.7	-0.1	Imperceptible

Receptor ID	X	Y	Address	Property use	Distance (km) to scheme within DS	NO_2 (µg/m^3)				Magnitude of change	PM_{10} (µg/m^3)				Magnitude of change
						Base 2014	DM 2022	DS 2022	DS-DM 2022	NO_2	Base 2014	DM 2022	DS 2022	DS-DM 2022	PM_{10}
			road, Hirwaun												
R079	295818	205194	Hirwaun county primary school, Glanant street, Hirwaun	Commercial	47.8	11.4	6.3	5.8	-0.4	Imperceptible	15.1	14.3	14.1	-0.2	Imperceptible
R080	295905	205206	Hirwaun infants and nursery school, Glanant street, Hirwaun	Commercial	84.7	10.3	6.3	6.2	-0.2	Imperceptible	15	14.2	14.1	-0.1	Imperceptible
R081	307070	207920	Dowlais primary school - junior department, High street caeharris, Merthyr Tydfil	Commercial	49.4	16.7	12.5	13.1	0.6	Small	14	13.2	13.2	0.0	Imperceptible
R082	306022	207940	Gellifaelog primary school, Caerhendy street, Merthyr Tydfil	Commercial	60.0	15.1	11.1	11.4	0.2	Imperceptible	14.3	13.4	13.4	0.0	Imperceptible
R083	306556	208879	Pant primary school, Heol-y-bryniau, Merthyr Tydfil	Commercial	68.3	14.1	10.2	10.4	0.2	Imperceptible	14.5	13.6	13.6	0.0	Imperceptible
R084	306138	207789	St illtyds school, Balaclava road, Merthyr Tydfil	Commercial	56.1	15.1	11.2	11.4	0.2	Imperceptible	14.3	13.4	13.4	0.0	Imperceptible
R085	303350	207184	Ysgol gynradd coed y dderwen, Heol parc maen, Merthyr Tydfil	Commercial	81.1	13.6	10.5	10.7	0.2	Imperceptible	15.1	14.2	14.2	0.0	Imperceptible
R086	304551	207852	Goetre junior & infant school, Rowan way, Merthyr Tydfil	Commercial	29.0	13.2	9.9	9.5	-0.4	Imperceptible	15.1	14.1	14	-0.1	Imperceptible
R087	304399	207889	Goetre junior & infant school, Rowan way, Merthyr	Commercial	12.5	15.0	11.6	10.7	-0.9	Small	15.4	14.4	14.2	-0.2	Imperceptible

Receptor ID	X	Y	Address	Property use	Distance (km) to scheme within DS	NO_2 (µg/m^3)				Magnitude of change	PM_{10} (µg/m^3)				Magnitude of change
						Base 2014	DM 2022	DS 2022	DS-DM 2022	NO_2	Base 2014	DM 2022	DS 2022	DS-DM 2022	PM_{10}
			Tydfil												
R088	304777	206738	Brecon road infant school, Norman terrace, Merthyr Tydfil	Commercial	4.0	31.3	24.1	24.0	-0.1	Imperceptible	16.6	15.5	15.5	0.0	Imperceptible
R089	304618	206183	Former merthyr Tydfil college, College boulevard, Merthyr Tydfil	Commercial	8.2	16.4	14.6	14.6	0.0	Imperceptible	14.9	14.5	14.5	0.0	Imperceptible
R090	304798	208414	Pen-y-dre school bungalow, Goitre lane, Merthyr Tydfil	Commercial	32.0	12.5	9.3	10.1	0.8	Small	14.4	13.5	13.6	0.1	Imperceptible
R091	304910	205755	Caedraw primary school, Caedraw road, Merthyr Tydfil	Commercial	70.7	14.8	8.0	8.0	0.0	Imperceptible	14.5	13.6	13.6	0.0	Imperceptible
R092	304614	206203	Merthyr Tydfil college, College boulevard, Merthyr Tydfil	Commercial	8.8	17.7	15.4	15.4	0.0	Imperceptible	15.1	14.6	14.6	0.0	Imperceptible
R093	304823	208584	Pen y dre high school, Goitre lane, Merthyr Tydfil	Commercial	33.8	14.8	11.4	13.7	2.3	Medium	14.7	13.9	14.2	0.3	Imperceptible
R094	304268	206952	Cyfarthfa junior school, Cyfarthfa park, Merthyr Tydfil	Commercial	5.2	18.8	14.9	13.9	-1.0	Small	15.1	14.3	14.1	-0.2	
R095	306046	208123	6 CWM GRAIG BUNGALOWS, Rocky road, Merthyr Tydfil	Residential	9.4	14.0	10.3	10.7	0.4	Imperceptible	14.5	13.7	13.7	0.0	Imperceptible
R096	303286	208109	CARTREF, Lower vaynor road, Merthyr Tydfil	Residential	14.4	16.7	13.8	14.8	1.0	Small	15.7	15.0	15.0	0.0	Imperceptible

Receptor ID	X	Y	Address	Property use	Distance (km) to scheme within DS	NO_2 (µg/m^3)				Magnitude of change	PM_{10} (µg/m^3)				Magnitude of change
						Base 2014	DM 2022	DS 2022	DS-DM 2022	NO_2	Base 2014	DM 2022	DS 2022	DS-DM 2022	PM_{10}
MT_DT_05	305410	205869	55 Twynyrodyn Road (WAQF29)	Monitoring	6.0	23.9	17.4	17.3	-0.2	Imperceptible	15.7	14.5	14.5	0.0	Imperceptible
MT_DT_06	305410	205869	55 Twynyrodyn Road (collocated) (29J)	Monitoring	6.0	23.9	17.4	17.3	-0.2	Imperceptible	15.7	14.5	14.5	0.0	Imperceptible
MT_DT_07	305217	205880	91 Twynyrodyn Road (29A)	Monitoring	1.5	34.3	23.4	23.0	-0.4	Imperceptible	17.1	15.5	15.4	-0.1	Imperceptible
MT_DT_08	305147	205906	15 Arfryn Terrace(29B)	Monitoring	14.7	36.6	17.7	17.5	-0.2	Imperceptible	17.1	14.3	14.3	0.0	Imperceptible
MT_DT_09	305149	205906	17 Court Terrace (29D)	Monitoring	15.6	35.7	17.5	17.3	-0.1	Imperceptible	17	14.3	14.2	-0.1	Imperceptible
MT_DT_10	305316	205872	40 William Street (29E)	Monitoring	3.0	29.3	21.2	21.0	-0.3	Imperceptible	16.4	15.2	15.1	-0.1	Imperceptible
MT_DT_11	305521	205836	Mardy Street Mount View (29F)	Monitoring	4.3	24.9	18.6	18.4	-0.2	Imperceptible	15.8	14.8	14.7	-0.1	Imperceptible
MT_DT_12	305415	205856	64 Gilfach Cynon (29G)	Monitoring	5.3	24.9	18.2	18.0	-0.2	Imperceptible	15.8	14.7	14.6	-0.1	Imperceptible
MT_DT_13	305431	205863	51 Twynyrodyn Road (29H)	Monitoring	5.6	24.2	17.7	17.5	-0.2	Imperceptible	15.7	14.6	14.5	-0.1	Imperceptible
MT_DT_14	305431	205863	3 Gilfach Cynon (29I)	Monitoring	5.6	24.2	17.7	17.5	-0.2	Imperceptible	15.7	14.6	14.5	-0.1	Imperceptible
MT_DT_17	305382	205872	11 Alexandra Terrace(lamppost)(38)	Monitoring	5.0	24.7	17.9	17.7	-0.2	Imperceptible	15.8	14.6	14.6	0.0	Imperceptible
MT_DT_18	305382	205873	11 Alexandra Terrace (facade)(39)	Monitoring	6.0	23.8	17.2	17.0	-0.2	Imperceptible	15.6	14.5	14.4	-0.1	Imperceptible

Page left intentionally blank.

Appendix 8E – Designated Site Assessment

8E.1 Introduction

Some air pollutants can have an adverse effect on vegetation. Concentrations of pollutants in air and deposition of particles can damage vegetation directly or affect plant health and productivity. Deposition of pollutants to the ground and vegetation can alter the characteristics of the soil, the pH and nitrogen availability that can then impact on plant health and species composition. Some plant species rely on the soil being nutrient-poor, so an increase in nutrient level through nitrogen deposition can cause these species to be lost through competition by species which thrive at higher nutrient levels. The pollutant of most concern for sensitive vegetation near roads is NOx. Increases in concentrations of NOx directly increase nitrogen deposition.

The 1979 Convention on Long-Range Transboundary Air Pollution was established within the framework of the United Nations Economic Commission for Europe (UNECE). The Convention was the first international legally binding instrument to deal with problems of air pollution on a broad regional basis. It is extended by eight related protocols. The overall intention is to reduce pollutant emissions internationally; the reduction has been taking place for many pollutants, including oxides of nitrogen (NOx). The Gothenburg Protocol considers the linked impacts of NOx, ammonia, sulphur dioxide and volatile organic compounds (VOCs) in relation to the issues of acidification, eutrophication and photochemical oxidants.

The institutional framework set up by the UNECE is the source of information used to evaluate impacts on habitats at a local rather than a regional level.

In order to protect certain habitats and species, legislation is in place to reduce the impacts of development on sensitive ecosystems. The sites of these are given legal designations. These include Special Areas of Conservation (SAC), Special Protection Areas (SPA) (for bird conservation), Ramsar Sites (wetland sites for bird conservation), and Sites of Special Scientific Interest (SSSI).

The current policy of the UK agencies associated with environmental protection (which in Wales includes Natural Resources Wales) is that developments should be assessed for their impact on critical levels at Designated Sites in all locations of the country.

8E.2 Protection of habitats and ecosystems

The modelled concentrations at ecological receptors were compared to the relevant critical levels for the protection of vegetation and ecosystems, as set out in Table 8E.1. A 'critical level' is an air quality standard or guideline for ambient concentrations of a pollutant that applies at ecological receptors. Similar to the assessment criteria set out for the protection of human health, there are AQOs and EALs that exist for the protection of vegetation and sensitive ecological sites.

Table 8E.1 : Critical Level for Oxides of Nitrogen (NOx) from the Air Quality Strategy

Pollutant	Concentration	Measured As	Date to be achieved by
Nitrogen oxides (NOx) – for the protection of vegetation and ecosystems	30 µg/m^3	Annual mean	31 December 2000

The modelled nitrogen and acid deposition at ecological sites was compared to the relevant critical loads. The critical loads for designated habitat sites in the UK have been published by the Centre for Ecology and Hydrology and are available from the UK Air Pollution Information System (APIS) website[1]. Critical loads are defined on the APIS website as, "…a quantitative estimate of exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge."

[1] Centre for Ecology and Hydrology, Air Pollution Information System, http://www.apis.ac.uk/ [Accessed 1 March 2017]

The critical loads for the designated ecological sites considered in this assessment are set out in Table 8E.2. The selection of the acid deposition critical load for each ecological site, and the nutrient nitrogen deposition critical loads for CWS and ancient woodlands were based on identifying the vegetation or habitat types present at each site using the 'Site Relevant Critical Loads' tool on the APIS website. This tool provides a list of the broad habitat features that are present at each designated ecological receptor. It then lists all the specific priority habitats within that broad habitat category, regardless of whether they are present at the designated site or not. Where relevant, the qualifying features identified in the citations were selected. Otherwise, the specific priority habitat within each broad habitat category present at the site which had the lowest critical load from those present on the ecological site (i.e. the most stringent) was used for the assessment.

For ancient woodlands and the marsh fritillary supporting sites, the 'Search by Location' tool was used to determine the critical loads for these ecological sites, and the specific habitat features present at each site were selected on the APIS website[1].

Deposition rates of nitrogen and acid vary based on whether they are depositing on short or tall vegetation. Where an ecological receptor contained habitat types representing both tall and short vegetation, existing deposition rates and critical load values were obtained for each of these separately.

For nitrogen deposition, the critical loads are provided as a range, and it is accepted standard good practice to apply the lower end of the range in the determination of significance of the predicted increase, as agreed with NRW (NRW, 2016b). For acid deposition, it is more complex as the critical load is made up of a number of values that represent a critical load function, based on the nitrogen and sulphur-derived acid deposition. There are rules on how this critical load function should be applied, (as specified on the APIS website[1]), which were followed for the assessment.

Determining Significance

Where appropriate, the significance of the predicted long-term (annual mean) concentrations or deposition at ecological receptors (specifically SAC and SSSIs) were determined in line with guidance provided by the Environment Agency [2] (Environment Agency, 2016). This is summarised below.

i. Where the process contribution (PC) is less than 1% of the relevant critical level or critical load, the emission is not likely to have a significant effect alone or in combination irrespective of the existing concentrations or deposition rates.

ii. Where the contribution is above 1%, further consideration of existing background concentration or deposition rate is required, and where the total concentration or deposition is less than 70% of the critical level or critical load, calculated in combination with other committed projects or developments included within the traffic data, the emission is considered to be unlikely to have a significant effect.

iii. Where the contribution is above 1%, and the total concentration or deposition rate is greater than 70% of the critical level or critical load, either alone or in combination with other committed projects or developments, then this may indicate a significant effect and further consideration is likely to be required. This would occur on a site-by-site basis through determination of the applicability of the critical levels, directly applicable critical loads at each site, and further assessment by qualified ecologists as part of the assessment set out in Chapter 8: Air Quality.

The above approach is used to give a clear definition of what effects can be disregarded as insignificant, and which need to be considered in more detail in relation to the predicted annual mean concentrations or deposition. For short-term mean concentrations (i.e. the 24-hour mean critical level for NOx), it is considered that a potentially significant effect would be identified where the predicted contribution from the modelled sources would lead to an exceedance of the critical level. In this case, further consideration would be required within the relevant terrestrial and freshwater ecology assessment (see chapter B8).

A predicted exceedance of the 24-hour mean NOx critical level does not necessarily indicate that there will be adverse effects at ecological sites. Use of the critical level value of 75µg/m^3 is conservative and is based on a non-statutory air quality guideline set out in the Environment Agency guidance (Environment Agency, 2016).

[2] Environment Agency, Air emissions risk assessment for your environmental permit, August 2016.

The critical level has been adopted from the World Health Organisation Air Quality Guidelines for Europe (World Health Organisation, 2000). The derivation of, and justification for, this critical level is based on the presence of SO_2 and ozone at elevated concentrations which could cause an additive effect with NOx. This would not always be the case in the vicinity of the proposed scheme. If the predicted NOx concentrations exceed the 24-hour mean critical level then the potential for this additive effect would be considered at the relevant ecological receptor.

For other sites such as the assessed ancient woodland sites, guidance set out in the Environment Agency risk assessment guidance (Environment Agency, 2016) states that:

"If your emissions meet both of the following criteria they're insignificant – you don't need to assess them any further:

- the short-term PC is less than 100% of the short-term environmental standard; and
- the long-term PC is less than 100% of the long-term environmental standard".

This guidance was adopted for use in this assessment for the identification of potentially significant effects at the ancient woodland sites.

Based on the specific guidance for the determination of significance described above, it is not possible to assign a magnitude of change descriptor to the predicted changes in ambient concentrations of pollutants or deposition rates at sensitive ecological sites due to the varying methods specified for determination of the significance of effects. As with the consideration of effects at human receptors, the value of the receptor is built into the criteria for the determination of significance.

Methodology

Traffic is screened for the 'affected roads' which will experience significant changes in traffic flow with the scheme in place. Designated Sites within 200 m of the affected roads are identified, along with the habitat type with the most stringent Critical Load (CL), as reported by APIS[1]. The quoted lower nutrient nitrogen deposition critical load thresholds are advised to be used at the screening stage of an assessment; these are shown in Table 8E.3.

Scheme Impacts

The full results of the dispersion modelling impact (PC) against nutrient nitrogen and acid deposition Critical Loads as well as the NOx critical levels significance criteria are presented in the following pages in Table 8E.2, Table 8E.3 and Table 8E.4. Note that those receptors that only exist in the without scheme scenario (i.e. they are under the scheme) are not shown in Table 8E.4. The term 'exceedence' in Table 8E.3 is used to identify sites which are predicted to exceed the AQO in the DM and D/S and the change in concentration with the scheme in place is greater than 0.4.

Table 8E.2 : Predicted change in NOx concentrations at ecological sites assessed and Critical Levels

Receptor name	Annual mean NOx Concentration (µg/m³), AQO = 30 µg/m³					
	DM	DS	Change (DS-DM)	DM>AQO	DS>AQO	Change >0.4 µg/m³
Blaen Cynon_0	8.38	8.46	0.08	-	-	-
Blaen Cynon_1	8.21	8.28	0.07	-	-	-
Blaen Cynon_2	8.07	8.13	0.06	-	-	-
Blaen Cynon_3	7.96	8.01	0.06	-	-	-
Blaen Cynon_4	7.86	7.91	0.05	-	-	-
Blaen Cynon_5	7.77	7.82	0.05	-	-	-
Blaen Cynon_6	7.71	7.75	0.04	-	-	-

Receptor name	Annual mean NOx Concentration (µg/m³), AQO = 30 µg/m³					
	DM	DS	Change (DS-DM)	DM>AQO	DS>AQO	Change >0.4 µg/m³
Blaen Cynon_7	7.64	7.68	0.04	-	-	-
Blaen Cynon_8	7.58	7.62	0.04	-	-	-
Blaen Cynon_9	7.53	7.57	0.04	-	-	-
Blaen Cynon_10	7.49	7.52	0.04	-	-	-
Blaen Cynon_11	7.44	7.48	0.03	-	-	-
Blaen Cynon_12	7.40	7.43	0.03	-	-	-
Cors Bryn-y-gaer_0	9.91	9.89	-0.02	-	-	-
Cors Bryn-y-gaer_1	10.72	10.72	0.00	-	-	-
Cors Bryn-y-gaer_2	9.53	9.51	-0.03	-	-	-
Cors Bryn-y-gaer_3	9.31	9.28	-0.03	-	-	-
Cors Bryn-y-gaer_4	9.16	9.12	-0.03	-	-	-
Cors Bryn-y-gaer_5	9.04	9.01	-0.03	-	-	-
Cors Bryn-y-gaer_6	8.95	8.92	-0.03	-	-	-
Cors Bryn-y-gaer_7	8.87	8.85	-0.03	-	-	-
Cors Bryn-y-gaer_8	8.81	8.79	-0.02	-	-	-
Cors Bryn-y-gaer_9	8.76	8.74	-0.02	-	-	-
Cors Bryn-y-gaer_10	8.74	8.72	-0.02	-	-	-
Proposal - Hirwaun Common_A_0	20.56	15.66	-4.89	-	-	-
Proposal - Hirwaun Common_A_1	16.48	13.72	-2.76	-	-	-
Proposal - Hirwaun Common_A_2	14.46	12.68	-1.78	-	-	-
Proposal - Hirwaun Common_A_3	13.28	12.03	-1.25	-	-	-
Proposal - Hirwaun Common_A_4	12.44	11.55	-0.89	-	-	-
Proposal - Hirwaun Common_A_5	11.83	11.20	-0.63	-	-	-
Proposal - Hirwaun Common_A_6	11.36	10.92	-0.44	-	-	-
Proposal - Hirwaun Common_A_7	10.46	10.41	-0.05	-	-	-
Proposal - Hirwaun Common_A_8	10.70	10.54	-0.16	-	-	-
Proposal - Hirwaun Common_A_9	10.99	10.71	-0.29	-	-	-
Proposal - Hirwaun Common_B_0	21.05	15.90	-5.15	-	-	-
Proposal - Hirwaun Common_B_1	16.71	13.91	-2.80	-	-	-
Proposal - Hirwaun Common_B_2	14.64	12.87	-1.77	-	-	-
Proposal - Hirwaun Common_B_3	13.33	12.17	-1.16	-	-	-
Proposal - Hirwaun Common_B_4	12.46	11.69	-0.77	-	-	-
Proposal - Hirwaun Common_B_5	11.84	11.34	-0.50	-	-	-
Proposal - Hirwaun Common_B_6	11.32	11.05	-0.27	-	-	-
Proposal - Hirwaun Common_B_7	10.93	10.84	-0.09	-	-	-
Proposal - Hirwaun Common_B_8	10.63	10.69	0.06	-	-	-
Proposal - Hirwaun Common_B_9	10.39	10.58	0.19	-	-	-
Proposal - Hirwaun Common_B_10	10.18	10.50	0.32	-	-	-

Receptor name	Annual mean NOx Concentration (µg/m³), AQO = 30 µg/m³					
	DM	DS	Change (DS-DM)	DM>AQO	DS>AQO	Change >0.4 µg/m³
Proposal - Hirwaun Common_B_11	9.97	10.44	0.47	-	-	Exceedance
Proposal - Hirwaun Common_B_12	9.80	10.41	0.61	-	-	Exceedance
Proposal - Hirwaun Common_B_13	9.65	10.43	0.78	-	-	Exceedance
Proposal - Hirwaun Common_B_14	9.51	10.49	0.98	-	-	Exceedance
Proposal - Hirwaun Common_B_15	9.38	10.62	1.24	-	-	Exceedance
Proposal - Hirwaun Common_B_16	9.27	10.86	1.59	-	-	Exceedance
Proposal - Hirwaun Common_B_17	8.28	10.46	2.18	-	-	Exceedance
Proposal - Hirwaun Common_B_18	8.11	13.06	4.95	-	-	Exceedance
Proposal - Hirwaun Common_B_19	8.20	11.21	3.01	-	-	Exceedance
Proposal - Upper Cynon Floodplain_2	22.60	31.98	9.38	-	Exceedance	Exceedance
Proposal - Upper Cynon Floodplain_3	19.61	25.22	5.61	-	-	Exceedance
Proposal - Upper Cynon Floodplain_4	17.55	21.33	3.78	-	-	Exceedance
Proposal - Upper Cynon Floodplain_5	16.11	18.88	2.77	-	-	Exceedance
Proposal - Upper Cynon Floodplain_6	15.09	17.27	2.18	-	-	Exceedance
Proposal - Upper Cynon Floodplain_7	14.35	16.15	1.80	-	-	Exceedance
Proposal - Upper Cynon Floodplain_8	13.76	15.28	1.52	-	-	Exceedance
Proposal - Upper Cynon Floodplain_9	13.28	14.60	1.32	-	-	Exceedance
Proposal - Upper Cynon Floodplain_10	12.84	13.98	1.15	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_4	15.62	24.55	8.93	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_5	14.27	19.93	5.66	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_6	13.23	17.20	3.97	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_7	12.48	15.52	3.03	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_8	11.92	14.37	2.45	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_9	11.47	13.53	2.06	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_10	11.08	12.83	1.75	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_11	10.77	12.30	1.54	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_12	10.49	11.84	1.36	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_13	10.24	11.44	1.21	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_14	10.03	11.12	1.09	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_15	9.85	10.86	1.00	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_16	9.70	10.62	0.93	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_17	9.55	10.41	0.86	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_18	9.42	10.22	0.80	-	-	Exceedance
Tir Mawr a Dderi Hir, Llwydcoed_19	9.30	10.05	0.75	-	-	Exceedance
Ancient Semi Natural Woodland_0	10.04	12.56	2.51	-	-	Exceedance
Ancient Semi Natural Woodland_1	9.66	11.53	1.87	-	-	Exceedance
Ancient Semi Natural Woodland_2	9.38	10.87	1.49	-	-	Exceedance
Ancient Semi Natural Woodland_3	9.15	10.38	1.23	-	-	Exceedance

Receptor name	Annual mean NOx Concentration (µg/m³), AQO = 30 µg/m³					
	DM	DS	Change (DS-DM)	DM>AQO	DS>AQO	Change >0.4 µg/m³
Ancient Semi Natural Woodland_4	8.94	9.97	1.03	-	-	Exceedance
Ancient Semi Natural Woodland_5	8.76	9.63	0.87	-	-	Exceedance
Ancient Semi Natural Woodland_7	8.49	9.16	0.67	-	-	Exceedance
Ancient Semi Natural Woodland_8	8.37	8.98	0.60	-	-	Exceedance
Ancient Semi Natural Woodland_9	8.29	8.84	0.55	-	-	Exceedance
Ancient Semi Natural Woodland_10	8.20	8.70	0.50	-	-	Exceedance
Ancient Semi Natural Woodland_11	8.12	8.58	0.46	-	-	Exceedance
Proposal - Nant Hir Valley & Resevoir_5	9.50	13.95	4.45	-	-	Exceedance
Proposal - Nant Hir Valley & Resevoir_6	9.04	11.72	2.68	-	-	Exceedance
Proposal - Nant Hir Valley & Resevoir_7	8.74	10.68	1.94	-	-	Exceedance
Proposal - Nant Hir Valley & Resevoir_8	8.51	10.02	1.51	-	-	Exceedance
Proposal - Nant Hir Valley & Resevoir_9	8.31	9.52	1.21	-	-	Exceedance
Proposal - Nant Hir Valley & Resevoir_10	8.14	9.13	0.99	-	-	Exceedance
Proposal - Nant Hir Valley & Resevoir_11	8.01	8.85	0.85	-	-	Exceedance
Proposal - Nant Hir Valley & Resevoir_12	7.88	8.60	0.72	-	-	Exceedance
Bryncarnau grasslands, Llwydcoed_0	7.98	8.40	0.42	-	-	Exceedance
Bryncarnau grasslands, Llwydcoed_1	7.96	8.37	0.41	-	-	Exceedance
Bryncarnau grasslands, Llwydcoed_2	7.94	8.34	0.39	-	-	-
Coed Meirig Pastures_3	14.94	20.46	5.51	-	-	Exceedance
Coed Meirig Pastures_4	14.07	17.90	3.83	-	-	Exceedance
Coed Meirig Pastures_5	13.49	16.38	2.89	-	-	Exceedance
Restored Ancient Woodland Site_0	11.39	15.05	3.66	-	-	Exceedance
Restored Ancient Woodland Site_1	11.32	14.43	3.11	-	-	Exceedance
Restored Ancient Woodland Site_2	11.29	13.66	2.38	-	-	Exceedance
Restored Ancient Woodland Site_3	11.33	13.45	2.12	-	-	Exceedance
Restored Ancient Woodland Site_4	11.28	14.01	2.73	-	-	Exceedance
Restored Ancient Woodland Site_5	11.48	13.34	1.85	-	-	Exceedance
Restored Ancient Woodland Site_6	11.82	13.43	1.61	-	-	Exceedance
Restored Ancient Woodland Site_7	12.94	14.17	1.23	-	-	Exceedance
Gyrnos Wood_2	14.53	18.15	3.61	-	-	Exceedance
Gyrnos Wood_3	13.43	16.02	2.59	-	-	Exceedance
Gyrnos Wood_4	12.65	14.67	2.02	-	-	Exceedance
Gyrnos Wood_5	11.68	13.13	1.44	-	-	Exceedance
Gyrnos Wood_6	12.10	13.78	1.68	-	-	Exceedance
Gyrnos Wood_7	11.37	12.65	1.28	-	-	Exceedance
Gyrnos Wood_8	11.11	12.24	1.14	-	-	Exceedance
Gyrnos Wood_9	10.88	11.91	1.03	-	-	Exceedance
Gyrnos Wood_10	10.71	11.65	0.94	-	-	Exceedance

Receptor name	Annual mean NOx Concentration (µg/m³), AQO = 30 µg/m³					
	DM	DS	Change (DS-DM)	DM>AQO	DS>AQO	Change >0.4 µg/m³
Gyrnos Wood_11	10.54	11.40	0.86	-	-	Exceedance
Gyrnos Wood_12	10.41	11.20	0.80	-	-	Exceedance
Gyrnos Wood_13	10.28	11.03	0.74	-	-	Exceedance
Gyrnos Wood_14	10.18	10.87	0.69	-	-	Exceedance
Gyrnos Wood_15	10.08	10.72	0.65	-	-	Exceedance
Gyrnos Wood_16	10.00	10.62	0.61	-	-	Exceedance
Gyrnos Wood_17	9.93	10.51	0.58	-	-	Exceedance
Gyrnos Wood_18	9.85	10.40	0.55	-	-	Exceedance
Gyrnos Wood_19	9.73	10.22	0.49	-	-	Exceedance
Gyrnos Wood_20	9.79	10.31	0.52	-	-	Exceedance
Cwm Taf Fechan woodlands_20 (roadside)	18.23	12.49	-5.74	-	-	-
Cwm Taf Fechan woodlands_0	14.70	11.68	-3.01	-	-	-
Cwm Taf Fechan woodlands_1	12.99	11.17	-1.81	-	-	-
Cwm Taf Fechan woodlands_2	11.20	10.49	-0.71	-	-	-
Cwm Taf Fechan woodlands_3	11.86	10.76	-1.09	-	-	-
Cwm Taf Fechan woodlands_4	10.75	10.28	-0.47	-	-	-
Cwm Taf Fechan woodlands_5	10.42	10.11	-0.31	-	-	-
Cwm Taf Fechan woodlands_6	10.17	9.97	-0.20	-	-	-
Cwm Taf Fechan woodlands_7	9.81	9.75	-0.06	-	-	-
Cwm Taf Fechan woodlands_8	9.97	9.85	-0.12	-	-	-
Cwm Taf Fechan woodlands_9	9.68	9.67	-0.01	-	-	-
Cwm Taf Fechan woodlands_10	9.56	9.59	0.02	-	-	-
Cwm Taf Fechan woodlands_11	9.47	9.52	0.05	-	-	-
Cwm Taf Fechan woodlands_12	9.37	9.45	0.08	-	-	-
Cwm Taf Fechan woodlands_13	9.30	9.39	0.10	-	-	-
Cwm Taf Fechan woodlands_14	9.23	9.34	0.11	-	-	-
Cwm Taf Fechan woodlands_15	9.17	9.29	0.12	-	-	-
Cwm Taf Fechan woodlands_16	9.11	9.24	0.13	-	-	-
Cwm Taf Fechan woodlands_17	9.06	9.20	0.14	-	-	-
Cwm Taf Fechan woodlands_18	9.02	9.17	0.15	-	-	-
Cwm Taf Fechan woodlands_19	8.98	9.13	0.15	-	-	-
Bryniau_A_8	12.33	17.06	4.73	-	-	Exceedance
Bryniau_A_9	12.07	15.23	3.16	-	-	Exceedance
Bryniau_A_10	11.85	14.30	2.45	-	-	Exceedance
Bryniau_A_11	11.66	13.66	2.00	-	-	Exceedance
Bryniau_A_12	11.51	13.24	1.73	-	-	Exceedance
Bryniau_A_13	11.37	12.88	1.51	-	-	Exceedance
Bryniau_A_14	11.25	12.60	1.35	-	-	Exceedance

Receptor name	Annual mean NOx Concentration (µg/m³), AQO = 30 µg/m³					
	DM	DS	Change (DS-DM)	DM>AQO	DS>AQO	Change >0.4 µg/m³
Bryniau_A_15	11.14	12.35	1.21	-	-	Exceedance
Bryniau_B_0	13.22	15.22	1.99	-	-	Exceedance
Bryniau_B_1	12.42	13.77	1.35	-	-	Exceedance
Bryniau_B_2	12.06	13.15	1.09	-	-	Exceedance
Bryniau_B_3	11.87	12.82	0.95	-	-	Exceedance
Bryniau_B_4	11.74	12.61	0.87	-	-	Exceedance
Bryniau_B_5	11.65	12.46	0.81	-	-	Exceedance
Bryniau_B_6	11.58	12.35	0.78	-	-	Exceedance
Bryniau_B_7	11.52	12.26	0.75	-	-	Exceedance
Bryniau_B_8	11.47	12.20	0.73	-	-	Exceedance
Bryniau_B_9	11.43	12.15	0.72	-	-	Exceedance
Bryniau_B_10	11.39	12.11	0.71	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_0	68.60	78.41	9.81	Exceedance	Exceedance	Exceedance
Pan March and Traed y Milwyr, Llechryd_1	41.04	45.75	4.71	Exceedance	Exceedance	Exceedance
Pan March and Traed y Milwyr, Llechryd_2	26.80	29.25	2.45	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_3	31.86	35.08	3.22	Exceedance	Exceedance	Exceedance
Pan March and Traed y Milwyr, Llechryd_4	23.51	25.48	1.96	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_5	19.66	21.09	1.43	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_6	21.35	23.01	1.66	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_7	18.39	19.65	1.26	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_8	17.44	18.56	1.12	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_9	16.64	17.66	1.02	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_10	15.94	16.86	0.92	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_11	15.41	16.27	0.86	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_12	14.28	15.08	0.81	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_13	13.85	14.60	0.75	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_14	13.19	13.85	0.66	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_15	13.50	14.20	0.71	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_16	12.90	13.52	0.63	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_17	12.65	13.24	0.60	-	-	Exceedance
Pan March and Traed y Milwyr, Llechryd_18	12.41	12.97	0.56	-	-	Exceedance
Pan March and Traed y Milwyr,	12.19	12.74	0.54	-	-	Exceedance

Receptor name	Annual mean NOx Concentration (µg/m³), AQO = 30 µg/m³					
	DM	DS	Change (DS-DM)	DM>AQO	DS>AQO	Change >0.4 µg/m³
Llechryd_19						
Pan March and Traed y Milwyr, Llechryd_20	11.99	12.51	0.52	-	-	Exceedance
East Llwydcoed_0	16.93	17.86	0.93	-	-	Exceedance
East Llwydcoed_6	13.24	13.66	0.43	-	-	Exceedance
East Llwydcoed_7	12.74	13.12	0.38	-	-	-
East Llwydcoed_8	12.34	12.68	0.34	-	-	-
East Llwydcoed_9	12.02	12.33	0.31	-	-	-
East Llwydcoed_10	11.76	12.04	0.29	-	-	-
East Llwydcoed_11	11.53	11.79	0.27	-	-	-
East Llwydcoed_12	11.33	11.58	0.25	-	-	-
East Llwydcoed_13	11.16	11.40	0.23	-	-	-
East Llwydcoed_14	11.01	11.23	0.22	-	-	-
East Llwydcoed_15	10.88	11.09	0.21	-	-	-
East Llwydcoed_16	10.76	10.96	0.20	-	-	-
East Llwydcoed_17	10.65	10.84	0.19	-	-	-
East Llwydcoed_18	10.55	10.74	0.18	-	-	-
East Llwydcoed_19	10.46	10.64	0.18	-	-	-
Cwm Ffwrdd_0	24.64	25.35	0.70	-	-	Exceedance
Cwm Ffwrdd_1	18.00	18.47	0.48	-	-	Exceedance
Cwm Ffwrdd_2	15.43	15.80	0.37	-	-	-
Cwm Ffwrdd_3	14.03	14.35	0.32	-	-	-
Cwm Ffwrdd_4	13.15	13.43	0.28	-	-	-
Cwm Ffwrdd_5	12.55	12.79	0.25	-	-	-
Cwm Ffwrdd_6	12.10	12.33	0.23	-	-	-
Cwm Ffwrdd_7	11.76	11.97	0.21	-	-	-
Cwm Ffwrdd_8	11.49	11.68	0.19	-	-	-
Cwm Ffwrdd_9	11.27	11.45	0.18	-	-	-
Cwm Ffwrdd_10	11.09	11.26	0.17	-	-	-
Cwm Ffwrdd_11	10.93	11.09	0.16	-	-	-
Cwm Ffwrdd_12	10.80	10.95	0.15	-	-	-
Cwm Ffwrdd_13	10.69	10.83	0.15	-	-	-
Cwm Ffwrdd_14	10.59	10.73	0.14	-	-	-
Cwm Ffwrdd_15	10.50	10.63	0.13	-	-	-
Cwm Ffwrdd_16	10.42	10.55	0.13	-	-	-
Cwm Ffwrdd_17	10.35	10.48	0.13	-	-	-
Cwm Ffwrdd_18	10.29	10.41	0.12	-	-	-
Cwm Ffwrdd_19	10.23	10.35	0.12	-	-	-
Cwm glo a glyndyrys_0	23.74	23.50	-0.24	-	-	-

Receptor name	Annual mean NOx Concentration (µg/m³), AQO = 30 µg/m³					
	DM	DS	Change (DS-DM)	DM>AQO	DS>AQO	Change >0.4 µg/m³
Cwm glo a glyndyrys_1	21.77	21.59	-0.17	-	-	-
Cwm glo a glyndyrys_2	20.38	20.25	-0.13	-	-	-
Cwm glo a glyndyrys_3	19.33	19.24	-0.10	-	-	-
Cwm glo a glyndyrys_4	18.51	18.43	-0.07	-	-	-
Cwm glo a glyndyrys_5	17.83	17.78	-0.05	-	-	-
Cwm glo a glyndyrys_6	17.26	17.23	-0.04	-	-	-
Cwm glo a glyndyrys_7	16.77	16.75	-0.03	-	-	-
Cwm glo a glyndyrys_8	15.38	15.36	-0.02	-	-	-
Cwm glo a glyndyrys_9	15.01	15.00	-0.01	-	-	-
Cwm glo a glyndyrys_10	14.68	14.68	0.00	-	-	-
Cwm glo a glyndyrys_11	14.38	14.38	0.01	-	-	-
Cwm glo a glyndyrys_12	14.10	14.11	0.01	-	-	-
Cwm glo a glyndyrys_13	13.85	13.87	0.01	-	-	-
Cwm glo a glyndyrys_14	13.63	13.65	0.02	-	-	-
Hirwaun Common SINC_7	11.25	12.07	0.81	-	-	Exceedance
Hirwaun Common SINC_8	10.79	10.81	0.02	-	-	-
Hirwaun Common SINC_9	10.35	10.10	-0.24	-	-	-
Hirwaun Common SINC_10	9.95	9.63	-0.31	-	-	-
Hirwaun Common SINC_11	9.59	9.28	-0.31	-	-	-
Hirwaun Common SINC_12	9.29	9.01	-0.28	-	-	-
Hirwaun Common SINC_13	9.03	8.79	-0.24	-	-	-
Hirwaun Common SINC_14	8.80	8.60	-0.20	-	-	-
Hirwaun Common SINC_15	8.61	8.45	-0.17	-	-	-
Hirwaun Common SINC_16	8.45	8.31	-0.14	-	-	-
Hirwaun Common SINC_17	8.30	8.19	-0.11	-	-	-
Hirwaun Common SINC_18	8.18	8.09	-0.09	-	-	-
Hirwaun Common SINC_19	8.07	7.99	-0.07	-	-	-
Hirwaun Common SINC_20	7.97	7.91	-0.06	-	-	-
Hirwaun Common SINC_21	7.89	7.84	-0.05	-	-	-
Hirwaun Common SINC_22	7.81	7.77	-0.04	-	-	-
Llwydcoed Slopes_0	17.67	16.11	-1.55	-	-	-
Llwydcoed Slopes_1	14.22	13.90	-0.32	-	-	-
Llwydcoed Slopes_2	12.42	12.53	0.11	-	-	-
Llwydcoed Slopes_3	11.31	11.60	0.29	-	-	-
Llwydcoed Slopes_4	10.57	10.93	0.36	-	-	-
Llwydcoed Slopes_5	10.02	10.42	0.40	-	-	-
Llwydcoed Slopes_6	9.86	10.27	0.41	-	-	Exceedance
Llwydcoed Slopes_7	9.54	9.95	0.40	-	-	Exceedance

Receptor name	Annual mean NOx Concentration (µg/m³), AQO = 30 µg/m³					
	DM	DS	Change (DS-DM)	DM>AQO	DS>AQO	Change >0.4 µg/m³
Llwydcoed Slopes_8	9.28	9.68	0.40	-	-	-
Llwydcoed Slopes_9	9.07	9.46	0.39	-	-	-
Llwydcoed Slopes_10	8.89	9.27	0.38	-	-	-
Llwydcoed Slopes_11	8.74	9.10	0.37	-	-	-
Llwydcoed Slopes_12	8.60	8.96	0.36	-	-	-
Llwydcoed Slopes_13	8.49	8.84	0.35	-	-	-
Llwydcoed Slopes_14	8.39	8.73	0.34	-	-	-
Llwydcoed Slopes_15	8.30	8.63	0.33	-	-	-
Llwydcoed Slopes_16	8.22	8.54	0.32	-	-	-
Llwydcoed Slopes_17	8.15	8.46	0.31	-	-	-
Llwydcoed Slopes_18	8.09	8.39	0.30	-	-	-
Llwydcoed Slopes_19	8.03	8.33	0.30	-	-	-
Llwydcoed Slopes_20	7.98	8.27	0.29	-	-	-
Llwydcoed Slopes_21	7.94	8.22	0.29	-	-	-
Llwydcoed Slopes_22	7.90	8.18	0.28	-	-	-
Llwydcoed Slopes_23	7.86	8.14	0.28	-	-	-
Llwydcoed Slopes_24	7.84	8.11	0.27	-	-	-
Llwydcoed Slopes_25	7.82	8.09	0.27	-	-	-
Llwydcoed Slopes_26	7.82	8.10	0.28	-	-	-
Llwydcoed Slopes_27	7.91	8.21	0.30	-	-	-
Bryniau_B_11	11.36	12.07	0.71	-	-	Exceedance
Bryniau_B_12	11.34	12.04	0.70	-	-	Exceedance
Bryniau_B_13	11.31	12.02	0.70	-	-	Exceedance
Bryniau_B_14	11.29	12.00	0.70	-	-	Exceedance
Bryniau_B_15	11.28	11.98	0.70	-	-	Exceedance
Bryniau_B_16	11.26	11.96	0.70	-	-	Exceedance
Bryniau_B_17	11.25	11.95	0.70	-	-	Exceedance
Bryniau_B_18	11.24	11.94	0.71	-	-	Exceedance
Bryn Defaid Heath_0	24.92	26.92	2.00	-	-	Exceedance
Bryn Defaid Heath_1	14.40	15.17	0.77	-	-	Exceedance
Bryn Defaid Heath_2	12.01	12.53	0.52	-	-	Exceedance
Bryn Defaid Heath_3	10.94	11.35	0.40	-	-	Exceedance
Bryn Defaid Heath_4	10.34	10.68	0.34	-	-	-
Bryn Defaid Heath_5	9.95	10.26	0.31	-	-	-
Bryn Defaid Heath_6	9.68	9.96	0.28	-	-	-
Bryn Defaid Heath_7	9.48	9.74	0.26	-	-	-
Bryn Defaid Heath_8	9.33	9.58	0.25	-	-	-
Bryn Defaid Heath_9	9.21	9.44	0.23	-	-	-

Receptor name	Annual mean NOx Concentration (µg/m³), AQO = 30 µg/m³					
	DM	DS	Change (DS-DM)	DM>AQO	DS>AQO	Change >0.4 µg/m³
Bryn Defaid Heath_10	9.11	9.34	0.23	-	-	-
Bryn Defaid Heath_11	9.03	9.25	0.22	-	-	-
Bryn Defaid Heath_12	8.97	9.18	0.21	-	-	-
Bryn Defaid Heath_13	8.91	9.12	0.21	-	-	-
Bryn Defaid Heath_14	8.86	9.07	0.20	-	-	-
Bryn Defaid Heath_15	8.82	9.02	0.20	-	-	-
Bryn Defaid Heath_16	8.78	8.98	0.20	-	-	-
Bryn Defaid Heath_17	8.75	8.95	0.19	-	-	-
Bryn Defaid Heath_18	8.72	8.92	0.19	-	-	-
Bryn Defaid Heath_19	8.70	8.89	0.19	-	-	-
Bryn Defaid Heath_20	8.41	8.60	0.19	-	-	-
Winchfawr West_12	9.14	10.00	0.86	-	-	Exceedance
Winchfawr West_9	9.84	11.19	1.34	-	-	Exceedance
Winchfawr West_6	10.80	13.18	2.38	-	-	Exceedance
Winchfawr West_11	9.45	10.50	1.05	-	-	Exceedance
Winchfawr West_8	10.10	11.67	1.57	-	-	Exceedance
Winchfawr West_5	11.25	14.46	3.21	-	-	Exceedance
Winchfawr West_10	9.63	10.81	1.18	-	-	Exceedance
Winchfawr West_14	9.03	9.82	0.79	-	-	Exceedance
Winchfawr West_7	10.41	12.29	1.88	-	-	Exceedance
Winchfawr West_13	9.28	10.22	0.94	-	-	Exceedance
Proposal - Hirwaun Ponds North_0	16.31	16.87	0.56	-	-	Exceedance
Proposal - Hirwaun Ponds North_1	12.47	12.77	0.30	-	-	-
Proposal - Hirwaun Ponds North_2	10.89	11.10	0.21	-	-	-
Proposal - Hirwaun Ponds North_3	10.01	10.17	0.16	-	-	-
Proposal - Hirwaun Ponds North_4	9.45	9.58	0.13	-	-	-
Proposal - Hirwaun Ponds North_5	9.06	9.17	0.11	-	-	-
Proposal - Hirwaun Ponds North_6	8.77	8.86	0.09	-	-	-
Proposal - Hirwaun Ponds North_7	8.55	8.63	0.08	-	-	-
Proposal - Hirwaun Ponds North_8	8.37	8.44	0.07	-	-	-
Proposal - Hirwaun Ponds North_9	8.22	8.29	0.07	-	-	-
Proposal - Hirwaun Ponds North_10	8.10	8.16	0.06	-	-	-
Marsh Fritillary_0	9.98	10.13	0.15	-	-	-
Marsh Fritillary_1	9.76	9.91	0.16	-	-	-
Marsh Fritillary_2	9.59	9.75	0.16	-	-	-
Marsh Fritillary_3	9.45	9.60	0.16	-	-	-
Marsh Fritillary_4	9.32	9.47	0.16	-	-	-
Marsh Fritillary_5	9.20	9.35	0.16	-	-	-

Receptor name	Annual mean NOx Concentration (µg/m³), AQO = 30 µg/m³					
	DM	DS	Change (DS-DM)	DM>AQO	DS>AQO	Change >0.4 µg/m³
Marsh Fritillary_6	9.09	9.24	0.15	-	-	-
Marsh Fritillary_7	9.00	9.15	0.15	-	-	-

Table 8E.3 Predicted site specific nutrient N deposition

Receptor	Veg type	Min CL	Existing Deposition	Scheme Contribution (PC)	Total N Deposition (PEC)	PC/CL	PEC /CL
		kgN/ha-year				%	
Blaen Cynon_0	Non tree	15	22.0	0.01	22.0	0.1%	147%
Blaen Cynon_1	Non tree	15	22.0	0.01	22.0	0.1%	147%
Blaen Cynon_2	Non tree	15	22.0	0.01	22.0	0.0%	147%
Blaen Cynon_3	Non tree	15	22.0	0.01	22.0	0.1%	147%
Blaen Cynon_4	Non tree	15	22.0	0.01	22.0	0.04%	147%
Blaen Cynon_5	Non tree	15	22.0	0.004	22.0	0.02%	147%
Blaen Cynon_6	Non tree	15	22.0	0.01	22.0	0.04%	147%
Blaen Cynon_7	Non tree	15	22.0	0.004	22.0	0.02%	147%
Blaen Cynon_8	Non tree	15	22.0	0.01	22.0	0.04%	147%
Blaen Cynon_9	Non tree	15	22.0	0.01	22.0	0.04%	147%
Blaen Cynon_10	Non tree	15	22.0	0.004	22.0	0.02%	147%
Blaen Cynon_11	Non tree	15	22.0	0.004	22.0	0.02%	147%
Blaen Cynon_12	Non tree	15	22.0	0.004	22.0	0.02%	147%
Cors Bryn-y-gaer_0	Non tree	10	25.3	-0.002	25.3	-0.02%	253%
Cors Bryn-y-gaer_1	Non tree	10	25.3	-0.002	25.3	-0.02%	253%
Cors Bryn-y-gaer_2	Non tree	10	25.3	-0.004	25.3	-0.04%	253%
Cors Bryn-y-gaer_3	Non tree	10	25.3	-0.004	25.3	-0.04%	253%
Cors Bryn-y-gaer_4	Non tree	10	25.3	-0.004	25.3	-0.04%	253%
Cors Bryn-y-gaer_5	Non tree	10	25.3	-0.004	25.3	-0.04%	253%
Cors Bryn-y-gaer_6	Non tree	10	25.3	-0.002	25.3	-0.02%	253%
Cors Bryn-y-gaer_7	Non tree	10	25.3	-0.002	25.3	-0.02%	253%
Cors Bryn-y-gaer_8	Non tree	10	25.3	-0.004	25.3	-0.04%	253%
Cors Bryn-y-gaer_9	Non tree	10	25.3	-0.002	25.3	-0.02%	253%
Cors Bryn-y-gaer_10	Non tree	10	25.3	-0.002	25.3	-0.02%	253 %
Proposal - Hirwaun Common_A_0	Non tree	10	25.3	-0.5	24.8	-5.1%	248%
Proposal - Hirwaun Common_A_1	Non tree	10	25.3	-0.3	25.0	-3.0%	250%
Proposal - Hirwaun Common_A_2	Non tree	10	25.3	-0.2	25.1	-2.0%	251%
Proposal - Hirwaun Common_A_3	Non tree	10	25.3	-0.1	25.2	-1.4%	252%
Proposal - Hirwaun Common_A_4	Non tree	10	25.3	-0.1	25.2	-1.0%	252%

Receptor	Veg type	Min CL	Existing Deposition	Scheme Contribution (PC)	Total N Deposition (PEC)	PC/CL	PEC /CL
		kgN/ha-year				%	
Proposal - Hirwaun Common_A_5	Non tree	10	25.3	-0.1	25.3	-0.7%	253%
Proposal - Hirwaun Common_A_6	Non tree	10	25.3	-0.05	25.3	-0.5%	253%
Proposal - Hirwaun Common_A_7	Non tree	10	25.3	-0.01	25.3	-0.1%	253%
Proposal - Hirwaun Common_A_8	Non tree	10	25.3	-0.02	25.3	-0.2%	253%
Proposal - Hirwaun Common_A_9	Non tree	10	25.3	-0.03	25.3	-0.3%	253%
Proposal - Hirwaun Common_B_0	Non tree	10	25.3	-0.5	24.8	-5.3%	248%
Proposal - Hirwaun Common_B_1	Non tree	10	25.3	-0.3	25.0	-3.0%	250%
Proposal - Hirwaun Common_B_2	Non tree	10	25.3	-0.2	25.1	-1.9%	251%
Proposal - Hirwaun Common_B_3	Non tree	10	25.3	-0.1	25.2	-1.3%	252%
Proposal - Hirwaun Common_B_4	Non tree	10	25.3	-0.1	25.3	-0.8%	253%
Proposal - Hirwaun Common_B_5	Non tree	10	25.3	-0.1	25.3	-0.6%	253%
Proposal - Hirwaun Common_B_6	Non tree	10	25.3	-0.03	25.3	-0.3%	253%
Proposal - Hirwaun Common_B_7	Non tree	10	25.3	-0.01	25.3	-0.1%	253%
Proposal - Hirwaun Common_B_8	Non tree	10	25.3	0.01	25.3	0.1%	253%
Proposal - Hirwaun Common_B_9	Non tree	10	25.3	0.02	25.4	0.2%	254%
Proposal - Hirwaun Common_B_10	Non tree	10	25.3	0.04	25.4	0.4%	254%
Proposal - Hirwaun Common_B_11	Non tree	10	25.3	0.1	25.4	0.5%	254%
Proposal - Hirwaun Common_B_12	Non tree	10	25.3	0.1	25.4	0.7%	254%
Proposal - Hirwaun Common_B_13	Non tree	10	25.3	0.1	25.4	0.9%	254%
Proposal - Hirwaun Common_B_14	Non tree	10	25.3	0.1	25.5	1.1%	255%
Proposal - Hirwaun Common_B_15	Non tree	10	25.3	0.1	25.5	1.4%	255%
Proposal - Hirwaun Common_B_16	Non tree	10	25.3	0.2	25.5	1.8%	255%
Proposal - Hirwaun Common_B_17	Non tree	10	25.3	0.2	25.6	2.5%	256%
Proposal - Hirwaun Common_B_18	Non tree	10	25.3	0.6	25.9	5.5%	259%
Proposal - Hirwaun Common_B_19	Non tree	10	25.3	0.3	25.7	3.4%	257%
Proposal - Upper Cynon Floodplain_0	Tree	10	33.9	0.00	33.9	0.0%	339%
Proposal - Upper Cynon Floodplain_1	Tree	10	33.9	0.0	33.9	0.0%	339%
Proposal - Upper Cynon Floodplain_2	Tree	10	33.9	1.9	35.8	19.3%	358%
Proposal - Upper Cynon Floodplain_3	Tree	10	33.9	1.2	35.1	11.8%	351%
Proposal - Upper Cynon Floodplain_4	Tree	10	33.9	0.8	34.7	8.1%	347%
Proposal - Upper Cynon Floodplain_5	Tree	10	33.9	0.6	34.5	6.0%	345%
Proposal - Upper Cynon Floodplain_6	Tree	10	33.9	0.5	34.4	4.7%	344%
Proposal - Upper Cynon Floodplain_7	Tree	10	33.9	0.4	34.3	3.9%	343%
Proposal - Upper Cynon Floodplain_8	Tree	10	33.9	0.3	34.2	3.4%	342%
Proposal - Upper Cynon Floodplain_9	Tree	10	33.9	0.3	34.2	2.9 %	342%
Proposal - Upper Cynon Floodplain_10	Tree	10	33.9	0.3	34.1	2.5%	341%
Tir Mawr a Dderi Hir, Llwydcoed_0	Non tree	20	25.3	0.00	25.3	0.0%	127%

Receptor	Veg type	Min CL	Existing Deposition	Scheme Contribution (PC)	Total N Deposition (PEC)	PC/CL	PEC /CL
		kgN/ha-year				%	
Tir Mawr a Dderi Hir, Llwydcoed_1	Non tree	20	25.3	0.00	25.3	0.0%	127%
Tir Mawr a Dderi Hir, Llwydcoed_2	Non tree	20	25.3	0.00	25.3	0.0%	127%
Tir Mawr a Dderi Hir, Llwydcoed_3	Non tree	20	25.3	0.00	25.3	0.0%	127%
Tir Mawr a Dderi Hir, Llwydcoed_4	Non tree	20	25.3	1.0	26.3	4.8%	131%
Tir Mawr a Dderi Hir, Llwydcoed_5	Non tree	20	25.3	0.6	26.0	3.1%	130%
Tir Mawr a Dderi Hir, Llwydcoed_6	Non tree	20	25.3	0.4	25.8	2.2%	129%
Tir Mawr a Dderi Hir, Llwydcoed_7	Non tree	20	25.3	0.3	25.7	1.7%	128%
Tir Mawr a Dderi Hir, Llwydcoed_8	Non tree	20	25.3	0.3	25.6	1.4%	128%
Tir Mawr a Dderi Hir, Llwydcoed_9	Non tree	20	25.3	0.2	25.6	1.1%	128%
Tir Mawr a Dderi Hir, Llwydcoed_10	Non tree	20	25.3	0.2	25.5	1.0%	128%
Tir Mawr a Dderi Hir, Llwydcoed_11	Non tree	20	25.3	0.2	25.5	0.8 %	128%
Tir Mawr a Dderi Hir, Llwydcoed_12	Non tree	20	25.3	0.2	25.5	0.8%	127%
Tir Mawr a Dderi Hir, Llwydcoed_13	Non tree	20	25.3	0.1	25.5	0.7%	127%
Tir Mawr a Dderi Hir, Llwydcoed_14	Non tree	20	25.3	0.1	25.5	0.6%	127%
Tir Mawr a Dderi Hir, Llwydcoed_15	Non tree	20	25.3	0.1	25.5	0.6%	127%
Tir Mawr a Dderi Hir, Llwydcoed_16	Non tree	20	25.3	0.1	25.4	0.5%	127%
Tir Mawr a Dderi Hir, Llwydcoed_17	Non tree	20	25.3	0.1	25.4	0.5%	127%
Tir Mawr a Dderi Hir, Llwydcoed_18	Non tree	20	25.3	0.1	25.4	0.4%	127%
Tir Mawr a Dderi Hir, Llwydcoed_19	Non tree	20	25.3	0.1	25.4	0.4%	127%
Ancient Semi Natural Woodland_0	Tree	10	33.9	0.6	34.4	5.5%	344%
Ancient Semi Natural Woodland_1	Tree	10	33.9	0.4	34.3	4.2%	343%
Ancient Semi Natural Woodland_2	Tree	10	33.9	0.3	34.2	3.4%	342%
Ancient Semi Natural Woodland_3	Tree	10	33.9	0.3	34.2	2.8%	342%
Ancient Semi Natural Woodland_4	Tree	10	33.9	0.2	34.1	2.3%	341%
Ancient Semi Natural Woodland_5	Tree	10	33.9	0.2	34.1	2.0%	341%
Ancient Semi Natural Woodland_6	Tree	10	33.9	0.0	33.9	0.0%	339%
Ancient Semi Natural Woodland_7	Tree	10	33.9	0.2	34.0	1.5%	340%
Ancient Semi Natural Woodland_8	Tree	10	33.9	0.1	34.0	1.3%	340%
Ancient Semi Natural Woodland_9	Tree	10	33.9	0.1	34.0	1.2%	340%
Ancient Semi Natural Woodland_10	Tree	10	33.9	0.1	34.0	1.1%	340%
Ancient Semi Natural Woodland_11	Tree	10	33.9	0.1	34.0	1.1%	340%
Proposal - Nant Hir Valley & Resevoir_0	Tree	10	33.9	0.00	33.9	0.0%	339%
Proposal - Nant Hir Valley & Resevoir_1	Tree	10	33.9	0.00	33.9	0.0%	339%
Proposal - Nant Hir Valley & Resevoir_2	Tree	10	33.9	0.00	33.9	0.0%	339%
Proposal - Nant Hir Valley & Resevoir_3	Tree	10	33.9	0.00	33.9	0.0%	339%
Proposal - Nant Hir Valley & Resevoir_4	Tree	10	33.9	0.00	33.9	0.0%	339%
Proposal - Nant Hir Valley & Resevoir_5	Tree	10	33.9	1.0	34.9	10.1%	349%

Receptor	Veg type	Min CL	Existing Deposition	Scheme Contribution (PC)	Total N Deposition (PEC)	PC/CL	PEC /CL
		kgN/ha-year				%	
Proposal - Nant Hir Valley & Resevoir_6	Tree	10	33.9	0.6	34.5	6.1%	345%
Proposal - Nant Hir Valley & Resevoir_7	Tree	10	33.9	0.4	34.3	4.5%	343%
Proposal - Nant Hir Valley & Resevoir_8	Tree	10	33.9	0.3	34.2	3.5%	342%
Proposal - Nant Hir Valley & Resevoir_9	Tree	10	33.9	0.3	34.2	2.8%	342%
Proposal - Nant Hir Valley & Resevoir_10	Tree	10	33.9	0.2	34.1	2.3%	341%
Proposal - Nant Hir Valley & Resevoir_11	Tree	10	33.9	0.2	34.1	2.0%	341%
Proposal - Nant Hir Valley & Resevoir_12	Tree	10	33.9	0.2	34.0	1.7%	340%
Bryncarnau grasslands, Llwydcoed_0	Non tree	10	25.5	0.05	25.5	0.5%	255%
Bryncarnau grasslands, Llwydcoed_1	Non tree	10	25.5	0.05	25.5	0.5%	255%
Bryncarnau grasslands, Llwydcoed_2	Non tree	10	25.5	0.04	25.5	0.4%	255%
Coed Meirig Pastures_0	Non tree	10	25.5	0.00	25.5	0.0%	255%
Coed Meirig Pastures_1	Non tree	10	25.5	0.00	25.5	0.0%	255%
Coed Meirig Pastures_2	Non tree	10	25.5	0.00	25.5	0.0%	255%
Coed Meirig Pastures_3	Non tree	10	25.5	0.6	26.1	6.1%	261%
Coed Meirig Pastures_4	Non tree	10	25.5	0.4	25.9	4.3%	259%
Coed Meirig Pastures_5	Non tree	10	25.5	0.3	25.8	3.2%	258%
Restored Ancient Woodland Site_0	Tree	10	35.4	0.8	36.2	8.3%	362%
Restored Ancient Woodland Site_1	Tree	10	35.4	0.7	36.1	7.0%	361%
Restored Ancient Woodland Site_2	Tree	10	35.4	0.5	36.0	5.4%	360%
Restored Ancient Woodland Site_3	Tree	10	35.4	0.5	35.9	4.8%	359%
Restored Ancient Woodland Site_4	Tree	10	35.4	0.6	36.0	6.2%	360%
Restored Ancient Woodland Site_5	Tree	10	35.4	0.4	35.8	4.2%	358%
Restored Ancient Woodland Site_6	Tree	10	35.4	0.4	35.8	3.6%	358%
Restored Ancient Woodland Site_7	Tree	10	35.4	0.3	35.7	2.8%	357%
Gyrnos Wood_0	Tree	10	35.4	0.00	35.4	0.00%	354%
Gyrnos Wood_1	Tree	10	35.4	0.00	35.4	0.00%	354%
Gyrnos Wood_2	Tree	10	35.4	0.8	36.2	8.0%	362%
Gyrnos Wood_3	Tree	10	35.4	0.6	36.0	5.8%	360%
Gyrnos Wood_4	Tree	10	35.4	0.5	35.9	4.6%	359%
Gyrnos Wood_5	Tree	10	35.4	0.3	35.7	3.3%	357%
Gyrnos Wood_6	Tree	10	35.4	0.4	35.8	3.8%	358%
Gyrnos Wood_7	Tree	10	35.4	0.3	35.7	2.9%	357%
Gyrnos Wood_8	Tree	10	35.4	0.3	35.7	2.6%	357%
Gyrnos Wood_9	Tree	10	35.4	0.2	35.7	2.4%	357%
Gyrnos Wood_10	Tree	10	35.4	0.2	35.6	2.2%	356%

Receptor	Veg type	Min CL	Existing Deposition	Scheme Contribution (PC)	Total N Deposition (PEC)	PC/CL	PEC /CL
		kgN/ha-year				%	
Gyrnos Wood_11	Tree	10	35.4	0.2	35.6	2.0%	356%
Gyrnos Wood_12	Tree	10	35.4	0.2	35.6	1.8%	356%
Gyrnos Wood_13	Tree	10	35.4	0.2	35.6	1.7%	356%
Gyrnos Wood_14	Tree	10	35.4	0.2	35.6	1.6%	356%
Gyrnos Wood_15	Tree	10	35.4	0.1	35.6	1.5%	356%
Gyrnos Wood_16	Tree	10	35.4	0.1	35.6	1.4%	356%
Gyrnos Wood_17	Tree	10	35.4	0.1	35.6	1.3%	356%
Gyrnos Wood_18	Tree	10	35.4	0.1	35.5	1.3%	355%
Gyrnos Wood_19	Tree	10	35.4	0.1	35.5	1.1%	355%
Gyrnos Wood_20	Tree	10	35.4	0.1	35.5	1.2%	355%
Cwm Taf Fechan woodlands_20 (roadside)	Tree	10	35.4	-1.3	34.1	-12.8%	341%
Cwm Taf Fechan woodlands_0	Tree	10	35.4	-0.7	34.7	-6.8%	347%
Cwm Taf Fechan woodlands_1	Tree	10	35.4	-0.4	35.0	-4.1%	350%
Cwm Taf Fechan woodlands_2	Tree	10	35.4	-0.2	35.2	-1.6%	352%
Cwm Taf Fechan woodlands_3	Tree	10	35.4	-0.2	35.2	-2.5%	352%
Cwm Taf Fechan woodlands_4	Tree	10	35.4	-0.1	35.3	-1.1%	353%
Cwm Taf Fechan woodlands_5	Tree	10	35.4	-0.1	35.3	-0.7%	353%
Cwm Taf Fechan woodlands_6	Tree	10	35.4	-0.04	35.4	-0.4%	354%
Cwm Taf Fechan woodlands_7	Tree	10	35.4	-0.01	35.4	-0.1%	354%
Cwm Taf Fechan woodlands_8	Tree	10	35.4	-0.02	35.4	-0.2%	354%
Cwm Taf Fechan woodlands_9	Tree	10	35.4	0.00	35.4	0.0%	354%
Cwm Taf Fechan woodlands_10	Tree	10	35.4	0.00	35.4	0.0%	354%
Cwm Taf Fechan woodlands_11	Tree	10	35.4	0.01	35.4	0.1%	354%
Cwm Taf Fechan woodlands_12	Tree	10	35.4	0.02	35.4	0.2%	354%
Cwm Taf Fechan woodlands_13	Tree	10	35.4	0.02	35.4	0.2%	354%
Cwm Taf Fechan woodlands_14	Tree	10	35.4	0.03	35.4	0.3%	354%
Cwm Taf Fechan woodlands_15	Tree	10	35.4	0.03	35.4	0.3%	354%
Cwm Taf Fechan woodlands_16	Tree	10	35.4	0.03	35.4	0.3%	354%
Cwm Taf Fechan woodlands_17	Tree	10	35.4	0.03	35.4	0.3%	354%
Cwm Taf Fechan woodlands_18	Tree	10	35.4	0.03	35.4	0.3%	354%
Cwm Taf Fechan woodlands_19	Tree	10	35.4	0.03	35.4	0.3%	354%
Bryniau_A_0	Non tree	10	22.8	0.00	22.8	0.00%	228%
Bryniau_A_1	Non tree	10	22.8	0.00	22.8	0.00%	228%
Bryniau_A_2	Non tree	10	22.8	0.00	22.8	0.00%	228%
Bryniau_A_3	Non tree	10	22.8	0.00	22.8	0.00%	228%
Bryniau_A_4	Non tree	10	22.8	0.00	22.8	0.00%	228%
Bryniau_A_5	Non tree	10	22.8	0.00	22.8	0.00%	228%

Receptor	Veg type	Min CL	Existing Deposition	Scheme Contribution (PC)	Total N Deposition (PEC)	PC/CL	PEC /CL
		kgN/ha-year				%	
Bryniau_A_6	Non tree	10	22.8	0.00	22.8	0.00%	228%
Bryniau_A_7	Non tree	10	22.8	0.00	22.8	0.00%	228%
Bryniau_A_8	Non tree	10	22.8	0.5	23.4	5.3%	234%
Bryniau_A_9	Non tree	10	22.8	0.4	23.2	3.6%	232%
Bryniau_A_10	Non tree	10	22.8	0.3	23.1	2.8%	231%
Bryniau_A_11	Non tree	10	22.8	0.2	23.0	2.3%	230%
Bryniau_A_12	Non tree	10	22.8	0.2	23.0	2.0%	230%
Bryniau_A_13	Non tree	10	22.8	0.2	23.0	1.7%	230%
Bryniau_A_14	Non tree	10	22.8	0.2	23.0	1.5%	230%
Bryniau_A_15	Non tree	10	22.8	0.1	23.0	1.4%	230%
Bryniau_B_0	Non tree	10	22.8	0.2	23.1	2.5%	231%
Bryniau_B_1	Non tree	10	22.8	0.2	23.0	1.7%	230%
Bryniau_B_2	Non tree	10	22.8	0.1	23.0	1.4%	230%
Bryniau_B_3	Non tree	10	22.8	0.1	22.9	1.2%	229%
Bryniau_B_4	Non tree	10	22.8	0.1	22.9	1.1%	229%
Bryniau_B_5	Non tree	10	22.8	0.1	22.9	1.0%	229%
Bryniau_B_6	Non tree	10	22.8	0.1	22.9	1.0%	229%
Bryniau_B_7	Non tree	10	22.8	0.1	22.9	1.0%	229%
Bryniau_B_8	Non tree	10	22.8	0.1	22.9	0.9%	229%
Bryniau_B_9	Non tree	10	22.8	0.1	22.9	0.9%	229%
Bryniau_B_10	Non tree	10	22.8	0.1	22.9	0.9%	229%
Pan March and Traed y Milwyr, Llechryd_0	Non tree	10	22.8	0.8	23.6	7.7%	236%
Pan March and Traed y Milwyr, Llechryd_1	Non tree	10	22.8	0.4	23.2	4.3%	232%
Pan March and Traed y Milwyr, Llechryd_2	Non tree	10	22.8	0.2	23.1	2.4%	231%
Pan March and Traed y Milwyr, Llechryd_3	Non tree	10	22.8	0.3	23.1	3.0%	231%
Pan March and Traed y Milwyr, Llechryd_4	Non tree	10	22.8	0.2	23.0	1.9%	230%
Pan March and Traed y Milwyr, Llechryd_5	Non tree	10	22.8	0.1	23.0	1.5%	230%
Pan March and Traed y Milwyr, Llechryd_6	Non tree	10	22.8	0.2	23.0	1.6%	230%
Pan March and Traed y Milwyr, Llechryd_7	Non tree	10	22.8	0.1	22.9	1.3%	229%
Pan March and Traed y Milwyr, Llechryd_8	Non tree	10	22.8	0.1	22.9	1.1%	229%
Pan March and Traed y Milwyr,	Non tree	10	22.8	0.1	22.9	1.1%	229%

Receptor	Veg type	Min CL	Existing Deposition	Scheme Contribution (PC)	Total N Deposition (PEC)	PC/CL	PEC /CL
		kgN/ha-year				%	
Llechryd_9							
Pan March and Traed y Milwyr, Llechryd_10	Non tree	10	22.8	0.1	22.9	1.0%	229%
Pan March and Traed y Milwyr, Llechryd_11	Non tree	10	22.8	0.1	22.9	0.9%	229%
Pan March and Traed y Milwyr, Llechryd_12	Non tree	10	22.8	0.1	22.9	0.8%	229%
Pan March and Traed y Milwyr, Llechryd_13	Non tree	10	22.8	0.1	22.9	0.8%	229%
Pan March and Traed y Milwyr, Llechryd_14	Non tree	10	22.8	0.1	22.9	0.7%	229%
Pan March and Traed y Milwyr, Llechryd_15	Non tree	10	22.8	0.1	22.9	0.7%	229%
Pan March and Traed y Milwyr, Llechryd_16	Non tree	10	22.8	0.1	22.9	0.7%	229%
Pan March and Traed y Milwyr, Llechryd_17	Non tree	10	22.8	0.1	22.9	0.6%	229%
Pan March and Traed y Milwyr, Llechryd_18	Non tree	10	22.8	0.1	22.9	0.6%	229%
Pan March and Traed y Milwyr, Llechryd_19	Non tree	10	22.8	0.1	22.9	0.6%	229%
Pan March and Traed y Milwyr, Llechryd_20	Non tree	10	22.8	0.1	22.9	0.5%	229%
East Llwydcoed_0	Non tree	20	28.7	0.10	28.8	0.5%	144%
East Llwydcoed_6	Non tree	20	28.7	0.05	28.7	0.2%	144%
East Llwydcoed_7	Non tree	20	28.7	0.04	28.7	0.2%	144%
East Llwydcoed_8	Non tree	20	28.7	0.04	28.7	0.2%	144%
East Llwydcoed_9	Non tree	20	28.7	0.04	28.7	0.2%	144%
East Llwydcoed_10	Non tree	20	28.7	0.03	28.7	0.2%	144%
East Llwydcoed_11	Non tree	20	28.7	0.03	28.7	0.1%	144%
East Llwydcoed_12	Non tree	20	28.7	0.03	28.7	0.1%	144%
East Llwydcoed_13	Non tree	20	28.7	0.03	28.7	0.1%	144%
East Llwydcoed_14	Non tree	20	28.7	0.03	28.7	0.1%	144%
East Llwydcoed_15	Non tree	20	28.7	0.02	28.7	0.1%	144%
East Llwydcoed_16	Non tree	20	28.7	0.02	28.7	0.1%	144%
East Llwydcoed_17	Non tree	20	28.7	0.02	28.7	0.1%	144%
East Llwydcoed_18	Non tree	20	28.7	0.02	28.7	0.1%	144%
East Llwydcoed_19	Non tree	20	28.7	0.02	28.7	0.1%	144%
Cwm Ffwrdd_0	Tree	10	35.4	0.1	35.6	1.5%	356%
Cwm Ffwrdd_1	Tree	10	35.4	0.1	35.5	1.0%	355%

Receptor	Veg type	Min CL	Existing Deposition	Scheme Contribution (PC)	Total N Deposition (PEC)	PC/CL	PEC /CL
		kgN/ha-year				%	
Cwm Ffwrdd_2	Tree	10	35.4	0.1	35.5	0.8%	355%
Cwm Ffwrdd_3	Tree	10	35.4	0.1	35.5	0.7%	355%
Cwm Ffwrdd_4	Tree	10	35.4	0.1	35.5	0.6%	355%
Cwm Ffwrdd_5	Tree	10	35.4	0.1	35.5	0.5%	355%
Cwm Ffwrdd_6	Tree	10	35.4	0.1	35.5	0.5%	355%
Cwm Ffwrdd_7	Tree	10	35.4	0.05	35.5	0.5%	355%
Cwm Ffwrdd_8	Tree	10	35.4	0.04	35.5	0.4%	355%
Cwm Ffwrdd_9	Tree	10	35.4	0.04	35.5	0.4%	355%
Cwm Ffwrdd_10	Tree	10	35.4	0.04	35.5	0.4%	355%
Cwm Ffwrdd_11	Tree	10	35.4	0.04	35.5	0.4%	355%
Cwm Ffwrdd_12	Tree	10	35.4	0.04	35.5	0.4%	355%
Cwm Ffwrdd_13	Tree	10	35.4	0.03	35.5	0.3%	355%
Cwm Ffwrdd_14	Tree	10	35.4	0.03	35.5	0.3%	355%
Cwm Ffwrdd_15	Tree	10	35.4	0.03	35.5	0.3%	355%
Cwm Ffwrdd_16	Tree	10	35.4	0.03	35.4	0.3%	354%
Cwm Ffwrdd_17	Tree	10	35.4	0.03	35.4	0.3%	354%
Cwm Ffwrdd_18	Tree	10	35.4	0.03	35.4	0.3%	354%
Cwm Ffwrdd_19	Tree	10	35.4	0.03	35.4	0.3%	354%
Cwm glo a glyndyrys_0	Non tree	10	25.5	-0.02	25.5	-0.2%	255%
Cwm glo a glyndyrys_1	Non tree	10	25.5	-0.02	25.5	-0.2%	255%
Cwm glo a glyndyrys_2	Non tree	10	25.5	-0.01	25.5	-0.1%	255%
Cwm glo a glyndyrys_3	Non tree	10	25.5	-0.01	25.5	-0.1%	255%
Cwm glo a glyndyrys_4	Non tree	10	25.5	-0.01	25.5	-0.1%	255%
Cwm glo a glyndyrys_5	Non tree	10	25.5	-0.01	25.5	-0.1%	255%
Cwm glo a glyndyrys_6	Non tree	10	25.5	-0.003	25.5	-0.03%	255%
Cwm glo a glyndyrys_7	Non tree	10	25.5	-0.002	25.5	-0.02%	255%
Cwm glo a glyndyrys_8	Non tree	10	25.5	0.000	25.5	0.00%	255%
Cwm glo a glyndyrys_9	Non tree	10	25.5	0.000	25.5	0.00%	255%
Cwm glo a glyndyrys_10	Non tree	10	25.5	0.000	25.5	0.00%	255%
Cwm glo a glyndyrys_11	Non tree	10	25.5	0.000	25.5	0.00%	255%
Cwm glo a glyndyrys_12	Non tree	10	25.5	0.000	25.5	0.00%	255%
Cwm glo a glyndyrys_13	Non tree	10	25.5	0.000	25.5	0.00%	255%
Cwm glo a glyndyrys_14	Non tree	10	25.5	0.002	25.5	0.02%	255%
Hirwaun Common SINC_0	Non tree	10	22.0	0.000	22.0	0.00%	220%
Hirwaun Common SINC_1	Non tree	10	22.0	0.000	22.0	0.00%	220%
Hirwaun Common SINC_2	Non tree	10	22.0	0.000	22.0	0.00%	220%
Hirwaun Common SINC_3	Non tree	10	22.0	0.000	22.0	0.00%	220%

Receptor	Veg type	Min CL	Existing Deposition	Scheme Contribution (PC)	Total N Deposition (PEC)	PC/CL	PEC /CL
		kgN/ha-year				%	
Hirwaun Common SINC_4	Non tree	10	22.0	0.000	22.0	0.00%	220%
Hirwaun Common SINC_5	Non tree	10	22.0	0.000	22.0	0.00%	220%
Hirwaun Common SINC_6	Non tree	10	22.0	0.000	22.0	0.00%	220%
Hirwaun Common SINC_7	Non tree	10	22.0	0.1	22.1	0.9%	221%
Hirwaun Common SINC_8	Non tree	10	22.0	0.0	22.0	0.0%	220%
Hirwaun Common SINC_9	Non tree	10	22.0	0.0	22.0	-0.3%	220%
Hirwaun Common SINC_10	Non tree	10	22.0	0.0	21.9	-0.4%	219%
Hirwaun Common SINC_11	Non tree	10	22.0	0.0	21.9	-0.3%	219%
Hirwaun Common SINC_12	Non tree	10	22.0	0.0	21.9	-0.3%	219%
Hirwaun Common SINC_13	Non tree	10	22.0	0.0	22.0	-0.3%	220%
Hirwaun Common SINC_14	Non tree	10	22.0	0.0	22.0	-0.2%	220%
Hirwaun Common SINC_15	Non tree	10	22.0	0.0	22.0	-0.2%	220%
Hirwaun Common SINC_16	Non tree	10	22.0	0.0	22.0	-0.2%	220%
Hirwaun Common SINC_17	Non tree	10	22.0	0.0	22.0	-0.1%	220%
Hirwaun Common SINC_18	Non tree	10	22.0	0.0	22.0	-0.1%	220%
Hirwaun Common SINC_19	Non tree	10	22.0	0.0	22.0	-0.1%	220%
Hirwaun Common SINC_20	Non tree	10	22.0	0.0	22.0	-0.1%	220%
Hirwaun Common SINC_21	Non tree	10	22.0	0.0	22.0	-0.1%	220%
Hirwaun Common SINC_22	Non tree	10	22.0	0.0	22.0	0.0%	220%
Llwydcoed Slopes_0	Non tree	20	25.3	-0.2	25.2	-0.9%	126%
Llwydcoed Slopes_1	Non tree	20	25.3	0.0	25.3	-0.2%	127%
Llwydcoed Slopes_2	Non tree	20	25.3	0.0	25.4	0.1%	127%
Llwydcoed Slopes_3	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_4	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_5	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_6	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_7	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_8	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_9	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_10	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_11	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_12	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_13	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_14	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_15	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_16	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_17	Non tree	20	25.3	0.0	25.4	0.2%	127%

Receptor	Veg type	Min CL	Existing Deposition	Scheme Contribution (PC)	Total N Deposition (PEC)	PC/CL	PEC /CL
		kgN/ha-year				%	
Llwydcoed Slopes_18	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_19	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_20	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_21	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_22	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_23	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_24	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_25	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_26	Non tree	20	25.3	0.0	25.4	0.2%	127%
Llwydcoed Slopes_27	Non tree	20	25.3	0.0	25.4	0.2%	127%
Bryniau_B_11	Non tree	10	22.8	0.1	22.9	0.9%	229%
Bryniau_B_12	Non tree	10	22.8	0.1	22.9	0.9%	229%
Bryniau_B_13	Non tree	10	22.8	0.1	22.9	0.9%	229%
Bryniau_B_14	Non tree	10	22.8	0.1	22.9	0.9%	229%
Bryniau_B_15	Non tree	10	22.8	0.1	22.9	0.9%	229%
Bryniau_B_16	Non tree	10	22.8	0.1	22.9	0.9%	229%
Bryniau_B_17	Non tree	10	22.8	0.1	22.9	0.9%	229%
Bryniau_B_18	Non tree	10	22.8	0.1	22.9	0.9%	229%
Bryn Defaid Heath_0	Non tree	10	25.5	0.2	25.7	2.1%	257%
Bryn Defaid Heath_1	Non tree	10	25.5	0.1	25.6	0.8%	256%
Bryn Defaid Heath_2	Non tree	10	25.5	0.1	25.5	0.6%	255%
Bryn Defaid Heath_3	Non tree	10	25.5	0.0	25.5	0.4%	255%
Bryn Defaid Heath_4	Non tree	10	25.5	0.0	25.5	0.4%	255%
Bryn Defaid Heath_5	Non tree	10	25.5	0.0	25.5	0.3%	255%
Bryn Defaid Heath_6	Non tree	10	25.5	0.0	25.5	0.3%	255%
Bryn Defaid Heath_7	Non tree	10	25.5	0.0	25.5	0.3%	255%
Bryn Defaid Heath_8	Non tree	10	25.5	0.0	25.5	0.3%	255%
Bryn Defaid Heath_9	Non tree	10	25.5	0.0	25.5	0.3%	255%
Bryn Defaid Heath_10	Non tree	10	25.5	0.0	25.5	0.2%	255%
Bryn Defaid Heath_11	Non tree	10	25.5	0.0	25.5	0.3%	255%
Bryn Defaid Heath_12	Non tree	10	25.5	0.0	25.5	0.2%	255%
Bryn Defaid Heath_13	Non tree	10	25.5	0.0	25.5	0.2%	255%
Bryn Defaid Heath_14	Non tree	10	25.5	0.0	25.5	0.2%	255%
Bryn Defaid Heath_15	Non tree	10	25.5	0.0	25.5	0.2%	255%
Bryn Defaid Heath_16	Non tree	10	25.5	0.0	25.5	0.2%	255%
Bryn Defaid Heath_17	Non tree	10	25.5	0.0	25.5	0.2%	255%
Bryn Defaid Heath_18	Non tree	10	25.5	0.0	25.5	0.2%	255%

Receptor	Veg type	Min CL	Existing Deposition	Scheme Contribution (PC)	Total N Deposition (PEC)	PC/CL	PEC /CL
		kgN/ha-year				%	
Bryn Defaid Heath_19	Non tree	10	25.5	0.0	25.5	0.2%	255%
Bryn Defaid Heath_20	Non tree	10	25.5	0.0	25.5	0.2%	255%
Winchfawr West_4	Non tree	10	25.5	0.0	25.5	0.0%	255%
Winchfawr West_12	Non tree	10	25.5	0.1	25.6	1.0%	256%
Winchfawr West_9	Non tree	10	25.5	0.2	25.6	1.5%	256%
Winchfawr West_0	Non tree	10	25.5	0.0	25.5	0.0%	255%
Winchfawr West_1	Non tree	10	25.5	0.0	25.5	0.0%	255%
Winchfawr West_6	Non tree	10	25.5	0.3	25.8	2.7%	258%
Winchfawr West_11	Non tree	10	25.5	0.1	25.6	1.2%	256%
Winchfawr West_8	Non tree	10	25.5	0.2	25.7	1.8%	257%
Winchfawr West_3	Non tree	10	25.5	0.0	25.5	0.0%	255%
Winchfawr West_5	Non tree	10	25.5	0.4	25.8	3.6%	258%
Winchfawr West_10	Non tree	10	25.5	0.1	25.6	1.4%	256%
Winchfawr West_14	Non tree	10	25.5	0.1	25.6	0.9%	256%
Winchfawr West_7	Non tree	10	25.5	0.2	25.7	2.1%	257%
Winchfawr West_2	Non tree	10	25.5	0.0	25.5	0.0%	255%
Winchfawr West_13	Non tree	10	25.5	0.1	25.6	1.1%	256%
Proposal - Hirwaun Ponds North_0	Non tree	10	22.0	0.1	22.0	0.6%	220%
Proposal - Hirwaun Ponds North_1	Non tree	10	22.0	0.0	22.0	0.3%	220%
Proposal - Hirwaun Ponds North_2	Non tree	10	22.0	0.0	22.0	0.2%	220%
Proposal - Hirwaun Ponds North_3	Non tree	10	22.0	0.0	22.0	0.2%	220%
Proposal - Hirwaun Ponds North_4	Non tree	10	22.0	0.0	22.0	0.1%	220%
Proposal - Hirwaun Ponds North_5	Non tree	10	22.0	0.0	22.0	0.1%	220%
Proposal - Hirwaun Ponds North_6	Non tree	10	22.0	0.0	22.0	0.1%	220%
Proposal - Hirwaun Ponds North_7	Non tree	10	22.0	0.0	22.0	0.1%	220%
Proposal - Hirwaun Ponds North_8	Non tree	10	22.0	0.0	22.0	0.1%	220%
Proposal - Hirwaun Ponds North_9	Non tree	10	22.0	0.0	22.0	0.1%	220%
Proposal - Hirwaun Ponds North_10	Non tree	10	22.0	0.0	22.0	0.1%	220%
Marsh Fritillary_0	Non tree	10	25.3	0.0	25.4	0.2%	254%
Marsh Fritillary_1	Non tree	10	25.3	0.0	25.4	0.2%	254%
Marsh Fritillary_2	Non tree	10	25.3	0.0	25.4	0.2%	254%
Marsh Fritillary_3	Non tree	10	25.3	0.0	25.4	0.2%	254%
Marsh Fritillary_4	Non tree	10	25.3	0.0	25.4	0.2%	254%
Marsh Fritillary_5	Non tree	10	25.3	0.0	25.4	0.2%	254%
Marsh Fritillary_6	Non tree	10	25.3	0.0	25.4	0.2%	254%
Marsh Fritillary_7	Non tree	10	25.3	0.0	25.4	0.2%	254%

A number of transect points show zero values for the PC. This is where the proposed scheme has been built over the transect point, with the scheme in place, or the scheme contribution is nominal at the location.

Table 8E.4 Predicted site specific Acid Deposition

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Blaen Cynon_0	Non tree	1.770	0.581	2.280	1.570	0.530	0.001	2.101	0.02%	92%
Blaen Cynon_1	Non tree	1.770	0.581	2.280	1.570	0.530	0.001	2.101	0.02%	92%
Blaen Cynon_2	Non tree	1.770	0.581	2.280	1.570	0.530	0.000	2.100	0.02%	92%
Blaen Cynon_3	Non tree	1.770	0.581	2.280	1.570	0.530	0.001	2.101	0.02%	92%
Blaen Cynon_4	Non tree	1.770	0.581	2.280	1.570	0.530	0.000	2.100	0.02%	92%
Blaen Cynon_5	Non tree	1.770	0.581	2.280	1.570	0.530	0.000	2.100	0.01%	92%
Blaen Cynon_6	Non tree	1.770	0.581	2.280	1.570	0.530	0.000	2.100	0.02%	92%
Blaen Cynon_7	Non tree	1.770	0.581	2.280	1.570	0.530	0.000	2.100	0.01%	92%
Blaen Cynon_8	Non tree	1.770	0.581	2.280	1.570	0.530	0.000	2.100	0.02%	92%
Blaen Cynon_9	Non tree	1.770	0.581	2.280	1.570	0.530	0.000	2.100	0.02%	92%
Blaen Cynon_10	Non tree	1.770	0.581	2.280	1.570	0.530	0.000	2.100	0.01%	92%
Blaen Cynon_11	Non tree	1.770	0.581	2.280	1.570	0.530	0.000	2.100	0.01%	92%
Blaen Cynon_12	Non tree	1.770	0.581	2.280	1.570	0.530	0.000	2.100	0.01%	92%
Cors Bryn-y-gaer_0	Non tree	1.770	0.581	2.280	1.810	0.610	0.000	2.420	-0.01%	106%
Cors Bryn-y-gaer_1	Non tree	1.770	0.581	2.280	1.810	0.610	0.000	2.420	-0.01%	106%
Cors Bryn-y-gaer_2	Non tree	1.770	0.581	2.280	1.810	0.610	0.000	2.420	-0.01%	106%
Cors Bryn-y-gaer_3	Non tree	1.770	0.581	2.280	1.810	0.610	0.000	2.420	-0.01%	106%
Cors Bryn-y-gaer_4	Non tree	1.770	0.581	2.280	1.810	0.610	0.000	2.420	-0.01%	106%
Cors Bryn-y-gaer_5	Non tree	1.770	0.581	2.280	1.810	0.610	0.000	2.420	-0.01%	106%
Cors Bryn-y-gaer_6	Non tree	1.770	0.581	2.280	1.810	0.610	0.000	2.420	-0.01%	106%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Cors Bryn-y-gaer_7	Non tree	1.770	0.581	2.280	1.810	0.610	0.000	2.420	-0.01%	106%
Cors Bryn-y-gaer_8	Non tree	1.770	0.581	2.280	1.810	0.610	0.000	2.420	-0.01%	106%
Cors Bryn-y-gaer_9	Non tree	1.770	0.581	2.280	1.810	0.610	0.000	2.420	-0.01%	106%
Cors Bryn-y-gaer_10	Non tree	1.770	0.581	2.280	1.810	0.610	0.000	2.420	-0.01%	106%
Proposal - Hirwaun Common_A_0	Non tree	1.780	0.440	2.220	1.810	0.610	-0.036	2.384	-1.64%	107%
Proposal - Hirwaun Common_A_1	Non tree	1.780	0.440	2.220	1.810	0.610	-0.021	2.399	-0.96%	108%
Proposal - Hirwaun Common_A_2	Non tree	1.780	0.440	2.220	1.810	0.610	-0.014	2.406	-0.63%	108%
Proposal - Hirwaun Common_A_3	Non tree	1.780	0.440	2.220	1.810	0.610	-0.010	2.410	-0.44%	109%
Proposal - Hirwaun Common_A_4	Non tree	1.780	0.440	2.220	1.810	0.610	-0.007	2.413	-0.31%	109%
Proposal - Hirwaun Common_A_5	Non tree	1.780	0.440	2.220	1.810	0.610	-0.005	2.415	-0.23%	109%
Proposal - Hirwaun Common_A_6	Non tree	1.780	0.440	2.220	1.810	0.610	-0.004	2.416	-0.16%	109%
Proposal - Hirwaun Common_A_7	Non tree	1.780	0.440	2.220	1.810	0.610	0.000	2.420	-0.02%	109%
Proposal - Hirwaun Common_A_8	Non tree	1.780	0.440	2.220	1.810	0.610	-0.001	2.419	-0.06%	109%
Proposal - Hirwaun Common_A_9	Non tree	1.780	0.440	2.220	1.810	0.610	-0.002	2.418	-0.10%	109%
Proposal - Hirwaun Common_B_0	Non tree	1.780	0.440	2.220	1.810	0.610	-0.038	2.382	-1.72%	107%
Proposal - Hirwaun Common_B_1	Non tree	1.780	0.440	2.220	1.810	0.610	-0.021	2.399	-0.97%	108%
Proposal - Hirwaun Common_B_2	Non tree	1.780	0.440	2.220	1.810	0.610	-0.014	2.406	-0.62%	108%
Proposal - Hirwaun Common_B_3	Non tree	1.780	0.440	2.220	1.810	0.610	-0.009	2.411	-0.42%	109%
Proposal - Hirwaun Common_B_4	Non tree	1.780	0.440	2.220	1.810	0.610	-0.006	2.414	-0.27%	109%
Proposal - Hirwaun Common_B_5	Non tree	1.780	0.440	2.220	1.810	0.610	-0.004	2.416	-0.18%	109%
Proposal - Hirwaun Common_B_6	Non tree	1.780	0.440	2.220	1.810	0.610	-0.002	2.418	-0.10%	109%
Proposal - Hirwaun Common_B_7	Non tree	1.780	0.440	2.220	1.810	0.610	-0.001	2.419	-0.03%	109%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Proposal - Hirwaun Common_B_8	Non tree	1.780	0.440	2.220	1.810	0.610	0.000	2.420	0.02%	109%
Proposal - Hirwaun Common_B_9	Non tree	1.780	0.440	2.220	1.810	0.610	0.002	2.422	0.07%	109%
Proposal - Hirwaun Common_B_10	Non tree	1.780	0.440	2.220	1.810	0.610	0.003	2.423	0.12%	109%
Proposal - Hirwaun Common_B_11	Non tree	1.780	0.440	2.220	1.810	0.610	0.004	2.424	0.17%	109%
Proposal - Hirwaun Common_B_12	Non tree	1.780	0.440	2.220	1.810	0.610	0.005	2.425	0.22%	109%
Proposal - Hirwaun Common_B_13	Non tree	1.780	0.440	2.220	1.810	0.610	0.006	2.426	0.28%	109%
Proposal - Hirwaun Common_B_14	Non tree	1.780	0.440	2.220	1.810	0.610	0.008	2.428	0.35%	109%
Proposal - Hirwaun Common_B_15	Non tree	1.780	0.440	2.220	1.810	0.610	0.010	2.430	0.44%	109%
Proposal - Hirwaun Common_B_16	Non tree	1.780	0.440	2.220	1.810	0.610	0.013	2.433	0.57%	110%
Proposal - Hirwaun Common_B_17	Non tree	1.780	0.440	2.220	1.810	0.610	0.018	2.438	0.79%	110%
Proposal - Hirwaun Common_B_18	Non tree	1.780	0.440	2.220	1.810	0.610	0.039	2.459	1.78%	111%
Proposal - Hirwaun Common_B_19	Non tree	1.780	0.440	2.220	1.810	0.610	0.024	2.444	1.08%	110%
Proposal - Upper Cynon Floodplain_0	Tree	3.780	0.360	4.140	2.420	0.690	0.000	3.110	0.00%	75%
Proposal - Upper Cynon Floodplain_1	Tree	3.780	0.360	4.140	2.420	0.690	0.000	3.110	0.00%	75%
Proposal - Upper Cynon Floodplain_2	Tree	3.780	0.360	4.140	2.420	0.690	0.138	3.248	3.33%	78%
Proposal - Upper Cynon Floodplain_3	Tree	3.780	0.360	4.140	2.420	0.690	0.084	3.194	2.04%	77%
Proposal - Upper Cynon Floodplain_4	Tree	3.780	0.360	4.140	2.420	0.690	0.058	3.168	1.39%	77%
Proposal - Upper Cynon Floodplain_5	Tree	3.780	0.360	4.140	2.420	0.690	0.043	3.153	1.03%	76%
Proposal - Upper Cynon Floodplain_6	Tree	3.780	0.360	4.140	2.420	0.690	0.034	3.144	0.82%	76%
Proposal - Upper Cynon Floodplain_7	Tree	3.780	0.360	4.140	2.420	0.690	0.028	3.138	0.67%	76%
Proposal - Upper Cynon Floodplain_8	Tree	3.780	0.360	4.140	2.420	0.690	0.024	3.134	0.58%	76%
Proposal - Upper Cynon Floodplain_9	Tree	3.780	0.360	4.140	2.420	0.690	0.021	3.131	0.50%	76%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Proposal - Upper Cynon Floodplain_10	Tree	3.780	0.360	4.140	2.420	0.690	0.018	3.128	0.43%	76%
Tir Mawr a Dderi Hir, Llwydcoed_0	Non tree	1.770	0.438	2.208	1.810	0.610	0.000	2.420	0.00%	110%
Tir Mawr a Dderi Hir, Llwydcoed_1	Non tree	1.770	0.438	2.208	1.810	0.610	0.000	2.420	0.00%	110%
Tir Mawr a Dderi Hir, Llwydcoed_2	Non tree	1.770	0.438	2.208	1.810	0.610	0.000	2.420	0.00%	110%
Tir Mawr a Dderi Hir, Llwydcoed_3	Non tree	1.770	0.438	2.208	1.810	0.610	0.000	2.420	0.00%	110%
Tir Mawr a Dderi Hir, Llwydcoed_4	Non tree	1.770	0.438	2.208	1.810	0.610	0.068	2.488	3.07%	113%
Tir Mawr a Dderi Hir, Llwydcoed_5	Non tree	1.770	0.438	2.208	1.810	0.610	0.044	2.464	1.98%	112%
Tir Mawr a Dderi Hir, Llwydcoed_6	Non tree	1.770	0.438	2.208	1.810	0.610	0.031	2.451	1.39%	111%
Tir Mawr a Dderi Hir, Llwydcoed_7	Non tree	1.770	0.438	2.208	1.810	0.610	0.024	2.444	1.07%	111%
Tir Mawr a Dderi Hir, Llwydcoed_8	Non tree	1.770	0.438	2.208	1.810	0.610	0.019	2.439	0.87%	110%
Tir Mawr a Dderi Hir, Llwydcoed_9	Non tree	1.770	0.438	2.208	1.810	0.610	0.016	2.436	0.74%	110%
Tir Mawr a Dderi Hir, Llwydcoed_10	Non tree	1.770	0.438	2.208	1.810	0.610	0.014	2.434	0.63%	110%
Tir Mawr a Dderi Hir, Llwydcoed_11	Non tree	1.770	0.438	2.208	1.810	0.610	0.012	2.432	0.55%	110%
Tir Mawr a Dderi Hir, Llwydcoed_12	Non tree	1.770	0.438	2.208	1.810	0.610	0.011	2.431	0.49%	110%
Tir Mawr a Dderi Hir, Llwydcoed_13	Non tree	1.770	0.438	2.208	1.810	0.610	0.010	2.430	0.44%	110%
Tir Mawr a Dderi Hir, Llwydcoed_14	Non tree	1.770	0.438	2.208	1.810	0.610	0.009	2.429	0.39%	110%
Tir Mawr a Dderi Hir, Llwydcoed_15	Non tree	1.770	0.438	2.208	1.810	0.610	0.008	2.428	0.36%	110%
Tir Mawr a Dderi Hir, Llwydcoed_16	Non tree	1.770	0.438	2.208	1.810	0.610	0.007	2.427	0.34%	110%
Tir Mawr a Dderi Hir, Llwydcoed_17	Non tree	1.770	0.438	2.208	1.810	0.610	0.007	2.427	0.31%	110%
Tir Mawr a Dderi Hir, Llwydcoed_18	Non tree	1.770	0.438	2.208	1.810	0.610	0.006	2.426	0.29%	110%
Tir Mawr a Dderi Hir, Llwydcoed_19	Non tree	1.770	0.438	2.208	1.810	0.610	0.006	2.426	0.27%	110%
Ancient Semi Natural Woodland_0	Tree	1.960	0.500	2.460	2.420	0.690	0.040	3.150	1.61%	128%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Ancient Semi Natural Woodland_1	Tree	1.960	0.500	2.460	2.420	0.690	0.030	3.140	1.21%	128%
Ancient Semi Natural Woodland_2	Tree	1.960	0.500	2.460	2.420	0.690	0.024	3.134	0.98%	127%
Ancient Semi Natural Woodland_3	Tree	1.960	0.500	2.460	2.420	0.690	0.020	3.130	0.80%	127%
Ancient Semi Natural Woodland_4	Tree	1.960	0.500	2.460	2.420	0.690	0.016	3.126	0.66%	127%
Ancient Semi Natural Woodland_5	Tree	1.960	0.500	2.460	2.420	0.690	0.014	3.124	0.57%	127%
Ancient Semi Natural Woodland_6	Tree	1.960	0.500	2.460	2.420	0.690	0.000	3.110	0.00%	126%
Ancient Semi Natural Woodland_7	Tree	1.960	0.500	2.460	2.420	0.690	0.011	3.121	0.44%	127%
Ancient Semi Natural Woodland_8	Tree	1.960	0.500	2.460	2.420	0.690	0.010	3.120	0.39%	127%
Ancient Semi Natural Woodland_9	Tree	1.960	0.500	2.460	2.420	0.690	0.009	3.119	0.36%	127%
Ancient Semi Natural Woodland_10	Tree	1.960	0.500	2.460	2.420	0.690	0.008	3.118	0.33%	127%
Ancient Semi Natural Woodland_11	Tree	1.960	0.500	2.460	2.420	0.690	0.008	3.118	0.31%	127%
Proposal - Nant Hir Valley & Resevoir_0	Tree	1.980	0.500	2.480	2.420	0.690	0.000	3.110	0.00%	125%
Proposal - Nant Hir Valley & Resevoir_1	Tree	1.980	0.500	2.480	2.420	0.690	0.000	3.110	0.00%	125%
Proposal - Nant Hir Valley & Resevoir_2	Tree	1.980	0.500	2.480	2.420	0.690	0.000	3.110	0.00%	125%
Proposal - Nant Hir Valley & Resevoir_3	Tree	1.980	0.500	2.480	2.420	0.690	0.000	3.110	0.00%	125%
Proposal - Nant Hir Valley & Resevoir_4	Tree	1.980	0.500	2.480	2.420	0.690	0.000	3.110	0.00%	125%
Proposal - Nant Hir Valley & Resevoir_5	Tree	1.980	0.500	2.480	2.420	0.690	0.072	3.182	2.92%	128%
Proposal - Nant Hir Valley & Resevoir_6	Tree	1.980	0.500	2.480	2.420	0.690	0.044	3.154	1.76%	127%
Proposal - Nant Hir Valley & Resevoir_7	Tree	1.980	0.500	2.480	2.420	0.690	0.032	3.142	1.29%	127%
Proposal - Nant Hir Valley & Resevoir_8	Tree	1.980	0.500	2.480	2.420	0.690	0.025	3.135	1.00%	126%
Proposal - Nant Hir Valley & Resevoir_9	Tree	1.980	0.500	2.480	2.420	0.690	0.020	3.130	0.81%	126%
Proposal - Nant Hir Valley & Resevoir_10	Tree	1.980	0.500	2.480	2.420	0.690	0.016	3.126	0.66%	126%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Proposal - Nant Hir Valley & Resevoir_11	Tree	1.980	0.500	2.480	2.420	0.690	0.014	3.124	0.56%	126%
Proposal - Nant Hir Valley & Resevoir_12	Tree	1.980	0.500	2.480	2.420	0.690	0.012	3.122	0.48%	126%
Bryncarnau grasslands, Llwydcoed_0	Non tree	0.620	0.438	1.210	1.820	0.610	0.003	2.433	0.29%	201%
Bryncarnau grasslands, Llwydcoed_1	Non tree	0.620	0.438	1.210	1.820	0.610	0.003	2.433	0.28%	201%
Bryncarnau grasslands, Llwydcoed_2	Non tree	0.620	0.438	1.210	1.820	0.610	0.003	2.433	0.27%	201%
Coed Meirig Pastures_0	Non tree	0.630	0.580	1.210	1.820	0.580	0.000	2.400	0.00%	198%
Coed Meirig Pastures_1	Non tree	0.630	0.580	1.210	1.820	0.580	0.000	2.400	0.00%	198%
Coed Meirig Pastures_2	Non tree	0.630	0.580	1.210	1.820	0.580	0.000	2.400	0.00%	198%
Coed Meirig Pastures_3	Non tree	0.630	0.580	1.210	1.820	0.580	0.044	2.444	3.60%	202%
Coed Meirig Pastures_4	Non tree	0.630	0.580	1.210	1.820	0.580	0.030	2.430	2.52%	201%
Coed Meirig Pastures_5	Non tree	0.630	0.580	1.210	1.820	0.580	0.023	2.423	1.90%	200%
Restored Ancient Woodland Site_0	Tree	3.670	0.360	4.030	2.530	0.670	0.059	3.259	1.47%	81%
Restored Ancient Woodland Site_1	Tree	3.670	0.360	4.030	2.530	0.670	0.050	3.250	1.25%	81%
Restored Ancient Woodland Site_2	Tree	3.670	0.360	4.030	2.530	0.670	0.039	3.239	0.96%	80%
Restored Ancient Woodland Site_3	Tree	3.670	0.360	4.030	2.530	0.670	0.034	3.234	0.85%	80%
Restored Ancient Woodland Site_4	Tree	3.670	0.360	4.030	2.530	0.670	0.044	3.244	1.09%	80%
Restored Ancient Woodland Site_5	Tree	3.670	0.360	4.030	2.530	0.670	0.030	3.230	0.74%	80%
Restored Ancient Woodland Site_6	Tree	3.670	0.360	4.030	2.530	0.670	0.026	3.226	0.64%	80%
Restored Ancient Woodland Site_7	Tree	3.670	0.360	4.030	2.530	0.670	0.020	3.220	0.49%	80%
Gyrnos Wood_0	Tree	3.670	0.360	4.030	2.530	0.670	0.000	3.200	0.00%	79%
Gyrnos Wood_1	Tree	3.670	0.360	4.030	2.530	0.670	0.000	3.200	0.00%	79%
Gyrnos Wood_2	Tree	3.670	0.360	4.030	2.530	0.670	0.057	3.257	1.42%	81%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Gyrnos Wood_3	Tree	3.670	0.360	4.030	2.530	0.670	0.041	3.241	1.03%	80%
Gyrnos Wood_4	Tree	3.670	0.360	4.030	2.530	0.670	0.033	3.233	0.81%	80%
Gyrnos Wood_5	Tree	3.670	0.360	4.030	2.530	0.670	0.023	3.223	0.58%	80%
Gyrnos Wood_6	Tree	3.670	0.360	4.030	2.530	0.670	0.027	3.227	0.67%	80%
Gyrnos Wood_7	Tree	3.670	0.360	4.030	2.530	0.670	0.020	3.220	0.51%	80%
Gyrnos Wood_8	Tree	3.670	0.360	4.030	2.530	0.670	0.019	3.219	0.46%	80%
Gyrnos Wood_9	Tree	3.670	0.360	4.030	2.530	0.670	0.017	3.217	0.42%	80%
Gyrnos Wood_10	Tree	3.670	0.360	4.030	2.530	0.670	0.015	3.215	0.38%	80%
Gyrnos Wood_11	Tree	3.670	0.360	4.030	2.530	0.670	0.014	3.214	0.35%	80%
Gyrnos Wood_12	Tree	3.670	0.360	4.030	2.530	0.670	0.013	3.213	0.32%	80%
Gyrnos Wood_13	Tree	3.670	0.360	4.030	2.530	0.670	0.012	3.212	0.30%	80%
Gyrnos Wood_14	Tree	3.670	0.360	4.030	2.530	0.670	0.011	3.211	0.28%	80%
Gyrnos Wood_15	Tree	3.670	0.360	4.030	2.530	0.670	0.011	3.211	0.27%	80%
Gyrnos Wood_16	Tree	3.670	0.360	4.030	2.530	0.670	0.010	3.210	0.25%	80%
Gyrnos Wood_17	Tree	3.670	0.360	4.030	2.530	0.670	0.010	3.210	0.24%	80%
Gyrnos Wood_18	Tree	3.670	0.360	4.030	2.530	0.670	0.009	3.209	0.22%	80%
Gyrnos Wood_19	Tree	3.670	0.360	4.030	2.530	0.670	0.008	3.208	0.20%	80%
Gyrnos Wood_20	Tree	3.670	0.360	4.030	2.530	0.670	0.008	3.208	0.21%	80%
Cwm Taf Fechan woodlands_20 (roadside)	Tree	1.759	0.142	2.435	2.530	0.670	-0.091	3.109	-3.74%	128%
Cwm Taf Fechan woodlands_0	Tree	1.759	0.142	2.435	2.530	0.670	-0.048	3.152	-1.98%	129%
Cwm Taf Fechan woodlands_1	Tree	1.759	0.142	2.435	2.530	0.670	-0.029	3.171	-1.21%	130%
Cwm Taf Fechan woodlands_2	Tree	1.759	0.142	2.435	2.530	0.670	-0.012	3.188	-0.47%	131%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Cwm Taf Fechan woodlands_3	Tree	1.759	0.142	2.435	2.530	0.670	-0.018	3.182	-0.73%	131%
Cwm Taf Fechan woodlands_4	Tree	1.759	0.142	2.435	2.530	0.670	-0.008	3.192	-0.32%	131%
Cwm Taf Fechan woodlands_5	Tree	1.759	0.142	2.435	2.530	0.670	-0.005	3.195	-0.21%	131%
Cwm Taf Fechan woodlands_6	Tree	1.759	0.142	2.435	2.530	0.670	-0.003	3.197	-0.13%	131%
Cwm Taf Fechan woodlands_7	Tree	1.759	0.142	2.435	2.530	0.670	-0.001	3.199	-0.03%	131%
Cwm Taf Fechan woodlands_8	Tree	1.759	0.142	2.435	2.530	0.670	-0.002	3.198	-0.07%	131%
Cwm Taf Fechan woodlands_9	Tree	1.759	0.142	2.435	2.530	0.670	0.000	3.200	-0.01%	131%
Cwm Taf Fechan woodlands_10	Tree	1.759	0.142	2.435	2.530	0.670	0.000	3.200	0.01%	131%
Cwm Taf Fechan woodlands_11	Tree	1.759	0.142	2.435	2.530	0.670	0.001	3.201	0.03%	131%
Cwm Taf Fechan woodlands_12	Tree	1.759	0.142	2.435	2.530	0.670	0.001	3.201	0.06%	131%
Cwm Taf Fechan woodlands_13	Tree	1.759	0.142	2.435	2.530	0.670	0.002	3.202	0.07%	131%
Cwm Taf Fechan woodlands_14	Tree	1.759	0.142	2.435	2.530	0.670	0.002	3.202	0.08%	131%
Cwm Taf Fechan woodlands_15	Tree	1.759	0.142	2.435	2.530	0.670	0.002	3.202	0.08%	131%
Cwm Taf Fechan woodlands_16	Tree	1.759	0.142	2.435	2.530	0.670	0.002	3.202	0.09%	132%
Cwm Taf Fechan woodlands_17	Tree	1.759	0.142	2.435	2.530	0.670	0.002	3.202	0.10%	132%
Cwm Taf Fechan woodlands_18	Tree	1.759	0.142	2.435	2.530	0.670	0.002	3.202	0.10%	132%
Cwm Taf Fechan woodlands_19	Tree	1.759	0.142	2.435	2.530	0.670	0.002	3.202	0.10%	132%
Bryniau_A_0	Non tree	1.740	0.440	2.180	1.630	0.510	0.000	2.140	0.00%	98%
Bryniau_A_1	Non tree	1.740	0.440	2.180	1.630	0.510	0.000	2.140	0.00%	98%
Bryniau_A_2	Non tree	1.740	0.440	2.180	1.630	0.510	0.000	2.140	0.00%	98%
Bryniau_A_3	Non tree	1.740	0.440	2.180	1.630	0.510	0.000	2.140	0.00%	98%
Bryniau_A_4	Non tree	1.740	0.440	2.180	1.630	0.510	0.000	2.140	0.00%	98%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Bryniau_A_5	Non tree	1.740	0.440	2.180	1.630	0.510	0.000	2.140	0.00%	98%
Bryniau_A_6	Non tree	1.740	0.440	2.180	1.630	0.510	0.000	2.140	0.00%	98%
Bryniau_A_7	Non tree	1.740	0.440	2.180	1.630	0.510	0.000	2.140	0.00%	98%
Bryniau_A_8	Non tree	1.740	0.440	2.180	1.630	0.510	0.038	2.178	1.74%	100%
Bryniau_A_9	Non tree	1.740	0.440	2.180	1.630	0.510	0.026	2.166	1.17%	99%
Bryniau_A_10	Non tree	1.740	0.440	2.180	1.630	0.510	0.020	2.160	0.90%	99%
Bryniau_A_11	Non tree	1.740	0.440	2.180	1.630	0.510	0.016	2.156	0.74%	99%
Bryniau_A_12	Non tree	1.740	0.440	2.180	1.630	0.510	0.014	2.154	0.65%	99%
Bryniau_A_13	Non tree	1.740	0.440	2.180	1.630	0.510	0.012	2.152	0.56%	99%
Bryniau_A_14	Non tree	1.740	0.440	2.180	1.630	0.510	0.011	2.151	0.50%	99%
Bryniau_A_15	Non tree	1.740	0.440	2.180	1.630	0.510	0.010	2.150	0.45%	99%
Bryniau_B_0	Non tree	1.740	0.440	2.180	1.630	0.510	0.018	2.158	0.82%	99%
Bryniau_B_1	Non tree	1.740	0.440	2.180	1.630	0.510	0.012	2.152	0.56%	99%
Bryniau_B_2	Non tree	1.740	0.440	2.180	1.630	0.510	0.010	2.150	0.45%	99%
Bryniau_B_3	Non tree	1.740	0.440	2.180	1.630	0.510	0.009	2.149	0.39%	99%
Bryniau_B_4	Non tree	1.740	0.440	2.180	1.630	0.510	0.008	2.148	0.36%	99%
Bryniau_B_5	Non tree	1.740	0.440	2.180	1.630	0.510	0.007	2.147	0.34%	99%
Bryniau_B_6	Non tree	1.740	0.440	2.180	1.630	0.510	0.007	2.147	0.32%	98%
Bryniau_B_7	Non tree	1.740	0.440	2.180	1.630	0.510	0.007	2.147	0.31%	98%
Bryniau_B_8	Non tree	1.740	0.440	2.180	1.630	0.510	0.007	2.147	0.30%	98%
Bryniau_B_9	Non tree	1.740	0.440	2.180	1.630	0.510	0.007	2.147	0.30%	98%
Bryniau_B_10	Non tree	1.740	0.440	2.180	1.630	0.510	0.007	2.147	0.30%	98%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Pan March and Traed y Milwyr, Llechryd_0	Non tree	0.870	0.540	1.420	1.630	0.510	0.055	2.195	3.89%	155%
Pan March and Traed y Milwyr, Llechryd_1	Non tree	0.870	0.540	1.420	1.630	0.510	0.030	2.170	2.14%	153%
Pan March and Traed y Milwyr, Llechryd_2	Non tree	0.870	0.540	1.420	1.630	0.510	0.017	2.157	1.19%	152%
Pan March and Traed y Milwyr, Llechryd_3	Non tree	0.870	0.540	1.420	1.630	0.510	0.022	2.162	1.52%	152%
Pan March and Traed y Milwyr, Llechryd_4	Non tree	0.870	0.540	1.420	1.630	0.510	0.014	2.154	0.98%	152%
Pan March and Traed y Milwyr, Llechryd_5	Non tree	0.870	0.540	1.420	1.630	0.510	0.010	2.150	0.73%	151%
Pan March and Traed y Milwyr, Llechryd_6	Non tree	0.870	0.540	1.420	1.630	0.510	0.012	2.152	0.83%	152%
Pan March and Traed y Milwyr, Llechryd_7	Non tree	0.870	0.540	1.420	1.630	0.510	0.009	2.149	0.64%	151%
Pan March and Traed y Milwyr, Llechryd_8	Non tree	0.870	0.540	1.420	1.630	0.510	0.008	2.148	0.58%	151%
Pan March and Traed y Milwyr, Llechryd_9	Non tree	0.870	0.540	1.420	1.630	0.510	0.008	2.148	0.53%	151%
Pan March and Traed y Milwyr, Llechryd_10	Non tree	0.870	0.540	1.420	1.630	0.510	0.007	2.147	0.48%	151%
Pan March and Traed y Milwyr, Llechryd_11	Non tree	0.870	0.540	1.420	1.630	0.510	0.006	2.146	0.45%	151%
Pan March and Traed y Milwyr, Llechryd_12	Non tree	0.870	0.540	1.420	1.630	0.510	0.006	2.146	0.42%	151%
Pan March and Traed y Milwyr, Llechryd_13	Non tree	0.870	0.540	1.420	1.630	0.510	0.005	2.145	0.39%	151%
Pan March and Traed y Milwyr, Llechryd_14	Non tree	0.870	0.540	1.420	1.630	0.510	0.005	2.145	0.35%	151%
Pan March and Traed y Milwyr, Llechryd_15	Non tree	0.870	0.540	1.420	1.630	0.510	0.005	2.145	0.36%	151%
Pan March and Traed y Milwyr, Llechryd_16	Non tree	0.870	0.540	1.420	1.630	0.510	0.005	2.145	0.33%	151%
Pan March and Traed y Milwyr, Llechryd_17	Non tree	0.870	0.540	1.420	1.630	0.510	0.005	2.145	0.32%	151%
Pan March and Traed y Milwyr, Llechryd_18	Non tree	0.870	0.540	1.420	1.630	0.510	0.004	2.144	0.30%	151%
Pan March and Traed y Milwyr, Llechryd_19	Non tree	0.870	0.540	1.420	1.630	0.510	0.004	2.144	0.29%	151%
Pan March and Traed y Milwyr, Llechryd_20	Non tree	0.870	0.540	1.420	1.630	0.510	0.004	2.144	0.26%	151%
East Llwydcoed_0	Non tree	4.040	0.850	4.900	2.050	0.580	0.007	2.637	0.15%	54%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
East Llwydcoed_6	Non tree	4.040	0.850	4.900	2.050	0.580	0.003	2.633	0.07%	54%
East Llwydcoed_7	Non tree	4.040	0.850	4.900	2.050	0.580	0.003	2.633	0.06%	54%
East Llwydcoed_8	Non tree	4.040	0.850	4.900	2.050	0.580	0.003	2.633	0.05%	54%
East Llwydcoed_9	Non tree	4.040	0.850	4.900	2.050	0.580	0.003	2.633	0.05%	54%
East Llwydcoed_10	Non tree	4.040	0.850	4.900	2.050	0.580	0.002	2.632	0.05%	54%
East Llwydcoed_11	Non tree	4.040	0.850	4.900	2.050	0.580	0.002	2.632	0.04%	54%
East Llwydcoed_12	Non tree	4.040	0.850	4.900	2.050	0.580	0.002	2.632	0.04%	54%
East Llwydcoed_13	Non tree	4.040	0.850	4.900	2.050	0.580	0.002	2.632	0.04%	54%
East Llwydcoed_14	Non tree	4.040	0.850	4.900	2.050	0.580	0.002	2.632	0.04%	54%
East Llwydcoed_15	Non tree	4.040	0.850	4.900	2.050	0.580	0.002	2.632	0.03%	54%
East Llwydcoed_16	Non tree	4.040	0.850	4.900	2.050	0.580	0.002	2.632	0.03%	54%
East Llwydcoed_17	Non tree	4.040	0.850	4.900	2.050	0.580	0.002	2.632	0.03%	54%
East Llwydcoed_18	Non tree	4.040	0.850	4.900	2.050	0.580	0.001	2.631	0.03%	54%
East Llwydcoed_19	Non tree	4.040	0.850	4.900	2.050	0.580	0.002	2.632	0.03%	54%
Cwm Ffwrdd_0	Tree	1.990	0.500	2.490	2.530	0.670	0.011	3.211	0.42%	129%
Cwm Ffwrdd_1	Tree	1.990	0.500	2.490	2.530	0.670	0.007	3.207	0.29%	129%
Cwm Ffwrdd_2	Tree	1.990	0.500	2.490	2.530	0.670	0.006	3.206	0.24%	129%
Cwm Ffwrdd_3	Tree	1.990	0.500	2.490	2.530	0.670	0.005	3.205	0.21%	129%
Cwm Ffwrdd_4	Tree	1.990	0.500	2.490	2.530	0.670	0.004	3.204	0.18%	129%
Cwm Ffwrdd_5	Tree	1.990	0.500	2.490	2.530	0.670	0.004	3.204	0.15%	129%
Cwm Ffwrdd_6	Tree	1.990	0.500	2.490	2.530	0.670	0.004	3.204	0.15%	129%
Cwm Ffwrdd_7	Tree	1.990	0.500	2.490	2.530	0.670	0.004	3.204	0.14%	129%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Cwm Ffwrdd_8	Tree	1.990	0.500	2.490	2.530	0.670	0.003	3.203	0.13%	129%
Cwm Ffwrdd_9	Tree	1.990	0.500	2.490	2.530	0.670	0.003	3.203	0.12%	129%
Cwm Ffwrdd_10	Tree	1.990	0.500	2.490	2.530	0.670	0.003	3.203	0.12%	129%
Cwm Ffwrdd_11	Tree	1.990	0.500	2.490	2.530	0.670	0.003	3.203	0.12%	129%
Cwm Ffwrdd_12	Tree	1.990	0.500	2.490	2.530	0.670	0.003	3.203	0.10%	129%
Cwm Ffwrdd_13	Tree	1.990	0.500	2.490	2.530	0.670	0.002	3.202	0.09%	129%
Cwm Ffwrdd_14	Tree	1.990	0.500	2.490	2.530	0.670	0.002	3.202	0.09%	129%
Cwm Ffwrdd_15	Tree	1.990	0.500	2.490	2.530	0.670	0.002	3.202	0.09%	129%
Cwm Ffwrdd_16	Tree	1.990	0.500	2.490	2.530	0.670	0.002	3.202	0.08%	129%
Cwm Ffwrdd_17	Tree	1.990	0.500	2.490	2.530	0.670	0.002	3.202	0.08%	129%
Cwm Ffwrdd_18	Tree	1.990	0.500	2.490	2.530	0.670	0.002	3.202	0.08%	129%
Cwm Ffwrdd_19	Tree	1.990	0.500	2.490	2.530	0.670	0.002	3.202	0.08%	129%
Cwm glo a glyndyrys_0	Non tree	0.360	0.223	0.726	1.820	0.580	-0.002	2.398	-0.22%	330%
Cwm glo a glyndyrys_1	Non tree	0.360	0.223	0.726	1.820	0.580	-0.001	2.399	-0.15%	330%
Cwm glo a glyndyrys_2	Non tree	0.360	0.223	0.726	1.820	0.580	-0.001	2.399	-0.12%	330%
Cwm glo a glyndyrys_3	Non tree	0.360	0.223	0.726	1.820	0.580	-0.001	2.399	-0.10%	330%
Cwm glo a glyndyrys_4	Non tree	0.360	0.223	0.726	1.820	0.580	-0.001	2.399	-0.07%	331%
Cwm glo a glyndyrys_5	Non tree	0.360	0.223	0.726	1.820	0.580	0.000	2.400	-0.05%	331%
Cwm glo a glyndyrys_6	Non tree	0.360	0.223	0.726	1.820	0.580	0.000	2.400	-0.02%	331%
Cwm glo a glyndyrys_7	Non tree	0.360	0.223	0.726	1.820	0.580	0.000	2.400	-0.02%	331%
Cwm glo a glyndyrys_8	Non tree	0.360	0.223	0.726	1.820	0.580	0.000	2.400	0.00%	331%
Cwm glo a glyndyrys_9	Non tree	0.360	0.223	0.726	1.820	0.580	0.000	2.400	0.00%	331%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Cwm glo a glyndyrys_10	Non tree	0.360	0.223	0.726	1.820	0.580	0.000	2.400	0.00%	331%
Cwm glo a glyndyrys_11	Non tree	0.360	0.223	0.726	1.820	0.580	0.000	2.400	0.00%	331%
Cwm glo a glyndyrys_12	Non tree	0.360	0.223	0.726	1.820	0.580	0.000	2.400	0.00%	331%
Cwm glo a glyndyrys_13	Non tree	0.360	0.223	0.726	1.820	0.580	0.000	2.400	0.00%	331%
Cwm glo a glyndyrys_14	Non tree	0.360	0.223	0.726	1.820	0.580	0.000	2.400	0.02%	331%
Hirwaun Common SINC_0	Non tree	0.580	0.580	1.160	1.570	0.530	0.000	2.100	0.00%	181%
Hirwaun Common SINC_1	Non tree	0.580	0.580	1.160	1.570	0.530	0.000	2.100	0.00%	181%
Hirwaun Common SINC_2	Non tree	0.580	0.580	1.160	1.570	0.530	0.000	2.100	0.00%	181%
Hirwaun Common SINC_3	Non tree	0.580	0.580	1.160	1.570	0.530	0.000	2.100	0.00%	181%
Hirwaun Common SINC_4	Non tree	0.580	0.580	1.160	1.570	0.530	0.000	2.100	0.00%	181%
Hirwaun Common SINC_5	Non tree	0.580	0.580	1.160	1.570	0.530	0.000	2.100	0.00%	181%
Hirwaun Common SINC_6	Non tree	0.580	0.580	1.160	1.570	0.530	0.000	2.100	0.00%	181%
Hirwaun Common SINC_7	Non tree	0.580	0.580	1.160	1.570	0.530	0.006	2.106	0.55%	182%
Hirwaun Common SINC_8	Non tree	0.580	0.580	1.160	1.570	0.530	0.000	2.100	0.01%	181%
Hirwaun Common SINC_9	Non tree	0.580	0.580	1.160	1.570	0.530	-0.002	2.098	-0.17%	181%
Hirwaun Common SINC_10	Non tree	0.580	0.580	1.160	1.570	0.530	-0.003	2.097	-0.22%	181%
Hirwaun Common SINC_11	Non tree	0.580	0.580	1.160	1.570	0.530	-0.002	2.098	-0.21%	181%
Hirwaun Common SINC_12	Non tree	0.580	0.580	1.160	1.570	0.530	-0.002	2.098	-0.19%	181%
Hirwaun Common SINC_13	Non tree	0.580	0.580	1.160	1.570	0.530	-0.002	2.098	-0.17%	181%
Hirwaun Common SINC_14	Non tree	0.580	0.580	1.160	1.570	0.530	-0.002	2.098	-0.14%	181%
Hirwaun Common SINC_15	Non tree	0.580	0.580	1.160	1.570	0.530	-0.001	2.099	-0.11%	181%
Hirwaun Common SINC_16	Non tree	0.580	0.580	1.160	1.570	0.530	-0.001	2.099	-0.10%	181%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Hirwaun Common SINC_17	Non tree	0.580	0.580	1.160	1.570	0.530	-0.001	2.099	-0.08%	181%
Hirwaun Common SINC_18	Non tree	0.580	0.580	1.160	1.570	0.530	-0.001	2.099	-0.06%	181%
Hirwaun Common SINC_19	Non tree	0.580	0.580	1.160	1.570	0.530	-0.001	2.099	-0.05%	181%
Hirwaun Common SINC_20	Non tree	0.580	0.580	1.160	1.570	0.530	-0.001	2.099	-0.05%	181%
Hirwaun Common SINC_21	Non tree	0.580	0.580	1.160	1.570	0.530	0.000	2.100	-0.04%	181%
Hirwaun Common SINC_22	Non tree	0.580	0.580	1.160	1.570	0.530	0.000	2.100	-0.02%	181%
Llwydcoed Slopes_0	Non tree	4.050	0.850	4.910	1.810	0.610	-0.012	2.408	-0.25%	49%
Llwydcoed Slopes_1	Non tree	4.050	0.850	4.910	1.810	0.610	-0.002	2.418	-0.05%	49%
Llwydcoed Slopes_2	Non tree	4.050	0.850	4.910	1.810	0.610	0.001	2.421	0.02%	49%
Llwydcoed Slopes_3	Non tree	4.050	0.850	4.910	1.810	0.610	0.002	2.422	0.05%	49%
Llwydcoed Slopes_4	Non tree	4.050	0.850	4.910	1.810	0.610	0.003	2.423	0.06%	49%
Llwydcoed Slopes_5	Non tree	4.050	0.850	4.910	1.810	0.610	0.003	2.423	0.07%	49%
Llwydcoed Slopes_6	Non tree	4.050	0.850	4.910	1.810	0.610	0.003	2.423	0.07%	49%
Llwydcoed Slopes_7	Non tree	4.050	0.850	4.910	1.810	0.610	0.003	2.423	0.07%	49%
Llwydcoed Slopes_8	Non tree	4.050	0.850	4.910	1.810	0.610	0.003	2.423	0.07%	49%
Llwydcoed Slopes_9	Non tree	4.050	0.850	4.910	1.810	0.610	0.003	2.423	0.07%	49%
Llwydcoed Slopes_10	Non tree	4.050	0.850	4.910	1.810	0.610	0.003	2.423	0.06%	49%
Llwydcoed Slopes_11	Non tree	4.050	0.850	4.910	1.810	0.610	0.003	2.423	0.06%	49%
Llwydcoed Slopes_12	Non tree	4.050	0.850	4.910	1.810	0.610	0.003	2.423	0.06%	49%
Llwydcoed Slopes_13	Non tree	4.050	0.850	4.910	1.810	0.610	0.003	2.423	0.06%	49%
Llwydcoed Slopes_14	Non tree	4.050	0.850	4.910	1.810	0.610	0.003	2.423	0.06%	49%
Llwydcoed Slopes_15	Non tree	4.050	0.850	4.910	1.810	0.610	0.003	2.423	0.06%	49%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Llwydcoed Slopes_16	Non tree	4.050	0.850	4.910	1.810	0.610	0.003	2.423	0.05%	49%
Llwydcoed Slopes_17	Non tree	4.050	0.850	4.910	1.810	0.610	0.003	2.423	0.05%	49%
Llwydcoed Slopes_18	Non tree	4.050	0.850	4.910	1.810	0.610	0.002	2.422	0.05%	49%
Llwydcoed Slopes_19	Non tree	4.050	0.850	4.910	1.810	0.610	0.002	2.422	0.05%	49%
Llwydcoed Slopes_20	Non tree	4.050	0.850	4.910	1.810	0.610	0.002	2.422	0.05%	49%
Llwydcoed Slopes_21	Non tree	4.050	0.850	4.910	1.810	0.610	0.002	2.422	0.05%	49%
Llwydcoed Slopes_22	Non tree	4.050	0.850	4.910	1.810	0.610	0.002	2.422	0.05%	49%
Llwydcoed Slopes_23	Non tree	4.050	0.850	4.910	1.810	0.610	0.002	2.422	0.04%	49%
Llwydcoed Slopes_24	Non tree	4.050	0.850	4.910	1.810	0.610	0.002	2.422	0.04%	49%
Llwydcoed Slopes_25	Non tree	4.050	0.850	4.910	1.810	0.610	0.002	2.422	0.04%	49%
Llwydcoed Slopes_26	Non tree	4.050	0.850	4.910	1.810	0.610	0.002	2.422	0.05%	49%
Llwydcoed Slopes_27	Non tree	4.050	0.850	4.910	1.810	0.610	0.002	2.422	0.05%	49%
Bryniau_B_11	Non tree	1.740	0.440	2.180	1.630	0.510	0.006	2.146	0.29%	98%
Bryniau_B_12	Non tree	1.740	0.440	2.180	1.630	0.510	0.006	2.146	0.29%	98%
Bryniau_B_13	Non tree	1.740	0.440	2.180	1.630	0.510	0.006	2.146	0.29%	98%
Bryniau_B_14	Non tree	1.740	0.440	2.180	1.630	0.510	0.006	2.146	0.29%	98%
Bryniau_B_15	Non tree	1.740	0.440	2.180	1.630	0.510	0.006	2.146	0.29%	98%
Bryniau_B_16	Non tree	1.740	0.440	2.180	1.630	0.510	0.006	2.146	0.29%	98%
Bryniau_B_17	Non tree	1.740	0.440	2.180	1.630	0.510	0.006	2.146	0.30%	98%
Bryniau_B_18	Non tree	1.740	0.440	2.180	1.630	0.510	0.006	2.146	0.30%	98%
Bryn Defaid Heath_0	Non tree	1.200	0.510	1.710	1.820	0.580	0.015	2.415	0.86%	141%
Bryn Defaid Heath_1	Non tree	1.200	0.510	1.710	1.820	0.580	0.006	2.406	0.35%	141%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Bryn Defaid Heath_2	Non tree	1.200	0.510	1.710	1.820	0.580	0.004	2.404	0.24%	141%
Bryn Defaid Heath_3	Non tree	1.200	0.510	1.710	1.820	0.580	0.003	2.403	0.19%	141%
Bryn Defaid Heath_4	Non tree	1.200	0.510	1.710	1.820	0.580	0.003	2.403	0.16%	141%
Bryn Defaid Heath_5	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.14%	140%
Bryn Defaid Heath_6	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.13%	140%
Bryn Defaid Heath_7	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.13%	140%
Bryn Defaid Heath_8	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.12%	140%
Bryn Defaid Heath_9	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.11%	140%
Bryn Defaid Heath_10	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.10%	140%
Bryn Defaid Heath_11	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.11%	140%
Bryn Defaid Heath_12	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.10%	140%
Bryn Defaid Heath_13	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.10%	140%
Bryn Defaid Heath_14	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.09%	140%
Bryn Defaid Heath_15	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.09%	140%
Bryn Defaid Heath_16	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.09%	140%
Bryn Defaid Heath_17	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.09%	140%
Bryn Defaid Heath_18	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.09%	140%
Bryn Defaid Heath_19	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.09%	140%
Bryn Defaid Heath_20	Non tree	1.200	0.510	1.710	1.820	0.580	0.002	2.402	0.09%	140%
Winchfawr West_4	Non tree	0.630	0.860	1.490	1.820	0.580	0.000	2.400	0.00%	161%
Winchfawr West_12	Non tree	0.630	0.860	1.490	1.820	0.580	0.007	2.407	0.47%	162%
Winchfawr West_9	Non tree	0.630	0.860	1.490	1.820	0.580	0.011	2.411	0.73%	162%

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Winchfawr West_0	Non tree	0.630	0.860	1.490	1.820	0.580	0.000	2.400	0.00%	161%
Winchfawr West_1	Non tree	0.630	0.860	1.490	1.820	0.580	0.000	2.400	0.00%	161%
Winchfawr West_6	Non tree	0.630	0.860	1.490	1.820	0.580	0.019	2.419	1.30%	162%
Winchfawr West_11	Non tree	0.630	0.860	1.490	1.820	0.580	0.009	2.409	0.58%	162%
Winchfawr West_8	Non tree	0.630	0.860	1.490	1.820	0.580	0.013	2.413	0.85%	162%
Winchfawr West_3	Non tree	0.630	0.860	1.490	1.820	0.580	0.000	2.400	0.00%	161%
Winchfawr West_5	Non tree	0.630	0.860	1.490	1.820	0.580	0.026	2.426	1.73%	163%
Winchfawr West_10	Non tree	0.630	0.860	1.490	1.820	0.580	0.010	2.410	0.65%	162%
Winchfawr West_14	Non tree	0.630	0.860	1.490	1.820	0.580	0.006	2.406	0.43%	162%
Winchfawr West_7	Non tree	0.630	0.860	1.490	1.820	0.580	0.015	2.415	1.03%	162%
Winchfawr West_2	Non tree	0.630	0.860	1.490	1.820	0.580	0.000	2.400	0.00%	161%
Winchfawr West_13	Non tree	0.630	0.860	1.490	1.820	0.580	0.008	2.408	0.51%	162%
Proposal - Hirwaun Ponds North_0	Non tree	N/A	N/A	N/A	1.570	0.530	0.004	2.104	0.00%	N/A
Proposal - Hirwaun Ponds North_1	Non tree	N/A	N/A	N/A	1.570	0.530	0.002	2.102	0.00%	N/A
Proposal - Hirwaun Ponds North_2	Non tree	N/A	N/A	N/A	1.570	0.530	0.002	2.102	0.00%	N/A
Proposal - Hirwaun Ponds North_3	Non tree	N/A	N/A	N/A	1.570	0.530	0.001	2.101	0.00%	N/A
Proposal - Hirwaun Ponds North_4	Non tree	N/A	N/A	N/A	1.570	0.530	0.001	2.101	0.00%	N/A
Proposal - Hirwaun Ponds North_5	Non tree	N/A	N/A	N/A	1.570	0.530	0.001	2.101	0.00%	N/A
Proposal - Hirwaun Ponds North_6	Non tree	N/A	N/A	N/A	1.570	0.530	0.001	2.101	0.00%	N/A
Proposal - Hirwaun Ponds North_7	Non tree	N/A	N/A	N/A	1.570	0.530	0.001	2.101	0.00%	N/A
Proposal - Hirwaun Ponds North_8	Non tree	N/A	N/A	N/A	1.570	0.530	0.001	2.101	0.00%	N/A
Proposal - Hirwaun Ponds North_9	Non tree	N/A	N/A	N/A	1.570	0.530	0.000	2.100	0.00%	N/A

Receptor	Veg type	CLMaxS	CLMinN	CLMaxN	Existing Deposition (N)	Existing Deposition (S)	Scheme Contribution N (PC)	Total acid deposition (PEC)	PC / CL	PEC / CL
		kEqH+/ha-year							%	
Proposal - Hirwaun Ponds North_10	Non tree	N/A	N/A	N/A	1.570	0.530	0.001	2.101	0.00%	N/A
Marsh Fritillary_0	Non tree	1.780	0.440	2.220	1.810	0.610	0.001	2.421	0.06%	109%
Marsh Fritillary_1	Non tree	1.780	0.440	2.220	1.810	0.610	0.001	2.421	0.06%	109%
Marsh Fritillary_2	Non tree	1.780	0.440	2.220	1.810	0.610	0.001	2.421	0.06%	109%
Marsh Fritillary_3	Non tree	1.780	0.440	2.220	1.810	0.610	0.001	2.421	0.06%	109%
Marsh Fritillary_4	Non tree	1.780	0.440	2.220	1.810	0.610	0.001	2.421	0.06%	109%
Marsh Fritillary_5	Non tree	1.780	0.440	2.220	1.810	0.610	0.001	2.421	0.06%	109%
Marsh Fritillary_6	Non tree	1.780	0.440	2.220	1.810	0.610	0.001	2.421	0.06%	109%
Marsh Fritillary_7	Non tree	1.780	0.440	2.220	1.810	0.610	0.001	2.421	0.05%	109%

N/A Site is not sensitive to acid deposition

Appendix 9A – Legislative and Policy Background

Table 9A.1: Legislation

Legislation	Relevant points	How it is addressed through Environmental Statement
Ancient Monuments and Archaeological Areas Act 1979	Scheduled Monuments are protected by law and are, by definition, of national importance. The Act creates criminal offences in respect of unauthorised works to, or the destruction or damage of, Scheduled Monuments.	Scheduled Monuments with the potential to be impacted by the proposed scheme have been identified and the design changed to avoid impact. The proposed scheme is not predicted to have a significant impact on these assets.
Planning (Listed Buildings and Conservation Areas) Act 1990	Planning authorities are required to have special regard to the desirability of preserving a Listed Building, its setting or any features of special architectural or historic interest which it may possess. Designation as a Listed Building provides planning authorities with additional controls over the demolition and alteration of historic buildings through the process of gaining Listed Building Consent.	Listed Buildings with the potential to be impacted by the proposed scheme have been identified during assessment and the design changed to avoid impact. The proposed scheme is not predicted to have a significant impact on these assets.
Historic Environment (Wales) Act, 2016	An Act of the National Assembly of Wales to make provision amending certain aspects of the law relating to ancient monuments and listed buildings; to establish a register of historic parks and gardens; to require local planning authorities to establish historic environment records relating to their areas; to establish an Advisory Panel for the Welsh Historic Environment; and for connected purposes.	The key change affecting cultural heritage assets identified during assessment is the designation of Registered Parks and Gardens as a statutory designation. This results in changes to the potential impacts on such assets and puts a greater importance on the mitigation of impact in regard to the planning process.

Table 9A.2 : National Planning Policy

Policy Document	Relevant points	How it is addressed through Environmental Statement
Wales Spatial Plan (Welsh Assembly Government, 2008b)	The Wales Spatial Plan (WSP) sets out to ensure that planning proposals throughout Wales are integrated, sustainable and made in compliance with the shared vision described in the WSP for managing change in the historic environment.	Assets comprising the 'historic environment' and identified as being within the study area for the proposed scheme have been assessed in regard to their value, the impact of the proposed scheme, mitigation measures and residual effects, thus meeting requirements of the WSP for an integrated an sustainable plan for managing change to the historic environment.

Policy Document	Relevant points	How it is addressed through Environmental Statement
Planning Policy Wales Edition 9 (PPW) (Welsh Assembly Government, 2016a) – Chapter 6 (Historic Environment)	PPW sets out the importance of cultural heritage assets and confirms that it is necessary to consider protection of the historic environment in decision-making.	Environmental Statement identifies heritage assets likely to be affected as a result of construction and operation of the proposed scheme. Proposed mitigation measures are designed to minimise impact on these heritage assets.
Technical Advice Note (Wales) 12: Design (Welsh Government, 2014b)	The setting and views of historic buildings, parks and gardens and archaeological sites should be considered during the planning process and the design of a development of a proposed scheme and, if necessary, how setting and views should be protected.	Cultural Heritage input into the Environmental Statement identifies those heritage assets where setting is likely to be affected as a result of construction and operation of the proposed scheme. Proposed mitigation measures are designed to minimise impact on the setting of heritage assets.
Technical Advice Note 24 – The Historic Environment (2017)	This guidance reflects the changes to cultural heritage protection resulting from the Historic Environment (Wales) Act 2016. It notes the importance of archaeological remains, schedule monuments, listed buildings, conservation areas, historic parks and gardens and historic landscapes.	Environmental Statement identifies heritage assets likely to be affected as a result of construction and operation of the proposed scheme. Proposed mitigation measures are designed to minimise impact on these heritage assets.
Hedgerow Regulations 1997 (amended 2003)	This affords protection to hedgerows which are deemed important for their ecological and archaeological / historic significance across England and Wales. The Regulations set out criteria to be used to establish whether a particular hedgerow is important and provides guidance regarding the replacement of such hedgerows and measures required to ensure good practice is adhered to.	No hedgerows assessed as being important under the Hedgerow Regulations have been identified within the study area. A number of drystone wall and turfstone walls have been identified in the Cultural Heritage ES chapter, however the Hedgerow Regulations does not include drystone or turfstone walls, unless there is a hedge located on the summit of the wall.

Table 9A.3: Local Planning Policy

Policy Document	Relevant points	How it is addressed through Environmental Statement
Rhondda Cynon Taf County Borough Council Local Development Plan up to 2021 (LDP) (Adopted March 2011) (RCTCBC, 2011a)	Policy CS 1: Development in the North In the Northern Strategy Area the emphasis will be on building strong, sustainable communities. This would be achieved by: 1. Promoting residential and commercial development in locations which would support and reinforce the roles of Principal Towns and Key Settlements; 2. Providing high quality, affordable accommodation that promotes	Cultural Heritage input into the Environmental Statement identifies aspects of the built and historic environment that may be affected by the proposed scheme and proposes mitigation measures designed to minimise impact, thereby contributing to the preservation of the local setting and cultural and historical qualities of the area.

Policy Document	Relevant points	How it is addressed through Environmental Statement
	diversity in the residential market; 3. Ensuring the removal and remediation of dereliction by promoting the re-use of under used and previously developed land and buildings; 4. Promoting large scale regeneration schemes in the Principal Town of Aberdare and in the Key Settlements of Mountain Ash, Ferndale and Treorchy; 5. Promoting accessibility by securing investment in new roads, public transport improvements, walking and cycling; 6. Encouraging a strong, diverse economy which supports traditional employment and promotes new forms of employment in the leisure and tourism sectors; 7. Protecting the cultural identity of the Strategy Area by protecting historic built heritage and the natural environment; 8. Promoting and enhancing transport infrastructure services to support growth and investment; and 9. Reducing daily out commuting by private car and promoting sustainable forms of travel. Policy EB101: The Historic Built Environment (SPG) 2010. This Supplementary Planning Guidance (SPG) gives detailed guidance to owners and occupiers of land and buildings within the historic built environment, and anyone wishing to develop within it or make alterations to it, and is a material consideration in the determination of relevant planning applications.	
Merthyr Tydfil County Borough Council Local Development Plan 2006-2021 (LDP) (Adopted May 2011) (MTCBC, 2011)	Strategic Objective 11 To ensure the continued protection and enhancement of the natural, cultural, built and historic environment. Policy BW6: Townscape and Built Heritage The Council will protect and support the enhancement of the unique built heritage of the County Borough.	Cultural Heritage input into the Environmental Statement identifies aspects of the built and historic environment that may be affected by the proposed scheme and proposes mitigation measures designed to minimise impact, thereby contributing to the preservation of the local setting and cultural and historical qualities of the area.

Policy Document	Relevant points	How it is addressed through Environmental Statement
	Development proposals would only be permitted where it can be demonstrated they would preserve or enhance the architectural quality, character and setting of any of the following: • listed Buildings; • scheduled Ancient Monuments; • conservation Areas; • registered Historic Parks and Gardens of Special Historic Interest; • townscape character and the local distinctiveness of settlements; and • other historic, archaeological and cultural features of acknowledged importance. *Policy AS4: Historic Landscape* There would be a presumption in favour of the protection, conservation and enhancement of: • Gelligaer Common; and • the main settlement of Merthyr Tydfil in accord with their status as landscapes of Historic Interest in Wales. The extent of these areas is shown on the LDP Proposals Map and proposals for development would only be permitted where they would maintain or enhance the character and integrity of the landscape.	
Merthyr Tydfil County Borough Council Built Heritage Strategy and Action Plan (2008)	The principal objectives of the Brief for this Built Heritage Strategy are: • to provide the Council with a costed and detailed Action Plan to protect and enhance its heritage assets, including listed and locally listed buildings, ancient monuments, and conservation areas; • to assess the Council's management of these heritage assets, and suggest areas for improvement; and • to promote Merthyr Tydfil in terms of its tourism and cultural value.	Cultural Heritage input into the Environmental Statement identifies aspects of the built and historic environment that may be affected by the proposed scheme and proposes mitigation measures designed to minimise impact, thereby contributing to the preservation of the local setting and cultural and historical qualities of the area.
Brecon Beacons National Park Local	Overarching Policies: SP1 – National Park Policy. Sets out	Cultural Heritage input into the Environmental Statement identifies aspects

Policy Document	Relevant points	How it is addressed through Environmental Statement
Development Plan (adopted December 2013)	that development should be permitted where it conserves and enhanced the cultural heritage of the Park. Policy 1 – Appropriate Development in the National Park. Sets out that the potential effects on cultural heritage should be considered and design for development should be appropriate taking into this into account. SP2 – Major Development in the National Park – Strategic Policy. Sets out that major development should only be consented in the National Park in exceptional circumstances and where they are proven in the public interest. SP3 – Environmental Protection – Strategic Policy. Sets out that the potential effects on cultural heritage should be considered in determining planning applications. Policy 15 – Listed Buildings Policy 16 – Demolition of Listed Buildings Policy 17 – The Settings of Listed Buildings Policy 19 – Development affecting Conservation Areas Policy 20 – Historic Parks and Gardens Policy 21 – Historic Landscapes Policy 22 – Areas of Archaeological Evaluation CYC LP1 – Enabling Appropriate Development	of the built and historic environment that may be affected by the proposed scheme and proposes mitigation measures designed to minimise impact, thereby contributing to the preservation of the local setting and cultural and historical qualities of the area.
Caerphilly County Borough Council Local Development Plan (adopted November 2010)	There are no policies that are of relevance to the assessment of cultural heritage effects	Cultural Heritage input into the Environmental Statement identifies aspects of the built and historic environment that may be affected by the proposed scheme and proposes mitigation measures designed to minimise impact, thereby contributing to the preservation of the local setting and cultural and historical qualities of the area.

Page left intentionally blank

Appendix 9B – Cultural Heritage Gazetteer

Asset Number	1
Asset Name	Vale of Neath Railway
Sub Topic	Archaeological Remains
NGR	SN8913006480
Easting	289130
Northing	206480
Parish	Glynneath
Broad Type	Railway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	02500.0m
Condition	Good
Period	19th Century
Value	Low
Description	The line was initially designed for passenger travel and played an important role in the development of mining in the Vale of Neath; carrying coal, iron and chemicals. The line was closed in 1985 with the section between Neath and Glynneath currently being restored by the Vale of Neath Railway Society as a tourist attraction. The railway line appears twice within the study area for the proposed scheme; once, for a distance of approximately 1200 m, to the north of the existing A465 west of Hirwaun. At its closest point the line is located less than 40 m to the north of the proposed scheme. The line then appears within the study area to the east of Hirwaun, where it runs for approximately 750 m west to east, bisecting both the existing A465 and the footprint of the proposed scheme. The construction of the Vale of Neath Railway was authorised by Act of Parliament in 1846. The first trains ran between Neath and Pontypool in 1863 and in the same year the Vale of Neath Railway amalgamated with the Great Western Railway. The line played an important part in the later development of industry and mining in the Vale of Neath carrying coal, iron and chemicals as well as passengers. In 1967 the section of line from Glynneath to Aberdare was closed. The rest of the line was closed in 1985. [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	2
Asset Name	Tappenden's Tramroad (West)
Sub Topic	Archaeological Remains
NGR	SN8871206736
Easting	288712
Northing	206736
Parish	Glynneath
Broad Type	Tramway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03225.1m
Condition	Damaged
Period	19th Century
Value	Low
Description	It took long deliberation before the construction of a tramroad connecting the ironworks at Llwydcoed and Abernant with the Neath Canal was finally begun. The tramroad was eventually built in two sections; the first by the Neath Canal Company commenced in 1802 from the canal head at Glyn Neath to Wyfra bridge, the second by Homfray, Birch and the Tappendens eastwards from the bridge to the ironworks. The whole tramroad was eventually opened in 1805. The western section ran west from Hirwaun to the Neath canal head at Glyn-Neath. This section was more or less abandoned after the opening of the Aberdare canal and extension of the eastern section. Most of the tramroad route now comprises minor roads and tracks. From Hirwaun this route can be followed along Manchester Place and Meadow Lane; from this point the tramroad route has been interrupted by road construction and and redevelopment. Its route can be picked up again along Rhigos Road. It heads south west through private land and then along a footpath as far as Wyfra Ucha. West of Wyfra Uchaf farm to the Vale of Neath Gliding Club, the route can be traced along a gravelled and tarmaced track. From here the route of the footpath depicted on the map has been diverted and the tramroad lost to land reclamation. West of Graig-y-Nos farm the route can be followed along a tarmaced road, down an incline then along Merthyr and Aberdare Roads. Approximately 16% of the tramroad survives in varying condition, surviving features include; bridge, causeway and inclined plane. [1] [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Roberts, R. & Jones, C. 2006 Southeast Wales Industrial Ironworks Landscape Year 2: transport networks

Asset Number	3
Asset Name	Hirwaun Ponds
Sub Topic	Archaeological Remains
NGR	SN9480005990
Easting	294800
Northing	205990
Parish	Hirwaun
Broad Type	Reservoir
Specific Type	Water Supply and Drainage
Designation	None
Cadw Reference	N/A
HER Reference	01809m
Condition	Fair
Period	19th Century
Value	Negligible
Description	Ponds may have been header reservoirs which were used for enhancing the flow in the Afon Cynon and leats lower down the Valley which served the Hirwaun iron works (no longer extant). [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	4
Asset Name	Site of Building, Glyneath to Aberdare Tramway
Sub Topic	Archaeological Remains
NGR	SN9516005500
Easting	295160
Northing	205500
Parish	Hirwaun
Broad Type	Building
Specific Type	Unassigned
Designation	None
Cadw Reference	N/A
HER Reference	01798m
Condition	Not known
Period	Post-Medieval
Value	Negligible
Description	Small building alongside the Glynneath – Aberdare Tramway, possibly used for stables or for housing a weighing machine. [1] Location overbuilt with modern housing and road infrastructure. [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016

Asset Number	5
Asset Name	The course of the Hirwaun Common Mineral Railway
Sub Topic	Archaeological Remains
NGR	SN9495006180
Easting	294950
Northing	206180
Parish	Hirwaun
Broad Type	Railway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03220m
Condition	Damaged
Period	19th Century
Value	Low
Description	The Hirwaun Common Mineral Railway was marked as a tramroad on the tithe map of approximately 1840 and a conventional locomotive-operated railway on the Ordnance Survey map of approximately 1880. The line can be followed to the west of Hirwaun at SO 9495 0618 where it converges with the Vale of Neath Railway. To the east, the line of the railway follows along Longfield Court where it is crossed by the A465. The 1880 Ordnance Survey shows that the line continues further on to the south-east and a branch line diverges to the south, currently a footpath. The main line eventually crosses the Hirwaun Road. [1] [2] Within Stage 3 of the archaeological programme in 1996, two trenches were evaluated and were located across the route of the tramway, one to assess the presence of possible track / sleeper level, the other to record in section the construction methods used for track bedding. The construction method used for the track bedding is similar to the branch-line of the Hirwaun Common Railway. A series of hogging layers suggest that the track bedding was improved during its use. The location of trenches for the railway plus trenches across the branch-line merged into one large trench. In section there was a small gap between the two suggesting that the branching of both lines was a few metres north of the trench location. No artefacts were recovered from either trenches. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	6
Asset Name	Coal Tips, Bryngelli Estate
Sub Topic	Archaeological Remains
NGR	SN9520005340
Easting	295200
Northing	205340
Parish	Rhigos
Broad Type	Spoil heap
Specific Type	Industrial
Designation	None
Cadw Reference	N/A
HER Reference	03233m
Condition	Near intact
Period	Post-Medieval
Value	Negligible
Description	South of the A465, and close to the second roundabout west of Hirwaun, are extensive coal-tippings that date from the 19th / 20th centuries. Standing around 25 m high and running for 300 m the tips originate from nearby collieries to the south. A number of tramroads are located close-by and may have served the southern extent of the tips. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	7
Asset Name	Turfstone Walled Landscape, Hirwaun
Sub Topic	Archaeological Remains
NGR	SN9525005330
Easting	295250
Northing	205330
Parish	Rhigos
Broad Type	Field boundary
Specific Type	Agriculture and Subsistence
Designation	None
Cadw Reference	N/A
HER Reference	03227m
Condition	Damaged
Period	Post-medieval
Value	Low
Description	Either side of the A465 are the remnants of a turfstone walled landscape which probably predates industrial activity in the area. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	8
Asset Name	Railway A: Aberdare to Rhondda Railway
Sub Topic	Archaeological Remains
NGR	SN9578005140
Easting	295780
Northing	205140
Parish	Hirwaun
Broad Type	Railway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03224m
Condition	Near destroyed
Period	19th Century
Value	Negligible
Description	The course of the Aberdare & Rhondda Railway running roughly west / east, and crossing the proposed line of the A465 near to the crossing over the Nant-y-Bwlch. It is marked on the Ordnance Survey of 1880 as the Aberdare & Rhondda 'main line'. From a bridge over the stream at SO 9531 0508 the line continues east, running to the south of the tennis courts to another bridge where a tramroad crossed the main line (SO9560 0503). [1] Within Stage 3 of the archaeological programme in 1996, an evaluation was undertaken where the proposed scheme severely impacts the site. The excavation revealed the remains (in section) of a track-bed layer constructed of stone hogging. Also present was slag and coke deposits. [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report

Asset Number	9
Asset Name	Hirwaun Common, Inscribed Stone
Sub Topic	Archaeological Remains
NGR	SN9500005000
Easting	295000
Northing	205000
Parish	Rhigos
Broad Type	Inscribed stone
Specific Type	Religious, Ritual and Funerary
Designation	None
Cadw Reference	N/A
HER Reference	01275m
Condition	Not known
Period	Early Medieval
Value	Negligible
Description	An inscribed stone was reported in 1827 to be on Hirwaun Common. Inscription illustrated in original publication: 'ERECOR/MAGLORI/CVNIIAC/FICIT' (= Of Erecor[ius?] [son of] Maglorius. Cuniiac[us] made [it]) All Roman capitals except for cursive forms of G and L, implies Early Christian inscription of late 5th century. Extensive open-cast mining reduces possibility of rediscovering the stone. [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	10
Asset Name	Bute Colliery and Hirwaun Tramway
Sub Topic	Archaeological Remains
NGR	SN9520005050
Easting	295200
Northing	205050
Parish	Rhigos
Broad Type	Tramway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	02498.0m
Condition	Not known
Period	Post-Medieval
Value	Negligible
Description	Course of the dismantled Bute Colliery to Hirwaun Tramway intersects with the preferred route south of A465 and has now been replaced by the Tower Road. To the south at SO 9506 0501 the Bute colliery tramway and the Aberdare to Rhondda Railway appear to converge near an area of open cast workings. [1] [2] Within Stage 3 of the archaeological programme in 1996, two evaluation trenches were excavated in the area where the proposed scheme would impact. The excavation revealed little evidence of a tramroad surface. Below the present road surface was an extensive stony layer which may be the foundation material for the tramroad. Below this was a deep, well sorted layer of shale. There was no evidence of an earlier ground surface. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	11
Asset Name	Knobby Drift Ironstone Pit
Sub Topic	Archaeological Remains
NGR	SN9559004910
Easting	295590
Northing	204910
Parish	Hirwaun
Broad Type	Quarry
Specific Type	Industrial
Designation	None
Cadw Reference	N/A
HER Reference	03232m
Condition	Near destroyed
Period	19th Century
Value	Negligible
Description	This ironstone pit was served by a tramway which fell into disuse before it was surveyed for the Ordnance Survey in the 1870s. The quarry supplied ironstone to the Hirwaun Ironworks during the mid 19th century. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	12
Asset Name	Tramroad B, Branch of the Aberdare to Rhondda Tramway
Sub Topic	Archaeological Remains
NGR	SN9581005120
Easting	295810
Northing	205120
Parish	Hirwaun
Broad Type	Tramway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03223.0m
Condition	Damaged
Period	19th Century
Value	Negligible
Description	Shown on the Ordnance Survey map of 1880 as an abandoned branch of the Aberdare & Rhondda tramroad, continuing south-south-west, presumably to pits, which had vanished by the time of the Ordnance Survey in 1880. The tramroad is built upon an earth bank over 1.5 m high which has been truncated by the later construction of Tramroad C and crosses a stream above a culvert. [1] [2] Within Stage 3 of the archaeological programme in 1996, an evaluation of the site revealed the remains of the tramroad track-bed (in section). The banking is constructed of a clean clayey soil. At the base of the trench was recorded that original ground surface which at the same height as the ground either side of the tramroad bank. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	13
Asset Name	Tramroad C, Hirwaun Tramroad
Sub Topic	Archaeological Remains
NGR	SN9587005100
Easting	295870
Northing	205100
Parish	Hirwaun
Broad Type	Tramway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03231.0m
Condition	Near destroyed
Period	19th Century
Value	Negligible
Description	The course of a tramway running south-south-west but not shown on the Ordnance Survey of 1880. The tramroad intersects with Tramroad B causing the partial destruction of its earth bank, and indicating its later construction date. Within Stage 3 of the archaeological programme. [1] [2] Within Stage 3 of the archaeological programme in 1996, two trenches were excavated across the tramroad. Due to heavy waterlogging and past disturbance, there were no sub-surface remains recorded. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	14
Asset Name	Culvert, Aberdare to Rhondda Tramroad
Sub Topic	Archaeological Remains
NGR	SN9582005060
Easting	295820
Northing	205060
Parish	Hirwaun
Broad Type	Culvert
Specific Type	Water Supply and Drainage;Maritime
Designation	None
Cadw Reference	N/A
HER Reference	03168m
Condition	Damaged
Period	19th Century
Value	Negligible
Description	A small culvert below the course of Tramroad B (Asset 12), of drystone construction now partly collapsed on the eastern side. Built from sandstone blocks, the culvert is contemporary with the initial construction of the tramroad. [1] [2] Within Phase 2 of the archaeological programme in 1996, a photographic record was undertaken. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	15
Asset Name	Hirwaun Common Railway (Branch Line)
Sub Topic	Archaeological Remains
NGR	SN9617005000
Easting	296170
Northing	205000
Parish	Pen-y-waun
Broad Type	Railway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03219m
Condition	Damaged
Period	19th Century
Value	Negligible
Description	At the point where the Hirwaun Common Mineral Railway crosses the A465, a branch line diverges to the south and currently survives as a footpath. This branch line is marked on the 1880 O.S. (but not on the tithe map). [1] [2] Two trenches were evaluated with Stage 3 of the archaeological programme. These were located across the route of the tramway, one to assess the presence of possible track/sleeper level, the other to record in section the construction methods used for track bedding. Revealed in section were a series of deposits which are conducive with track ballast construction. Each deposit contained thick varying quantities of slag, coke and coal. The residues of which were present throughout. Below the track ballast was a clay deposit (0.30-0.40 m thick) which overlies a brick culvert. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	16
Asset Name	Tramway Branch, Hirwaun Common Railway
Sub Topic	Archaeological Remains
NGR	SN9597005000
Easting	295970
Northing	205000
Parish	Hirwaun
Broad Type	Tramway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03221.0m
Condition	Near destroyed
Period	Post-Medieval
Value	Negligible
Description	This tramway survives as a north / south track and is marked on the Ordnance Survey map of 1880. It was a branch line of the Hirwaun Common Railway and would have carried coal from collieries to the south. [1] [2] Two trenches were evaluated with Stage 3 of the archaeological programme in 1996. These were located across the route of the tramway, one to assess the presence of possible track/sleeper level, the other to record in section the construction methods used for track bedding. Revealed in section were a series of deposits which are conducive with track ballast construction. Each deposit contained thick varying quantities of slag, coke and coal. The residues of which were present throughout. Below the track ballast was a clay deposit (0.30-0.40 m thick) which overlies a brick culvert. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	17
Asset Name	Tappenden's Tramroad
Sub Topic	Archaeological Remains
NGR	SN0151202181
Easting	301512
Northing	202181
Parish	Cwmbach
Broad Type	Tramway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03225.0m
Condition	Damaged
Period	19th Century
Value	Low
Description	It took long deliberation before the construction of a tramroad connecting the ironworks at Llwydcoed and Abernant with the Neath Canal was finally begun. The tramroad was eventually built in two sections; the first by the Neath Canal Company commenced in 1802 from the canal head at Glyn Neath to Wyfra bridge, the second by Homfray, Birch and the Tappendens eastwards from the bridge to the ironworks (Mear, 1999). The whole tramroad was eventually opened in 1805. The section east of Hirwaun (03225.0m), also known as the Abernant Tramroad, carried limestone brought from Penderyn along a pre-existing tramroad to Aberdare and Abernant furnaces. Following the eventual commencement of the Aberdare Canal in 1809 a new tramroad branch was built from the proposed canal head to Gelli Isaf bridge. Later in 1819 Abernant ironworks constructed a direct line to the canal, making the route westwards (03225.1m) redundant. In 1827 Gadlys ironworks was linked via a small branch to Robertstown bridge (van Laun 2001: 188-196). The growth of Abernant ironworks resulted in increased traffic and acted as a catalyst for the conversion of the eastern section of tramroad to Aberdare canal firstly to a steam-hauled line and then to a railway in 1852. This route represents the most long-lived section of Tappenden's Tramroad east of Hirwaun, which thrived after the construction of the Aberdare Canal. This includes the original route running between Abernant and Llwydcoed to Hirwaun; later branches built to the new canal head from Gelli-Isaf bridge and Abernant ironworks as well as the 1827 branch linking Gadlys ironworks to the whole system. From Hirwaun the route can be followed along a tarmaced track and footpath just south of the River Cynon above Penywaun to Gelli-isaf bridge near Llwydcoed. Through the site of Llwydcoed ironworks the route can be followed along a footpath then minor road to Abernant, where the later route to the canal can be traced as a footpath to the canal. The branch running from a junction at Gelli-isaf bridge (01084m) to the canal can now be traced along a tarmaced footpath to the canal. approximately 29% of the tramroad survives in varying condition, surviving features include; stone blocks, revetment, bridges (Roberts and Jones 2006). [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	18
Asset Name	Site of Cynon Farm
Sub Topic	Archaeological Remains
NGR	SN9640005260
Easting	296400
Northing	205260
Parish	Hirwaun
Broad Type	Farmhouse
Specific Type	Domestic
Designation	None
Cadw Reference	N/A
HER Reference	03206m
Condition	Near destroyed
Period	19th Century
Value	Negligible
Description	Site of mid-Victorian cottage recorded on the HER as having with at least three phases of construction and sited close to the banks of the Afon Cynon. Built of stone rubble with brick detailing around the windows and doors, quoin stones and a central doorway. The building is no longer present. [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	19
Asset Name	Culvert, Hirwaun to Aberdare Tramroad
Sub Topic	Archaeological Remains
NGR	SN9648005190
Easting	296480
Northing	205190
Parish	Pen-y-waun
Broad Type	Culvert
Specific Type	Water Supply and Drainage;Maritime
Designation	None
Cadw Reference	N/A
HER Reference	03189m
Condition	Damaged
Period	Post-medieval
Value	Negligible
Description	A small culvert below the line of the tramroad for the course of a brook built of drystone masonry. The culvert has been repaired using an iron girder and concrete. [1] [2] Within Phase 2 of the archaeological programme in 1996, a photographic record was made of the exterior. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	20
Asset Name	Drystone Walling, Parc Hensol
Sub Topic	Archaeological Remains
NGR	SN9675005280
Easting	296750
Northing	205280
Parish	Pen-y-waun
Broad Type	Field boundary
Specific Type	Agriculture and Subsistence
Designation	None
Cadw Reference	N/A
HER Reference	03202m
Condition	Poor
Period	Post-Medieval
Value	Low
Description	An drystone walled system around the now derelict farmstead of Parc-Hensol Farm. Much of the walling, which is in reasonable state of preservation, extends to the A465, 80 m to the north. Walling includes a small enclosure, attached to the farmstead and revetting on a nearby stream; a tributary of the Afon Cynon. [1] [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report

Asset Number	21
Asset Name	Rectangular Platform and Earthworks, Hirwaun
Sub Topic	Archaeological Remains
NGR	SN9674005440
Easting	296740
Northing	205440
Parish	Hirwaun
Broad Type	Building
Specific Type	Unassigned
Designation	None
Cadw Reference	N/A
HER Reference	03201m
Condition	Near destroyed
Period	Post-Medieval
Value	Negligible
Description	Approximately 80 m north of A465 is a substantial rectangular building platform, probably industrial in form and may be contemporary with a track which runs north-south towards the Afon Cynon. The layout of the brick suggests a building with at least three rooms and an outer platform, possibly for loading. [1] [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report

Asset Number	22
Asset Name	Site of Farmstead, Parc Hensol
Sub Topic	Archaeological Remains
NGR	SN9677005260
Easting	296770
Northing	205260
Parish	Pen-y-waun
Broad Type	Building
Specific Type	Unassigned
Designation	None
Cadw Reference	N/A
HER Reference	03203m
Condition	Near destroyed
Period	19th Century
Value	Negligible
Description	Between the Afon Cynon and a brook to the west is a small, demolished, farmstead in the lea of a small hillock, associated with dry-stone wall field boundaries probably of the early 19th century. It was probably a single-storey cottage divided in two bays with a western gable-end chimney. Attached to the northern elevation is a lean-to structure with further separate outbuildings to the east, currently represented by the remains of a flagstone floor. The building is constructed of uncoursed limestone bonded with lime mortar, but with some repairs in cement and red-brick. To the west, is an area of gardens and a masonry revetment along the nearby stream . [1] [2] No evidence of the structure above ground. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Site visit by Jacobs 25-26 January 2016

Asset Number	23
Asset Name	Bridge Remains, Afon Cynon
Sub Topic	Archaeological Remains
NGR	SN9682005290
Easting	296820
Northing	205290
Parish	Pen-y-waun
Broad Type	Bridge
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03204m
Condition	Near destroyed
Period	Post-Medieval
Value	Negligible
Description	To the east of the Parc-Hensol farmstead and along the bank of the Afon Cynon is a wrought-iron tension bar indicating the remains of a rope / wire footbridge. On the opposite side of the river is the remains of a slabbed platform relating to the crossing. [1] [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report

Asset Number	24
Asset Name	Track, Afon Cynon
Sub Topic	Archaeological Remains
NGR	SN9697005290
Easting	296970
Northing	205290
Parish	Pen-y-waun
Broad Type	Road
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03207.0m
Condition	Near destroyed
Period	Post-Medieval
Value	Negligible
Description	A small metalled track running alongside the Afon Cyon and following east around the lower contour of a small hill, adjacent to the A465. Width of track is approximately 2.75-3.0m. [1] [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report

Asset Number	25
Asset Name	Skew Bridge over Vale of Neath Railway
Sub Topic	Archaeological Remains
NGR	SN9727005520
Easting	297270
Northing	205520
Parish	Hirwaun
Broad Type	Bridge
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03205m
Condition	Near intact
Period	19th Century
Value	Low
Description	A skew bridge which was built to carry a road over the Vale of Neath Mineral Railway (later a branch of Great Western Railway). It is constructed of large to medium sized, coursed, rusticated, limestone blocks. Within the tunnel there is a masonry pier with angled stonework, which form the curve of the arch. [1] [2] Within Phase 2 of the archaeological programme in 1996, a photographic record was undertaken. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	26
Asset Name	Court Farm
Sub Topic	Archaeological Remains
NGR	SN9734005640
Easting	297340
Northing	205640
Parish	Hirwaun
Broad Type	Hollow way
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03233.0m
Condition	Near destroyed
Period	19th Century
Value	Negligible
Description	Remnants of a hollow way / track running either side of the A465 which is at right-angles to the B4018 (an extension of the old A465). It appears to have once served Court Farm (SO 9718 0584). The hollow way/track predates the Vale of Neath Mineral Railway - the railway truncates the hollow way (pre 1851). It may also be contemporary with coppicing and drystone walling to the south. [1] [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report

Asset Number	27
Asset Name	Cae Carn Ucha (Place Name Site)
Sub Topic	Archaeological Remains
NGR	SN9740005800
Easting	297400
Northing	205800
Parish	Hirwaun
Broad Type	Round cairn
Specific Type	Religious, Ritual and Funerary
Designation	None
Cadw Reference	N/A
HER Reference	01228m
Condition	Destroyed
Period	Bronze Age
Value	Unknown
Description	A placename site. Not located by RCAHMW and other fieldworkers; not visited. [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	28
Asset Name	Gelli-tarw house and outbuildings, Hirwaun
Sub Topic	Historic Buildings
NGR	SN 97796 05462
Easting	297796
Northing	205462
Parish	Hirwaun
Broad Type	Farmhouse
Specific Type	Domestic
Designation	None
Cadw Reference	N/A
HER Reference	N/A
Condition	Good
Period	Post-Medieval
Value	Low
Description	Gelli-Tarw, between Hirwaun and Penywaun, stands on a level site, on the north side of the Afon Cynon, west of Cwm Ynysmintan and lying just north of the branch railway line between Hirwaun and Cardiff. The farm is built of local mixed stone and consists of an L-shaped range that includes the farmhouse in the longer North to South range with a barn in the shorter East to West range. The farmhouse is a two storey building with a slate pitched roof, with a centrally located doorway and four sash windows to the south-eastern front. Part of the house on the east may be of approximately 1800 date. The rear part of the house and the remaining buildings are late 19th century. The L-shaped range farmhouse range is flanked by two cowsheds in the longer North to South range with a barn and cart-shed to the east of this, in the shorter East to West range. The barn has a central projecting entry and between it and the cart-shed on the external North facing wall are stairs leading up to a loft. The cowsheds are single storey pitched roof buildings. The barn, along with one cowhouse, may be of approximately1800 date. The remaining outbuildings are late 19th century in origin. Setting: The setting is characterised by the Hirwaun Common Mineral Railway to the south and the open field looking on to the existing embanked section of the A465 to the north. To the east the setting is screened by woodland. Located approximately 260 m south of the main A465 road. [1] [2]
References	[1] H Brooksby, NMR Site Files, 1976 [2] Ian Archer, RCAHMW, 10th February 2005

Asset Number	29
Asset Name	Hollow way, Llycoch
Sub Topic	Archaeological Remains
NGR	SN9768005920
Easting	297680
Northing	205920
Parish	Hirwaun
Broad Type	Hollow way
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03226.0m
Condition	Damaged
Period	Post-Medieval
Value	Negligible
Description	A Hollow way aligned north / south and perpendicular to A465, with substantial rubble drystone walls (approximately 1 m high) and indicator species of birch, hazel and holly. The track appears to extend north to Llyncoch Farm and beyond. To the south, the track terminates at the southern most point of a birch coppice. [1] [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report

Asset Number	30
Asset Name	Hollow way, Nant Melyn
Sub Topic	Archaeological Remains
NGR	SN9770006220
Easting	297700
Northing	206220
Parish	Hirwaun
Broad Type	Hollow way
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03218.0m
Condition	Damaged
Period	Post-Medieval
Value	Negligible
Description	An east / west aligned hollow way (north of A465), is at present, connected to a farm track leading to Nantmoel Farm. The existingt A465 has destroyed any possible indication of its southern route. However, the route probably crossed the Nant Melyn at the point now traversed by a road bridge (SO 9792 0624). [1] [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report

Asset Number	31
Asset Name	Drystone Walling, Nant Melyn
Sub Topic	Archaeological Remains
NGR	SN9798006250
Easting	297980
Northing	206250
Parish	Hirwaun
Broad Type	Field boundary
Specific Type	Agriculture and Subsistence
Designation	None
Cadw Reference	N/A
HER Reference	03208m
Condition	Near destroyed
Period	19th Century
Value	Low
Description	An extensive drystone wall landscape either side of A465. [1] [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report

Asset Number	32
Asset Name	Drystone Walling, Nant Hir
Sub Topic	Archaeological Remains
NGR	SN98750684
Easting	298750
Northing	206840
Parish	Hirwaun
Broad Type	Field Boundary
Specific Type	Agriculture and subsistence
Designation	None
Cadw Reference	N/A
HER Reference	03217m
Condition	Poor
Period	Post-medieval
Value	Low
Description	An extensive drystone walled landscape which is located either side of A465, is probably contemporary with two hollow ways to the east. The present road truncates the linearity of at least two walled boundaries which delineate a probable Post-Medieval field system. [1] [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report

Asset Number	33
Asset Name	Field Barn and Stable
Sub Topic	Historic Buildings
NGR	SN9885006860
Easting	298850
Northing	206860
Parish	Hirwaun
Broad Type	Barn
Specific Type	Agriculture and Subsistence
Designation	None
Cadw Reference	N/A
HER Reference	03209m
Condition	Damaged
Period	Post-Medieval
Value	Negligible
Description	An unusual arrangement of farm buildings constructed adjacent to Nant Hir reservoir and associated with a drystone walled landscape, the intersections of two hollow ways and reservoir perimeter wall. [1] An unusual arrangement of farm buildings constructed adjacent to Nant Hir reservoir and associated with a drystone walled landscape and the intersections of two hollow ways adjacent to the reservoir perimeter wall. To the north the remains of a substantial building (approximately 4 m x 6 m) of coursed masonry, standing to approximately 2 m high which has become derelict. The stonework is uniform with quoin stones and a cross-passage, but no evidence of the roofing material. Attached to the eastern elevation was a later lean-to rubble masonry building. To the south of the mortared building is a drystone walled structure. Probably a stable / field-barn. Setting: The remains of this structure are located approximately 75 m to the south of an embanked section of the A465 road. The embankment is heavily wooded and views to the barn/stable are limited. [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016

Asset Number	34
Asset Name	Hollow way, Nant Hir
Sub Topic	Archaeological Remains
NGR	SN9885006900
Easting	298850
Northing	206900
Parish	Hirwaun
Broad Type	Hollow way
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03211.0m
Condition	Near destroyed
Period	Post-Medieval
Value	Negligible
Description	A small hollow way running north-east / south-west and is parallel to the walls of the Nant Hir Reservoir. It merges into a more substantial hollow way from the west at a field shelter. [1] [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report

Asset Number	35
Asset Name	Nant Hir Reservoir
Sub Topic	Archaeological Remains
NGR	SN9890006900
Easting	298900
Northing	206900
Parish	Hirwaun
Broad Type	Reservoir
Specific Type	Water Supply and Drainage
Designation	None
Cadw Reference	N/A
HER Reference	03213m
Condition	Near intact
Period	19th Century
Value	Low
Description	The Nant Hir Reservoir, of mid-19th century date, was built by the Aberdare Water Works Co. The reservoir which is now bisected by the existing A465 is not found on the tithe map, but is shown on the OS of 1880. It is surrounded by a substantial mortared wall and a dam, sluice and bridge are found in the southern extent of the reservoir. [1] [2] Reservoir already compromised by existing A465. Mortar and walling in fair condition. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Site visit by Jacobs 25-26 January 2016

Asset Number	36
Asset Name	Crop Marks, Nant Hir
Sub Topic	Archaeological Remains
NGR	SN9900007100
Easting	299000
Northing	207100
Parish	Hirwaun
Broad Type	Enclosure
Specific Type	Unassigned
Designation	None
Cadw Reference	N/A
HER Reference	01251m
Condition	Not known
Period	Unknown
Value	Low
Description	Consists of a large rectangular crop mark in the field, east of the Nant Hir reservoir. This may indicate workings associated with the reservoir, or be the remnant of an earlier field system. Asset located at Cwm Nant Hir. Now a commercial plantation and is likely to have been damaged during planting. [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	37
Asset Name	Drystone and Turfstone Walling, Lech Sychrhyd
Sub Topic	Archaeological Remains
NGR	SN9947007000
Easting	299470
Northing	207000
Parish	Llwydcoed
Broad Type	Field boundary
Specific Type	Agriculture and Subsistence
Designation	None
Cadw Reference	N/A
HER Reference	03193m
Condition	Near destroyed
Period	Post-Medieval
Value	Low
Description	Remnants of a drystone walled and turf boundary landscape now bisected by A465. To the north, landscape has been much altered due to extensive forestry plantations. [1] [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report

Asset Number	38
Asset Name	Track, Lech Sychrhyd
Sub Topic	Archaeological Remains
NGR	SN9960007040
Easting	299600
Northing	207040
Parish	Llwydcoed
Broad Type	Trackway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03212.0m
Condition	Not known
Period	Post-Medieval
Value	Negligible
Description	A track to the south of the A465 which is visible above ground level. It has a slightly raised platform running north / south. It is possible that this track once continued further to the north of the A465, but forestry planting in this area has now destroyed any possible evidence. [1] [2] Within Stage 3 of the archaeological programme in 1996, an evaluation of the track was undertaken. A trench was located across the track which revealed that it had been constructed recently. At approximately 0.55 m below present ground surface, the original field level was present. Consisting of a black humic soil, this layer linked-up with the present exposed field level. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	39
Asset Name	Drystone Walling, Gurnos
Sub Topic	Archaeological Remains
NGR	SN9970007170
Easting	299700
Northing	207170
Parish	Hirwaun
Broad Type	Field boundary
Specific Type	Agriculture and Subsistence
Designation	None
Cadw Reference	N/A
HER Reference	03230m
Condition	Damaged
Period	Post-Medieval
Value	Low
Description	A substantial drystone wall which is partly revetted on the west side, runs for approximately 150 m, south of the A465. It stands in places at 1.5 m high and may have supported a trackway behind to the south. [1] [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report

Asset Number	40
Asset Name	Drystone Walling, Baverstock
Sub Topic	Archaeological Remains
NGR	SN9970007170
Easting	299700
Northing	207170
Parish	Hirwaun
Broad Type	Field boundary
Specific Type	Agriculture and Subsistence
Designation	None
Cadw Reference	N/A
HER Reference	03192m
Condition	Near destroyed
Period	Post-Medieval
Value	Low
Description	Drystone wall field system running either side of A465, possibly related to drystone walling, approximately 150 m to the west. [1] [2] Line of walling appears to link settlement with cottage. Now truncated by existing A465. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Site visit by Jacobs 25-26 January 2016

Asset Number	41
Asset Name	Dam and Possible Sluice System, Lech Sychrhyd
Sub Topic	Archaeological Remains
NGR	SN9969006900
Easting	299690
Northing	206900
Parish	Llwydcoed
Broad Type	Earthwork
Specific Type	Unassigned
Designation	None
Cadw Reference	N/A
HER Reference	03214m
Condition	Near destroyed
Period	Post-Medieval
Value	Negligible
Description	South of A465 is a probable damming system that incorporates a substantial oval-shaped series of banks and a sluice. The banks have been cut and enlarged around a small stream. [1] [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report

Asset Number	42
Asset Name	Hollow way / Sheep Fold, Nant Hir
Sub Topic	Archaeological Remains
NGR	SN9983006870
Easting	299830
Northing	206870
Parish	Llwydcoed
Broad Type	Hollow way
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03228.0m
Condition	Damaged
Period	Post-Medieval
Value	Negligible
Description	An extensive hollow way (2-3 m deep) running north / south, either side of the A465. On both sides of the hollow way is a series of mature taxa possibly indicating an early date for the hollow way. To the north, approximately 50 m from the road, the hollow way merge into an extensive corralling area (sheep or cattle) which is delineated by low dry-stone walling. To the south, a second hollow way converges at a small field shelter, west of Nant Hir Reservoir. [1] [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report

Asset Number	43
Asset Name	Ty Gwyn Farmhouse
Sub Topic	Historic Buildings
NGR	SN0050006780
Easting	300500
Northing	206780
Parish	Llwydcoed
Broad Type	Farmhouse
Specific Type	Domestic
Designation	None
Cadw Reference	N/A
HER Reference	06389m
Condition	Not known
Period	Post-Medieval
Value	Low
Description	Bryn-y-Gwyddel is the name of a house as well as the name of the hill on which it stands. The house was recorded on the 1st Edition of the Ordnance Survey 25 inch map and therefore predates 1868. It was found to be in a derelict condition. A two storey limewashed, stone built farmhouse with a slate roof and two chimneys and later extensions to the rear. The farm has been in continued use since Tithe survey of Merthyr Tydfil in 1850. [1] Setting: The setting consists of an oval plot of land bounded by overgrown hedgerows to the west, modern forestry planting to the east and largely uninterrupted sight lines to the existing A465 approximately 300 m to the north. [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016

Asset Number	44
Asset Name	Old Level
Sub Topic	Archaeological Remains
NGR	SN0042006740
Easting	300420
Northing	206740
Parish	Llwydcoed
Broad Type	Ironstone Level
Specific Type	Industrial
Designation	None
Cadw Reference	N/A
HER Reference	06388m
Condition	Near Intact
Period	Post-Medieval
Value	Low
Description	This site was marked as an 'Old Level' on the 1st Edition of the 25 inch Ordnance Survey map which was surveyed in 1868. It was, therefore one of the earlier mineral-working features in the area. It is recorded on that map as having been used for the mining of ironstone. The site now lies within a forested area but close to the edge and it could be visited. It was found to survive in good condition despite fairly dense tree-planting on it. The visible features consisted of a clear entrance to the level and extensive finger tips on the slope below it. [1] [2] Site no longer visible from the existing road. Condition uncertain. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Site visit by Jacobs 25-26 January 2016

Asset Number	45
Asset Name	Bryn-y-Gwyddel
Sub Topic	Historic Buildings
NGR	SO 00486 06880
Easting	300486
Northing	206880
Parish	Llwydcoed
Broad Type	Farmhouse
Specific Type	Domestic
Designation	None
Cadw Reference	N/A
HER Reference	06389m
Condition	Poor
Period	19th Century
Value	Negligible
Description	A heavily modernised dwelling recorded in 1885 by Ordnance Survey mapping on rectangular plot of land, which it still maintains. The building survives as a two storey cottage with rough cast render under a slate roof with a gable end chimney. All windows have been replaced with modern casements. The floorplan is of two bays with a gable end, flat roof extension. No surviving external features of architectural or historic interest. [1] Setting: The setting consists of 1970s forestry surrounding the cottage on all sides, except where bisected by the Merthyr Road. Located approximately 430 m south of the existing A465 road. [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016

Asset Number	46
Asset Name	Site of Fairfield House
Sub Topic	Archaeological Remains
NGR	SN0055007280
Easting	300550
Northing	207280
Parish	Llwydcoed
Broad Type	House
Specific Type	Domestic
Designation	None
Cadw Reference	N/A
HER Reference	03194m
Condition	Near destroyed
Period	Post-Medieval
Value	Negligible
Description	Cottage is believed by the owner to be a masonry-built public-house of at least the Victorian era, originally known as the 'Giant's Head' after the 'Giant's Grave' Pillow mound (Asset 49) on the hill to the south. The house is of two-storeys [1] [2] Building demolished. No evidence of structure above ground. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Site visit by Jacobs 25-26 January 2016

Asset Number	47
Asset Name	Coal Workings and Tips, Baverstock
Sub Topic	Archaeological Remains
NGR	SN0069007270
Easting	300690
Northing	207270
Parish	Cyfarthfa
Broad Type	Earthwork
Specific Type	Unassigned
Designation	None
Cadw Reference	N/A
HER Reference	03196m
Condition	Near intact
Period	19th Century
Value	Low
Description	The remains of early open-cast workings possibly aided by water extraction located behind the Post-Medieval settlement of Baverstock. The tippings have been purposely dumped in order not to extend beyond field boundaries close to the settlement. They stretch for approximately 110 m and merge into substantial coal tippings running east to the settlement of Cyfarthfa. [1] [2] Mineral mining As suggested above, a division of mineral rights may have occurred at the watershed between the Cynon and Taff valleys which now follows the County Boundaries. This would give the western part to Aberdare and the eastern to Cyfarthfa. The other three Merthyr Tydfil ironworks had mineral rights to the east of the Taff. The Rosser Ironstone outcrops (32.18% metallic iron) from around SO 0045 0700 to SO 0168 0717 and the Lower Four-Foot coal lies about 210 m south, petering out around SO 0086 0693 close to the County Boundary. The succession being the Lower Four-Foot Coal over the Rosser ironstone. There are no Geological Memoirs for the area. However there are for the Rosser Ironstone and 4 Foot Coal at Dowlais. Here the 'Botton Rosser Vein' was 4 inches thick, with the Lower Four-Foot Coal, or Old Coal, 117 feet above (35.66m). This was made up of eight seams totalling 14 foot 6 inches. The Four Foot itself appears to be the Botton Coal. The practice here was to work the outcrop from the north, but the 7 degree dip south of the coalfield created drainage problems. However the land profile made it possible to drive levels up into the ore and coal. In order to work the seams downwards, adits were driven at a lower level still, with drainage taking

place into established valley systems. This would allow approximately 600 m of southerly working before drainage again became a problem.

Ironstone working

In places, a little above the Rosser ironstone outcrop, are three or more 'trials' presumably pre-dating other workings. In 1813 there were mine (iron ore) levels at SO 0120 0710 and SO 0111 0707 worked from a tramroad which ran via SO 0141 0712, SO 0164 0709 to Clwydyfagwyr (SO 0321 0681). Here it was joined by two branches (SO 0210 0683 and 0219 0674) working 'Coal and Mine Works'. The line ran steeply on to SO 0260 0697 and from here to SO 0289 0666, the old road via SO 0327 0668 took it to the furnace bank at around SO 0360 0675. In several places collapses from pillar and stall working are apparent (SO 0101 0720) and would have been within the Rosser.

By 1829 (Ordnance Survey 1832) work had progressed as far as Pen-y-Waun itself (SO 0089 0718) and this part appears from field walking to be worked by 'plank and barrow' (from SO 0108 0719). With this method the overburden would have been removed to expose the rock. The face was then worked down as far as practicable until the next section of overburden was reached. This was barrowed across the newly formed gorge and deposited one step further on. In this way the face advanced in a long strip with the waste moving a step at a time, always being roughly the same distance behind the face. The characteristic of this method left a waste tip roughly where quarrying began, sometimes radiating slightly outwards where gaps have been filled, with a final gorge where working stopped. The advantage was that trams could be loaded directly from the face.

The area worked from SO 0045 0700 to SO 0073 0723 is more characteristic of this method. At SO 0063 0721 is a clear outcrop showing 'balls' and 'pins' . From SO 0045 0700 a gully can be followed along the outcrop. Waste was dumped to the north. At SO 0047 0700 is a cutting through the waste to a dump to the west of the B 4276. This appears to have been by tramroad at the final stage when the disposal of waste became a problem, possibly after the post-1829 enclosure (SO 0063 0728). These post-1829 workings can be attributed to Aberdare Ironworks before 1867-72.

By 1829 the Cyfarthfa tramroad had, apart from the 'plank and barrow' work, sprouted a level at SO 0190 0700 working into the outcrop with two fingers of waste, shown on the 1832 Ordnance Survey map, to the north. The mine levels at SO 0120 0710 and SO 0111 0707 were still in operation where there is now an issue. They were abandoned well before 1867-72 (OS 1899).

In 1866 there were 10 furnaces in blast but no returns for raising Argillaceous Carbonate. But by 1867-72 there were a number of ironstone levels at work but in different areas, all situated east of northing 0140. In the 1850s, judging by the engineering, the tramroad running to the general area appears to have been modified (well graded embankment at SO 0163 0709) to work a level (OS 6 inch map surveyed 1867-72) around SO 0140 0713. This created as much waste as a deep mine, with fingers of spoil running around 250 m and intertwining with each other in a search for dumping space. At the 1867-72 period there were six short parallel lines running from the level but by

	comparison with the 1906 Ordnance Survey 6 inch map the waste tip appears formed by then. By the extent of the waste this must have been a major source for native ores. Coal Workings By 1829 (Ordnance Survey 1832) a tramroad, or track, ran from around 0164 0708 slightly south of the tramroad described, making a loop and rejoining the tramroad near its western limits. This ran fairly close to the Lower 4 foot coal which lay from SO 0086 0693 to SO 0182 0689. No investigation has yet been made but it is suspected that coal working from this was abandoned early. West of the large ironstone level (SO 0130 0715) the tramroad appears as the original line and can be intermittently followed to SO 0098 0718. A number of levels lay just south of it indicated by run-ins. After 1829, but well before 1867-72, the tramroad was realigned north from SO 0132 0714 to serve a level at SO 0090 0724 with extensive waste dumped at SO 0094 0729. This was driven below the ironstone outcrop to meet the Lower Four-Foot beyond. Although some distance from the underground seams, the angle driven upwards would provide a good gradient for drainage and tramroads. This was abandoned along with all the western workings by 1867-72. By the 1870s, and probably well before, levels were being driven westwards into the outcrop but between 100 m to 170 m lower down in the Taff valley giving more direct access to coal and ironstone. Initially it appears puzzling that the coal levels, and accompanying waste, lie below the ironstone workings. However the reasons, were necessitated by the only means of obtaining drainage, and easy haulage. To reach the coal workings it would have been necessary to pass through the iron. However there was an advantage as ironstone could also be won from the same level. Based on the methods of working, a phasing could be reasonably undertaken. This area of approximately 37 hectares rivals Blaenavon as a complete industrial landscape. Although only preliminary fieldwork has been undertaken this compact area appears to contain near complete survivals of workings for iron and coal from well before the 1870s (not including deep mining). Levels, pillar and stall, and plank and barrow working combine with tramroads and surviving waste tips to make this rich mixture worth preserving. Furthermore the area is largely vegetated which would not benefit by land reclamation. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	48
Asset Name	Settlement and Field System, Baverstock
Sub Topic	Archaeological Remains
NGR	SN0073007300
Easting	300730
Northing	207300
Parish	Cyfarthfa
Broad Type	Earthwork
Specific Type	Unassigned
Designation	None
Cadw Reference	N/A
HER Reference	03195m, 01255m
Condition	Near destroyed
Period	19th Century
Value	Medium
Description	Located south-east of the existing Ja Jireh Nursing Home is a complex series of field systems of substantial turf and drystone walling representing gardens, enclosures and drainage systems. Areas of rubble concentrations seem to indicate house platforms and the associated banks may be the remains of post-medieval tofts. The surface finds of pottery and glass indicate continuing usage and the disposal of domestic refuse throughout the 19th century. On the hillside above the site is a multi-period landscape with a number of features including several Bronze Age ring cairns and an unusual raised turf cross described as a 'pillow mound', known locally as the 'Giant's Grave' (Asset 49). This latter feature, although with no supporting evidence, is indicated by the HER as the possible site of a medieval windmill (GGAT). This, however, seems to be a somewhat unlikely inference as the surrounding landscape supplies ample opportunity for the harnessing of water-power. The Merthyr tithe map of 1850 marks two cottages, now demolished, close to the site of the Dynevor Arms, one of which is likely to be directly impacted by the dualling, whereas the other is on the edge of the 50 m corridor. These may have been built by miners working the outcrops of coal and iron up slope. [1] [2] Field evidence Carefully organised field patterns with stone rubble walls and house platforms suggest a pre-industrial settlement. This is confirmed by the careful dumping of post-1829 ironstone waste (SO 0059 0725 to SO 0073 0726) short of the settlement. The rectangular field patterns with houses situated in the middle is characteristic of the type found following the growth in population in the 1600s. Documentary evidence The 1813 Ordnance Survey draft 2 inches to the mile shows a single field running the length of the area and beyond, to around SO 0129 0716. At SO 0082 0723, there is

	now a small enclosure, named 'Penywaun Newydd'. This implies a new settlement on a previous site. Pre-1813 'old' Pen-y-Waun seems to have been part of a greater enclosure which would have crossed the Heads of the Valleys Road (SO 0063 0735) to multiple fields north of the road grouped around tributaries of the Taf Fawr. Pen-y-Waun was the most southerly enclosed part of this. The area west (SO 0070 0730 to SO 0058 0726) up to the B4276 was open moorland at this time. Possibly this became part of Pen-y-Waun Newydd estate. The 1 inch Ordnance Survey map (1832), surveyed 1829, confirms the location of Pen-y-Waun and that the area west was still not enclosed. Discussion Industrial settlement should not be ruled out. In 1813 Pen-y-Waun itself was within 400 m of a mine level and the western part of the enclosure within a few metres. By 1829 industrial activity had extended right up to Pen-y-Waun. The field pattern of the area enclosed by 1867-72 follows the line of the County Boundary on the west (SO 0056 0729 to SO 0060 0723). This suggests it might be related to mineral holdings east and west along the watershed. On this remote moorland it is likely that squatter settlement may have continued with miners and colliers. There is evidence that quarrying was a seasonal job and the same may have applied with minerals. Furthermore, in this there may be similarities between the Hafod and Hendre dwellings common throughout upland Wales. Within Phase 2 of the archaeological programme in 1996, a photographic record and ground survey was undertaken. A series of evaluation trenches were excavated within Stage 3 and involved the excavation of six trenches. Trenches 1 and 2 were located within a banked enclosure approximately 30 m x 25 m and incorporated the platforms of two buildings. Within trench 1 was the external walls of two small, but substantial dwellings. The side elevations and walls to both buildings were located in trench 2. A structure resembling the base of a cottage chimney was located within the side walling. The foundation walling for both dwellings was that of sandstone, probably locally quarried. The walling of both buildings were on average 0.5 m thick. There were in places along the walling within trench 1 evidence of internal walls. Dispersed throughout both trenches were large amounts of 19th century pottery including Staffordshire dark earthen ware, china and glazed biscuit wares. Trenches 3, 4, 5 and 6 were located in order to cut into the raised turfstone boundaries. The construction methods for each boundary were identical: limited drystone wall covered over by an earthen bank. Over the years of disuse, the earthen banks have been colonised by mosses, sedges and grasses. The excavation of turfstone boundaries within trenches 4, 5 and 6 revealed the original ground surface and the line a stones. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	49
Asset Name	Pillow Mound at Bryn-y-Gwydell
Sub Topic	Archaeological Remains
NGR	SN0072007080
Easting	300720
Northing	207080
Parish	Llwydcoed
Broad Type	Pillow mound
Specific Type	Agriculture and Subsistence
Designation	Scheduled Monument
Cadw Reference	GM517
HER Reference	00451m
Condition	Near intact
Period	Medieval
Value	High
Description	A large pillow mound of unusual cruciform design, situated near the highest point of Bryn-y-Gwyddel. It consists of two straight banks crossing near their centres, each 2 m wide and approximately 0.4m high. The banks are roughly 26 m long and 22 m long. The banks appear to be underlain by stone chambers which form rabbit nests, and one of these has been exposed as a cist some 1.2 m long by 0.3 m wide. Near intact. [1] No scheduling entry description at time of writing.
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	50
Asset Name	Bryn y Gwyddel Ring Cairn
Sub Topic	Archaeological Remains
NGR	SN0081207147
Easting	300812
Northing	207147
Parish	Cyfarthfa
Broad Type	Ring cairn
Specific Type	Religious, Ritual and Funerary
Designation	None
Cadw Reference	N/A
HER Reference	05110m
Condition	Damaged
Period	Bronze Age
Value	Unknown
Description	A small ring cairn with the bank picked out in bilberry; limited probing failed to pick up stone in the bank. The bank is widest at the N side (2.9 m), reducing to 0.9 m at the S side. There is a possible break at the NW, max width 0.6 m. The centre is slightly lower than the area outside the bank, and surface water picked up a slight depression running round inside the bank on the E side. Not the same as the lost or destroyed 00448m (Bedd y Gwyddel ring cairn), which from the RCAHMW description was twice as big. [1] [2] Ring cairn measuring 10m (NW-SE) by 9 m overall, defined by a stony ring bank 1.5 m - 2 m wide and 0.3 m high, possible entrance on the W. [3] Site not visible from the road. Condition uncertain. [4]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Coflein.gov.uk. (2017). BRYN-Y-GWYDDEL, RING CAIRN | Coflein. [online] Available at: http://www.coflein.gov.uk/en/site/91898/details/BRYN-Y-GWYDDEL%2C+RING+CAIRN/ [Accessed 11 Jan. 2017]. [4] Site visit by Jacobs 25-26 January 2016

Asset Number	51
Asset Name	Winch Fawr West Colliery
Sub Topic	Archaeological Remains
NGR	SN0090007180
Easting	300900
Northing	207180
Parish	Cyfarthfa
Broad Type	Level
Specific Type	Industrial
Designation	None
Cadw Reference	N/A
HER Reference	04911m, 07202m, 07001m, 03100m, 04912m, 07184m
Condition	Not known
Period	Post-Medieval
Value	Low
Description	Multiple sites: HER refs: 04911m : Level, probably ironstone, below Garw seam. 07202m : Iron Ore level 07001m : Spoil heap 03100m : Spoil heap 04912m : Level, probably ironstone 07184m : Iron Ore level 03105m : Ironstone Mine 03074m: Ironstone Mine 07014m : Level 07197m : Iron Ore level 03061m : Ironstone Mine 03062m : Spoil heap 07198m : Pond 03099m : Pond 07183m : Iron Ore level 07107m : Tramroad 03075m : Tramway 07224m : Tramroad 03077m : Tramway 07229m : Tramroad - Investigation of the Pen-y-Darren Station platform revealed an adjacent building to the southeast thought to have been the

	signal / station building depicted on a late 19th century photograph. This building was constructed of local yellowbrick, surviving up to ten courses in places, held in a dark-grey mortar matrix common to the late 19th century. The railway platform itself was found to be substantial and constructed of industrial waste butting a large (2.5 m high) retaining wall of rusticated ashlar sandstone blocks and red brick. To the west of the station was a substantial GWR bridge / culvert that carried the Cwm Bargoed line over a stream long since dried up. The structure was constructed of neat rusticated ashlar sandstone blocks with a segmental archway of trapezoidal sandstone blocks. 03079m : Tramway 07194m : Level 03103m : Colliery [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	52
Asset Name	Demolished Cottage, Baverstock
Sub Topic	Archaeological Remains
NGR	SN0110007400
Easting	301100
Northing	207400
Parish	Cyfarthfa
Broad Type	Earthwork
Specific Type	Building
Designation	None
Cadw Reference	N/A
HER Reference	03191m
Condition	Near destroyed
Period	19th Century
Value	Negligible
Description	Area of stone rubble spread suggesting the site of a cottage that was demolished 30 years ago (pers. comm.). The cottage would have been part of the Baverstock settlement. Drystone walling either side of the A465 links the two sites. [1] Area of stone spread. Part of Baverstock. Severed from context. [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016

Asset Number	53
Asset Name	Iron Ore Scours and Patch Workings at Winch Fawr
Sub Topic	Archaeological Remains
NGR	SN0180006800
Easting	301800
Northing	206800
Parish	Cyfarthfa
Broad Type	Ironstone workings
Specific Type	Industrial
Designation	Scheduled Monument
Cadw Reference	GM554
HER Reference	04351m
Condition	Not known
Period	19th Century
Value	High
Description	Asset 53, a Scheduled Monument, forms an area of patching and scouring associated with iron ore processing dating to the late 18th century located approximately 200 m to the south of the proposed scheme and associated with the Cyfarthfa Ironworks to the east. As a legible industrial landscape and example of industrial practice, Asset 53 contributes to the overall historic character of the Merthyr Tydfil Landscape of Outstanding Historic Interest (MTLOHI) and has the potential to contribute to Regional Research Framework (RRF) priorities relating to the landscape impact and survival of the iron industry. The site is a well preserved area at Winch Fawr of patching and scouring for iron ore associated with the early history of Cyfarthfa Ironworks. The mineral leases for the supply of iron ore to Cyfarthfa appear to have extended over this area from 1765, and the area is believed to have been worked intensively during the late 18th century and into the early years of the 19th century, when Cyfarthfa was the largest ironworks in the world. The earliest working methods, of patching at the outcrops and scouring with water, are well represented on this site. Minerals were excavated from the outcrop on a contract basis, patch by patch, in which miners sub-leased sections of the seams and often worked them in family groups, including young children. The physical evidence of surface quarrying and clusters of small conical tips downslope is visible in the north and south of the area, following the Seven Foot seam and Lower Coal Measures. Scouring was the process of damming water and releasing it suddenly at localised points to remove overburden or to sort mined ore from shale heaps placed in the stream. Two deep scours can be seen, together with the bank of a large reservoir at their head, and hand-dug watercourses supplying them. The earlier features have been cut through in a few places by 19th century tramroads, levels, and their associated crowsfoot pattern spoil tips. Designated of national importance as a particularly clear and well preserved group of typical remains of patching

	and scouring, associated with Cyfarthfa Ironworks. [1] Physical evidence of surface quarrying, conical tips and hand-dug watercourses is visible in the landscape. [2] Iron Ore Scours and Patch Workings at Winch Fawr, west of Gellideg. The site is extensive, part of which is a Scheduled Ancient Monument (GM554). The scheduled site takes in the Cyfarthfa Levels (NPRNs: 265250 and 265251), the D. Rees Levels (NPRNs: 262518, 262517 and 262339), the Clwyd-y-fagwr Moorland Tramway II (NPRN: 262341) and the Cyfarthfa Main Moorland Tramming Level. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016 [3] Anon, (2017). [online] Available at: http://www.coflein.gov.uk/en/site/415576/ [Accessed 11 Jan. 2017].

Asset Number	54
Asset Name	Drystone Walling and Sheep Pen, Coed Meurig Farm and Drystone Walled Landscape Nant Ffrwd
Sub Topic	Archaeological Remains
NGR	SN0220007350
Easting	302200
Northing	207350
Parish	Cyfarthfa
Broad Type	Sheep fold
Specific Type	Agriculture and Subsistence
Designation	None
Cadw Reference	NA
HER Reference	03229m, 03190m, 03178m
Condition	Damaged
Period	Post-Medieval
Value	Low
Description	A substantial drystone walled landscape which incorporates a sheep fold, both are at present related to Coed Meurig Farm. The walling on the southern side of the A465 is arranged in order to funnel livestock towards the lofted cow shed at Coed Meurig Farm (north of A465). Remnants of drystone walling located south-east of Coed Meurig Farm which represents part of the associated field-system enclosing the farmstead. To the north-east of Coed Meurig farm is a drystone walled field-system which extends approximately 60 m to the east. Associated with the lofted cow shed [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	55
Asset Name	Coed Meurig Farm and Lofted Cowshed
Sub Topic	Historic Buildings
NGR	SN0226007450
Easting	302260
Northing	207450
Parish	Cyfarthfa
Broad Type	Farnhouse and Cow shed
Specific Type	Domestic and Agriculture and Subsistence
Designation	None
Cadw Reference	N/A
HER Reference	03188m, 01271m, 03159m
Condition	Near intact
Period	Post-Medieval
Value	Low
Description	Coed Meurig lofted cowshed of six bays in length with external stone staircase at the eastern end to the hayloft above. Built of uncoursed masonry with brick detailing, wooden lintels. The roof trusses have been entirely replaced.[1] Coed Meurig farmstead and the associated lofted cowshed are bisected by the A465 road. Coed Meurig farm, currently unoccupied, consists of a two-storey cottage with an outshut to the rear. It is constructed of a coursed masonry with front and rear porches, two gable-end chimneys, a Welsh slate roof and a small lean-to. The associated lofted cowshed structure is of six bays in length with external stone staircase at the eastern end to the hayloft above. Built of uncoursed masonry with brick detailing, wooden lintels. The roof trusses have been entirely replaced and covered with a Welsh slate roof. There are the remains of full-length double doors at the rear (northern elevation), mirrored by a similar blocked entrance to the front, which appear to have been used as threshing doors. Ventilation slits either side of these entrances also suggest that fodder was stored in this building. Internally the stalls and hay racks are still present. Externally, there are associated sheep pens, a sheep dip and a cobbled yard which surrounds the cowshed. Coed Meurig farm is shown on the Merthyr tithe map of 1850 and described in the schedule of 1846 as being a farm of 37 acres belonging to Lord Dynevor. Setting: The immediate setting is dominated by the adjacent existing A465 which bisects the main house from the outbuildings. To the south of the house is the modern estate housing of the outskirts of Merthyr Tydfil and to the north of the outbuildings is a line of woodland. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Merthyr tithe map of 1850 and Tithe schedule of 1846 [3] Site visit by Jacobs 25-26 January 2016

Asset Number	56
Asset Name	Ffrwd Ganol Fach Farmhouse (site of)
Sub Topic	Archaeological Remains
NGR	SN0250008020
Easting	302500
Northing	208020
Parish	Vaynor
Broad Type	House
Specific Type	Domestic
Designation	None
Cadw Reference	N/A
HER Reference	02193m
Condition	Unknown
Period	Post-Medieval
Value	Negligible
Description	Post-medieval farmhouse and associated outbuildings shown on the 1890 1st edition Ordnance Survey map of Brecknockshire. Recorded as ruinous in 1991. [1] Site no longer visible from the road. Condition uncertain. [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016

Asset Number	57
Asset Name	Ffrwd Uchaf Farmhouse and cowshed, Ffrwd Road, Mid Glamorgan
Sub Topic	Historic Buildings
NGR	SN0227008360
Easting	302270
Northing	208360
Parish	Vaynor
Broad Type	Farmhouse
Specific Type	Domestic
Designation	Grade II Listed Building
Cadw Reference	LB11479
HER Reference	02192m
Condition	Not known
Period	Post-Medieval
Value	Medium
Description	Complex of post-medieval buildings, comprising a 17th-18th century farmhouse based on a long-house design, with its associated outbuildings of mostly 18th- 19th century date. The house has stone rubble walls and a slate gabled roof. Although there have been some modern alterations and additions to the buildings, the earlier elements are still well preserved. [1] The Ffrwd Uchaf Farmhouse and attached outbuilding form a Grade II Listed Building. The farmhouse and cowshed range, are probably 17th century in origin as long-house. It has been much rebuilt in 19th century and 20th century. The main part of the farmhouse is supposed to have been converted from a cowshed after 1896, when all 4 windows were inserted, and the door even later, but this part is of 17th century origins having an external chimneybreast, stair projection at rear and marks of a lower gable. There was a 3-light diamond-mullion window in the stair projection, now gone. The house was said to have had original entry from the byre into the hall, with inner rooms beyond, then it was extended upwards with kitchen scullery and dairy, and presumably at the same date or later the upper floor was raised. It forms part of a traditional farm group with the attached cowshed and the barn range across the yard. The interior has a stone winding stair within and fireplace with oak lintel. A deep fireplace in upper section is said to have been blocked. The farmhouse, rubble stone with close-eaved slate roofs. Three sections, the roofs stepping down to left, and the cowhouse downhill to right. The main part of the house said to have been rebuilt approximately 1900 has 2 4-pane sashes each floor, the upper ones longer, and off-centre door close to right sash. Stone voussoirs to cambered heads, stone sills. Stone chimney to right end. Section to left has continuous walling, door to right and window to left

	with stone voussoirs, and casement pair window under eaves above the window. A chimney on left end has gone. Short lowest section to extreme left has one window with stone voussoirs. All windows and doors renewed in late 20th century. End wall of top section is rendered. Rear of second section has added rear wing. Main house rear has small projection to left, apparently a 17th century or 18th century stair projection with tiny window. Rear wall to right has an arch with stone voussoirs found in wall, apparently a blocked cart entry, one window to right and 2 above. Cowshed to right is of whitewashed rubble stone with 5 doors with timber lintels, the third and fifth doors now windows.[2] Setting: Situated on a hillock on the west side of the A470, approximately 750 m northwest of its existing roundabout junction with the existing A465. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Cadw Listed Building Description: LB11479 [3] Site visit by Jacobs 25-26 January 2016

Asset Number	58
Asset Name	Barn range at Ffrwd Uchaf Farmhouse, Ffrwd Road
Sub Topic	Historic Buildings
NGR	SO 02337 08197
Easting	302337
Northing	208197
Parish	Cefn Coed
Broad Type	Barn
Specific Type	Agriculture and Subsistence
Designation	Grade II Listed Building
Cadw Reference	LB11480
HER Reference	02192m
Condition	N/A
Period	Post-Medieval
Value	Medium
Description	The barn with lofted stables, probably early 19th century but possibly of several periods. Walling between loft steps and barn door was damaged by tremors during construction of A470 and has been rebuilt. It forms a farm group with the farmhouse and attached byre. The interior consists of the end left doors into stable with one large oak beam. The centre stable has pine joists, former loose box for cart horse. The barn and lofted stable range, whitewashed rubble stone with long slate roof. Barn to right has full-height opening to right of centre. Lofted part to left has 2 square loft openings, the right one with outside stone steps up, and ground floor has 2 doors with stone voussoirs to left, a window and a door with timber lintels set between the 2 loft windows (to left of loft stairs). Lean-to on right end wall.[1] [2] Setting: Located on the east side of the farmyard at Ffrwd Uchaf. Situated on a hillock on the west side of the A470, approximately 750 m northwest of its roundabout junction with the A465 road. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Cadw Listed Building Description: LB11480 [3] Site visit by Jacobs 25-26 January 2016

Asset Number	59
Asset Name	Brecon and Merthyr Joint Railway
Sub Topic	Archaeological Remains
NGR	SO03430853
Easting	303430
Northing	208530
Parish	Cefn-coed-y-cymmer
Broad Type	Rail
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	01279.0m
Condition	Poor
Period	19th Century
Value	Negligible
Description	On the western bank of the Taf Fechan, either side of the A465 is the route of the Brecon & Merthyr Railway, opened in 1863. A bridge crosses the A465 at SO 0324 0814. Approximately 30 m north-east of the railway bridge is a small footbridge. Between both bridges, the embankment is heavily revetted. [1] [2] Within Phase 2 of the archaeological programme in 1996, a photographic record was undertaken. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	~~60~~
Asset Name	~~Tai Mawr Leat for Cyfarthfa Iron Works~~
NGR	~~SN0314007600~~
Easting	~~303140~~
Northing	~~207600~~
Parish	~~Vaynor~~
Broad Type	~~Leat~~
Specific Type	~~Industrial;Water Supply and Drainage~~
Designation	~~Scheduled Monument~~
Cadw Reference	~~GM479~~
HER Reference	~~02435.0m~~
Condition	~~Intact~~
Period	~~18th Century~~
Value	~~High~~
Description	~~The Tai Mawr Leat comprises a well-preserved artificial water course built in 1766 and is located approximately 150m to the west of the A470 and 500m south of proposed scheme. The leat is a Scheduled Monument and forms a component of the broader Cyfarthfa Ironworks surviving in the form of a blast furnace to the south and a section of tramroad to the west.~~ ~~An unusually complete water course from an important C18th ironworks, exceptional for its ingenious design and the documentary evidence for its construction. The leat was built in 1766 as the original water course serving Cyfarthfa. It was designed initially by William Edwards and revised by Charles Wood. The scheduled area incorporates all surface remains of the leat from the re-emergence of the first tunnel to a former rail crossing, after which the leat is less well preserved. [1]~~ ~~Charles Wood and William Edward's original 1766 weir and leat from the Taff Fawr to the first Cyfarthfa furnace. Ditch runs alongside the river as far as Pontycafnau. (A Guide to the Industrial Archaeology of South East Wales, AIA, 2003). The leat was built in 1766 to carry water from a weir across the Afon Taf to Cyfarthfa Ironworks (nprn 34078), approximately 1km to the southeast. The course includes a rock-cut tunnel with a stone paved floor, originally some 93m long but later extended. [2]~~
References	~~[1] Glamorgan Gwent Archaeological Trust Historic Environment Record~~ ~~[2] http://www.coflein.gov.uk/en/site/275881/~~

STRUCK THROUGH DUE TO DESIGN CHANGE RESULTING IN REMOVAL OF THE ASSET FROM THE STUDY AREA

Asset Number	61
Asset Name	Cefn Railway Viaduct, Merthyr Tydfil
Sub Topic	Historic Buildings
NGR	SN0304907597
Easting	303049
Northing	207597
Parish	Park
Broad Type	Railway viaduct
Specific Type	Transport
Designation	Grade II* Listed Building
Cadw Reference	LB11377, LB02367
HER Reference	02367m
Condition	Intact
Period	Post-Medieval
Value	High
Description	Brecon-Merthyr Line, London and Northwestern joint railway. 1868. [1] Cefn railway viaduct is a Grade II* Listed structure. The structure is located partly within the Merthyr Tydfil County Borough and partly within the Vaynor and Penderyn Districts. An impressive rusticated-limestone structure of fifteen arches, set on a curve, Cefn-coed-y-cymmer viaduct was built to carry the Brecon and Merthyr Railway over the Taf Fawr. Constructed by Savin and Ward in 1866 to a design by H. Conybeare and A. Sutherland, it is 235 m (770 ft) long and 36.6 m (120 ft) high. The railway viaduct was built 1866 by Henry Conybeare and Alexander Sutherland for Savin and Ward at a cost of £25,000. Sutherland was a friend of Robert Crawshay of the nearby Cyfarthfa Iron Works. The viaduct carried the former Brecon and Merthyr Railway over the Afon Taf Fawr and was built on a curve to satisfy conditions laid down by the Crawshay Estate. It was planned to be constructed entirely of limestone like the nearby Pontsarn Viaduct but a trade union strike by stonemasons in February 1866 caused the company to buy 800,000 bricks from Hirwaun and Welshpool and use bricklayers to complete the fifteen arches. Most of the masons were sacked shortly after returning to work. The first arch from the Vaynor side was keyed on 12 May 1866 and the last on 27 August 1866. The viaduct was built for double-line working but a single track only was installed, on the north side. The viaduct is noted as one of the most historically interesting and architecturally impressive railway viaducts in Wales and a key structure in Cyfartha Conservation Area– Character Area 3: Taf Fechan Valley (Asset 64).

	The railway viaduct consists of abutments, tall slender piers and parapets of coursed irregular sized rock-faced limestone blocks and fifteen ring-built semi-circular brick arches each of six courses. The piers have a projecting impost band and there are two projecting string courses below the parapets. The viaduct is built on a gentle arc some 235 m long and has a maximum height of approximately 36 m. An inscription on the south side reads "Built by Savin and Ward 1866". [2] Setting: Located on the southwest side of Cefn-coed-y-cymmer crossing the valley of the Afon Taf Fawr and approximately 22 m from the existing A465 at its closest point. The viaduct is located to the south of the existing A465, at the same height and has clear sight lines to and from the existing A465. The viaduct has been refurbished and now forms part of the Taff Trail walking and cycling route. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] RCAHMW, 05 May 2010 [3] Site visit by Jacobs 25-26 January 2016

Asset Number	62
Asset Name	Buttressing Under Nant Ffrwd Viaduct
Sub Topic	Archaeological Remains
NGR	SN0303007670
Easting	303030
Northing	207670
Parish	Cyfarthfa
Broad Type	Bridge
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03215m
Condition	Near intact
Period	19th Century
Value	Low
Description	The remains of earlier masonry abutments incorporated within the structure of the Nant Ffrwd concrete viaduct. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	63
Asset Name	A465 road viaduct over the Taf Fawr, Merthyr Tydfil
Sub Topic	Historic Buildings
NGR	SN0282007890
Easting	302820
Northing	207890
Parish	Vaynor
Broad Type	Road viaduct
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03174m
Condition	Near intact
Period	Post-Medieval
Value	Low
Description	Two 1960's concrete viaducts are located further west of the Taf Fechan viaduct; all three won Civic Trust Awards in 1968. The road is supported by two single-span elliptical arches with vertical struts. The bridges were designed by road [1] A 1960s concrete award winning viaduct built as part of the original A465 scheme. The furthest west of 1960's concrete viaducts over the Taf Fechan valley, it won a Civic Trust Award in 1968. The road is supported by two single-span elliptical arches with vertical struts. The bridges were designed by road engineers Rendel, Palmer & Tritton with Alex Gordon and Partners as consultant architects. Those central viaduct over the Taf Fawr has three spans cantilevered from two piers. Setting: The bridge forms part of the existing A465 and carries the road directly over the Taf Fawr valley below. Views of the structure from the surrounding landscape contribute to its value. [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016

Asset Number	64
Asset Name	Cyfarthfa Conservation Area, Merthyr Tydfil
Sub Topic	Historic Buildings
NGR	SO 04379 07333
Easting	304379
Northing	207333
Parish	Cyfarthfa
Broad Type	Industrial
Specific Type	Industrial
Designation	Conservation Area
Cadw Reference	N/A
HER Reference	N/A
Condition	Good
Period	Post-Medieval
Value	Medium
Description	Cyfartha Conservation Area is an area of special architectural and historic interest the character and appearance of which it is desirable to preserve or enhance. The Conservation Area is sub-divided into the following character areas: • Character Area 1 - Cyfarthfa Park South and Castle; • Character Area 2 - Cyfarthfa Park North; • Character Area 3 - Taf Fechan Valley; and • Character Area 4 - Cyfarthfa Ironworks and Taf Fawr Valley Two character areas within the study area: Character Area 3 - Taf Fechan Valley; and Character Area 4 - Cyfarthfa Ironworks and Taf Fawr Valley. The Conservation Area is centred on the Cyfarthfa Ironworks, park, castle and the features which relate all three. The Conservation Area is important in relaying Merthyr Tydfil's importance as an ironworking centre of worldwide significance. This is displayed with the grand architectural scale of Cyfarthfa Castle, Cefn Viaduct and the Blast Furnace bank and the associated Cyfartha Park. The buildings and structures in the area are predominantly built of pennant stone with limestone incorporated on buildings of a higher status, many of which have been recognised nationally as buildings, structures, or archaeological remains of special historic interest. It also contains a number of smaller elements of the local built heritage such as the stone walls and cast iron fencing that surround Cyfarthfa Castle and parts of the River Taf. The unscheduled remains of the Cyfarthfa fingertip provide for an interesting manmade feature of the landscape by means of a cinder tip, while the Cyfarthfa museum contains portraits of the Crawshay family,

examples of steel and iron work, and much on Merthyr's industrial and cultural life.

Character Area 3: The Taf Fechan Valley

Character Area 3 is the primary Character Area located within the study area. The Taf Fechan Valley is a narrow and steep sided basin, which converges with the Taf Fawr valley south near Pont-y-cafnau and running below the A465 road which carried on a viaduct above it. The Gurnos Quarry tramway runs along the eastern bank of the Taf Fechan River from the open Gurnos Quarry, constructed in 1792-4, which becomes enclosed within the gorge after passing under the higher, modern Heads of the Valleys bridge. The Taf Fechan leat runs along the tramway and supplies Cyfarthfa Park's lake with water. Nearer to the south the area becomes more open woodland, eventually leading into Cyfarthfa Park.

Setting: The character area is set outside the town centre of Merthyr Tydfil whilst the settlement of Cefn-coed-y-cymmer is wedged in between these two valleys.The setting includes sections of the rivers Taf Fawr and Taf Fechan which runs through steep-sided and wooded valleys and converges to the south of Cefn Coed-y-Cymmer. The settlement of Cefn-coed-y-cymmer runs alongside the western edge of the valley, while some modern housing development is located to the east and the A465 road carried on a viaduct above it. This gorged area is covered in copious woodland set alongside quarried limestone cliffs. The river bed, which is a base to this valley, creates a natural corridor although it is largely hidden from much of its surrounding area.

Character Area 4: Cyfarthfa Ironworks and Taf Fawr Valley

The most prominent structure within the study area is the Cefn Viaduct Grade II* Listed railway viaduct across the Taf Fawr Valley. The bridge is a very large structure which is prominent in views from both sides of the valleys and adjacent to the A465 road. The setting of the viaduct is important to the attractiveness of these views. The viaduct also acts as a landmark entry into the built up areas of Merthyr Tydfil from the A465 road. The viaduct is used to carry the Taf Trail across the valley towards the Brecon Beacons.

Setting: Most of the area retains wasteland with areas of self-seeded scrub, woodland and heathland with a number of residential properties and highways providing for its setting.

The area provides for extensive views across Cefn-coed-y-cymmer, up the valley towards Brecon Beacons and down the valley towards Cyfarthfa Castle and Park The Taf and Taf Fawr flow to the eastern flank of this character area and makes a large contribution in terms of its setting and function.

Overall Setting

Areas of modern and semi-modern housing development exist around the fringes of the Conservation Area including the Gurnos and Gellideg Estates. These have reduced the areas connection with the wider historic landscape. Some areas of modern industrial development appear to be unsympathetic to the historic character of the area.

	Views Key views can be achieved through Cyfarthfa Park from east to west encompassing the tranquil parkland areas. However, views to the north towards the existing and proposed A465 are blocked by the castle woodlands, which also screen views towards the Gurnos Estate High and matured trees block many views and it is noted, that some trees obscure views directly to the south towards Cyfarthfa Retail Park. This, however, is considered to be somewhat of an advantage to the amenity of Cyfarthfa Park. [1] [2]
References	[1] Merthyr Tydfil County Borough Council Built Heritage Strategy and Action Plan 2008 [2] Merthyr Tydfil County Borough Council Cyfartha Conservation Area Character Appraisal 2009

Asset Number	65
Asset Name	Tabor Independent Chapel, Merthyr Tydfil
Sub Topic	Historic Buildings
NGR	SN0297008080
Easting	302970
Northing	208080
Parish	Vaynor
Broad Type	Chapel
Specific Type	Religious, Ritual and Funerary
Designation	Grade II Listed Building
Cadw Reference	LB21317
HER Reference	03185m
Condition	Near intact
Period	Post-Medieval
Value	Medium
Description	Tabor chapel was built in approximately 1850, and rebuilt in 1904 in a Neo-classical style, as a 2 storey building with a basement. The first floor has decorative keystones and mouldings to windows on front elevation. The ground floor has decorative long / short work [1] Tabor Independent Chapel is a Grade II Listed Building. The Independent chapel was rebuilt in 1904. The chapel was founded by members seceding from Ebenezer chapel, Cefn Coed in 1842 under the Rev W Moses. The first chapel was built in 1845. By 1851, there were 150 attendees. A meeting of 26 March 1899, elected to rebuild the chapel. The new chapel was begun in 1904. The chapel closed in the early 1970s, and by 1980 was a sport club. The chapel was carefully restored as a place of worship in 1989 and has recently undergone refurbishment. The building is a well-preserved chapel of early 20th century regional character and prominently sited. The interior is largely complete from 1904, and was carefully restored in 1989. Three-sided raked gallery, with canted angles, and slightly deeper rear, supported by 6 painted, fluted, cast iron columns, with florid capitals, carrying bracketed cornice. Gallery front has long, horizontal panels, similar shorter panels to canted angles. Pews with two aisles and panelled to match gallery. Pulpit with curved stair to each side, with turned balusters. Canted pulpit front with pair of arched-headed panels with small columns to centre, horizontal panels to canted sides. Base, also canted, has horizontal panels. Large, arched recess behind pulpit, with panelled pilasters, moulded arch and keystone. Ceiling has deep moulded cornice, then timber border with pierced ventilation panels at corners and diagonal slatting elsewhere, and plaster centre. This is divided in 4 by moulded beams terminated at outer ring of centre rose. Rose has 2 moulded rings with 15 floral bosses in band between. Centre has large pendant, probably for a gasolier, with banded

	detail, surrounded by a pierced ornamental iron grille. Independent Chapel of 1904, basement and two storeys in painted stucco with imitation slates to roof, bargeboards and terracotta finial to front gable. Gabled façade of 3 bays with recessed roundel to gable inscribed: 'Tabor Built 1845. Rebuilt 1904. Arched windows with raised shouldered surrounds to upper storey. Triplet to centre, of large central light, with flanking, narrower, similar lights. Single, shorter window to each side. Keystones to triplet. Stucco pilasters to angles. Raised cornice between storeys. Ground floor has cambered-headed windows flanking large projecting central entrance lobby with triplet. Rusticated quoins and window dressings. Projecting lobby has entablature with painted frieze and cornice moulding corresponding to upper floor cornice. Three memorial stones and pair of blank arches below window. Arched entry is in right side-wall with panelled double doors and simple fanlight. Horned sash windows with marginal glazing bars throughout. Painted stucco sides of 3 storeys, 3 bays. Arched windows to top floor, the rest cambered-headed. Basement windows altered, door to right has porch with stone end wall and imitation slate roof. [1] [2] Setting: Located in a prominent position, just to the north of the existing A465 in north Merthyr Tydfil. The chapel is located on a natural platform situated adjacent to the modern High Street road bridge over the existing A465 cutting below. The chapel looks out on to the existing A465 below approximately 30 m away although sight lines to the existing A465 road are partly screened by an existing bridge over the A465. Rebuilt in 1904. In good condition and recently repainted. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Dr Elwyn, Vaynor - A study of the Welsh countryside, 1992; [3] Site visit by Jacobs 25-26 January 2016

Asset Number	66
Asset Name	Celtic Hut Circles
Sub Topic	Archaeological Remains
NGR	SN0297008040
Easting	302970
Northing	208040
Parish	Vaynor
Broad Type	Hut circle
Specific Type	Domestic
Designation	None
Cadw Reference	N/A
HER Reference	01104m
Condition	Destroyed
Period	Bronze Age
Value	Negligible
Description	An area of possible Iron Age activity west of Cefn-coed-y-cymmer described as a 'Celtic hut circle' (GGAT) consisting of a simple earth mound and a single broken quern stone. The area indicated by the SMR grid reference is now within a large cutting made for the A465 and has therefore been destroyed. [1] [2] [3] Location overbuilt with modern housing and road infrastructure. [4]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report [4] Site visit by Jacobs 25-26 January 2016

Asset Number	67
Asset Name	Station Hotel, Merthyr Tydfil
Sub Topic	Historic Buildings
NGR	SO 03081 07949
Easting	303081
Northing	207949
Parish	Cyfarthfa
Broad Type	Hotel
Specific Type	Commercial
Designation	Locally Listed Building
Cadw Reference	N/A
HER Reference	57
Condition	Fair
Period	Post-Medieval
Value	Low
Description	The Station Hotel public house is currently unoccupied. It consists of a two storey, purpose built building, rendered and finished in yellow paint with red stone dressings around the doors and windows. It has two gable end chimneys and a slate roof. The building retains the external signage. Dating from the late 19th century. [1] Setting: Located on Station Road, a side street off the main High Street to the north of Merthyr Tydfil. The public house is located on a natural platform above the A465 cutting below. The public house is overshadowed by large modern blocks of flats and terraces of workers housing to the east. The site and has no clear sight lines towards the existing A465 road and is located approximately 120 m to the south of it. [2]
References	[1] Merthyr Tydfil County Borough Council [2] Site visit by Jacobs 25-26 January 2016

Asset Number	68
Asset Name	Number 97 High Street, Merthyr Tydfil
Sub Topic	Historic Buildings
NGR	SO 03150 07963
Easting	303150
Northing	207963
Parish	Cyfarthfa
Broad Type	House
Specific Type	Commercial
Designation	None
Cadw Reference	N/A
HER Reference	N/A
Condition	Good
Period	Post-Medieval
Value	Low
Description	A two bay, two storey, semi-detached cottage. It is built of squared, but roughly coursed, un-rendered limestone, with a modern concrete tile roof and white painted ashlar stone dressings with keystones around the windows and doors. Workers housing dating from the mid to late 19th century. Possibly pre-1842 workers housing comprised of one dwelling based on evidence from the Merthyr Tithe survey of 1850. [1] Setting: Located along the main High Street to the north of Merthyr Tydfil and surrounded by similar terraces of workers housing. The site is located on a natural platform above the existing A465 cutting below, has no clear sight lines towards the existing A465 road and is located approximately 100 m to the south of it. [2]
References	[1] Jeremy Lowe's database of Workers housing ref: 429 [2] Site visit by Jacobs 25-26 January 2016

Asset Number	69
Asset Name	The Drovers Arms Public House, Merthyr Tydfil
Sub Topic	Historic Buildings
NGR	SO 03353 07870
Easting	303353
Northing	207870
Parish	Cyfarthfa
Broad Type	Public House
Specific Type	Commercial
Designation	Locally Listed Building
Cadw Reference	N/A
HER Reference	33
Condition	Good
Period	Post-Medieval
Value	Low
Description	The Drovers Arms public house is a two storey, one-and-a-half bay building converted from end-of-terrace workers housing. The building is rendered and finished in red ochre paint with black stone dressings with keystones around the doors and windows. It has one gable end chimneys and a modern concrete tiled roof. The building retains the external signage. Dating from the late 19th century. [1] Setting: Located on the main High Street to the north of Merthyr Tydfil. The public house is located on a natural platform above the existing A465 cutting below. The public house is surrounded by similar workers housing and has no clear sight lines towards the existing A465 road; it is located approximately 100 m to the south of it. [2]
References	[1] Merthyr Tydfil County Borough Council [2] Site visit by Jacobs 25-26 January 2016

Asset Number	70
Asset Name	Morlais Villa Coin Hoard
Sub Topic	Archaeological Remains
NGR	SN0328008050
Easting	303280
Northing	208050
Parish	Vaynor
Broad Type	Coin hoard
Specific Type	Object; Currency
Designation	None
Cadw Reference	N/A
HER Reference	01887m
Condition	Not known
Period	Medieval
Value	Negligible
Description	Garden of Morlais Villa, Lower Vaynol Road, a coin hoard was discovered. 31 silver pence: Edward I-II (26) Edward I, Ireland (2); Scotland, Alexander III (3). Latest c1320-25. [1] Close to St. John's Church, Cefn-coed-y-cymmer was discovered a hoard of 31 silver coins, all dating before A.D.1325. [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	71
Asset Name	The Railway Inn public house, Merthyr Tydfil
Sub Topic	Historic Buildings
NGR	SO 03352 07826
Easting	33078
Northing	207826
Parish	Cyfarthfa
Broad Type	Public House
Specific Type	Commercial
Designation	Locally Listed Building
Cadw Reference	N/A
HER Reference	56
Condition	Good
Period	Post-Medieval
Value	Low
Description	The former Railway Inn public house is currently unoccupied. It is a three storey, two-and-a-half bay building converted from a terrace of workers housing. The building was historically rendered but the render has been removed to reveal squared, but roughly coursed, limestone. The white stone dressings around the doors and windows have been retained. It has one end chimney and a modern concrete tiled roof. The building retains some of the external signage. The front panel inscription dates the building to 1826. [1] Setting: Located on the main High Street to the north of Merthyr Tydfil. The former public house is located on a natural platform above the existing A465 cutting below. The former public house is surrounded by similar two and three storey workers housing and has no clear sight lines towards the existing A465 road; it is located approximately 140 m to the south of it. [2]
References	[1] Merthyr Tydfil County Borough Council [2] Site visit by Jacobs 25-26 January 2016

Asset Number	72
Asset Name	Tan y Bryn, Merthyr Tydfil
Sub Topic	Historic Buildings
NGR	SO 03400 07855
Easting	303400
Northing	207855
Parish	Cyfarthfa
Broad Type	House
Specific Type	Domestic
Designation	Locally Listed Building
Cadw Reference	N/A
HER Reference	18
Condition	Good
Period	Post-Medieval
Value	Low
Description	Tan y Bryn is a well built two-and-half storey, detached villa. It is built of squared and well-coursed limestone masonry with a shallow pitched, slate roof. It has decorative bargeboards, dormer and oriel windows and a decorative porch. It is built in a rustic style for the affluent of Merthyr. [1] Setting: Located to the east of the main High Street to the north of Merthyr Tydfil. The house is located on a natural platform above the existing A465 cutting below. The house is surrounded by similar affluent villa properties and has no clear sight lines towards the existing A465 road; it is located approximately 200 m to the south of it. [2]
References	[1] Merthyr Tydfil County Borough Council [2] Site visit by Jacobs 25-26 January 2016

Asset Number	73
Asset Name	Fronheulog House, Merthyr Tydfil
Sub Topic	Historic Buildings
NGR	SO 03246 08242
Easting	303246
Northing	208242
Parish	Cyfarthfa
Broad Type	House
Specific Type	Domestic
Designation	Locally Listed Building
Cadw Reference	N/A
HER Reference	17
Condition	Good
Period	Post-Medieval
Value	Low
Description	Fronheulog House is a well-built, two storey, detached villa with attics. It is built of rendered masonry finished with white and grey paint under a pitched, slate roof with a long front porch with lead roof. The front has a large bay window with balcony above it and stone balustrading. The quoins and window surrounds have stone detailing. The ground floor to the left has exposed, painted ashlar work. [1] Setting: Located to the north of the A465 to the north of Merthyr Tydfil. The house is located on a natural platform above the existing A465 cutting below. The house is surrounded by similar affluent villa properties and looks out on to the A465 below around 50 m away. The sight lines towards the A465 road to the south are largely screened by tree growth. [2]
References	[1] Merthyr Tydfil County Borough Council [2] Site visit by Jacobs 25-26 January 2016

Asset Number	74
Asset Name	Church of St John the Baptist, Merthyr Tydfil
Sub Topic	Historic Buildings
NGR	SO 03135 08098
Easting	303135
Northing	208098
Parish	Cyfarthfa
Broad Type	Church
Specific Type	Religious, Ritual and Funerary
Designation	Grade II Listed Building
Cadw Reference	LB81185
HER Reference	03186m
Condition	Good
Period	Post-Medieval
Value	Medium
Description	Church of St John the Baptist is a Grade II Listed Anglican parish church of 1870 by G E Robinson of Cardiff, David Jenkins builder, built on land given by A G Holford. Known as the Swiss church for its slated spire. Vestry and organ chamber added after 1922. Included as a mid-Victorian church with unusual brick-lined interior (reminiscent of John Norton's churches in South Wales) and landmark spire. Interior Walls of pale brick with thin decorative bands of red brick and encaustic tile, one at level of capitals the other at level of corbels of the colonnettes that carry the roof trusses, and alternating buff and white bricks to pointed window reveals and chancel arch. Plastered dado. Open roofs of thin arch-braced collar trusses, the braces carried down low onto short colonnettes with moulded square caps at level of upper decorative band, marble shafts and corbels at level of lower band. Broad 4 bay nave roof. Tall pointed chancel arch in 3 orders of moulded brick, the inner 2 round-moulded, the outer one hollow-moulded with hoodmould, and the inner arch on corbelled colonnettes as in nave. Pointed door at east end of nave to left of chancel arch. One step into chancel, considerably narrower than nave with similar 3-bay roof on corbelled paired colonnetes. Timber lintel to north organ chamber, gabled organ chamber, vestry to east, with plaque recording addition of both in memory of K Jones died 1922. Sanctuary has plain 3-colour tiles to floor, east window has ashlar frame with column shafts and hoodmould. Ashlar cusped piscina on south wall with moulded gabled hood mould and broad segmental-pointed tall entry into base of tower. Fittings: Ashlar octagonal font on octagonal shaft. Ornate brass eagle lectern post 1895, Gothic panelled pulpit post 1922. Gothic stalls of 1904 with colonnettes to bench ends, tall backs with pierced band of cusped triangles, similar cusped heads to arcaded fronts. Fine brass rails also of 1904, 2 round rails on 4 standards with pointed arch on twisted shafts with Gothic leaf scroll each side. Oak Gothic reredos of 1918 with eight blind traceried panels between tall side pieces with crocketted gables and finials.

	Oak altar with traceried panels, early 20th century. Stained glass: Nave south first window, Suffer the children, post 1938, by Wippell & Co of Exeter, signed G. Cooper-Abbs; second window post 1884, Angel at the tomb, possibly by Mayer of Munich; third post 1904, 2 saints to 2 brothers; large E window Sermon on the Mount, early C20 by Heaton, Butler & Bayne of London, to Kate Jones, died 1901; N third, Ann Griffiths and St David, 1984 by Celtic Studios; North fourth Dorcas and Joanna, post 1932. Memorials: marble scroll to west. Gould died 1902, brass plaque to Mrs Williams, caretaker, died 1905. In porch is an early Christian inscribed stone. The exterior of the parish church consists of distinctive stonework in crazed rubble with bands of thin stones at sill and impost levels, rock-faced sandstone quoins, and ashlar windows, steep slate roofs. Nave, chancel, South porch, south-east tower with slated spire and north gabled organ-chamber with vestry. W end has 4 bands of thin stones, diagonal buttresses and two-step buttresses framing lower half of large W window with chamfered surround of sandstone, with hoodmould. Odd tracery of three lancets with transoms at mid height and across tops and tracery in head, apparently partly or wholly renewed in concrete in the 20th century. Coped shouldered gable with stone finial. Big south porch has steep gable and ashlar pointed door, hollow-moulded with hoodmould. Double doors with diagonal boarding. Within porch S door has roll-moulded pointed arch with double cambered-headed doors with diagonally boarded panels. Nave has buttresses of rock-faced sandstone between pointed windows with ashlar heads and hoodmoulds, chamfered rockfaced sandstone jambs, and ashlar 2-light tracery with quatrefoils in heads, 3 windows south, 4 to north. Lower chancel has attached south tower of 3 stages with high battered base, clasping buttresses at angles with similar high bases and long set offs, reaching up to base of top stage. Top stage has paired long bell openings with segmental-pointed ashlar chamfered heads, and big ashlar corbels under eaves of slated spire. Spire is broached with 4 small timber lucarnes set low with metal 3-sided roofs, and 4 similar but smaller vents in diagonal faces. Tower S side has cross in stonework above second stage and lancet in lowest stage, and E side has door with segmental-pointed arch. Chancel south has no windows, east end has coped gable, 3-light pointed window with ashlar tracery and hoodmould Chancel north has approximately 1925 gabled organ chamber with small flat-roofed vestry to east. Organ chamber has reset 2-light north window, matching those of nave. [1] [2] Setting: Location In a prominent position on the NE side of New Church Road in Cefn-coed-y-cymmer. Views from the north of the churchyard towards the existing A465 approximately 60 m to the north. [3]
References	[1] Newman, J. 1995. Buildings of Wales: Glamorgan, pp 318-9 [2] Howell, J. & Beazley, J. 1997. Companion Guide to South Wales, p 259 [3] Site visit by Jacobs 25-26 January 2016

Asset Number	75
Asset Name	Former Brecon and Merthyr Railway Bridge, Merthyr Tydfil
Sub Topic	Historic Buildings
NGR	SN0324008140
Easting	303240
Northing	208140
Parish	Vaynor
Broad Type	Bridge
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03184m
Condition	Near intact
Period	Post-Medieval
Value	Negligible
Description	A bridge once carrying the Brecon & Merthyr Railway across the line of the Merthyr / Abergavenny Railway (now the A465). It appears to have been fitted after construction of the A465 in 1964 and therefore may not be the original bridge. [1] A bridge across the A465. It once carried the Brecon & Merthyr Railway across the line of the Merthyr and Abergavenny Railway which later became the A465 road. The bridge is constructed iron riveted plates supported by iron girders and linked the northern and southern parts of Cefn-coed-y-cymmer. It appears to have been fitted after construction of the A465 in 1964 and therefore may not be the original railway bridge prior to the construction of the road. Setting: The bridge is located directly over the existing A465 and its setting is dominated by it. [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016

Asset Number	76
Asset Name	Footbridge over former Brecon and Merthyr railway, Merthyr Tydfil
Sub Topic	Historic Buildings
NGR	SN0327008210
Easting	303270
Northing	208210
Parish	Vaynor
Broad Type	Bridge
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03182m
Condition	Near intact
Period	Post-Medieval
Value	Negligible
Description	Thirty metres north-east of the a railway bridge spanning the existing A465 is a four-girder iron footbridge with cross concrete plinths. The adjoining bank is revetted with rusticated ashlar masonry. [1] Approximately 30 m north-east of the existing A465 is a four-girder iron footbridge with cross concrete plinths. The adjoining bank is revetted with rusticated ashlar masonry. Setting: The bridge is located on a natural platform approximately 50 m to the north of the existing A465 in a cutting below with no clear lines of sight to the road [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016

Asset Number	77
Asset Name	A465 road viaduct over the Taf Fechan
Sub Topic	Historic Buildings
NGR	SN0335008150
Easting	303350
Northing	208150
Parish	Vaynor
Broad Type	Bridge
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03181m
Condition	Near intact
Period	Post-Medieval
Value	Negligible
Description	One of the bridges designed by road engineers Rendel, Palmer & Tritton with Alex Gordon and Partners as consultant architects for the original A465 scheme in the 1960s, it employs twin parabolic arch ribs to carry the existing A465 over the gorge. [1] Setting: The viaduct forms part of the existing A465 and its setting is dominated by the valley below. [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016

Asset Number	78
Asset Name	Gurnos Quarry Tramroad and Leat
Sub Topic	Archaeological Remains
NGR	SN0348008390
Easting	303480
Northing	208390
Parish	Vaynor
Broad Type	Leat
Specific Type	Water Supply and Drainage
Designation	Scheduled Monument
Cadw Reference	GM478
HER Reference	02434.0m
Condition	Intact
Period	19th Century
Value	High
Description	A Tramroad and Leat constructed in 1792 and associated with the Gurnos limestone quarries that served Cyfarthfa Ironworks. The Tramroad and Leat run southeast to northwest along the line of Brecon Road in Merthyr Tydfil and are bisected by the current A465. The leat was constructed in 1825 to provide water for the Cyfarthfa Ironworks. Features of the leat include a weir on the Taf Fechan with entrance sluice, a culverted section beneath the quarry floor and an impressive overflow near the southern end. The monument demonstrates the complex water and transport management required for an important ironworks in the industrial revolution. [1] A leat, some 1.6 km long, was constructed in 1825 to provide water for the ornamental lake at Cyfarthfa Castle (nprn 18504) and, via Pont-y-cafnau (nprn 34860), for Cyfarthfa Ironworks (nprn 34078). The northern end of the watercourse is at a sluice on the Afon Taf opposite Gurnos Quarry; it runs parallel to the earlier Gurnos Tramroad (nprn 303701) and still supplies the lake at Cyfarthfa Castle. [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Anon, (2017). [online] Available at: http://www.coflein.gov.uk/en/site/406786/ [Accessed 11 Jan. 2017].

Asset Number	79
Asset Name	Smithy near Gurnos Quarry, Vaynor
Sub Topic	Archaeological Remains
NGR	SN0351008390
Easting	303510
Northing	208390
Parish	Vaynor
Broad Type	Blacksmiths workshop
Specific Type	Industrial
Designation	None
Cadw Reference	N/A
HER Reference	04954m
Condition	Not known
Period	Post-Medieval
Value	Negligible
Description	Site of a smithy near Gurnos Quarry in Vaynor, as noted from the OS 1875 First Edition Map. [1] Site no longer visible due to tree growth. Condition uncertain. [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016

Asset Number	80
Asset Name	Gurnos Limestone Quarry
Sub Topic	Archaeological Remains
NGR	SN0355008280
Easting	303550
Northing	208280
Parish	Vaynor
Broad Type	Quarry
Specific Type	Industrial
Designation	None
Cadw Reference	N/A
HER Reference	03183m
Condition	Near intact
Period	18th Century
Value	Low
Description	A well-preserved late 18th century quarry excavated to supply Cyfartha Ironworks with limestone. Described as 'Quarry and Pasture' on the tithe map and associated with a network of tramways on the quarry floor which were shown on the 1880 Ordnance Survey [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	81
Asset Name	Drystone Walling, Gurnos Farm
Sub Topic	Archaeological Remains
NGR	SN0423008600
Easting	304230
Northing	208600
Parish	Vaynor
Broad Type	Farm
Specific Type	Agriculture and Subsistence
Designation	None
Cadw Reference	N/A
HER Reference	03155m
Condition	Damaged
Period	Post-Medieval
Value	Low
Description	Directly to the west of Gurnos Farm and incorporated into the outer walls of the farm complex is a series of drystone walling, part of which encloses a small coppice. Drystone walling also forms part of a side entrance to the farm complex. [1] [2] [3] Asset 81 is located directly to the west of Gurnos Model Farm (Asset 82), approximately 30 m to the north of the existing A465 and within the footprint of the proposed scheme. [4]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report [4] Site visit by Jacobs 25-26 January 2016

Asset Number	82
Asset Name	Gurnos Model Farm and Workers Cottages
Sub Topic	Historic Buildings
NGR	SO 04348 08648
Easting	304348
Northing	208648
Parish	Vaynor
Broad Type	Farmhouse
Specific Type	Agriculture and Subsistence
Designation	Locally Listed Building
Cadw Reference	N/A
HER Reference	03179m, 64, 03166m
Condition	Fair
Period	Post-Medieval
Value	Low
Description	A large 'model' farm which was occupied, but not owned, by the ironmaster William Crawshay. A tithe award was prepared in 1846 relating to 209 acres. The farmstead is in a poor condition and is covered by striated render imitating ashlar masonry, painted windows and door detailing, with a front porch and decorative barge boards. The main body is of three bays in length with a hipped roof. To the side is an extension with a pitched roof of Welsh slate. Either side of house are single-storey stable blocks (the western wing forming a 'c' shaped layout) built of uncoursed stone with brick detailing. At the centre of the courtyard is a lofted barn built of coursed stone. The farm is unusual in being a planned courtyard farm, and the layout dates from before 1885 Ordnance Survey mapping. It may have been erected by William Crawshay II as part of his development of the Cyfartha estate, which included a large amount of ornamental planting between Gurnos and his seat at Cyfartha Castle. Associated with the model farm are three farm worker's cottages of two bays, and two storeys high with painted brick window & door detailing and coursed, rusticated masonry. Architecturally very similar to Gurnos Farm the buildings probably acted as tied cottages for agricultural labourers. [1] Setting: The farm is located approximately 40 m to the north of the existing A465 although it is partly screened by trees planted along the verge of the road. To the north side of the road the setting is largely rural whilst on the south side the setting is suburban being dominated by the modern, Gurnos housing estate. [2]
References	[1]] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016

Asset Number	83
Asset Name	Drystone Walling and Sheep Fold, Gurnos Farm
Sub Topic	Archaeological Remains
NGR	SN0450008650
Easting	304500
Northing	208650
Parish	Vaynor
Broad Type	Field boundary
Specific Type	Agriculture and Subsistence
Designation	None
Cadw Reference	N/A
HER Reference	03197m
Condition	Damaged
Period	Post-Medieval
Value	Low
Description	Asset 83 is located to the east of Gurnos Farm (Asset 82) adjacent to the boundary of the existing A465 and within the footprint of the proposed scheme. Approximately 110 m to the east of Gurnos Farm is a semi-circular drystone walled enclosure which appears to have been truncated to the south by the construction of the A465. Inside the semi-circular feature there is evidence of stone clearance, whilst externally the surrounding fields are littered with limestone outcrops and possible quarrying. Following the external circumference of the walling is a stream linked to other watercourses to the north. [1] [2] This site was included in the Stage 3 evaluation programme and was excavated in October 1996. A small section of walling was excavated. The lower section of the wall extended approximately 0.30 m below the present ground surface, close to the interface between recent shallow dark humic soils and light orange clays. No wall foundations were present. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	84
Asset Name	Findspot of Possible Prehistoric Quernstone
Sub Topic	Archaeological Remains
NGR	SN0455008660
Easting	304550
Northing	208660
Parish	Vaynor
Broad Type	Findspot
Specific Type	Object
Designation	None
Cadw Reference	N/A
HER Reference	03128m
Condition	Fair
Period	Prehistoric
Value	Negligible
Description	Approximately 150 m east of Gurnos Farm, a possible quern-stone (with bowling on one face) was identified, which is probably prehistoric. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	85
Asset Name	Gurnos Tower, Gurnos
Sub Topic	Historic Buildings
NGR	SO 04602 08507
Easting	304602
Northing	208507
Parish	Vaynor
Broad Type	Tower
Specific Type	Industrial
Designation	Locally Listed Building
Cadw Reference	N/A
HER Reference	131
Condition	Poor
Period	Post-Medieval
Value	Low
Description	The Gurnos tower is a three storey, square tower built of coursed masonry. The building is thought to have had an industrial use but may have been a watchtower associated with the adjacent Morlais tramroad and limekilns; its exact function is unknown. [1] Setting: The original setting has been lost and the setting is now largely suburban being dominated by the surrounding modern, Gurnos housing estate and the existing A465 approximately 110 m to the north. [2]
References	[1] Merthyr Tydfil County Borough Council [2] Site visit by Jacobs 25-26 January 2016

Asset Number	86
Asset Name	Coppice and Drystone Walling, Gurnos
Sub Topic	Archaeological Remains
NGR	SN0470008700
Easting	304700
Northing	208700
Parish	Vaynor
Broad Type	Coppice
Specific Type	Agriculture and Subsistence
Designation	None
Cadw Reference	N/A
HER Reference	03135m
Condition	Damaged
Period	Post-medieval
Value	Low
Description	West of the Castle Morlais Tramroad is a large coppice area which incorporates three lime kilns. It is possible that the coppice supplied fuel for the kilns as well for the farm. Surrounding the coppice on the north, east and western edges is a fragmented drystone wall. To the west the walling encloses open unimproved pasture land. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	87
Asset Name	Morlais Tramroad (West)
Sub Topic	Archaeological Remains
NGR	SO0723507676
Easting	307235
Northing	207676
Parish	Pant
Broad Type	Tram
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03173.2 m
Condition	Poor
Period	19th Century
Value	Negligible
Description	The Dowlais Iron Company opened a new limestone quarry at Morlais (east) after leaving Twynau Gwynion quarries in 1825. Despite this a tramroad connecting the quarries to the Dowlais and Ivor Ironworks was not opened until the 1830s. The gauge was 4 ft 2 in, the same as the Penydarren tramroad allowing traffic to transfer between the two. By 1832 it is possible that combined wheel locomotives could have worked the line to Morlais East as they were able to run on 4 ft 2 in as well as standard gauge railways.Track was converted to standard gauge after 1838. The northern section of the tramroad through the quarries is now a designated trail known as Morlais Heritage Trail; set up by Pen-y-Dre high school in conjunction with Merthyr Groundwork Trust. The trail starts opposite the lower car park of the Brecon Mountain Railway alongside Morlais Golf Course. From here the tramroad ran a winding course southwards through Pant to the Ivor Works, its route can be partly followed along Pant Road. The tramroad continued southeast to the eastern extent of Dowlais Ironworks where it joined the Penydarren Tramroad. Approximately 39% of its route survives in varying condition. surviving features include stone blocks, wooden sleepers and revetment. [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	88
Asset Name	Limekilns, Castle Morlais Tramroad
Sub Topic	Archaeological Remains
NGR	SN0471008720
Easting	304710
Northing	208720
Parish	Vaynor
Broad Type	Lime kiln
Specific Type	Industrial
Designation	None
Cadw Reference	N/A
HER Reference	03134m
Condition	Damaged
Period	Post-Medieval
Value	Low
Description	The remains of at least three circular, corbelled limekilns constructed of unmortared, uncoursed rubble stonework (standing to a height of approximately 1.5 m) are located on the eastern edge of a large coppiced woodland, next to the Morlais Tramroad (Asset 87, Asset 93). This tramroad would have supplied the raw materials used to charge the kilns, the resultant lime was probably being used for agricultural improvement of the land surrounding Gurnos Farm. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	89
Asset Name	Drystone Walling, Gurnos
Sub Topic	Archaeological Remains
NGR	SN0485008700
Easting	304850
Northing	208700
Parish	Vaynor
Broad Type	Field boundary
Specific Type	Agriculture and Subsistence
Designation	None
Cadw Reference	N/A
HER Reference	03133m
Condition	Near destroyed
Period	Post-Medieval
Value	Low
Description	To the north of the existing A465, east of the Castle Morlais Tramroad is the remnants of a drystone walled landscape. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	90
Asset Name	Line of Roman Road 1
Sub Topic	Archaeological Remains
NGR	SO0555308427
Easting	305553
Northing	208427
Parish	Pant
Broad Type	Road
Specific Type	Infrastructure
Designation	None
Cadw Reference	N/A
HER Reference	RR621-02b
Condition	Poor
Period	Roman
Value	Negligible
Description	Within the vicinity of the drystone walling at Gurnos are the possible remains of a Roman road which ran from Brecon to Cardiff. The road is marked on the 1891 Ordnance Survey map, approximately 200 m west of Gurnos Farm. [1] [2] Recent test pitting in an area 150 m east of Gurnos Farm was recovered a Roman pottery shard. [3] A Roman road is assumed to lead north from the Roman settlement at Cardiff, linking the military settlements at Caerphilly, Gelligaer and Pen-y-Darren, eventually heading for Brecon Gaer. Field evidence is limited to an uncertain stretch north from Gelligaer. [4]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report [4] Anon, (2017). [online] Available at: http://www.coflein.gov.uk/en/site/305956/ [Accessed 11 Jan. 2017].

Asset Number	91
Asset Name	Merthyr Unknown Structure
Sub Topic	Archaeological Remains
NGR	SN0615408484
Easting	306154
Northing	208484
Parish	Dowlais
Broad Type	Structure
Specific Type	Unassigned
Designation	None
Cadw Reference	N/A
HER Reference	05255m
Condition	Not known
Period	Uncertain
Value	Unknown
Description	Unknown structure visible on second (1900) and third (1920) edition Ordnance Survey maps. The structure was adjacent to a series of trackways leading from Ivor Ironworks outside and to the east of the existing A465. The tracks provided a means of transporting the spoil for dumping. [1] Site no longer visible above ground. Condition uncertain. [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016

Asset Number	92
Asset Name	Cwm-Rhyd-Y-Bedd Deserted Post Medieval Village
Sub Topic	Archaeological Remains
NGR	SN0629108371
Easting	306291
Northing	208371
Parish	Dowlais
Broad Type	Village
Specific Type	Settlement
Designation	None
Cadw Reference	N/A
HER Reference	05271m
Condition	Destroyed
Period	19th Century
Value	Negligible
Description	Cwm-Rhyd-Y-Bedd visible on first (1876), second (1900) and third (1920) edition Ordnance Survey maps, but no longer visible on subsequent maps. The settlement was scattered along Nant Morlais to the south of the existing A465, but is no longer visible. The housing was mostly small terraces. The area has been used heavily for tipping spoil and also appears to have been leveled so it it unlikely that the village survives. [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	93
Asset Name	Morlais Tramroad (East)
Sub Topic	Archaeological Remains
NGR	SN0509309982
Easting	305093
Northing	209982
Parish	Pant
Broad Type	Tramway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03173.1m
Condition	Damaged
Period	19th Century
Value	Negligible
Description	The Dowlais Iron Company opened a new limestone quarry at Morlais (east) after leaving Twynau Gwynion quarries in 1825. Despite this a tramroad connecting the quarries to the Dowlais and Ivor Ironworks was not opened until the 1830s. The gauge was 4 ft 2 in, the same as the Penydarren tramroad allowing traffic to transfer between the two. By 1832 it is possible that combined wheel locomotives could have worked the line to Morlais East as they were able to run on 4 ft 2 in as well as standard gauge railways. Track was converted to standard gauge after 1838. The northern section of the tramroad through the quarries is now a designated trail known as Morlais Heritage Trail; set up by Pen-y-Dre high school in conjunction with Merthyr Groundwork Trust. The trail starts opposite the lower car park of the Brecon Mountain Railway alongside Morlais Golf Course. From here the tramroad ran a winding course southwards through Pant to the Ivor Works, its route can be partly followed along Pant Road. The tramroad continued southeast to the eastern extent of Dowlais Ironworks where it joined the Penydarren Tramroad. Approximately 39 % of its route survives in varying condition. surviving features include stone blocks, wooden sleepers and revetment. [1] The course of the tramroad which was built in 1803 crosses the existing A465 at this point. It brought lime and limestone from Castle Morlais quarries down to the Dowlais Ironworks. The line was constructed of a plateway with mixed 2 ft. 9 in. and 4 ft. 2 in. gauge track and the route is marked on the tithe map and Ordnance Survey of 1880. The section of tramroad running under the existing A465 has been damaged and may have been re-aligned during the construction of the original A465 scheme in the 1960s. [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	94
Asset Name	Branch Line of Brecon and Merthyr Railway 1
Sub Topic	Archaeological Remains
NGR	SN0675008560
Easting	306750
Northing	208560
Parish	Pant
Broad Type	Railway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03170m
Condition	Near destroyed
Period	19th Century
Value	Negligible
Description	To either side of, and below, the existing A465 are the remains of a substantial north/south cutting originally part of the branch line of the Brecon & Merthyr Railway. Opened in 1869, the branch line ran from Dowlais Central (south of A465) to Pant in the north. At Pant, the branch line joins the main earlier Brecon & Merthyr Railway (to Brecon via Pontsticill) opened in 1863. [1] [2] Within Stage 3 of the archaeological programme in 1996, two trenches were evaluated and were located across the route of the railway, one to assess the presence of possible track/sleeper level, the other to record in section the construction methods used for track bedding. The construction method used for the track bedding is similar to exposed areas of the railway nearby. A series of stone hogging layers suggest that the track bedding was improved during its use. The trench section went to a depth of 1.2 m and revealed at least three sets of track. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	95
Asset Name	London and North Western Railway - Dowlais Extension
Sub Topic	Archaeological Remains
NGR	SN0653207989
Easting	306532
Northing	207989
Parish	Dowlais
Broad Type	Railway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	06076.0m
Condition	Damaged
Period	19th Century
Value	Negligible
Description	In 1873 the Brecon and Merthyr Railway allowed the London North Western Railway (LNWR) to construct a line running westward through Dowlais Top to Ivor Junction, in return for running rights. In achieving this the London North Western gained access to the strategically placed Lloyd Street station and the Dowlais Iron Company's traffic. The completion of this line and a number of others allowed the LNWR to run trains into Merthyr Tydfil from Monday 9 June 1879, ending the aspirations of the Midland Railway to run trains into the Merthyr area. [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	96
Asset Name	Branch Line of Brecon and Merthyr Railway 2
Sub Topic	Archaeological Remains
NGR	SN0675008560
Easting	306750
Northing	208560
Parish	Pant
Broad Type	Railway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03171m
Condition	Near destroyed
Period	Post-Medieval
Value	Negligible
Description	To the north of the A465 is the course of an east/west connecting line between the main line of the Brecon & Merthyr Railway to Brecon (via Pontsicill) in the west (No.194), and the branch line of the Brecon & Merthyr Railway to the east (No.192). The route has now been substantially disturbed by development, but is still indicated by the presence of railway posts. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	97
Asset Name	Tabernacle Apostolic Chapel, Pant Road, Penywern
Sub Topic	Historic Buildings
NGR	SO 06418 08468
Easting	306418
Northing	208468
Parish	Pant
Broad Type	Chapel
Specific Type	Religious, Ritual and Funerary
Designation	None
Cadw Reference	N/A
NMRW Reference	49540
Condition	Good
Period	Post-Medieval
Value	Negligible
Description	A single storey five-bay building with a corrugated iron pitched roof and finished in a smooth cream render. Gable end facing the Pant Road with a central doorway. The building is a simple chapel without any outward decoration or embellishments, it has a car park with fencing to the rear. Setting: The chapel is located within an area of terrace workers housing to the south. The chapel is separated by an open playground from the flyover section of the A465, approximately 60 m to the north. [1]
References	[1] Site visit by Jacobs 25-26 January 2016

Asset Number	98
Asset Name	Lower Row Nos. 4-27 and Upper Row Nos. 1-36, Penywern
Sub Topic	Historic Buildings
NGR	SO 06999 08132
Easting	306999
Northing	208132
Parish	Pant
Broad Type	Houses
Specific Type	Domestic
Designation	None
Cadw Reference	N/A
MTCBC Reference	286165, 286164
Condition	Fair
Period	Post-Medieval
Value	Low
Description	Upper Row consists of post 1827 workers housing comprised of thirty-six dwellings. A row of two storey, two-bay, terraced housing retaining Welsh slate roofs. The buildings are unrendered and built in finely cut and well-coursed rusticated limestone ashlar with painted brick detailing around the doors and windows. The original sash windows have generally been replaced unsympathetically with casements. Lower Row consists of post 1827 workers housing comprised of twenty-four dwellings. A row of two storey, two-bay, terraced housing retaining Welsh slate roofs, chimneys largely demolished. The buildings are rendered in rough cast some exposing finely finished painted stone detailing around the doors and windows. The original sash windows have generally been replaced unsympathetically. [1] Setting: The rows are located within a suburban setting of 19th century industrial workers housing, located approximately 70 m south of the A465 road at the closest point. The front elevations of the rows face away from the A465. [2]
References	[1] RCAHMW [2] Site visit by Jacobs 25-26 January 2016

Asset Number	99
Asset Name	Barrack Row Nos. 39-44; 45-46, 47-58, Penywern
Sub Topic	Historic Buildings
NGR	SO 06813 08360
Easting	306813
Northing	208360
Parish	Pant
Broad Type	Houses
Specific Type	Domestic
Designation	None
Cadw Reference	N/A
MTCBC Reference	286429, 286163
Condition	Good
Period	Post-Medieval
Value	Low
Description	Pre-1827 workers housing comprised of twenty dwellings in total along Barrack Row. A row of two storey, two-bay, terraced housing retaining Welsh slate roofs, chimneys largely demolished. The buildings are rendered in rough cast with finely finished painted stone detailing around the doors and windows. The original sash windows have generally been replaced unsympathetically. [1] Setting: The rows are located within a suburban setting of 19th century industrial workers housing, located approximately 120 m south of the existing A465 road at the closest point. The front elevations of the rows face away from the existing A465 and there are no clear views of the existing A465 road. [2]
References	[1] RCAHMW [2] Site visit by Jacobs 25-26 January 2016

Asset Number	100
Asset Name	Western Leat System, Upper Reservoir
Sub Topic	Archaeological Remains
NGR	SN0688008670
Easting	306880
Northing	208670
Parish	Pant
Broad Type	Water course
Specific Type	Industrial; Water Supply and Drainage
Designation	None
Cadw Reference	N/A
HER Reference	03169m
Condition	Near intact
Period	19th Century
Value	Low
Description	The Western Leat System, Upper Reservoir comprises a north-south oriented brick and masonry lined leat approximately 1 m deep and 1.5 m wide located approximately 165 m to the north of the existing A465. The leat feeds into the Lower Reservoir (Asset 102) to the south of the existing A465. The Leat was constructed in the late 19th century and fed Ivor and Dowlais Ironworks. To the west of the Upper Reservoir is a north / south orientated leat with an extensive brick and stone masonry lining visible. Flowing north to south, the leat is 1 m in depth by 1.5 m wide and runs approximately 200 m north of the A465. The leat south of the road feeds into Lower Reservoir. [1] [2] During the Stage 2 assessment in 1996, a photographic record was undertaken. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	101
Asset Name	Branch Line of Merthyr and Brecon Railway, Dowlais
Sub Topic	Archaeological Remains
NGR	SN0690008300
Easting	306900
Northing	208300
Parish	Dowlais
Broad Type	Railway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	01280.0m
Condition	Not known
Period	19th Century
Value	Negligible
Description	Course of the Brecon and Merthyr Railway. This has now been demolished, but its line is still partly visible, north of the existing A465, before heading south through Gelli Gaer Common. West off this is a branch line of the Merthyr and Brecon Railway that ran to the north of Pen-y-Wern,and ended at Dowlais. [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	102
Asset Name	Lower Reservoir
Sub Topic	Archaeological Remains
NGR	SN0730008300
Easting	307300
Northing	208300
Parish	Dowlais
Broad Type	Reservoir
Specific Type	Water Supply and Drainage
Designation	None
Cadw Reference	N/A
HER Reference	03131m
Condition	Near intact
Period	19th Century
Value	Low
Description	The smaller and more southerly of two inter-linked reservoirs, the Lower Reservoir was built prior to the completion of the Merthyr Tydfil tithe map of 1850, whereas the Upper Reservoir (Asset 104) was added later in the century. Constructed to supply water to the Dowlais Ironworks. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	103
Asset Name	No 1 Lower Row, Penywern
Sub Topic	Historic Buildings
NGR	SN0705008510
Easting	307050
Northing	208510
Parish	Pant
Broad Type	House
Specific Type	Domestic
Designation	Grade II Listed Building
Cadw Reference	N/A
HER Reference	27085
Condition	Near intact
Period	Post-Medieval
Value	Medium
Description	No. 1 Lower Row is a Grade II Listed Building. Mid C19 corner house of industrial workers terraced housing. Originally many terraces in the Dowlais and Penydarren areas ended in a curved corner house, this is the least altered survivor. The building is a corner house, unpainted roughcast with slate curved close-eaved roof. Two-storeys with one-window range and door to Lower Row, one-window range on corner. The upper windows are boarded over, the lower ones have C20 12-pane glazing. Windows and C20 half-glazed door have plain raised surrounds. Thick stone sills to ground floor windows, thinner above. It is listed for it special interest as the best surviving example of the curved corner-houses of the industrial workers' terraces in Dowlais. [1] [2] Setting: The building is located on the east end of Lower Row at its junction with the road leading to Upper Row. The building is within a suburban setting of 19th century industrial workers housing, located approximately 150 m south of the existing A465 road. The building faces southward away from the existing A465. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Glamorgan-Gwent Archaeological Trust Ltd , Historic Landscape Characterisation Report - Merthyr Tydfil, 2002, pp 47, 64. [3] Site visit by Jacobs 25-26 January 2016

Asset Number	104
Asset Name	Upper Reservoir
Sub Topic	Archaeological Remains
NGR	SN0720008500
Easting	307200
Northing	208500
Parish	Pant
Broad Type	Reservoir
Specific Type	Water Supply and Drainage
Designation	None
Cadw Reference	N/A
HER Reference	03127m
Condition	Near intact
Period	19th Century
Value	Low
Description	Two reservoirs, Upper and Lower are located either side of the existing A465. Upper Reservoir is the larger of the two and has two leat systems feeding into and out of it. The southern embankment is raised approximately 5 m in order to overcome the natural contours of the landscape. Below the embankment to the south-west is an associated water pumping / release station. This reservoir is the more modern of the two, and was built by the time of the preparation of the first edition of the OS 1:2500 map in 1872-85. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	105
Asset Name	Pumping Station, Upper Reservoir
Sub Topic	Historic Buildings
NGR	SO 07065 08498
Easting	307065
Northing	208498
Parish	Pant
Broad Type	Pumping station
Specific Type	Water Supply and Drainage
Designation	None
Cadw Reference	N/A
HER Reference	03130m
Condition	Good
Period	Post-Medieval
Value	Negligible
Description	A 19th century pumping station built below the Upper Reservoir. A simple industrial, single storey structure constructed of red brick with a later low concrete slab roof. The building no longer houses pumping equipment. [1] Setting: The building is overshadowed by the embankment of the Upper Reservoir located above the pumping station to the north and the existing A465 road approximately 60 m to the south. The value of the structure relates primarily to its relationship with the Upper Reservoir. [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016

Asset Number	106
Asset Name	Aqueduct, Upper Reservoir
Sub Topic	Historic Buildings
NGR	SN0744008380
Easting	307440
Northing	208380
Parish	Pant
Broad Type	Aqueduct
Specific Type	Water Supply and Drainage;Transport
Designation	Grade II Listed Building
Cadw Reference	LB80964
HER Reference	03136m
Condition	Damaged
Period	Post-Medieval
Value	Medium
Description	Two 19th century aqueducts constructed of unmortared sandstone masonry are located approximately 15 m north of the existing A465, close to the perimeter fence of the Asda superstore (Dowlais Top). [1] The Grade II Listed aqueduct was built 1860 / 1865 on Dowlais Free Drainage System to carry watercourse to nearby reservoir over access way to common. The aqueduct is built of grey stone, with a segmental arch approximately 2.4 m high and 1.4 m span with stone voussoirs. Angled wing-walls and buttresses in stone with soffit in red brick. The parapets have been repaired with cement. The associated watercourse is 1 m wide lined with brick. The tunnel is approximately 4 m long, the north side being part buried in overburden in 1979. The building was listed for its special interest as part of the historically important Dowlais Free Drainage System. [2] [3] Setting: The industrial setting of the structure is dominated by the reservoir, the existing A465 approximately 20 m to the south and overshadowed by a large supermarket on an embankment above it to the north. [4]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] W L Davies, The Bridges of Merthyr Tydfil, 1992, p 95 [3] Glamorgan-Gwent Archaeological Trust Ltd., Historic Landscape Characterisation Report - Merthyr Tydfil, 2002, p 104. [2] [4] Site visit by Jacobs 25-26 January 2016

Asset Number	107
Asset Name	Coedcae Row, Dowlais Top
Sub Topic	Historic Buildings
NGR	SN0760008150
Easting	307600
Northing	208150
Parish	Dowlais
Broad Type	House
Specific Type	Domestic
Designation	None
Cadw Reference	N/A
HER Reference	00895m
Condition	Not known
Period	Post-Medieval
Value	Low
Description	Row of post-medieval houses, double-fronted type, built before 1914 and much altered but similar to some of the houses in Well Street, Dowlais. [1] A row of early 19th century industrial cottages. Two storey row of two houses, built of stone and painted white with a Welsh slate roof and gable end chimney. [2] Setting: The row is within a suburban setting of 19th century industrial workers housing approximately 120 m south of the Dowlais roundabout on the existing A465. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] RCAHMW [3] Site visit by Jacobs 25-26 January 2016

Asset Number	108
Asset Name	Brecon and Merthy Railway to Pontsticill, Dowlais
Sub Topic	Archaeological Remains
NGR	SN0664008840
Easting	306640
Northing	208840
Parish	Pant
Broad Type	Railway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03172m
Condition	Near destroyed
Period	19th Century
Value	Negligible
Description	Below the existing A465 and to the west of the Brecon & Merthyr Dowlais Branch is the Brecon & Merthyr Railway main line to Brecon via Pontsticill - opened in 1863. At Pant, this line converges with the later Dowlais Branch of the Brecon & Merthyr Railway - opened in 1869. Directly below the existing A465 fly-over along the course of this line a set of railway signals are still visible. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	109
Asset Name	Nos. 36-37, 61-62, 59-62, 45-46 and 55-56, High Street, Dowlais Top
Sub Topic	Historic Buildings
NGR	SO 07579 08110
Easting	307579
Northing	208110
Parish	Dowlais
Broad Type	Houses
Specific Type	Domestic
Designation	Locally Listed Building
Cadw Reference	N/A
HER Reference	286344, 286343, 286066
Condition	Good
Period	Post-Medieval
Value	Low
Description	Post 1829 workers housing comprised of two dwellings. Terraces of two storey, two-bay, workers housing with a mixture of retained Welsh slate roofs and replacement modern concrete tiles, chimneys largely demolished. The buildings are finished in smooth render or rough cast with painted brick detailing around the doors and windows. The original sash windows have generally been replaced unsympathetically with modern casements. [1] Setting: The rows are within a suburban setting of 19th century industrial workers housing approximately 80 m south of the Dowlais roundabout on the existing A465. [2]
References	[1] RCAHMW [2] Site visit by Jacobs 25-26 January 2016

Asset Number	110
Asset Name	Course of the Brecon and Merthyr Railway
Sub Topic	Archaeological Remains
NGR	SN0730008400
Easting	307300
Northing	208400
Parish	Pant
Broad Type	Railway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	01282.0m
Condition	Not known
Period	19th Century
Value	Negligible
Description	Course of the Brecon and Merthyr Railway, main line The first of these is the main line Merthyr and Brecon Railway. This has now been demolished, but its line is still partly visible above Dowlais Top, north of the existing A465, before heading south through Gelli Gaer Common. West of this is a branch line of the Merthyr and Brecon Railway that ran into the development corridor north of Pen-y-Wern, and ended at Dowlais. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	111
Asset Name	Tredegar Arms, Dowlais Top
Sub Topic	Historic Buildings
NGR	SO 07451 08065
Easting	307451
Northing	208065
Parish	Dowlais
Broad Type	Public house
Specific Type	Commercial
Designation	Locally Listed Building
Cadw Reference	N/A
HER Reference	60
Condition	Good
Period	Post-Medieval
Value	Low
Description	A purpose built public house of three-bay, two and half storeys building with dormer windows to the attic it incorporates an adjacent two-bay, two-storey terrace house. The chimneys have been removed and the roof replaced in concrete tiles. The exterior is smooth rendered and there is a decorative door surround consisting of doric-style pilasters with an over-hanging coach light. The four front windows, one blocked, are large arch-headed 12 pane lower louvers with three pane upper louvers. The external signage survives with a large 'Tredegar Arms' sign applied in stucco to the front. [1] Setting: Structure is located at the end of a terraced row on High Street, Dowlais with oblique views towards the existing A465 to the northeast. [2]
References	[1] Merthyr Tydfil County Borough Council [2] Site visit by Jacobs 25-26 January 2016

Asset Number	112
Asset Name	Former Dowlais Top Station House, Dowlais Top
Sub Topic	Historic Buildings
NGR	SO 07949 08416
Easting	307949
Northing	208416
Parish	Dowlais
Broad Type	House
Specific Type	Domestic
Designation	None
Cadw Reference	N/A
HER Reference	03125m
Condition	Good
Period	Post-Medieval
Value	Negligible
Description	Former Dowlais Top railway station, now converted to residential use. Adjacent to the former line of the Brecon and Merthyr Railway, opened to Dowlais Top in 1863, and close to a junction with the former London and North Western Railway Dowlais Extension of 1873 is the former Dowlais Top Station. The two-storey station house is constructed of rusticated coursed masonry typical of 19th century railway architecture. The platform area to the west of the station house has now been landscaped and new housing built to the north. [1] Setting: The setting of the former railway station house is now dominated by the existing A465 road approximately 20 m to the south of it and has been eroded by a new supermarket to the west and new housing to the north. [2]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Site visit by Jacobs 25-26 January 2016

Asset Number	113
Asset Name	Inspection Road, Upper Reservoir
Sub Topic	Archaeological Remains
NGR	SN0728008460
Easting	307280
Northing	208460
Parish	Pant
Broad Type	Road
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03158.0m
Condition	Damaged
Period	19th Century
Value	Negligible
Description	Surrounding the Upper Reservoir is a concrete inspection road, approximately 3 m in width. It appears to be equi-distant between both the Upper and Lower Reservoir (Asset 104, Asset 102) as well as the leat system to the west (Asset 128). A smaller road links the Upper and Lower Reservoir via the pumping station [1] [2] [3] Road appears to have been truncated by existing A465. May have once linked Upper and Lower Reservoir. [4]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report [4] Site visit by Jacobs 25-26 January 2016

Asset Number	~~114~~
Asset Name	~~Goat Mill Road~~
NGR	~~SN0712007630~~
Easting	~~307120~~
Northing	~~207630~~
Parish	~~Dowlais~~
Broad Type	~~Building~~
Specific Type	~~Unassigned~~
Designation	~~None~~
Cadw Reference	~~NA~~
HER Reference	~~01666m~~
Condition	~~Near destroyed~~
Period	~~19th Century~~
Value	~~Unknown~~
Description	~~Buildings were discovered whilst making safe more than a mile of subterranean waterways built during the hey-day of Dowlais iron foundries.[1]~~
References	~~[1] Glamorgan Gwent Archaeological Trust Historic Environment Record~~

STRUCK THROUGH DUE TO DESIGN CHANGE RESULTING IN REMOVAL OF ASSET FROM STUDY AREA

Asset Number	115
Asset Name	Dowlais Rail Terminal
Sub Topic	Archaeological Remains
NGR	SN0725007450
Easting	307250
Northing	207450
Parish	Dowlais
Broad Type	Railway station
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	02757m
Condition	Not known
Period	19th Century
Value	Negligible
Description	GGAT Assessment East Merthyr Land Reclamation - Dowlais rail terminal was a busy coal terminal. [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	116
Asset Name	Site of McDonalds Restaurant
Sub Topic	Archaeological Remains
NGR	SN0783008220
Easting	307830
Northing	208220
Parish	Dowlais
Broad Type	Restaurant
Specific Type	Commercial
Designation	None
Cadw Reference	N/A
HER Reference	03132m
Condition	Near intact
Period	Modern
Value	Negligible
Description	Constructed during the early 1990s, this Post-Modernist fast-food restaurant is one of only a few 'Drive-thrus' situated within this part of Wales. Constructed of red brick to a 'McDonalds' standardised design, this building would be directly impacted by the dualling. [1] [2] Within Phase 2 of the archaeological programme in 1996, a photographic record was undertaken. [3] [4] The building is now demolished
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report [4] Site visit by Jacobs 25-26 January 2016

Asset Number	117
Asset Name	Line of Roman Road 2
Sub Topic	Archaeological Remains
NGR	SO 07982 08374
Easting	307982
Northing	208374
Parish	Pant
Broad Type	Road
Specific Type	Infrastructure
Designation	None
Cadw Reference	N/A
HER Reference	RR621-02a
Condition	Unknown
Period	Roman
Value	Negligible
Description	No information recorded on HER. Exists as a GIS shapefile layer only. [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	118
Asset Name	Twynau Gwynion line 1
Sub Topic	Archaeological Remains
NGR	SO 07771 08322
Easting	307771
Northing	208322
Parish	Pant
Broad Type	Rail
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	IWT015
Condition	Destroyed
Period	19th Century
Value	Negligible
Description	No information recorded on HER. Exists as a GIS shapefile layer only. [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	119
Asset Name	Bute Tramroad
Sub Topic	Archaeological Remains
NGR	SO0775808213
Easting	307758
Northing	208213
Parish	Pant
Broad Type	Tram
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	IWT020
Condition	Unknown
Period	19th Century
Value	Negligible
Description	No information recorded on HER. Exists as a GIS shapefile layer only. [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	120
Asset Name	Rhymney Limestone Railway
Sub Topic	Archaeological Remains
NGR	SN0905008350
Easting	309050
Northing	208350
Parish	Rhymney
Broad Type	Mineral railway
Specific Type	Industrial
Designation	None
Cadw Reference	N/A
HER Reference	03043.0m
Condition	Unknown
Period	19th Century
Value	Negligible
Description	Rhymney Limestone Railway runs between Dowlais and the Rhymney (Bute) Ironworks, where it supplied the furnaces. The line is named on 1st Edition (1875) Ordnance Survey map and recorded as disused on 3rd Edition (1919) Ordnance Survey map. [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	121
Asset Name	Brecon to Merthyr, Dowlais Top
Sub Topic	Archaeological Remains
NGR	SN0804008490
Easting	308040
Northing	208490
Parish	Pant
Broad Type	Railway
Specific Type	Transport
Designation	None
Cadw Reference	N/A
HER Reference	03177m
Condition	Poor
Period	19th Century
Value	Negligible
Description	The main line of the Brecon & Merthyr Railway opened in 1869 and ran from Dowlais Central to Pant, parallel for most of the way with the present road between these places. At Pant it was joined by the earlier B. & M. main line to Brecon via Pontsticill opened in 1863. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	122
Asset Name	Railway Furniture, Blaencarno
Sub Topic	Archaeological Remains
NGR	SN0842008620
Easting	308420
Northing	208620
Parish	Rhymney
Broad Type	Boundary stone
Specific Type	Unassigned
Designation	None
Cadw Reference	N/A
HER Reference	03119m
Condition	Fair
Period	19th Century
Value	Negligible
Description	A line of concrete posts delineates the northern extent of the Abergavenny, Tredegar & Merthyr Railway. Approximately 2 m south the route has been infilled by later coal tips. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	~~123~~
Asset Name	~~Jepsons Pond Tips, Blaencarno Common~~
NGR	~~SN0851008900~~
Easting	~~308510~~
Northing	~~208900~~
Parish	~~Rhymney~~
Broad Type	~~Earthwork~~
Specific Type	~~Unassigned~~
Designation	~~None~~
Cadw Reference	~~N/A~~
HER Reference	~~03148m~~
Condition	~~Near destroyed~~
Period	~~Post-Medieval~~
Value	~~Negligible~~
Description	~~Located to the north of the A465, and west of Blaencarno Common are a number of heavy scratches which extend over 150m2. Linear in form, these features overlie earlier coal-tips. To the south, and incorporated into the A465, are extensive coal-tips. [1]~~ ~~Site is in open scrubland. No indication of industrial features present. [2]~~
References	~~[1] Glamorgan Gwent Archaeological Trust Historic Environment Record~~ ~~[2] Site visit by Jacobs 25-26 January 2016~~

STRUCK THROUGH DUE TO DESIGN CHANGE RESULTING IN REMOVAL OF ASSET FROM STUDY AREA

Asset Number	124
Asset Name	Drystone and Turfstone Walling, Blaencarno Common
Sub Topic	Archaeological Remains
NGR	SN0860008900
Easting	308600
Northing	208900
Parish	Rhymney
Broad Type	Field boundary
Specific Type	Agriculture and Subsistence
Designation	None
Cadw Reference	N/A
HER Reference	03129m
Condition	Damaged
Period	Post-Medieval
Value	Negligible
Description	North of a series of linear scratches are the remnants of an early drystone and turfstone landscape that extends north and east beyond the Merthyr Common road. Traces of turfstone walling can also be seen on the Blaencarno Common. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	125
Asset Name	Bronze Age Ring Cairn, Blaencarno Common
Sub Topic	Archaeological Remains
NGR	SN0887008900
Easting	308870
Northing	208900
Parish	Rhymney
Broad Type	Ring cairn
Specific Type	Religious, ritual and funerary
Designation	None
Cadw Reference	N/A
HER Reference	03146m
Condition	Damaged
Period	Bronze Age
Value	Medium
Description	Remnants of a small doughnut shaped cairn approximately 3-4 m in diameter and about 1 m high, built of medium sized stone rubble probably Bronze Age in date. Although there is later material surrounding, including brick and slag, this structure does not appear to have had any industrial function. Aerial photographs show further similar features to the north and east, but outside the study area. This feature may therefore represent the remnants of a Bronze Age cairn field. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	126
Asset Name	Railway Culvert, Blaencarno
Sub Topic	Archaeological Remains
NGR	SN0899008900
Easting	308990
Northing	208900
Parish	Rhymney
Broad Type	Culvert
Specific Type	Water Supply and Drainage;Maritime
Designation	None
Cadw Reference	N/A
HER Reference	03122m
Condition	Near intact
Period	Post-Medieval
Value	Negligible
Description	A culvert below the line of the present A465, constructed of well-coursed masonry and built when the Merthyr, Tredegar & Abergavenny Railway followed this route. [1] [2] Within Phase 2 of the archaeological programme in 1996, a photographic record was undertaken. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	127
Asset Name	Brecon to Merthyr Railway Embankment
Sub Topic	Archaeological Remains
NGR	SN0750008360
Easting	307500
Northing	208360
Parish	Pant
Broad Type	Earthwork
Specific Type	Unassigned
Designation	None
Cadw Reference	N/A
HER Reference	03126m
Condition	Damaged
Period	Post-Medieval
Value	Low
Description	A large section of embankment belonging to the Brecon & Merthyr Railway survives west of the Dowlais Top roundabout, close to the easterly section of the Upper Reservoir leat system (No.186). The route of the railway at SO 0729 0849 veers north alongside the northern bank of the Upper Reservoir towards Brecon. The original line between Dowlais Top station and SO 0750 0840 roughly follows the northern limit of the existing A465. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	128
Asset Name	Eastern Leat System, Upper Reservoir
Sub Topic	Archaeological Remains
NGR	SN0750008340
Easting	307500
Northing	208340
Parish	Pant
Broad Type	Leat
Specific Type	Water Supply and Drainage
Designation	None
Cadw Reference	N/A
HER Reference	03167m
Condition	Damaged
Period	Post-Medieval
Value	Low
Description	A well preserved leat running for approximately 300 m and incorporating two aqueducts (No. 187) is located within a narrow piece of land belonging to Welsh Water. Orientated east / west, traces of original brick-work are visible along its entire length. [1] [2] Within Phase 2 of the archaeological programme in 1996, a photographic record was undertaken. [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	129
Asset Name	Dig for Victory Allotments, Blaencarno
Sub Topic	Archaeological Remains
NGR	SN0892008820
Easting	308920
Northing	208820
Parish	Rhymney
Broad Type	Allotment
Specific Type	Agriculture and Subsistence
Designation	None
Cadw Reference	N/A
HER Reference	03121m
Condition	Damaged
Period	20th Century
Value	Low
Description	A series of four allotment gardens dating from the World War 2 'Dig for Victory' campaign and originally belonging to the occupants of seven cottages (shown on tithe of 1842 and the Ordnance Survey of 1880) which stood adjacent to Blaencarno Farm, but which have now been demolished. The features consist of low drystone walls which delineated the extent of the various allotments. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	130
Asset Name	Coal Tippings, Blaencarno Farm
Sub Topic	Archaeological Remains
NGR	SN0890008760
Easting	308900
Northing	208760
Parish	Rhymney
Broad Type	Earthwork
Specific Type	Unassigned
Designation	None
Cadw Reference	N/A
HER Reference	03120m
Condition	Damaged
Period	19th Century
Value	Negligible
Description	These spoil-tips, which are still visible, are marked on the Ordnance Survey of 1880. They have been affected by the existing road. [1] [2] [3] Coal tippings still visible in the landscape. [4]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report [4] Site visit by Jacobs 25-26 January 2016

Asset Number	131
Asset Name	Cwm-Rhyd-Y-Bedd
Sub Topic	Archaeological Remains
NGR	SO0618508271
Easting	306138
Northing	208269
Parish	Dowlais
Broad Type	Settlement
Specific Type	Unassigned
Designation	None
Cadw Reference	N/A
HER Reference	05271m
Condition	Destroyed
Period	19th century, 20th century
Value	Negligible
Description	Cwm-Rhyd-Y-Bedd visible on first (1876), second (1900) and third (1920) edition Ordnance Survey maps, but no longer visible on subsequent maps. The settlement was scattered along Nant Morlais which ran north to south through the study area, but is no longer visible. The housing was mostly small terraces. The area has been used heavily for tipping spoil and also appears to have been leveled so it is unlikely that the village survives. [1] [2] [3]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report

Asset Number	132
Asset Name	Pig Pens, Hirwaun
Sub Topic	Historic Buildings
NGR	SO 9544 0535
Easting	295441
Northing	205346
Parish	Hirwaun
Broad Type	Agricultural outbuilding
Specific Type	Pig pen
Designation	None
Cadw Reference	N/A
HER Reference	03210m
Condition	Damaged
Period	19th century
Value	Low
Description	The uncoursed stone masonry pig-pens appear to have originally belonged to a former farmstead between the river Nant-y-Bwlch and Tower road. The remnants of the farmstead survive as the lower courses of a masonry building on the bank of the Nant-y-Bwlch which pre-dates the modern two storey house. The pig pens and associated farmstead are not shown on the Ordnance Survey map of 1867 and therefore probably date from the late-19th century. [1] [2] [3] [4]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record [2] Babtie, 1996. A465 Abergavenny to Hirwaun, Archaeological Survey Report, Phase 1 Report. Unpublished report [3] Babtie, 1997. A465 Abergavenny to Hirwaun Dualling, Environmental Statement, Cultural Heritage, Volume 2.2. Unpublished report [4] Ordnance Survey map - Brecknockshire 1867 (LNW) sheet 83

Asset Number	133
Asset Name	Settlement near Nant Moel Reservoir
Sub Topic	Archaeological Remains
NGR	SN 9842 0695
Easting	298425
Northing	206980
Parish	Hirwaun
Broad Type	Settlement
Specific Type	Settlement
Designation	None
Cadw Reference	None
HER Reference	06238m
Condition	Poor
Period	Prehistoric
Value	Low
Description	Area of stony scatters, cairns and linear banks and one or two hut circles on improved land. Features are eroded and poorly-defined. Six small, low, cairns were noted measuring between 2 m and 4 m across and 0.1 m to 0.2 m high. They are stony mounds consolidated with light vegetation. There are three banks, low linear stony spreads. The two hut circles are poorly defined and are possibly eroded small cairns. [1]
References	[1] Glamorgan Gwent Archaeological Trust Historic Environment Record

Asset Number	134
Asset Name	A465 Road Viaduct over the Nat Hir Reservoir
Sub Topic	Historic Buildings
NGR	SN 98898 07002
Easting	298898
Northing	207002
Parish	Vaynor
Broad Type	Road viaduct
Specific Type	Transport
Designation	None
Cadw Reference	NA
HER Reference	None
Condition	Near intact
Period	Post-Medieval
Value	Negligible
Description	A 1960's concrete viaduct across the Nant Hir reservoir. The viaduct carries the existing A465 road supported by two single-span elliptical arches with vertical struts similar to Asset 77. The bridge was designed by road engineers Rendel, Palmer & Tritton with Alex Gordon and Partners as consultant architects as part of the original A465 scheme in the 1960s. The bridge to cross Nant Hir Reservoir, required a self-supporting concept which could have no bridge supports in the water at any point, including during construction. The contractor had to devised a completely new method of construction: the arch was formed step-by-step outward from its two abutments. Temporary towers, like on a suspension bridge, supported a mobile shutter for pouring concrete. As each section set into place, the shutter was moved along and the next section poured, with the emerging structure supporting its own weight [1]. Setting: The bridge forms part of the existing A465 and carries the road of the located directly over the Nant Hir reservoir below which contributes to the significance of the bridge.
References	[1] http://www.cbrd.co.uk/articles/the-heads-of-the-valleys/new-ways.shtml

HLCA Number	1
HLCA Name	A465 Heads of the Valley Road
Sub Topic	Historic Landscape
NGR	SO 02025 07388
Easting	302025
Northing	207388
Mapsheet	SO
HLC Reference	056
Broad Type	Transport
Specific Type	Transport
Value	Negligible
Key Elements	Transport corridor; mid 20th century road and bridge construction
Historic Development	The historic landscape area of the A465 Heads of the Valleys Road comprises the existing east-west road link constructed in 1964. Important features include the three contemporary road bridges carrying the existing A465 Road over rivers and streams, one of which has been subsequently altered. Built by Rendel, Palmer and Tritton (Consultant architects Alex Gordon & Partners), of contrasting design in reinforced concrete, two with twin parabolic arched ribs and one of three spans cantilevered from two piers, these won civic awards in 1968. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	2
HLCA Name	Hirwaun Industrial Estate
Sub Topic	Historic Landscape
NGR	SN 95330 05524
Easting	295330
Northing	205524
Mapsheet	SN
HLC Reference	None
Broad Type	Built Environment
Specific Type	Built Environment
Value	Negligible
Historic Development	The Hirwaun Industrial Estate comprises a number of modern industrial units on the site of reclaimed industrial land. Current businesses include a recycling plant, a welding and fabrication firm and a number of technology businesses. [1]
Historic Development References	[1] Jim Mower, Jacobs, January 2017

HLCA Number	3
HLCA Name	Post Industrial Urban Hinterland
Sub Topic	Historic Landscape
NGR	SN 96332 05480
Easting	296332
Northing	205480
Mapsheet	SN
HLC Reference	None
Broad Type	Built Environment
Specific Type	Built Environment
Value	Negligible
Historic Development	HLCA 3 comprises land reclaimed from the effects of 19th century extractive industry. The area comprises open land, sub-divided by stone or hedged boundaries and covered with scrubland and mature trees. [1]
Historic Development References	[1] Jim Mower, Jacobs, January 2017

HLCA Number	4
HLCA Name	Settlement - Hirwaun
Sub Topic	Historic Landscape
NGR	SN 95746 05823
Easting	295746
Northing	205
Mapsheet	SN
HLC Reference	None
Broad Type	Built Environment
Specific Type	Built Environment
Value	Low
Historic Development	Hirwaun has an industrial background centering on the Hirwaun Ironworks. After the ironworks closed, coal mining continued, and was a major employer until the second half of the 20th century. Several areas of the modern settlement retain 19th century industrial workers houses, with some further housing and light industrial development into the 20th century. [1]
Historic Development References	[1] Jim Mower, Jacobs, January 2017

HLCA Number	5
HLCA Name	Post Industrial Agricultural Landscape
Sub Topic	Historic Landscape
NGR	SN 98815 06943
Easting	298815
Northing	206943
Mapsheet	SN
HLC Reference	None
Broad Type	Agriculture
Specific Type	Agriculture
Value	Low
Historic Development	HLCA 5 comprises land reclaimed from 19th and early 20th century extractive industries and returned to agriculture. Fields are separated with stone built or hedged boundaries. [1]
Historic Development References	[1] Jim Mower, Jacobs, January 2017

HLCA Number	6
HLCA Name	Winch Fawr, Pen-yr-heolgerrig, Cwm Du and Upper Cwn Glo Workings
Sub Topic	Historic Landscape
NGR	SO 00739 07105
Easting	300739
Northing	207105
Mapsheet	SO
HLC Reference	64
Broad Type	Industrial
Specific Type	Industrial
Value	High
Historic Development	The coal and ironstone workings of the area mainly owe their existence to the resurgence in the iron industry seen during the latter half of the 18th century, a direct result of the technical innovation that enabled coke to be used in iron smelting. The area is directly associated with the ironworks at Cyfarthfa, built 1765 by Anthony Bacon and expanded under Richard Crawshay, who leased Cyfarthfa in 1786. The early extraction industry largely depended on surface workings using a mixture of patching (a process which scours the land of its topsoil), small pits, and levels driven into the hillsides, the latter make up the majority extractive features of the area with particular concentrations to the west of Winch Fawr, the Upper Black Pins Levels and north of Blaen-canaid. The real boom years in the industry, however, occurred during the 1820s and 1830s and it was during this period that the deep pits, such as Cwm-du Pit, Cornel Waun Pit and Winch Fawr Pit were sunk in the area. The main means of haulage within the shafts was the water balance system, which depended on a plentiful and constant supply of water (Thomas 1981, 306-308); several of the reservoirs in the study area are likely to be relict features associated with this system. The extraction of ironstone and coal in particular continued throughout the 19th century, fluctuating with economic demand. By the end of 19th century the area's levels were largely disused, the mines of the area appear to have continued until the 1920s with been a brief period of renewed mining activity during the Second World War. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	7
HLCA Name	Coed Meurig
Sub Topic	Historic Landscape
NGR	SO 02679 07529
Easting	302679
Northing	207529
Mapsheet	SO
HLC Reference	62
Broad Type	Agriculture
Specific Type	Agriculture
Value	Low
Historic Development	The historic landscape area of Coed Meurig comprises an area of agricultural enclosure and ancient and environmentally sensitive deciduous woodland in the area to north of the existing A465 and Gellideg. The area contains post-medieval farms with farm buildings, including Coed Meurig, Tai Mawr, Tai Mawr-uchaf, Pen-Rhiw, Cwmffrwd, Ty'n Coedcae and Cwm-Waun-newydd, the latter two lying just west of the historic landscape boundary. These are associated with a landscape of by drystone walled enclosures and sheep pens. The area was part of the Dynevor Estate during the 19th century, leased to various tenant farmers. Progressive encroachment on waste during the early post-medieval period is suggested by nature of enclosure (intakes of rough grazing), and supported by place-name evidence, ie Ty'n Coedcae and Cwm Waun-newydd; the latter are later additions, which having been enclosed were later settled separately from the original holding, possibly through permanent occupation of earlier temporary structures. The earlier holdings were Coed Meyric (Coed Meurig), Tai Mawr, Tai Mawr-uchaf, Pen-rhiw and Cwmffrwd; all of which were well-established permanent settlements by the 18th century and appear on Yates' map of 1799. All the holdings of the area were extant by 1814, detailed by later maps (1826-1850; and all three editions of the 6-inch Ordnance Survey maps (1875-1915). Though there has been some minor industrial incursion, this typically was in the form of tips extending from workings to the south of the Swansea Road A4102 (HLCA 063). These tips were being created during the first quarter of the 19th century and are first detailed on a map of 1826. The 1st edition 1875 OS 6-inch map of the area depicts the full extent of the industrial encroachment in the area. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	8
HLCA Name	Clwyd-y-Fagwyr, Gellideg and Pen-Llwyn-Deri
Sub Topic	Historic Landscape
NGR	SO 02743 07125
Easting	302743
Northing	207125
Mapsheet	SO
HLC Reference	63
Broad Type	Built Environment
Specific Type	Built Environment
Value	Low
Historic Development	The historic landscape area of Clwyd-y-Fagwyr, Gellideg and Pen-Llwyn-Deri comprises as a settlement dominated by 20th century council estates, but which initially developed as small and discrete clusters of cottages and small rows centred at Clwyd-y-Fagwyr and Pen-llwyn-deri, with further isolated properties extending to Gellideg. The settlement, built on land of the Dynevor Estate, was probably initially agricultural, but later became associated with coal and iron ore mining. The original agricultural settlement dated to the 18th century and maps of 1814, 1826, and, in particular, the first edition 6-inch Ordnance Survey map of 1875 chart its later expansion. The settlement comprises isolated industrial rows, now dominated by large regular planned estates of council and suburban housing (mid-late 20th century), including bungalows, and further recent extension carried out during the late 20th/early 21st century with executive housing developments (such as Castle Park). Early industrial housing survives at Gellideg (15-21 Grade II Listed) also 23-28 and bake house, and at Clwyd-y-Fagwyr, which included a former brew house, the Harp Inn, while the area also contains characteristic non-conformist chapels (Clwyd-y-Fagwyr Methodist and Nant-gau Independent). Interspersed around the original isolated rows were workings and tips associated with the Cyfarthfa Mines; an industrial landscape, principally of levels, such as William Morgan's Level, R Morgan's Level, Baynon's Level, and spoil tips including finger tips, together with associated industrial water management features (ie water balance ponds and reservoirs). The area also functioned as a tramroad corridor with a complex and extensive network of tramroads connecting the area's levels and pits to the ironworks at Cyfarthfa (eg the Mynydd Aberdare - Cyfarthfa Tramroad, and the Cyfarthfa - Clwyd-y-Fagwyr Tramway). The extensive network of tramroads was begun during the late 18th century, the development of which is charted by maps of 1814, 1826, and in particular the 1st edition 6-inch Ordnance Survey map of 1875. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	9
HLCA Name	Cyfarthfa Iron Works and Associated Features
Sub Topic	Historic Landscape
NGR	SO 04284 07167
Easting	304284
Northing	207167
Mapsheet	SO
HLC Reference	012
Broad Type	Industry
Specific Type	Industry
Value	Very High
Historic Development	The historic landscape area of Cyfarthfa Iron Works and associated features is the site of the ironworks founded in 1765 by Anthony Bacon, a native of Cumberland, and his partner William Brownrigg. The works initially operated a single furnace and concentrated on the production of pig iron. Following Bacon's retirement in 1783, Richard Crawshay gained control of the Cyfarthfa Works. Thereafter the works remained in the Crawshay family, passing from Richard Crawshay, who died in 1810 to William Crawshay I, who directed operation from his London office, while the day to day management, including the great expansion of the works fell to William Crawshay II, and was responsible for the building of Cyfarthfa Castle in 1825 (see HLCA 013). The works at Cyfarthfa was the first in the area to change to the production of bar iron, which ultimately lead to Cyfarthfa becoming the largest Ironworks in the world by 1806. Instrumental in adopting Cort's puddling process soon after it was patented in 1784 were William Crawshay in partnership with George Watkin, foundry manager, perhaps most notable for his involvement in the design of several of the area's early cast-iron bridges, including the surviving Pont-y-Cafnau. Cyfarthfa was forced to buy in supplies of pig iron from both Dowlais and Plymouth for refining to maintain its production of bar iron. The layout of the works at the time is detailed in a view drawn in approximately 1800 by William Pamplin; this shows four furnaces and associated charging houses and casting sheds used in the production of pig iron, and the 48 ft diameter waterwheel which powered the bellow's. Immediately to the north is a large building with numerous chimneys housed the puddling furnaces and rolling mills. The early 19th century layout of the works and its associated features appears on Ordnance Survey maps and surveyors drawings of the period. Also detailed are tramroads leading to the Glamorganshire Canal. The works benefited from the upsurge in railway construction during the 1830s and 1840s, and in 1833 a new mill was built as a result, however shrinking export markets, among other difficulties were to effect the second half of the 19th century. Robert Thompson Crawshay could see no future in the iron industry by 1864 and only with great reluctance renegotiated the

Cyfarthfa lease. Though production reached a peak in 1871, the period was marked by boom-bust and labour relations problems. One strike in particular begun in April 1874 over wage reductions lasted over a year, while the furnaces remained out of blast until 1879 and death of Robert Thompson Crawshay.

The ironworks was shown in detail on the Ordnance Survey maps of 1875 and 1878 located either side of the Afon Taf connected by two tramroad bridges, in addition to Pont-y-Cafnau. Notable features extant at the time, apart from the blast furnaces, were casting sheds, a smithy, and a coke yard (similar to that illustrated by Pamplin in 1800) with extensive coke ovens to the rear of the charging bank and the Tai-mawr leat to the northwest of the works.

The conversion to steel began shortly afterwards with the construction of four new iron clad furnaces, and steel production started in 1884 under Robert Thompson Crawshay's three sons, trading under the name of Crawshay Brothers (Cyfarthfa) Ltd. Cylindrical iron clad furnaces were erected before the former ironworks blast furnaces. An important feature of the period was the linear slag tip leading northwest along the west bank of the Taf Fawr dating to approximately 1884. Other changes included a new range of coke ovens with alterations to the configuration of the coke yard. In 1902, an ailing Cyfarthfa works was acquired by GKN. In spite of additional investment, the works proved unprofitable and production ceased in 1910, with a brief reprieve during the First World War.

The associated Cinder Tips Area to the south was part of the Dynevor Estate leased to the Crawshays. It was depicted in its early stages during the first quarter of the 19th century, linked to the ironworks by tramroad, part of a more extensive transport network also characteristic of adjacent areas, HLCAs 066, 069 and 070). Over the intervening period the area was extensively tipped over: the cinder tip eventually extending as far as Georgetown, and in the process of being extended south to Cwm Pant Bach. A separate area of cinder tips was also located to the south of Cwm Pant Bach, just north of Ynysfach Ironworks. Small allotments characterised the fringes of the area, while an engine house was located just north of the Cinder Tips Area. By 1905 though the Cinder Tips remained largely unchanged; the engine house was now disused, while the tip area to the north of the Ynysfach ironworks appeared to be largely covered by small, regular allotments.

An old ironstone level (Ynysfach Pit) was located in the same general area. By 1919, the allotments to the west side of Llwyn Celyn Lane have been tipped over.

The area to the northeast of the ironworks and Pont-y-Cafnau contains the Gurnos Limestone Quarry, associated scheduled Tramroad and limekiln, near Pont-y-Cefn, and the scheduled Cyfarthfa Feeder Canal. The need for both water and limestone at the Cyfarthfa Ironworks necessitated the construction of a combined packhorse or plateway bridge and aqueduct, Pont-y-Cafnau, during the 1770s this would have been of wood; sketches by JMW Turner in 1797 depict the elevated wooden aqueduct, which formerly fed a great water wheel known to have been in use from 1796. A lease of 1771 secured the right to quarry limestone from the Gurnos Quarry

	and the Gurnos Tramroad had been built by 1792-3. The present Pont-y-Cafnau Iron Bridge, depicted in a painting of approximately 1819 / 20 by Penry Williams, is thought to date from this period, or shortly after, approximately 1793. The layout of the features of the area is detailed by 1875 Ordnance Survey map which also depicted the Cyfarthfa Feeder Canal and the leat approaching from a weir (possibly that built in 1766-77) on the Taf Fechan to the north via Pont-y-Cafnau. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	10
HLCA Name	Taf Fawr River Valley
Sub Topic	Historic Landscape
NGR	SO 02910 07820
Easting	302910
Northing	207820
Mapsheet	SO
HLC Reference	61
Broad Type	Built Environment
Specific Type	Built Environment
Value	Low
Historic Development	A major effect on the character of the area was the introduction into the northern part area for burial following the establishment of the Cefn Cemetery in 1858; proposals of 1857 authorised the laying out of the ground, and erection of chapels, lodge and boundary wall. The main cemetery between Brecon Road and the Taf was depicted in 1890 with a chapel and lodge. By 1919, the cemetery had expanded to take in an area to the westside of the Taf, linked by bridge. In 1860, the Jewish Community purchased land for a Jewish Burial Ground, to the east side of Brecon Road: the first burial was in 1870; burials had previously taken place in Swansea. The Jewish Burial Ground with its small mortuary chapel doubled in size between 1890 and 1918, an indication of the size of the Jewish Community at the time. The area formed the corridor of the construction railway for Llwyn-Onn Reservoir, built between 1914 and 1927. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	11
HLCA Name	Cefn-coed-y-cymmer
Sub Topic	Historic Landscape
NGR	SO 03452 08294
Easting	303452
Northing	208294
Mapsheet	SO
HLC Reference	55
Broad Type	Built Environment
Specific Type	Built Environment
Value	Medium
Historic Development	The historic landscape area of Cefncoed-y-cymmer has retained its distinct identity despite the spread of 20th century building around it. Compared to many of the settlements in Merthyr Tydfil, Cefn-coed-y-cymmer has survived with much of its 19th century character intact; this is primarily due to it being until recently outside the borough. Early 19th century documentary evidence indicates that Cefn-coed-y-cymmer originated as a squatter settlement. Theopholus Jones noted in 1809: "The village, raised in consequence of the neighbouring iron works at Merthyr is built upon the waste and houses are seen starting up without the slightest attention to regularity or arrangement, the convenience of each other or the preservation of health" (cited in Bowen 1992, 15). Thus it reflects a stage where the ironmasters had yet to assume control of all aspects of their workforce's lives. The irregular street pattern reflects this unplanned growth, although many of the buildings are of mid-late 19th century date. The expansion of population led to the construction of a chapel-of-ease in 1833, replacing a ruined medieval chapel (Bowen 1992, 243). The area contains the remains of the British Midland and London and North Western Railway Joint Line, which is carried over the Taf Fechan by the impressive Cefn-coed-y-cymmer Viaduct by Savin and Ward 1866 (Grade II Listed). By 1894, Clarke noted that Cefn-coed-y-cymmer was "situated two miles from Merthyr, and contains about 2,500 inhabitants" (1894, 35). By this time, the settlement had extended to the north along Upper High Street (north of the A465). There was a public tramway along the High Street in the early 20th century. Intermixed with the housing the settlement retained transport links to the ironworks, mines and quarries, the most notable survival of which is the railway viaduct. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	12
HLCA Name	Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views
Sub Topic	Historic Landscape
NGR	SO 02529 08312
Easting	302529
Northing	208312
Mapsheet	SO
HLC Reference	PGW (Gm) 70 (MER)
Broad Type	Built Environment
Specific Type	Built Environment
Value	High
Historic Development	Cefn Coed cemetery is the oldest and largest general public cemetery in Merthyr Tydfil. Apart from the loss of the chapel of rest it survives in its entirety, with its original layout. Some of the graves are of great historic interest, reflecting a wide range of occupations & wealth. Historical events, such as pit disasters, are also commemorated. A few memorials are of value for their sculptural and monumental qualities and include the work of the well-known Victorian sculptor Joseph Edwards. [1] [2] Merthyr Tydfil occupies a natural basin at the head of the Taf valley. High hills and ridges reach 450m above OD on all sides, with development constrained to the basin floor and smaller tributary valleys of the Taf, which itself provides the only natural route out of the basin to the south east. However, it is not topography alone that has shaped the town, but the mineral resources contained within its hinterland. It was probably the largest iron-making town in the world in the early to mid-1900s, with an output calculated to be a quarter of that of the entire United States of America. The town, and its associated landscape, was rapidly transformed from a modest village in the 1750s to the largest town in Wales by 1801. Despite extensive recent land reclamation and the sanitisation of the surrounding waste tips, overall Merthyr still retains its industrial landscape character as the most significant Welsh town of the Industrial Revolution. The town and its environs remain a potent example of an internationally renowned industrial landscape of the 18th and 19th centuries and a permanent reminder of man's exploitation of the landscape. The primarily late 18th to 19th centuries landscape comprises numerous relict elements and foci set within the present landscape. These individual elements consist of the remains of large ironworks, remnants of the associated coal mining industry, water power eats, an early iron bridge, communication systems, including early tramroads, tips, terraced industrial housing, and the ironmasters house, Cyfarthfa Castle. Merthyr Tydfil, however, retains not only its economic significance, but also its importance as a religious, literary and political centre. The area identified here contains many and diverse elements, which include Merthyr's Dowlais Ironworks, established in 1759, and probably the first such works to use coke in South Wales. It was followed by the foundation of other ironworks such as Plymouth in 1763, Cyfarthfa in 1765

	and Penydarren in 1784. Other subsidiary works were created in the early 19th century at Ynysfach by Cyfarthfa, Ivor by Dowlais, Dyffryn by Plymouth, with further forges at Pentrebach, a part of Plymouth. Surviving remains include the renowned furnace bank at the Cyfarthfa Ironworks, where six out of its seven late 18th century blast-furnaces, and its ranges of calcining kilns, survive substantially intact. At the Dowlais Ironworks the remains include the great stables and the blast-engine house, which have been restored. The remains of the Ynysfach Ironworks consist of one blast engine house and four early 19th century furnaces. The engine house is also restored and acts as a museum of the iron industry. Locally, early communication systems survive, though to varying degrees. Adjoining the Cyfarthfa Ironworks lies the Pontycafnau bridge built in 1793, and the first ever iron railway bridge to be built. The bridge has added significance in that it had a combined use as an aqueduct. The Gurnos tramroad which used the Pontycafnau bridge carried limestone from the Gurnos quarries and exists today as a scenic footpath retaining its stone sleeper blocks. The remains of limekilns and fulling mills survive on either side of the route. Elsewhere, the line of the Penydarren tramroad, built in 1802 to carry iron by horse-drawn tram, survives and is also historically significant as the route of the first steam-hauled railway journey by Richard Trevithick's 1804 locomotive. The tramroad also includes a tunnel constructed under the Plymouth Ironworks. Short sections of the famous Glamorganshire Canal, built in the 1790s, also survive as important landscape features, including a restored section in front of Chapel Row. This is crossed by the relocated Rhydycar bridge which is an early iron girder bridge dating from the 1790s. Chapel Row itself was built by the Cyfarthfa Iron Company as workers' houses, one of which is restored, both as an example of a period ironworker's cottage and also as the birthplace of the renowned composer Dr Joseph Parry. In a sharp distinction which reflects the other social extreme of the Merthyr ironmasters' activities, Cyfarthfa Castle, overlooking the Cyfarthfa Ironworks, was the largest and grandest ironmaster's house in Merthyr Tydfil, and amongst the most notable surviving industrialist's house in Wales. The house is situated in 64 ha of grounds, which were landscaped by the Crawshay family to include woodlands and a lake. This grand house and its parkland setting also provide an interesting and important contrast to the other relict landscape features of Merthyr.[3]
Historic Development References	[1] Cadw dataset December 2015 [2] Site visit by Jacobs 25-26 January 2016 [3] Cadw et al. 1998. Landscapes of Historic Interest in Wales. Part 2 of the Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales, Part 2.1 Landscpaes of Outstanding Historic Interest. Cadw

HLCA Number	13
HLCA Name	Taf Fechan
NGR	SO 03717 08502
Easting	303717
Northing	208502
Mapsheet	SO
HLC Reference	27
Broad Type	Transport
Specific Type	Transport
Value	Low
Historic Development	The historic landscape area of Taf Fechan contains features associated with the BM and LNWR joint Line (built 1868), the BM / LNWR and the Morlais Tunnel (1879). Particularly impressive structures include the Glais Viaduct at Pontsarn (built by Savin and Ward 1866). The remains of the Brecon and Merthyr Line, to the northeast of Pant junction are partly re-used by the current Brecon Mountain Railway. Other distinctive features are the ventilation towers of the Morlais Tunnel. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	14
HLCA Name	Graig Quarry and Tramroad
Sub Topic	Historic Landscape
NGR	SO 03931 08509
Easting	303931
Northing	208509
Mapsheet	SO
HLC Reference	12C
Broad Type	Industry
Specific Type	Industry
Value	Low
Historic Development	NA
Historic Development References	NA

HLCA Number	15
HLCA Name	Y Graig, Gurnos
Sub Topic	Historic Landscape
NGR	SO 04513 08616
Easting	304513
Northing	208616
Mapsheet	SO
HLC Reference	53
Broad Type	Agriculture
Specific Type	Agriculture
Value	Negligible
Historic Development	The historic landscape area of Y Graig, Gurnos is a remnant of land associated with Gurnos Farm to the south of the Heads of the Valleys Road. Shown as a fir plantation and other enclosures on the tithe of 1850, part of the estate of David Edwards, leased to William Crawshay. Cartographic evidence (1875) indicates the area contained a network of tracks leading to the Taf Fechan Valley and the Gurnos Quarry and lime works, and a small number of minor extractive features, possibly gravel pits. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	16
HLCA Name	Lakeside Gardens
Sub Topic	Historic Landscape
NGR	SO 04717 08128
Easting	304717
Northing	208128
Mapsheet	SO
HLC Reference	54
Broad Type	Built Environment
Specific Type	Built Environment
Value	Negligible
Historic Development	The historic landscape area of Lakeside Gardens comprises a linear development of late 20th century suburban housing, mostly detached within their own grounds. The area retains little of historic interest except for the road (now leading to the Gurnos Estate) which demarcates the eastern boundary of the area is thought to preserve the line of an earlier Roman Road from the fort at Penydarren, which lead via Gurnos to a crossing point on the Taf Fechan at Pontsarn. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	17
HLCA Name	Gurnos Farm and Bunkers Hill
Sub Topic	Historic Landscape
NGR	SO 04853 08728
Easting	304853
Northing	208728
Mapsheet	SO
HLC Reference	52
Broad Type	Agriculture
Specific Type	Agriculture
Value	Low
Historic Development	The historic landscape area of Gurnos Farm and Bunker's Hill comprises the surviving post-medieval agricultural landscape north of the Heads of the Valleys Road. The area was largely associated with William Crawshay; it included the eastern part of the Cyfarthfa Estate (Glanmol-goch tithe map of 1850, Llwyn-moelgoch OS 6-inch 1875 (later Dan-y-Castell Farm), and the holding of Gurnos, centred on its 'model' farm' owned by David Edwards leased to William Crawshay in 1850. The southeastern corner of the area comprises the surviving portion of Gain, formerly part of the Estate of Robert Henry Clive, the Earl of Plymouth, leased to the Penydarren Iron Company. The industrial agricultural landscape of large regular enclosures and stands of trees associated with the 'model' farm of the area was in place by 1826; cartographic evidence indicates that the area's field and track layout underwent drastic remodelling between 1814 and 1826. This included the removal of the former settlement of Pantton; the element 'Pen ton' retained in the field names of the area is a reference to it, while relict drystone enclosures in the area are surviving elements associated with the earlier agricultural landscape. The Morlais Castle Quarries Tramroad of 1803 crosses the area on its route to the Penydarren and Plymouth ironworks. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	18
HLCA Name	Gurnos and Galon Uchaf
Sub Topic	Historic Landscape
NGR	SO 04864 08350
Easting	304864
Northing	208350
Mapsheet	SO
HLC Reference	50A
Broad Type	Built Environment
Specific Type	Built Environment
Value	Negligible
Historic Development	The historic landscape area of Gurnos and Galon Uchaf comprises housing estates of local authority housing created during the early 1960s. The area displays an attempt to integrate commercial facilities at the core of the settlement. The estates at Gurnos are laid out in a variety of differing patterns centred on the Prince Charles Hospital. A unifying feature are the street names, which follow a common theme of plants and trees, such as Acacia Avenue, Sycamore Road, Chestnut Way and Honeysuckle Close. Additional distinctive features of the area are large schools, which with playing fields and allotments preserve to an extent the former open nature of the area, this is particularly evident at the south of the area. The area included the former holding of Gwaunferran Farm (the Dairy on the 1850 tithe map). The Penydarren Iron Company owned, or leased most of the area for agricultural purposes. Apart from agricultural land, the area contained leats and reservoirs such as those which formerly connected Goitre Pond (now infilled) to Penydarren, and which formed a part of a water management system supplying the needs of the Penydarren Ironworks. These features were extant by 1826, shown on the tithe map of 1850 and elaborated by 1875, the lower reservoir at Gwaelod-y-garth in use as a swimming pool by 1915. In 1858, the Penybryn filterbeds and storage tanks were constructed by the Merthyr Tydfil Corporation to supply domestic water to Merthyr and Penydarren piped from the Taf Fechan at a point near Dolygaer; this was in operation by 1861. Supply to Dowlais and Pant was via a service reservoir at Dowlais Top to which water was pumped by steam engine until 1884. The small road/tramroad junction settlement of Gwaelod-y-garth, the early development of which is charted by maps of 1814, 1826, and 1850, lies at the southwest corner of the area . Though the settlement has been almost submerged by the expansion of Penydarren Park, isolated rows of industrial housing (extant in 1875), still survive. Prince Charles Hospital (built in 1965-75 by Sir Percy Thomas and Partners, with additions of 1989-91) comprises a formal modem structure of two parallel five-storey ranges with service towers linked by a series of cross ranges.

	Prior to the construction of the housing estates the area was characterised by a mixed regular and irregular field pattern of generally large improved enclosures of late 18th / early 19th century date. The area contained the holdings of Galon Uchaf, Penygarn (kennels), Gain, Goitre, parts of Gellifaelog, Bonymaen and Gymos (Gurnos), only the latter farmstead survives just north of the A465. The use as the area as a transport corridor from the Roman period, and especially during the 19th century (eg the limestone tramway to Penydarren Iron Works from Morlais Castle Quarries) has had some influence on the present road system. The current main arterial routes of the area are essentially those established before the end of the 19th century. [2]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	19
HLCA Name	Bon-y-maen
Sub Topic	Historic Landscape
NGR	SO 05859 08662
Easting	305859
Northing	208662
Mapsheet	SO
HLC Reference	49
Broad Type	Industry
Specific Type	Industry
Value	Negligible
Historic Development	The historic landscape area of Bon-y-Maen included a rectangular range of buildings, the post-medieval farmstead, on the southern edge of a very large sub-circular enclosure of unknown date to the north of Cwm Rhyd-y-Bedd. The northwest boundary of the area is formed by the Bryniau Road to Pant, while along the northeast is Heol Rhyd-y-Bedd, which formerly carried the line of the tramroad from Bryniau Quarry to the Dowlais Ivor Ironworks, shown on maps between 1878 / 9 and 1915. The entire area was radically changed during the 1930s when ICI established a works in the area, in operation by 1939. The construction of the Heads of the Valleys Road during the mid-1960s opened up the area to renewed commercial and industrial possibilities and in response the site of the old works area was developed as the Merthyr Tydfil Industrial Estate by the Borough in 1966. The current features of the area comprise mixed industrial and commercial units and a sports ground. [2]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	20
HLCA Name	Bryniau Quarries
Sub Topic	Historic Landscape
NGR	SO 05481 08734
Easting	305481
Northing	208734
Mapsheet	SO
HLC Reference	46
Broad Type	Industry
Specific Type	Industry
Value	Negligible
Historic Development	The historic landscape area of Bryniau Quarries comprises an area of poorly drained rough grazing, part of the Castle Farm holding of the Plymouth Estate, leased to the Dowlais Iron Company during the 19th century. The area, depicted as wooded (scrub) on maps between 1766-1875, was being quarried by 1875. At this date a small quarry within the Bryniau enclosure was being worked connected by tramroad to the Dowlais area and the Ivor Iron Works, in particular. The quarry with its associated tram network had expanded considerably by 1915. Other features of the 19th century (and earlier) were tracks leading to Castle Farm. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	21
HLCA Name	Dowlais
Sub Topic	Historic Landscape
NGR	SO 06636 08399
Easting	306636
Northing	208399
Mapsheet	SO
HLC Reference	07
Broad Type	Built Environment
Specific Type	Built Environment
Value	Low
Historic Development	The historic landscape area of Dowlais comprised the settlement associated with the Dowlais and later Ivor Works. The settlement developed on the holdings Wern-Llwyn Isaf and Uchaf farms during the latter half of the 18th century. Estate maps of the area (Dowlais Iron Company 1784-1806) provide useful background to the area's early development. The initial settlement comprised a loosely dispersed scatter of cottages, mainly along the road to the Dowlais Iron Works furnaces and in the area immediately north of the furnaces, with a core cluster at the junction of the road from Upper Garth with Nantmorlais (the Cae-Harris area). By 1814, the settlement was characterised as a linear ribbon development along the road west of Pontgellifaelog to the junction with the lane from Pant, where there was a small nucleus of settlement adjacent to the furnaces, in the area south of the later Dowlais stables. The characteristic grid system imposed on the settlement was partly in place by the 1820s, with the area to the south of Union Street complete, including a church and the Dowlais stables (1820; site of the first educational facility for workers in Merthyr, established by Josiah John Guest in 1828). Gwern Llwyn Uchaf Farm remained, separated by agricultural land, to the east of the settlement. There was also a scatter of cottages in the area of Morgan Sweet during the period. Between 1832 and 1850 the settlement at Dowlais underwent major expansion; by the latter date Dowlais comprised linear ribbon development to the south of High Street, while the original core had been extended to include Cae Canol Street. Ribbon development now extended east beyond the junction with Pant Road. The southern area of Dowlais, all Dowlais Iron Company land, had already been laid out in grid fashion. By 1850, this area extended north of High Street as far as Upper Elizabeth Street and the southern end of Victoria Street, extending as far as the later station area and the road to Pant. The area included the north side of Ivor Street, where a barracks was located (later replaced by Barrack Row), and Lower and Upper Row. The northwestern area of Dowlais, adjacent to Cwm-Rhyd-y-Bedd belonged to a number of minor landowners and developed slightly different characteristics: notably in its layout. The latter was typified by a

	scatter of short rows and individual cottages and included the area between Pant Road and the Ivor Iron Works (HLCA 029), Llewellyn Street; Winifred Street and a row to the west of the later Balaclava Road in the area of Pen Cae Eira. The OS 6-inch and 25-inch First Edition maps (1875 and 1878) provide further detail such as the Dowlais Ironworks stables, Market House, Dowlais Iron Company schools, the Guest Reading Room, Hebron chapel, Dowlais House Lodge, hospital, and Beulah chapel. The area from Victoria Street and Elizabeth Steet as far north as Francis Street, ie north western Dowlais, had developed in a more tightly-packed fashion with a less regular grid street pattern, perhaps indicating different house provision to the south part of Dowlais where the Influence of the Iron Company on town-planning was clear. Dowlais was largely complete by 1878, though there was some minor additional development during the period up to 1919, such as Alfonso Terrace and Moulson, Rees and Jones Street. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	22
HLCA Name	Pantcadifor, Rhyd-y-bedd and Caeracca
Sub Topic	Historic Landscape
NGR	SO 06046 08847
Easting	306046
Northing	208847
Mapsheet	SO
HLC Reference	30
Broad Type	Built Environment
Specific Type	Built Environment
Value	Low
Historic Development	The historic landscape area of Pantcadifor, Rhyd-y-bedd and Caeracca originated as a small roadside quarrymen's settlement. By the 1870s, the settlement had grown to the north and south eventually merging with Dowlais. The original settlement at Pant appears in 1799 as a small settlement at the junction of the Penydarren and Dowlais roads to Brecon, nucleated around the Pant-Cad-Ivor Inn (c 1740), with minor development along the road south to Nant Morlais (Dingle) and Dowlais, including the farms of Cae'r-acca and Cwm Rhyd-y-bedd. By 1814 a small settlement was in place at Pantysgallog, including Pantysgallog House, just to the south of the original settlement at Pantcadifor, while to the west was a row of cottages (Tair Efail on the 1850 Tithe Map). The settlement remained static during the period up to 1850, apart from a major shift in the alignment of Pant Road to the south, and the establishment in 1849 of the prominent cemetery for victims of the second cholera epidemic to hit Merthyr (the first being in 1832). Pant Cemetery with its two mortuary chapels, one nonconformist, one Church of England, was located on land formerly part of Castle Farm. The Dowlais Fever Hospital located slightly to the south of Pantysgallog had been constructed in 1869 for the Merthyr Board of Health, built of wood, this 32 bed hospital was occupied on a temporary basis during epidemics. Just northeast of Pant Road was the Dowlais Branch of the Brecon & Merthyr Railway, built in 1864/65, with a signal box. The settlement developed in ribbon fashion with roadside developments of industrial workers' rows constructed at Pantysgallog and at Pant-Cerddinen to the south of Bryniau Quarry by 1875. Forty years later, the settlement had grown to include King and Queen Streets in the area between Pant Road and the Merthyr Extension of the LNWR (c 1868). Additional terraces had been constructed on the west side of Pant Road (New Houses), while a new area had been established to the east of the Brecon & Merthyr Railway including Caracas Terrace, and the grid layout of Edward and Gwladys Streets. By this date the settlement, served by a halt on the BM Railway and a station on the LNWR, also boasted schools, a post office, and a church, Christ Church, a laundry. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	23
HLCA Name	Ivor Works Area
Sub Topic	Historic Landscape
NGR	SO 06710 08215
Easting	306710
Northing	208215
Mapsheet	SO
HLC Reference	29
Broad Type	Industry
Specific Type	Industry
Value	Negligible
Historic Development	The historic landscape area of the Ivor Iron Works Area comprises the site of the works, which opened in 1839 as an extension of the Dowlais Iron Works, initially with four blast furnaces. A single redbrick built building, post-1915 in date, survives from the pre-British Steel era. During the second half of the 20th century the site of the Ivor Works was given over to a foundry operated by British Steel. The closure of the foundry in 1987 ended Merthyr's association with the iron industry; an association which had lasted more than 200 years. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	24
HLCA Name	Pengarnddu
Sub Topic	Historic Landscape
NGR	SO 07064 08480
Easting	307064
Northing	208480
Mapsheet	SO
HLC Reference	35
Broad Type	Built Environment
Specific Type	Built Environment
Value	Negligible
Historic Development	The historic landscape area of Pengarnddu comprises an area of semi-improved land bordered at the north and east by the Rhymney Limestone Railway of c 1864. The latter served the Twynau-gwynion quarries, connecting the quarries with the Guest's Ironworks at Rhymney and was connected to the ironworks by the Rhymney Mineral (Limestone) Railway in c 1864. The Twynau Gwynion Tramroad of 1805 to Dowlais Ironworks passed through the area; a Tramroad bridge of 1805/15 survived until 1984. The area also contains the remains of the Brecon & Merthyr (Newport Branch) Railway, dating from between 1860 and 1865. Interesting water management features dating from the 19th century, also survive in the area, part of the extensive 'Dowlais Free Drainage System': these remains are primarily Lower (Fish Pond) and Upper Reservoirs (New Pond) with associated leats (with brick and masonry lining) and aqueducts (masonry), and a 19th century red-brick pumping station, below Upper Reservoir. Lower Reservoir was built before 1850, while Upper reservoir dates to between 1850 and 1875. The area largely formed part of the Bute Estate during the l850s and included the farm of Blaen-Morlais. The area contains the small industrial settlement of Pengarnddu, extant in 1814. By 1875, this comprised two isolated rows, one associated with yards, to either side of the existing farmstead, and a school to the south-west. By 1915, the settlement boasted a church, St Michaels south of the school and a public house, among other features. By the 1960s the settlement had been abandoned, the farmstead and one cottage remaining. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	25
HLCA Name	Dowlais Top
Sub Topic	Historic Landscape
NGR	SO 07858 08453
Easting	307858
Northing	208453
Mapsheet	SO
HLC Reference	47
Broad Type	Industrial
Specific Type	Industrial
Value	Negligible
Historic Development	The historic landscape area of Dowlais Top comprises former industrial landscapes associated with the Dowlais Ironworks. The area to the north contained extensive workings, extant in 1814 and 1826 and connected to Dowlais and Dowlais Top by haulage or tramroad. These workings, depicted on later maps as quarries with numerous linear and lobed tips, were the remains of early surface or patch workings, and levels probably worked from the adjacent settlement of Penygarnddu and Dowlais Top. The workings, like those to the south would have been largely redundant by the 1860s, confirmed by the apparent lack of associated railed tramroads depicted on the 1875 Ordnance Survey 6-inch maps. Rail and tramroad routes passed through the area: that of the Twynau Gwynion Tramroad ('Tramway' in documentary evidence) of 1805 to Dowlais Ironworks, later the Rhymney Limestone Railway of c 1864, and the B&M (Newport Branch) Railway c 1860-1865, opened 1863. The latter had a station at Dowlais Top, detailed on the 1st, 2nd and 3rd edition 6-inch Ordnance Survey maps (1875-1915). This survives to the present-day. A kiln was depicted in the area adjacent to the Twynau Gwynion Tramway in 1826, apparently still extant in 1875 as a limekiln adjacent to the Rhymney Limestone Railway. Leats associated with the Dowlais Free Drainage system (see neighbouring 5) also once existed in the area. The area to the south comprises an open area of reclaimed industrial land to the south of Dowlais Top primarily a former rail corridor associated with Dowlais Iron Company Railway, which formerly contained lines and sidings in area north east of the charging bank and blast furnaces of Dowlais Ironworks. The lines served both the Dowlais and Ivor Works and connected tips, and the Dowlais coke yard. The present character of the area is that of a recreational landscape with sports facilities, football fields and until recently, a commercial presence, provided by the site of a demolished McDonalds Restaurant, one of the earliest in the area. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	26
HLCA Name	Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun
NGR	SO 08034 08078
Easting	308034
Northing	208078
Mapsheet	SO
HLC Reference	78
Broad Type	Reclaimed Land
Specific Type	Reclaimed Land
Value	Negligible
Historic Development	The historic landscape area of Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun comprises an extensive area of reclaimed industrial land, part of which has been subjected to opencast operations. The area encompasses the sites of Longtown (Trehir), Trecatti and Twyn-y-waun, the latter being the former site of a medieval market mentioned in numerous documentary sources. The area formed part of the extensive coal and ironstone workings associated with Dowlais Ironworks. The workings of the area spanned from the latter half of the 18th century, through the hay days of iron production associated with railway construction during the 1840s, and the conversion of Dowlais to steel production during the 1860s. With conversion to steel production the area's mineral workings declined, being all but abandoned by the early 1870s; a result of coal and iron ore imports from northern Spain, the local ore, rich in phosphorous and sulphur being unsuitable for steel production. By 1879, most if not all the pits and levels within the area, were probably already defunct. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	27
HLCA Name	Dowlais Iron Works Area
Sub Topic	Historic Landscape
NGR	SO 06792 07841
Easting	306792
Northing	207841
Mapsheet	SO
HLC Reference	08
Broad Type	Industry
Specific Type	Industry
Value	Very High
Historic Development	The historic landscape area of Dowlais Iron Works Area encompasses site of the ironworks founded in 1759 by a partnership headed by Isaac Wilkinson, an ironmaster from Bersham, Clwyd. The change over to the production of bar as opposed to pig iron was comparatively late at Dowlais. The lack of success in applying Peter Onions' puddling process dissuaded all but John Guest from investing in the technology during the 1780s and Dowlais continued to supply pig iron to Penydarren and Cyfarthfa. The Dowlais works was the first in Merthyr Tydfil to install Steam blowing engines, replacing waterwheel-powered bellows in 1798. The Works at Dowlais was to become strongly associated with the Guest family; first John Guest, then his son, Thomas Guest (1787) and in turn by his son, Josiah John Guest (1807), a liberal who advocated free trade and Merthyr's first MP, following the 1832 Reform Act. It was a result of the latter's vision and business acumen that Dowlais became the largest ironworks in the world. The rails for the Stockton and Darlington Railway were produced at the Dowlais works in 1821 heralding the rewards to come of the railway boom years of the 1830s and 1840s. Technological advances such as the adoption of the 'hot blast technique', patented in 1828, which substantially reduced the amount of coke required for smelting, enabled Dowlais to maintain its competitive edge. Further mills were constructed to produce rails: the Big Mill in 1830, supplemented by the Little Mill in 1840. William Menelaus was appointed general manager in 1856 and soon after the Dowlais works began experimenting with a new process developed by Henry Bessemer. Menelaus was to oversee the conversion to steel production, which began in a limited fashion in 1865. The local ironstone was unsuitable for the production of steel, due to its high phosphorous content and by the 1870s ironstone mining had ceased altogether in the Merthyr area. Based on imports, chiefly from Spain, steel production would ultimately transfer to coastal sites, such as the new steelworks built by the Dowlais Company at East Moors in Cardiff in 1891. In 1905, under GKN a new blast Furnace complex, which included two American designed 'Yankee' furnaces and a new mill was added. However, after a period of prolonged decline, in 1930 the production of steel at Dowlais finally came to an end.

	The early development of the works can be charted from cartographic sources, including estate maps and early Ordnance Survey maps and surveyor's drawings, the Tithe map of 1850 and unpublished map of 1851, among others. The extent of the ironworks development is well demonstrated by the 1878 6-inch Ordnance Survey map, which in part reflects the conversion of the works to steel production in the years after 1865. Numerous features were recorded within the area including charging bank, furnaces and brick kilns among other industrial features southeast of Dowlais House. Other features shown are engine houses, levels, a brickworks, the reservoir to the south of Dowlais House, Cae-Harris Pond, adjacent cottages on Pond Street (now demolished), the Dowlais Railway and numerous railway sidings and tramroads. GGAT Mill, Coed Cae pond, and an adjacent row of cottages (demolished by 1905) were located to the south the area. Significant changes occurred in 1905 when the plant was remodelled under GKN: additional reservoirs and extensive coke ovens were built in the area to the north of the brickworks, which itself had been extended. The Goat Mill was enlarged and Cae-Harris station had been constructed; this included a goods shed, an engine shed and cattle pens. Further alterations indicated by 1919 were primarily in the area to the southeast of Dowlais House and the blast engine house (now Grade II Listed), and included additions to the furnaces. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	28
HLCA Name	Ffos-y-fran
Sub Topic	Historic Landscape
NGR	SO 07371 07446
Easting	307371
Northing	207446
Mapsheet	SO
HLC Reference	39
Broad Type	Industry
Specific Type	Industry
Value	High
Historic Development	The historic landscape area of Ffos-y-fran comprises an important industrial extractive landscape; the area is dominated by coal and ironstone workings along the western outcrop of Merthyr Common, associated with the Dowlais and Penydarren Ironworks. It should be emphasised that while most of the surface remains in the area are 19th century coal and ironstone outcrop workings associated with the main period of operation of the Dowlais, and the Penydarren works (the latter closed c 1859), outcrop workings in the area span most of the century. These start in the late 18th century and end with some residual activity in the early 20th . Today's landscape is essentially the product of a succession of 19th century extraction phases (including re-working of earlier areas). The accessibility of the outcrop, particularly the reserves of ironstone make it likely that some mining activity occurred during late 18th to early 19th century. The initial stage of working would have been by quarrying or patch working, in addition to small levels and pits. These activities have produced a scarped face almost 1 km in length, curving around the crest of the north-north-west facing slopes to the north of Ffos-y-fran, possibly on the line of an existing erosion bench (the area has been subject to some reworking in later periods). Further patch working or open ore quarrying. some 9.5 ha in extent, in conjunction with surviving areas of crown pit type workings, continues south to the iron ore miners' settlement. Overburden removal for the patch working may have been cleared by a process known as scouring although surviving evidence in the area is now inconclusive. Scouring on the coalfield, though well documented in the 18th century, seems not to have continued much beyond the early 19th century. The Dowlais Free Drainage System, an ingenious system of reservoirs and leats, fed by gravity, and which formerly provided water to the Dowlais Ironworks and the water balance systems of its associated workings, was also a feature of the area (though the largest concentration of surviving features are now found in the adjacent area. The system, which in part dates to c 1818, was crucial to the expansion of the ironworks at Dowlais and indeed Penydarren. It supplied water to the coal mines and ironworks of Dowlais via an extensive above-ground network of leats and reservoirs and underground U-shaped channels, built to the 'Dowlais pattern' within various levels, such as the Brew House Level, and Buxton's or the Purple

Level. The system acted to drain a variety of coal seams including the Lower Four Feet seams of the Cwmbargoed, Trecatty and Trehir area and the Upper, and Lower Four Feet, Big Coal, Red, Blue and Spotted Vein in the Pantywaun, Rhaslas, and South Tunnel areas. It eventually drained into a water pit at Tyle Dowlais Pit, from where water could either be pumped back to the surface system or allowed to drain to the charging levels of the Penydarren furnaces (Owen 1977, 67-8).

Considerable expansion of level and shaft activity was the main feature of the mid 19th century (1820s to 1880s) outcrop working in the area and entirely replaced the older methods of shallow surface workings, as accessible sections of the outcrop became exhausted. Despite the Dowlais Iron Company having sunk 19 pits between 1837 and 1857, levels continued to provide the main means of coal and ironstone extraction in the area up to 1850, and accounted for 75 per cent of coal out put from the Dowlais workings. After this date, however, extraction of ironstone and coal appears to have concentrated on a number of pits (shafts) set on the lower slopes immediately to the west of this area. These included the Dowlais Pits 1, 2, 4, 6, and 7, the Pen-y-waun Fawr Pits and the Tyle Dowlais Pit, the latter two at the extreme northwest corner of the application area. Further reworking of the area along the crest of the west-facing outcrop with at least two additional levels driven into the worked face during the period was evident as was a series of levels driven along the base of the slope at the western boundary of the area.

The area contains extensive versions of 'finger' or 'fan-tips' frequently associated with shaft, as opposed to level workings, and generally restricted to the lower western outcrop, above the area of the now removed Great Dowlais Tip. Examples of these dominant and highly visual features include those associated with No.1 Pit, No. 2 Pit, No. 4 Pit, and No. 6 Pit, Dowlais. While many of the levels and pits were still named in the 1873 and 1879 Ordnance Surveys, the vast majority appear to have become disused soon after.

By 1879, the current form of tipping was typified by parallel tramlines, in close-set blocks, producing smooth, level surfaces; the contrast between the old and new forms of tipping is clearly shown on the surface of the tip. The first edition Ordnance Survey map shows this method in practice in the area north and south of No.1 Pit and at the pits of Pen-y-waun Fawr and Tyle Dowlais; the tips at the latter two sites have been extensively remodelled during the latter part of the 20th century.

The haulage tramroad, a common feature of the Merthyr outcrop landscape by the early 19th century, was an important element of the workings, allowing increasing volumes of ironstone and coal to be moved to the Dowlais stockyards. A haulage tramroad, the Dowlais Iron Company Railway, skirted the line of the outcrop, connecting the various levels and pits (shafts) with the main routes to the stockyards via a system of inclines. Several large sections of haulage tramroads, including the latter, and inclines provided for the levels of the Dowlais, and the Penydarren workings survive in the area.

Others included the Pant-y-Waun Mineral Railway, extended and incorporated into the Dowlais Iron Company Railway at around the turn of

	the century. The principal line in the study area was the Great Western & Rhymney Railways' Taff Bargoed Joint Line (c 1876). This projected eastwards to sidings at Fochriw Junction and westwards to the Dowlais Zigzag Lines Junction, where it divided, one line proceeding to Ivor Works, via the passenger station at Dowlais (Cae Harris), the other, via two reversing junctions (Furnace Tops and Ffos-y-fran) to the Dowlais Works. The former mineral branch of the LNWR (opened 1881, closed 1937) from Cwmbargoed Junction, between Dowlais Top and Dowlais, to Cwmbargoed and the Cwmbargoed Pits passes through the area. Also located within the area is a section of the Dowlais Iron Company's Railway, together with remains of various associated industrial tramways and inclines, such as the Penydarren and Bargoed inclines at Tyle Dowlais, and the Penydarren Pits tramway / incline. By the end of the 19th century, the outcrop workings of the area were in decline; the main product of these workings had been ironstone for the Dowlais furnaces, now given over to steel production, while coal was being won in far greater quantities elsewhere from the surviving mid-19th century deep shaft mines. By this date, iron ore was being sourced from northern Spain, the local ore, rich in phosphorous and sulphur being no longer suitable for steel production. As a result, local ore production declined rapidly to such an extent that it had ceased altogether by the early 1870s. Most if not all the pits and levels within the area shown on the first edition 2 inch Ordnance Survey map (surveyed 1879) were probably already defunct. Cartographic evidence charted the dereliction of the area's workings and associated transport network. The majority of the coal and iron ore workings in the area, in particular along the north west-facing slopes above Dowlais. Were disused by this date, including Pits 1, 2, 4, 6, and 7, as were the ironstone levels (2nd edition Ordnance Survey, 1905). A possible exception of Pen-y-waun Fawr pits and Tyle Dowlais pit where the continued existence of tramway tracks might indicate some level (if limited) of continued working. Most of the minor haulage tramroads had also been removed, however, the main Dowlais Iron Company Tramroad connecting the works at Dowlais with Cwm Bargoed Pits and the incline to Penydarren Pits were apparently railed. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	29
HLCA Name	Merthyr Tydfil Landscape of Outstanding Historic Interest
Sub Topic	Historic Landscape
NGR	SO 05252 06971
Easting	305252
Northing	206971
Mapsheet	SO
HLC Reference	HLW (MGL) 2
Broad Type	Landscape of Outstanding Historic Interest
Specific Type	Landscape of Outstanding Historic Interest
Value	High
Historic Development	An area from Blaen-Y-Dyffren in the north to Pentrebach in the south and from Bryn-Y-Gwydell in the west to Dowlais Top in the east. Merthyr Tydfil itself was probably the largest ironmaking town in the world in the early to mid-19th century, with an output calculated to be a quarter of that of the entire United States of America. The town, and its associated landscape, was rapidly transformed from a modest village in the 1750s to the largest town in Wales by 1801. [1]
Historic Development References	[1] Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 Jan. 2017].

HLCA Number	30
HLCA Name	East Fforest Fawr and Mynydd-y-Glog Landscape of Special Historic Interest
Sub Topic	Historic Landscape
NGR	SN 96180 11358
Easting	296180
Northing	211358
Mapsheet	SN
HLC Reference	HLW (MGL) 3
Broad Type	Landscape of Special Historic Interest
Specific Type	Landscape of Special Historic Interest
Value	High
Historic Development	The visually imposing northwards-facing escarpments and adjoining dramatic mountain masses of the Black Mountains, the Brecon Beacons, Fforest Fawr and the Black Mountain together form a vast natural ridge and physical barrier that divides South from Mid-Wales. Fforest Fawr forms the central part of this barrier with the area identified here comprising its eastern side situated between the valleys of the Mellte in the west and the Taf Fawr in the east. This natural block of land extends from Fan Fawr and Mynydd y Garn in the north, to Cadair Fawr, Cefn Sychbant and Mynydd-y-glôg in the south which lay outside the historical extent of the forest. The block comprises dissected upland plateau which dips gradually southwards from 734 m at the distinctive tabletop summit of Fan Fawr, to between 250 m and 300 m in the Hepste and Cwm Cadlan-Pant Sychbant valleys that penetrate the middle and include the only extents of enclosed land in an otherwise noticeably bleak and remote area of moorland. An intensive archaeological and historic landscape field survey undertaken in the Black Mountain and Fforest Fawr in the mid-1980s revealed the widespread survival of archaeological remains representing the recurrent, and at times intense, occupation and exploitation of this area and its natural resources from the prehistoric period to the recent past. These remains include prehistoric funerary and ritual monuments, evidence of early agriculture and land allotment, and a range of settlements from the prehistoric and the medieval periods, the whole superimposed in parts by more recent remains of quarries, lime works and workings, and abandoned land intakes. The earliest occupation of the area probably occurred in the Mesolithic period with an excavated assemblage of flings from Pant Sychbant having produced a tool type considered to be of late Mesolithic date. However, intensive and sustained land use probably did not occur in the area until the Bronze Age, when a proliferation of burial cairns was created on the slopes of Mynydd-y-glôg, Cefn Sychbant, Penmoelallt, Cefn Esgair-caerau, Waun Tincer and in Pant Sychbant. Most of the sites comprise quite simple, round heaps of stone, but some have more regular structures indicating reuse and adaptation, and a different status possibly, although very few sites have been excavated.

The ring cairn which, as the name implies, is essentially a ring of heaped stone, is another type of Bronze Age sepulchral monument represented in the area, although occurring in fewer numbers than round cairns. From excavated evidence elsewhere, ring cairns have a broader range of ritual functions than round cairns which were more likely to be used for the straightforward burial of the dead. The large ring cairn in Cwm Cadan is a particularly fine example of the type.

Undated, but presumed to be of broadly prehistoric date on the basis of similarities with sites dated by excavation elsewhere, are concentrations of remains representing early settlement and agriculture. The evidence includes hut circles or the stone foundations of round houses, artificial platforms or scooped hollows possibly intended for wooden structures, enclosures, field systems and groups of small clearance cairns, and occasionally, mounds of burnt stone which have been interpreted as the debris from cooking food in water heated in a pit or trough by hot stones. There are notable and extensive concentrations of these features in Pant Sychbant, Cwm Cadlan, and in the Hepste valley. It has even been argued that the patterns of limestone sink holes in this area probably relate to prehistoric human activity, monument building and field clearance. These erosion features are a distinctive feature of the local landscape.

Medieval settlement generally favoured similar locations to the prehistoric period but overall there appears to have been greater settlement dispersal, with more isolated sites occurring in the area. Clusters of characteristic medieval rectangular stone building foundations and house platforms occur in Pant Sychbant, Pant y Gadair and in the Hepste valley. The Pant Sychbant sites are in close proximity to earlier, prehistoric structures. There is less evidence for associated cultivation in the medieval period and the sites are conventionally regarded as having been predominantly pastoral, although none within the area has been excavated. Excavation would provide a more accurate indication of date and evidence of whether the sites were permanent, or seasonal hafod settlements in a transhumance regime.

Historically, after the Norman conquest, the northern part of the area now lying within Powys, became part of Fforest Fawr which was set aside for hunting as a Forest of the Lordship of Brecon by Bernard de Neufmarché in the late 11th century. In 1521, however, Fforest Fawr passed into Crown ownership and thereafter it steadily declined in size as landowners bought immunity from the restrictions of forest law, or through assarting and enclosure as, for example, in the Hepste valley. In 1819, Fforest Fawr was sold and the central part, or Crown Allotment, was enclosed by Parliamentary Enclosure, with the part included here remaining open moorland as the Commoners' Allotment. The abandoned land intakes found on the margins between the enclosed land and open moor date to about this time: there is a good example in Cwm Cadlan. Curiously, Hepste-fechan, a holding in the upper Hepste valley had been enclosed out of the open moorland at some stage prior to the sale, and the holding remains a highly visible 'island' of improved pasture within the Commoners' Allotment.

There is evidence of past industrial activity, mainly from the last two

	centuries, on Cadair Fawr and Mynydd-y-glôg, including quarrying and the burning of limestone. Lime working occurred in Fforest Fawr in the medieval period as documentary sources attest to the rights of commoners to quarry, burn and sell lime, but the surviving concentrations of remains in the areas noted here, which lay outside Fforest Fawr, probably belong to the main period of lime production in the 18th and 19th centuries when the demand – for agriculture, and to a lesser extent, for building work – rose. Silica sand used for making refractory fire bricks was recently worked at the Cwm Cadlan quarry, but has now ceased to be extracted. The growing importance of sheep farming during the post-medieval period is attested by the numerous sheepfolds and pens in the area. The richness, variety and remarkable extent of the surviving archaeological resources in this area, which is in many ways typical of upland Wales, demonstrates the vigour with which human populations recurrently, and at times continuously, exploited these zones in the past. The scale and intensity of human activity is remarkable. The results of recent historic landscape survey, using modern mapping, surveying and aerial photographic plotting techniques over very wide and representative areas, successfully brings that intensity of activity to life, in what appears today to be an essentially deserted and desolate area of moorland. [1]
Historic Development References	[1] Cpat.org.uk. (2017). Historic Landscape Characterisation. East Fforest Fawr and Mynnydd-y-glog. [online] Available at: http://www.cpat.org.uk/projects/longer/histland/fforest/ffintr.htm [Accessed 11 Jan. 2017]

Page left intentionally blank.

Appendix 9C – Regional Research Framework

Regional research priorities relevant to the assessment of value were identified from the Industrial and Modern Research Framework Priorities presented in: A Research Framework for the Archaeology of Wales, Version 2 (February, 2011). Regional Research Framework (RRF) priorities identified as relevant to this assessment are detailed below.

Background

The historic environment within a kilometre of the footprint of the proposed scheme is dominated by the archaeological remains of eighteenth, nineteenth and early twentieth century extractive industries, including levels, mine workings, spoil tips and elements of associated transport infrastructure. Some landscape evidence associated with agriculture (in the form of field systems and farm buildings) is also present. The proposed scheme is bisected in two locations by the line of two separate Roman roads. In general, prehistoric, Roman and medieval archaeological remains are poorly represented in the baseline. The following research priorities, presented in the RRF, are considered relevant to this study and have been taken into consideration during assessment:

Prehistory

The publication of the Prehistoric Funerary and Ritual Monument Survey by Cadw has identified archaeological sites relating to the monumental use of landscape during prehistory, as well as undertaking a number of associated environmental studies. This information has been considered by the RRF, which has identified the importance of obtaining detailed records of individual monuments as a result of targeted excavation. In considering the overall theme 'Ceremonial and Funerary Monuments' the RRF identifies the following questions as research priorities:

- What do prehistoric monuments tell us about the nature of society?
- What can their immediate environs tell us about the development, role and use of such monuments?

Roman

The Roman period in Wales began in AD 48 and continued until around AD 383. Clear research priorities for the Roman period in Wales are not presented in the RRF. However, the following themes are discussed in the text and are considered relevant to this study:

- settlement Patterns; and
- interaction between Roman occupiers and the indigenous population.

Industrial and Modern

The Industrial and Modern period in Wales is the period from 1750 to present. This period witnessed an agricultural and pastoral society changing to a leading industrial export economy. Wales supplied not only iron and copper products, coal, tinplate, lead, granite and slate to world-markets and to the rest of the UK, but also labour and knowledge, as Welsh workers took their skills with them to the United States, Russia and elsewhere. For these reasons, the period offers strong narratives of innovation and renewal, of transformation and social conflict, which inform the contemporary sense of Welsh identity. The RRF identifies the following research priorities considered relevant to this study:

- the significance of technical change in, and the scale, landscape impact and survival (including below-ground archaeology) of, the major industries of coal, iron, copper, tin, lead and slate; their context and significance in terms of similar sites elsewhere in the world; their relationship with the markets they served;
- the extent to which some industrial sites might have origins predating 1750;
- the erosion or survival of local and regional characteristics in domestic building from the later eighteenth century onwards; the varieties of planned and unplanned settlement; evidence for migration and social diversity in housing stock;

- the extent to which the proliferation of social infrastructure and communal institutions, such as chapels and churches, is a distinctive feature of the period and in what ways these structures might be distinctive to Wales;
- the significance, form and archaeological survival of transport corridors – turnpikes, government-sponsored roads, canals, railways – in terms of their engineering, the industries they served and the settlements they sustained; their context and significance in terms of similar sites elsewhere in the world;
- the agricultural sector remained important in Wales and saw many fundamental changes in this period, including enclosure, the development of court-yard farms and even of mechanised 'high farming' in some places. Improved transport links altered much of the character of Welsh agriculture in this period. Study of the many new farm-yards and agricultural buildings of this period must be a high priority; and
- the erosion or survival of local and regional characteristics in domestic building from the later eighteenth century onwards; the varieties of planned and unplanned settlement; evidence for migration and social diversity in housing stock.

Welsh Government

A465 Heads of the Valleys Dualling - Sections 5 and 6 - Dowlais Top to Hirwaun

Appendix 9D - Assessment of the Significance of the Impact of Development on the Historic Landscape (ASIDOHL)

Rev 0

July 2017

Final

Contents

Summary **1**
1. Stage 1: Contextual Information **2**
1.1 Introduction 2
1.2 Summary of Proposed Scheme 2
1.3 Context of Assessment 2
1.3.1 Study area 2
1.3.2 Methodology 3
1.4 Legislation, Policy and Guidance 4
1.4.1 Key legislation 4
1.4.2 Key policy 4
1.4.3 Key guidance 5
1.5 Confidence 5
1.6 Supporting Statement 5
1.7 Sources Consulted 5
2. Stage 2: Assessment of Direct Impacts **6**
2.1 Results of Assessment 6
2.1.1 HLCA 7: Coed Meurig 7
2.1.2 HLCA 10: Taf Fawr Valley and River 8
2.1.3 HLCA 11: Cefn-coed-y-cymmer 10
2.1.4 HLCA 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views 11
2.1.5 HLCA 13: Taf Fechan 13
2.1.6 HLCA 14: Graig Quarry and Tramroad 14
2.1.7 HLCA 15: Y Graig, Gurnos 15
2.1.8 HLCA 17: Gurnos Farm and Bunkers Hill 16
2.1.9 HLCA 18: Gurnos and Galon-Uchaf 17
2.1.10 HLCA 19: Bon-y-maen 18
2.1.11 HLCA 20: Bryniau Quarries 19
2.1.12 HLCA 21: Dowlais 20
2.1.13 HLCA 22: Pantcadifor, Rhyd-y-bedd and Caeracca 22
2.1.14 HLCA 24: Pengarnddu 23
2.1.15 HLCA 25: Dowlais Top 24
2.1.16 Summary 25
3. Stage 3: Assessment of Indirect Impacts **26**
3.1 Results of Assessment 26
3.1.1 HLCA 7: Coed Meurig 27
3.1.2 HLCA 10: Taf Fawr Valley and River 27
3.1.3 HLCA 11: Cefn-coed-y-cymmer 28
3.1.4 HLCA 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views 28

3.1.5 HLCA 13: Taf Fechan 29
3.1.6 HLCA 14: Graig Quarry and Tramroad 29
3.1.7 HLCA 15: Y Graig, Gurnos 30
3.1.8 HLCA 17: Gurnos Farm and Bunkers Hill 30
3.1.9 HLCA: 18 Gurnos and Galon-Uchaf 31
3.1.10 HLCA 19: Bon-y-maen 32
3.1.11 HLCA 20: Bryniau Quarries 32
3.1.12 HLCA 21: Dowlais 33
3.1.13 HLCA 22: Pantcadifor, Rhyd-y-bedd and Caeracca 33
3.1.14 HLCA 24: Pengarnddu 34
3.1.15 HLCA 25: Dowlais Top 34
3.1.16 HLCA 26: Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun 35
3.1.17 Summary 35
4. Stage 4: Evaluation of Relative Importance 37
4.1.1 HLCA 7: Coed Meurig 38
4.1.2 HLCA 10: Taf Fawr Valley and River 40
4.1.3 HLC 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views 41
4.1.4 HLCA 15: Y Graig, Gurnos 43
4.1.5 HLCA 17: Gurnos Farm and Bunkers Hill 44
4.1.6 HLCA 24: Pengarnddu 45
4.1.7 HLCA 26: Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun 47
4.1.8 Summary 48
4.2 Assessment of Value 49
5. Stage 5: Assessment of Overall Significance of Impact 50
5.1 Mitigation 51
6. Concluding Statement 52
7. References 53
Annex 1 – Legislative and Policy Background 54
Annex 2 – Citation in Register 56
Annex 3 – Figure 1 57

Summary

This assessment presents the results of an *Assessment of the Significance of the Impact of Development on the Historic Landscape* (ASIDOHL2) (Cadw *et al*., 2007) with regard to Section 5 and Section 6 of the proposed dualling of the A465 Heads of the Valley road in south Wales ('the proposed scheme').

The proposed scheme is partially located within the Merthyr Tydfil Landscape of Outstanding Historic Interest (MTLOHI), included on the Register of Historic Interest in Wales (Cadw, 1998).

The proposed scheme is predicted to have direct physical impacts on 15 of the 79 Historic Landscape Character Areas (HLCAs) comprising the MTLOHI.

The proposed scheme is predicted to have an indirect non-physical (visual) impact on 16 of the 79 Historic Landscape Character Areas (HLCAs) comprising the MTLOHI.

Direct physical impacts have been assessed to be Moderate on five HLCAs and Slight on 10 HLCAs. Indirect non-physical (visual) impacts have been assessed to be Considerable on two HLCAs, Moderate on eight HLCAs and Slight on six HLCAs. The relative importance of impacted areas of the HLCAs has been assessed to be Low overall.

HLCAs predicted to experience an impact as a result of the proposed scheme demonstrate an agricultural or otherwise non-industrial character (e.g. HLCA 7, HLCA 10, HLCA 12, and HLCA 17), poor legibility (HLCA 15), residential settlement (e.g. HLCA 11, HLCA 21 and HLCA 22), industrial (e.g. HLCA 14 and HLCA 20) or comprise predominantly industrial land (e.g. HLCA 18, HLCA 19, HLCA 25 and HLCA 26). As a result majority of the identified HLCAs do not contribute to the overall, predominantly industrial, character of the MTLOHI.

The overall impact of the development on the historic landscape on the register has been assessed to be Slight. The reduction of value of the historic landscape on the Register has been assessed to be Medium to Very Low.

1. Stage 1: Contextual Information

1.1 Introduction

This assessment, which should be read in conjunction with the Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and Development Process (Cadw *et al*., 2007), presents the results of an Assessment of the Significance of the Impact of Development on Historic Landscape (ASIDOHL2) on Section 5 and Section 6 of the proposed A465 Heads of the Valley road in South Wales ('the proposed scheme').

The ASIDOHL2 is a staged process for assessing the significance of the impact of a development on historic landscape areas on the Register of Landscapes of Historic Interest in Wales ('the Register') (Cadw, 1998).

The proposed scheme is partially located within a Registered Landscape of Outstanding Historic Interest (LOHI); the Merthyr Tydfil Landscape of Outstanding Historic Interest (MTLOHI). The proposed scheme in relation to the MTLOHI is show on Figure 1 (Annex 3).

1.2 Summary of Proposed Scheme

The proposed scheme comprises dualling of approximately 17.7 km of the A465 between Dowlais Top and Hirwaun. For a full scheme description refer to Chapter 5: Scheme Description in Volume 1 of the Environmental Statement (ES).

1.3 Context of Assessment

The assessment is being carried out as part of an ES to accompany a planning application being carried forward under the Highways Act 1980 (as amended) for the proposed scheme and forms an Appendix to the Cultural Heritage Chapter of the ES (Appendix 9D). Therefore, the HLCA numbering will remain consistent with that applied in the ES Cultural Heritage Chapter (Chapter 9) supported by this ASIDOHL.

1.3.1 Study area

The proposed scheme runs through the northern part of the MTLOHI, from east to west. As part of a Historic Landscape Characterisation programme undertaken by the Glamorgan Gwent Archaeological Trust (GGAT) the MTLOHI was divided into 79 Historic Landscape Character Areas (HLCA) (Cadw *et al*., 2007, GGAT, 2017).

The study area for assessment was defined as the limits of the MTLOHI (as defined by Cadw *et al* (2007) and GGAT (2017)) a 200 m study area extending in all directions from the footprint of the proposed scheme (defined by the ES). Of the 79 HLCAs within the MTLOHI, 24 fall within the 200 m study area. These are listed in Table 1.1.

Table 1.1 : HLCAs located within the study area

Jacobs HLCA Ref.	Name
HLCA 1	A465 Heads of the Valley Road
HLCA 6	Winch Fawr, Pen-yr-heolgerrig, Cwm Du and Upper Cwn Glo Workings
HLCA 7	Coed Meurig
HLCA 8	Clwyd-y-Fagwyr, Gellideg and Pen-Llwyn-Deri
HLCA 9	Cyfarthfa Iron Works and Associated Features
HLCA 10	Taf Fawr River Valley
HLCA 11	Cefn-coed-y-cymmer
HLCA 12	Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views
HLCA 13	Taf Fechan
HLCA 14	Graig Quarry and Tramroad
HLCA 15	Y Graig, Gurnos
HLCA 16	Lakeside Gardens
HLCA 17	Gurnos Farm and Bunkers Hill
HLCA 18	Gurnos and Galon-Uchaf
HLCA 19	Bon-y-maen
HLCA 20	Bryniau Quarries
HLCA 21	Dowlais
HLCA 22	Pantcadifor, Rhyd-y-bedd and Caeracca
HLCA 23	Ivor Works Area
HLCA 24	Pengarnddu
HLCA 25	Dowlais Top
HLCA 26	Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun
HLCA 27	Dowlais Iron Works Area
HLCA 28	Ffos-y-fran

1.3.2 Methodology

Under the assessment methodology provided by Cadw *et al.* (2007), impacts on the historic landscape are identified as 'direct physical impacts'; those impacts resulting in the surface area of the landscape being directly affected, 'indirect, physical impacts'; those impacts resulting in a severance or fragmentation of historic landscape areas and 'indirect (non-physical) visual impacts'; those impacts resulting in an effect on the setting of a historic landscape. This assessment does not take into account mitigation and, therefore, presents a 'worst-case' scenario, in accordance with the Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and Development Process (Cadw *et al*., 2007).

No impacts (direct or indirect) were predicted to occur on eight HLCAs as set out in Table 1.2. Thus these HLCAs have not been discussed any further in this report.

Table 1.2 : HLCAs located within the study area

Jacobs HLCA Ref.	Name	Rationale
HLCA 1	A465 Heads of the Valley Road	The proposed scheme is in keeping with the existing mid-20th century transport corridor. Thus no direct or indirect impact is predicted to occur.
HLCA 6	Winch Fawr, Pen-yr-heolgerrig, Cwm Du and Upper Cwn Glo Workings	The proposed scheme does not encroach onto the HLCA, and comprises the improvement and upgrade of an existing highway near the industrial area, thus no direct or indirect impact is predicted to occur.
HLCA 8	Clwyd-y-Fagwyr, Gellideg and Pen-Llwyn-Deri	The proposed scheme does not encroach onto the HLCA, and comprises the improvement and upgrade of an existing highway near the industrial settlement, thus no direct or indirect impact is predicted to occur.
HLCA 9	Cyfarthfa Iron Works	The proposed scheme does not encroach onto the HLCA, and comprises the improvement and upgrade of an existing highway near the iron works, thus no direct or indirect impact is predicted to occur.
HLCA 16	Lakeside Gardens	The proposed scheme does not encroach onto the HLCA, and comprises the improvement and upgrade of an existing highway near the modern housing development, thus no direct or indirect impact is predicted to occur.
HLCA 23	Ivor Works Area	The proposed scheme does not encroach onto the HLCA, and comprises the improvement and upgrade of an existing highway near the industrial area, thus no direct or indirect impact is predicted to occur.
HLCA 27	Dowlais Iron Works Area	Due to the distance between this HLCA and the proposed scheme no direct or indirect impact is predicted to occur.
HLCA 28	Ffos-y-fran	Due to the distance between this HLCA and the proposed scheme no direct or indirect impact is predicted to occur.

1.4 Legislation, Policy and Guidance

Legislation and policy are identified in Sections 1.4.1 to 1.4.3 and are presented in further detail in Appendix 9A: Legislative and Policy Background appended to the Cultural Heritage ES chapter (Chapter 9).

1.4.1 Key legislation

- Highways Act 1980 (as amended); and
- Historic Environment (Wales) Act 2016.

1.4.2 Key policy

Planning policy for archaeology and cultural heritage in Wales and local policy relevant to assessment is provided in the following documents:

- Hedgerow Regulations 1997 (amended 2003);
- Merthyr Tydfil County Borough Council Local Development Plan (MTCBC): Strategic Objective 1; Policy BW6; Policy AS4. (2011);
- Planning Policy Wales: Edition 9 (PPW9) Chapter 6: Conserving the Historic Environment (Welsh Government, December 2016);

- Rhondda Cynon Taf County Borough Council (RCTCBC) Local Development Plan up to 2021: Policy CS1; Policy EB101. (2011);
- Supplementary Planning Guidance: Cyfarthfa Conservation Area Character Appraisal (MTCBC 2009);
- Technical Advice Note (Wales) 12: Design (Welsh Government, 2014);
- Planning Policy Wales Technical Advice Note 24 – The Historic Environment (Welsh Government, 2017); and
- Wales Spatial Plan: People, Places, Futures (WSP) (Welsh Government, 2008).

1.4.3 Key guidance

This assessment has been prepared based on the guidance provided by:

- Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and Development Process, Revised (2nd) Edition including revisions to the assessment process (Cadw, *et al,* 2007);
- The Setting of Heritage Assets. Historic Environment Good Practice Advice in Planning: 3 (Historic England, 2015); and
- Understanding the Archaeology of Landscape: A guide to good recording practice (English Heritage, 2007).

1.5 Confidence

Sources used are considered appropriate and adequate for the requirements of this assessment.

1.6 Supporting Statement

The ASIDOHL has been undertaken by Jim Mower, MA Archaeology, ACIfA, employed by Jacobs UK Ltd on behalf of the Welsh Government. Mr Mower is experienced in undertaking impact assessment in relation to the historic environment and has completed such work on road schemes for Buckinghamshire County Council and Essex County Council.

1.7 Sources Consulted

The following sources were consulted:

- Cadw, 1998. Register of Landscapes of Outstanding Historic Interest in Wales. Cadw, CCW, ICOMOS UK;
- Ggat.org.uk. (2017). Merthyr Tydfil Main. [online] Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm [Accessed 11 January 2017]; and
- Landmap-maps.naturalresources.wales. (2017). Map. [online] Available at: http://landmap-maps.naturalresources.wales/ [Accessed 11 January 2017].

Figure 1 (Annex 3) shows the MTLOHI in relation to the proposed scheme and all HLCAs with the potential to be impacted by it.

Chapters within this ES relevant to Cultural Heritage include:

- Chapter 5 – Scheme Description;
- Chapter 9 – Cultural Heritage;
- Chapter 10 – Landscape and Visual Impact;
- Chapter 12 – Geology and Soils; and
- Chapter 14 – Noise and Vibration.

2. Stage 2: Assessment of Direct Impacts

Stage 2 describes and quantifies the direct, physical impacts of development on HLCAs affected by the proposed scheme. This is expressed in absolute terms (the percentage or proportion of the surface area of the HLCA directly affects) and in relative terms (the percentage or proportion of elements within the HLCA that are predicted to be affected). Each element is recorded using the categories adopted by the Welsh Archaeological Trusts.

2.1 Results of Assessment

The proposed scheme would result in a direct physical impact on 15 of the 79 HLCAs that contribute towards the MTLOHI as a result of land-take, landscaping and mounding and the placement of compound / set down areas. HLCAs predicted to experience direct, physical impacts as a result of the proposed scheme are presented in Table 2.1 and shown on Figure 1 (Annex 3). A summary of overall magnitude of direct impacts on the HLCAs is presented in Table 2.32.

Table 2.1 : HLCAs potentially directly impacted by the proposed scheme

HLCA	Name
HLCA 7	Coed Meurig
HLCA 10	Taf Fawr Valley and River
HLCA 11	Cefn-coed-y-cymmer
HLCA 12	Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views
HLCA 13	Taf Fechan
HLCA 14	Graig Quarry and Tramroad
HLCA 15	Y Graig, Gurnos
HLCA 17	Gurnos Farm and Bunkers Hill
HLCA 18	Gurnos and Galon-Uchaf
HLCA 19	Bon-y-maen
HLCA 20	Bryniau Quarries
HLCA 21	Dowlais
HLCA 22	Pantcadifor, Rhyd-y-bedd and Caeracca
HLCA 24	Pengarnddu
HLCA 25	Dowlais Top

The proposed scheme would not have a direct impact on HLCA 26: Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun as the footprint of the proposed scheme does not cross this historic landscape.

2.1.1 HLCA 7: Coed Meurig

Coed Meurig comprises an agricultural enclosed landscape of traditional hedge banks and drystone boundaries associated with post-medieval farms. This HLCA encompasses an area either side of the A465 from the Merthyr Road junction in the west to the A465 junction with the A470 in the north west of Merthyr Tydfil (between chainage 8300 to 10700). The area includes minor industrial characteristics in the form of tips extending from workings to the south.

Plate 1. HLCA 7: Coed Meurig (Photo: GGAT 2017)

Absolute and relative direct physical impacts on HLCA 7 are presented in Table 2.2. The overall magnitude of these impacts is presented in Table 2.3.

Table 2.2 : Direct physical impacts on HLCA 7: Coed Meurig

Direct physical impacts - absolute				
Absolute Impact (Loss of Area): 9.54 ha of 58 ha = 16.4% of HLCA		Magnitude & Score: Moderate = 3		
Direct physical impacts - relative				
Elements lost	**Site Category**	**Magnitude**	**Landscape Value**	**Landscape Value Effect**
Drystone and turfstone walling and fields. 9.5 ha would be permanently removed (16.4% of HLCA)	C = 2	Slight = 2	Low = 2	Slightly Reduced = 2
Post-Medieval lofted cowshed. 0.063 ha would be permanently removed (0.1% of HLCA)	C = 2	Moderate = 3	Low = 2	Lost = 6
Summary: 16.4% of the overall HLCA would be permanently lost or removed by development. Drystone and turfstone walling and fields comprising 16.4% of the HLCA and post medieval farm buildings comprising 0.1% of the HLCA would be permanently lost or removed by development				

Table 2.3 : Overall magnitude of direct physical impacts on HLCA 7: Coed Meurig

Score	**Grading**
(2 +2 + 2 + 2)+(2 +3 +2 + 6) ÷ 2 + 3 = 13.5 (13)	Moderate

2.1.2 HLCA 10: Taf Fawr River Valley

Please note that within HLCA 10: Taf Fawr River Valley includes Cefn Coed Cemetery which is also a Registered Park and Garden which has been assessed separately as HLCA 12 Cefn Coed Cemetery and Jewish Burial Ground. Thus a proportion of HLCA 10 has been assessed in this section whilst the remainder has been assessed under HLCA 12. Figure 1 (Annex 3) depicts the extent of these areas.

The Historic Landscape Characterisation database provided on Glamorgan and Gwent Archaeological Trust (GGAT) website indicates that the Taff Fawr River Valley comprises a river valley landscape and is characterised, at its northern limit, by the establishment of the Cefn Coed Cemetery in 1858, which included the laying out of the ground, and erection of chapels, lodge and boundary wall. By 1919, the cemetery had expanded to take in an area to the west side of the Taf, linked by a bridge. In 1860, the Jewish Community purchased land for a Jewish Burial Ground.

This HLCA encompasses areas either side of the existing A465 from Grawen Lane in the east to Afon Taf Fawr where it passes under the A645 to the west (at chainage 10900) and a drainage pond to the south of the existing A470 Junction roundabout.

Plate 2. HLCA 10: Taf Fawr River Valley (Photo: GGAT 2017)

Plate 3. HLCA 10: Taf Fawr Valley and River (Photo: Skeye 2017)

Absolute and relative direct physical impacts on HLCA 10 are presented in Table 2.4. The overall magnitude of these impacts is presented in Table 2.5.

Table 2.4 : Direct physical impacts on HLCA 10: Taf River Valley

Direct physical impacts - absolute				
Absolute Impact (Loss of Area): 1.52 ha of 28 ha = 5.4 % of HLCA		Magnitude & Score: Slight = 2		
Direct physical impacts - relative				
Elements lost	**Category**	**Magnitude**	**Landscape Value**	**Landscape Value Effect**
Woodland. 1.12 ha would be permanently removed (4% of HLCA)	U = 1	Slight = 2	Low = 2	Slightly reduced = 2
Open Fields. 0.4 ha would be permanently removed 1.4% of HLCA)	U = 1	Slight = 2	Low = 2	Very Slightly reduced = 1
Summary: 5.4% of the overall HLCA would be permanently lost or removed by development. Woodland comprising 4% of the HLCA and open fields comprising 1.4% of the HLCA would be permanently lost or removed by development.				

Table 2.5 : Overall magnitude of direct physical impacts on HLCA 10: Taf Fawr River Valley

Score	**Grading**
(1 + 2 + 2 + 2) + (1 + 2 + 2 + 1) ÷ 2 + 2 = 8.5 (9)	Moderate

2.1.3 HLCA 11: Cefn-coed-y-cymmer

Cefn-coed-y-cymmer is an industrial worker's squatter settlement which has retained its identity, despite the 20th century developments that have taken place around it. The HLCA is characterised by an unplanned layout, comprising early housing with a strong vernacular influence and non-conformist chapels of both rural and urban type and includes the transport corridor elements such as the turnpike road from Cefn to Cwm Taf, the Brecon-Merthyr road and Cefn-coed-y-cymmer railway viaduct. This HLCA encompasses areas either side of the A465 between Lower Vaynor Road Merthyr Road (chainage 11400), to the Taff Trail in the west (chainage 10900).

Plate 4. HLCA 11: Cefn-coed-y-cymmer (Photo: Skeye 2017)

Absolute and relative direct physical impacts on HLCA 11 are presented in Table 2.6. The overall magnitude of these impacts is presented in Table 2.7.

Table 2.6 : Direct physical impacts on HLCA 11: Cefn-coed-y-cymmer

Direct physical impacts - absolute				
Absolute Impact (Loss of Area): 1 ha of 50 ha = 2% of HLCA		Magnitude & Score: Very Slight = 1		
Direct physical impacts - relative				
Elements lost	**Site Category**	**Magnitude**	**Landscape Value**	**Landscape Value Effect**
Scrub and woodland. 0.6 ha would be permanently removed (1.20% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Existing tracks and roads. 0.4 ha would be permanently removed / altered (0.80% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Summary: 2% of the overall HLCA would be permanently lost or removed by development, including the removal of 1.20% of scrub and woodland and 0.80% of existing roads / tracks would be affected.				

Table 2.7 : Overall magnitude of direct physical impacts on HLCA 11: Cefn-coed-y-cymmer

Score	**Grading**
(1 + 1 + 1 + 2) + (1 +1 + 1 +2) ÷ 2 + 1 = 6	Slight

2.1.4 HLCA 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views

Cefn Coed cemetery is recorded as one of the oldest and largest general public cemeteries in the Merthyr Tydfil area. The majority of the HLCA area survives in its entirety in its original layout. Further information regarding the history of the cemetery is set out in Section 2.1.2 under HLCA 10: Taf Fawr River Valley. This HLCA encompasses an area to the north of the existing A465 Afon Taf Fawr in the east (chainage 10800) and the A470 Junction to the west (chainage 10700).

Plate 5. HLCA 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views (Photo: Skeye 2017)

Plate 6. HLCA 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views (Photo: Skeye 2017)

Absolute and relative direct physical impacts on HLCA 12 are presented in Table 2.8. The overall magnitude of these impacts is presented in Table 2.9.

Table 2.8 : Direct physical impacts on HLCA 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views

Direct physical impacts - absolute				
Absolute Impact (Loss of Area): 1.7 ha of 15 ha = 11.34% of HLCA		Magnitude & Score: Slight = 2		
Direct physical impacts - relative				
Elements lost	**Site Category**	**Magnitude**	**Landscape Value**	**Landscape Value Effect**
Open grassland within registered park and garden/cemetery area. 0.4 ha would be permanently removed (2.67% of HLCA)	C = 2	Very Slight = 1	Low = 2	Considerably Reduced = 4
Woodland within registered park and garden/cemetery area. 0.6 ha would be permanently removed (4% of HLCA)	C = 2	Very Slight = 1	Low = 2	Considerably Reduced = 4
Scrub and woodland. 0.7 ha would be permanently removed (4.67% of HLCA)	D = 1	Slight = 2	Very Low = 1	Moderately Reduced = 2
Summary: 11.33% of the overall HLCA would be permanently lost or removed by the development, comprising 2.67% of open grassland, 4% of woodland and 4.67% of scrub and woodland.				

Table 2.9 : Overall magnitude of direct physical impacts on HLCA 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views

Score	**Grading**
(2 + 1 + 2 + 4) + (2 + 1 + 2 + 4) + (1 + 2 + 1 + 2) ÷ 3 + 2 = 10	Moderate

2.1.5 HLCA 13: Taf Fechan

Taf Fechan comprises a transport corridor within the Taf Fechan Valley which is characterised by 19th century public rail networks, including the B&M/LNWR Joint Railway and the Glais Viaduct at Pontsarn. This HLCA encompasses two areas to the north of the existing A465 (at chainage 11400). The eastern area is located to the west of Gurnos Farm and the western area is located to the north of Lower Vaynor Road.

Plate 7. HLCA 13: Afon Taf Fechan (Photo: Skeye 2017)

Absolute and relative direct physical impacts on HLCA 13 are presented in Table 2.10. The overall magnitude of these impacts is presented in Table 2.11.

Table 2.10 : Direct physical impacts on HLCA 13: Taf Fechan

Direct physical impacts - absolute				
Absolute Impact (Loss of Area): 0.31 ha of 160 ha = 0.19% of HLCA		Magnitude & Score: Very Slight = 1		
Direct physical impacts - relative				
Elements lost	**Site Category**	**Magnitude**	**Landscape Value**	**Landscape Value Effect**
Scrub and woodland. 0.3 ha would be permanently removed (0.19% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Existing tracks and roads. 0.01 ha would be permanently removed / altered (0.01% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Summary: 0.39% of the overall HLCA would be permanently lost or removed by the development, comprising the removal of 0.19% of open fields and scrub and woodland and 0.01% of existing roads / tracks would be affected.				

Table 2.11 : Overall magnitude of direct physical impacts on HLCA 13: Taf Fechan

Score	**Grading**
(1 + 1 + 1 + 2) + (1 + 1 + 1+ 2) ÷2 + 1 = 6	Slight

2.1.6 HLCA 14: Graig Quarry and Tramroad

It is acknowledged that HLCA 14: Graig Quarry and Tramroad is part of a wider area included in the Cyfarthfa Iron Works which is another Historic Landscape Characterisation area provided on GGAT website. Figure 1 (Annex 3) depicts the extent of HLCA 14 which has been considered for this assessment. Founded in 1765, the Cyfarthfa Iron Works became one of the largest iron works in the world during the early 1800s. It is recognised as a nationally and internationally important landscape which is characterised by industrial features such as the Charging Bank and Blast Furnaces, Pont-y-Cafnau Iron Bridge, Cyfarthfa Cinder Tips, and the limestone quarry and associated tram road.

This HLCA encompasses an area to the north and south of the existing A465 east of Lower Vaynor Road (between chainage 11400 to 11500). The area of the HLCA included within the working footprint of the proposed scheme comprises an existing bridge within the HLCA over the Afon Taf Fechan.

Plate 8. HLCA 14: Graig Quarry and Tramroad (Photo: GGAT 2017)

Absolute and relative direct physical impacts on HLCA 14 are presented in Table 2.12. The overall magnitude of these impacts is presented in Table 2.13.

Table 2.12 : Direct physical impacts on HLCA 14: Graig Quarry and Tramroad

Direct physical impacts - absolute				
Absolute Impact (Loss of Area): 0.3 ha of 19 ha = 1.58% of HLCA		Magnitude & Score: Very Slight = 1		
Direct physical impacts - relative				
Elements lost	**Site Category**	**Magnitude**	**Landscape Value**	**Landscape Value Effect**
Woodland Plantation. 0.2 ha would be permanently removed (1.05% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slight = 2
Scrub and woodland. 0.1 ha would be permanently removed (0.53% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slight = 2
Summary: 1.58% of the overall HLCA would be permanently lost or removed by the development, comprising the removal of 1.05% of woodland plantation and 0.53% of scrub and woodland.				

Table 2.13 : Overall magnitude of direct physical impacts on HLCA 14: Graig Quarry and Tramroad

Score	Grading
(1 + 1 + 1 + 2) + (1 + 1 + 1 + 2) ÷ 2 + 1 = 6	Slight

2.1.7 HLCA 15: Y Graig, Gurnos

Y Graig, Gurnos comprises a remnant of land associated with Gurnos Farm to the south of the existing A465 at Gurnos. Characterised by scrub woodland and pasture, HLCA 15 also contains a network of tracks and a small number of minor extractive features, possibly gravel pits. This HLCA encompasses areas to the south of the existing A465 between the Taf Fechan in the west (at chainage 11500) and to the north of Ty Gwaunfarren in the east (chainage 12100). The areas of the HLCA included within the working footprint of the proposed scheme, comprises tracks, scrub and woodland.

Plate 9: HLCA 15: Y Graig, Gurnos (Photo: GGAT 2017)

Absolute and relative direct physical impacts on HLCA 15 are presented in Table 2.14. The overall magnitude of these impacts is presented in Table 2.15.

Table 2.14 : Direct physical impacts on HLCA 15: Y Graig, Gurnos

Direct physical impacts – absolute				
Absolute Impact (Loss of Area): 5.3 ha of 19 ha = 27.9% of HLCA		Magnitude and Score: Moderate = 3		
Direct physical impacts - relative				
Elements lost	**Category**	**Magnitude**	**Landscape Value**	**Landscape Value Effect**
Tracks. 1.3 ha would be permanently removed. 6.8% of HLCA)	D = 1	Slight = 2	Low = 2	Moderately reduced = 3
Scrub and woodland. 4ha would be permanently removed (21.1% of HLCA)	U = 1	Slight = 2	Low = 2	Moderately reduced = 3
Summary: 27.9% of the overall HLCA would be permanently lost or removed by development. Tracks comprising 6.8% of the HLCA and scrub and open woodland comprising 21.1% of the HLCA would be permanently lost or removed by development.				

Table 2.15 : Overall magnitude of direct physical impacts on HLCA 15: Y Graig, Gurnos

Score	Grading
(1 + 2 + 2 + 3) + (1 + 2 + 2 + 3) ÷ 2 + 3 = 11	Moderate

2.1.8 HLCA 17: Gurnos Farm and Bunkers Hill

Gurnos Farm and Bunkers Hill comprises a late 18th century agricultural landscape characterised predominantly by planned medium-large regular enclosures with dry stone walls. It also includes a transport corridor comprising a tramroad to Morlais Castle Quarries and a possible route of a Roman road. This HLCA encompasses areas to the north of the existing A465 between Lakeside Gardens in the west (chainage 11500) to Pontsarn Road in the east (chainage 13800).

Plate 10. HLCA 17: Gurnos Farm and Bunkers Hill (Photo: GGAT 2017)

Absolute and relative direct physical impacts on HLCA 17 are presented in Table 2.16. The overall magnitude of these impacts is presented in Table 2.17.

Table 2.16 : Direct physical impacts on HLCA 17: Gurnos Farm and Bunkers Hill

Direct physical impacts - absolute				
Absolute Impact (Loss of Area): 8.9 ha of 80ha = 11.14 % of HLCA			Magnitude & Score: Slight = 2	
Direct physical impacts - relative				
Elements lost	**Site Category**	**Magnitude**	**Landscape Value**	**Landscape Value Effect**
Woodland Plantation. 0.7 ha would be permanently removed (0.88% of HLCA)	C = 2	Very Slight = 1	Low = 2	Moderately Reduced = 3
Open fields. 7.1 ha would be permanently removed (8.88% of HLCA)	C = 2	Slight = 2	Low = 2	Moderately Reduced = 3
Scrub and woodland. 0.3 ha would be permanently removed (0.38% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Existing tracks and roads. 0.8 ha would be permanently removed/altered (1% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Summary: 11.14% of the overall HLCA would be permanently lost or removed by development, this includes				

0.88% of woodland plantation, 8.88% open fields, 0.38% of scrub and woodland and 1% of existing roads / tracks would be effected.

Table 2.17 : Overall magnitude of direct physical impacts on HLCA 17: Gurnos Farm and Bunkers Hill

Score	Grading
(2 + 1 + 2 + 3)+(2 + 2 + 2 + 3) + (1 + 1 + 1 + 2) + (1 + 1 + 1 + 2) ÷ 4 + 2 = 8.75 (9)	Moderate

2.1.9 HLCA 18: Gurnos and Galon-Uchaf

Gurnos and Galon Uchaf is an existing urban landscape, built on former agricultural land during the mid-1900s. The landscape is characterised by council housing estates, commercial buildings, educational and health facilities, and industrial features. This HLCA encompasses areas to the south of the existing A465 between Gurnos Road in the west (at chainage 11500) to Pontsarn Road in the east (at chainage 13800).

Plate 11. HLCA 18: Gurnos and Galon-Uchaf (Photo: GGAT 2017)

Absolute and relative direct physical impacts on HLCA 18 are presented in Table 2.18. The overall magnitude of these impacts is presented in Table 2.19.

Table 2.18 : Direct physical impacts on HLCA 18: Gurnos and Galon-Uchaf

Direct physical impacts - absolute				
Absolute Impact (Loss of Area): 4.4 ha of 199 ha = 2.21% of HLCA		Magnitude & Score: Very Slight = 1		
Direct physical impacts - relative				
Elements lost	**Site Category**	**Magnitude**	**Landscape Value**	**Landscape Value Effect**
Scrub and woodland. 1.4 ha would be permanently removed (0.7% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Existing tracks and roads. 3 ha would be permanently removed/altered (1.51% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2

Summary: 2.21% of the overall HLCA would be permanently lost or removed by development, including the removal of 0.7% of scrub and woodland and 1.51% of existing roads / tracks would be affected.

Table 2.19 : Overall magnitude of direct physical impacts on HLCA 18: Gurnos and Galon-Uchaf

Score	Grading
(1 + 1 + 1 + 2) + (1 + 1 + 1 + 2) ÷ 2 + 1 = 6	Slight

2.1.10 HLCA 19: Bon-y-maen

Bon-y-maen was formerly agricultural post-medieval farm land with irregular fields, but is now a modern industrial estate, comprising mixed industrial and commercial units and a sports ground. This HLCA encompasses areas to the south of the existing A465 between Rocky Road to the west (chainage 14100) and Pant Road in the east (chainage 14700).

Plate 12. HLCA 19: Bon-y-maen (Photo: Skeye 2017)

Absolute and relative direct physical impacts on HLCA 19 are presented in Table 2.20. The overall magnitude of these impacts is presented in Table 2.21.

Table 2.20 : Direct physical impacts on HLCA 19: Bon-y-maen

Direct physical impacts - absolute				
Absolute Impact (Loss of Area): 3.3 ha of 28 ha = 11.79% of HLCA		Magnitude & Score: Slight = 2		
Direct physical impacts - relative				
Elements lost	**Site Category**	**Magnitude**	**Landscape Value**	**Landscape Value Effect**
Scrub and woodland. 1.7 ha would be permanently removed (6.07% of HLCA)	D = 1	Slight = 2	Very Low = 1	Slightly Reduced = 2
Modern hardstanding. 0.8 ha would be permanently removed (2.86% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2

Existing tracks and roads. 0.8 ha would be permanently removed / altered (2.86% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Summary: 11.79% of the overall HLCA would be permanently lost or removed by development, including 6.07 % of scrub and woodland, 2.86% of modern hardstanding and 2.86 % of existing roads / tracks would be affected.				

Table 2.21 : Overall magnitude of direct physical impacts on HLCA 19: Bon-y-maen

Score	Grading
(1 + 2 + 1 + 2) + (1 + 1 + 1 + 2) + (1 + 1 + 1 + 2) ÷ 3 + 2 = 7.33 (7)	Slight

2.1.11 HLCA 20: Bryniau Quarries

Bryniau Quarries is a historical extractive industrial landscape, associated with Dowlais and Ivor Iron Works and is characterised by quarries and associated tramroads. This HLCA encompasses areas to the north and south of the existing A465 between Rocky Road in the west (chainage 14100) and High Street in the east (chainage 16000).

Plate 13. HLCA 20: Bryniau Quarries (Photo: GGAT 2017)

Absolute and relative direct physical impacts on HLCA 20 are presented in Table 2.22. The overall magnitude of these impacts is presented in Table 2.23.

Table 2.22 : Direct physical impacts on HLCA 20: Bryniau Quarries

Direct physical impacts - absolute				
Absolute Impact (Loss of Area): 1.1 ha of 20 ha = 5.50% of HLCA		Magnitude & Score: Slight = 2		
Direct physical impacts - relative				
Elements lost	**Site Category**	**Magnitude**	**Landscape Value**	**Landscape Value Effect**
Former quarry area. 0.8 ha would be permanently removed (4% of HLCA)	C = 2	Very Slight = 1	Very Low = 1	Moderately Reduced = 3
Scrub and woodland. 0.02 ha would be permanently removed	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2

(0.10% of HLCA)				
Existing tracks and roads. 0.28 ha would be permanently removed / altered (1.40% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Summary: 5.50% of the overall HLCA would be permanently lost or removed by development, this includes the removal of 4% of the area within the former quarry area, 0.10% of scrub and woodland and 1.40% of existing roads / tracks would be affected.				

Table 2.23 : Overall magnitude of direct physical impacts on HLCA 20: Bryniau Quarries

Score	Grading
(2 + 1 + 1 + 3) + (1 + 1 + 1 + 2) + (1 + 1 + 1 + 2) ÷ 3 + 2 = 7.66 (8)	Slight

2.1.12 HLCA 21: Dowlais

Dowlais initially began as a settlement of dispersed cottages dating to the 1700s, although it has expanded and its layout has changed from a characteristic grid system by the mid-1800s to the wider expansive development seen today. The area is characterised by industrial housing which is still extract, but it is also dominated by public and religious buildings, such as the Dowlais Ironworks Stables and the Memorial Library. This HLCA encompasses areas from Bryniau Road in west (chainage 13900) to High Street in the east (chainage 16000).

Plate 14. HLCA 21: Dowlais (Photo: Skeye 2017)

Absolute and relative direct physical impacts on HLCA 21 are presented in Table 2.24. The overall magnitude of these impacts is presented in Table 2.25.

Table 2.24 : Direct physical impacts on HLCA 21: Dowlais

Direct physical impacts - absolute				
Absolute Impact (Loss of Area): 3.4 ha of 91 ha = 3.74% of HLCA		Magnitude & Score: Very Slight = 1		
Direct physical impacts - relative				
Elements lost	**Site Category**	**Magnitude**	**Landscape Value**	**Landscape Value Effect**
Open fields. 0.2 ha would be permanently removed (0.22% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2

Scrub and woodland. 3.2 ha would be permanently removed (3.52% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Summary: 3.74% of the overall HLCA would be permanently lost or removed by development, this includes the removal of 0.22% of open fields and 3.52% of scrub and woodland.				

Table 2.25 : Overall magnitude of direct physical impacts on HLCA 21: Dowlais

Score	Grading
(1 + 1 + 1 + 2) + (1 + 1 + 1 + 2) ÷ 2 + 1 = 6	Slight

2.1.13 HLCA 22: Pantcadifor, Rhyd-y-bedd and Caeracca

Pantcadifor, Rhyd-y-bedd and Caeracca is a roadside settlement dating from the late 1700s and was formerly associated with local quarries within the area. The area is characterised by later regular terrace houses, 20th century social housing and a large cemetery and two chapels. This HLCA encompasses areas to the north of the existing A465 between Pant Road in the west (chainage 14700) to the Hafod in the east (chainage 15100).

Plate 15. HLCA 22: Pantcadifor, Rhyd-y-bedd and Caeracca (Photo: Skeye 2017)

Absolute and relative direct physical impacts on HLCA 22 are presented in Table 2.26. The overall magnitude of these impacts is presented in Table 2.27.

Table 2.26 : Direct physical impacts on HLCA 22: Pantcadifor, Rhyd-y-bedd and Caeracca

Direct physical impacts - absolute				
Absolute Impact (Loss of Area): 1.7 ha of 67 ha = 2.55% of HLCA		Magnitude & Score: Very Slight = 1		
Direct physical impacts - relative				
Elements lost	**Site Category**	**Magnitude**	**Landscape Value**	**Landscape Value Effect**
Open fields. 0.5 ha would be permanently removed (0.75% of HLCA)	C = 2	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Scrub and woodland. 0.5 ha would be permanently removed (0.75% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Modern hardstanding. 0.2 ha would be permanently removed (0.30% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Existing tracks and roads. 0.5 ha would be permanently removed / altered (0.75% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Summary: 2.55% of the overall HLCA would be permanently lost or removed by development, this includes the removal of 0.75% of open fields and scrub and woodland, 0.30% of modern hardstanding and 0.75% of existing roads / tracks would be affected.				

Table 2.27 : Overall magnitude of direct physical impacts on HLCA 22: Pantcadifor, Rhyd-y-bedd and Caeracca

Score	Grading
(2 + 1 + 1 + 2) + (1 + 1 + 1 + 2) + (1 + 1 + 1 + 2) + (1 + 1 + 1 + 2) ÷ 4 + 1 = 6.25 (6)	Slight

2.1.14 HLCA 24: Pengarnddu

The landscape of Pengarnddu is characterised by a transport corridor associated with the limestone quarries at Twynau Gwynion. The landscape also comprises extensive remains of the Dowlais Free Drainage System which comprises a system of reservoirs and leats which formerly provided water to the Dowlais Ironworks and pre-date the early 1800s. This HLCA encompasses areas to the north of the existing A465 between High Street in the east (chainage 16000) to the Hafod in the west (chainage 15100).

Plate 16. HLCA 24: Pengarnddu (Photo: Skeye 2017)

Absolute and relative direct physical impacts on HLCA 24 are presented in Table 2.28. The overall magnitude of these impacts is presented in Table 2.29.

Table 2.28 : Direct physical impacts on HLCA 24: Pengarnddu

Direct physical impacts - absolute				
Absolute Impact (Loss of Area): 4.66 ha of 88 ha = 4.30% of HLCA		Magnitude & Score: Slight = 2		
Direct physical impacts - relative				
Elements lost	**Site Category**	**Magnitude**	**Landscape Value**	**Landscape Value Effect**
Open fields. 3.38 ha would be permanently removed (3.84% of HLCA)	C = 2	Very Slight = 1	Low = 2	Slightly Reduced = 2
Scrub and woodland. 1.28 ha would be permanently removed (1.45% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Summary: 4.30% of the overall HLCA would be permanently lost or removed by development, this includes the				

removal of 3.84% of open fields and 1.45% of scrub and woodland.

Table 2.29 : Overall magnitude of direct physical impacts on HLCA 24: Pengarnddu

Score	Grading
(2 + 1 + 2 + 2) + (1 + 1 + 1 + 2) ÷ 2 + 2 = 8	Slight

2.1.15 HLCA 25: Dowlais Top

Dowlais Top comprises reclaimed industrial land which has been redeveloped and is characterised by modern buildings such as commercial, retail and light industry units. This HLCA encompasses areas to the north and south of the existing A465 between chainage 15200 and 16000.

Plate 15. HLCA 25: Dowlais Top (Photo: Skeye 2017)

Absolute and relative direct physical impacts on HLCA 25 are presented in Table 2.30. The overall magnitude of these impacts is presented in Table 2.31.

Table 2.30 : Direct physical impacts on HLCA 25: Dowlais Top

Direct physical impacts - absolute				
Absolute Impact (Loss of Area): 0.17 ha of 67 ha = 0.25% of HLCA		Magnitude & Score: Very Slight = 1		
Direct physical impacts - relative				
Elements lost	**Site Category**	**Magnitude**	**Landscape Value**	**Landscape Value Effect**
Scrub and woodland. 0.12 ha would be permanently removed (0.18% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2
Existing tracks and roads. 0.05 ha would be permanently removed / altered (0.07% of HLCA)	D = 1	Very Slight = 1	Very Low = 1	Slightly Reduced = 2

Summary: 0.25 % of the overall HLCA would be permanently lost or removed by development, this includes the removal of 0.18% of scrub and woodland and 0.05 % of existing tracks and roads.

Table 2.31 : Overall magnitude of direct physical impacts on HLCA 25: Dowlais Top

Score	Grading
(1 + 1 + 1 + 2) + (1 + 1+ 1 + 2) ÷ 2 + 1 = 6	Slight

2.1.16 Summary

A summary of overall magnitude of direct impacts on each HLCA is presented in Table 2.32.

Table 2.32 : Summary of overall magnitude of direct impacts on HLCAs.

HLCA	Name	Score	Magnitude
HLCA 7	Coed Meurig	13.5 (13)	Moderate
HLCA 10	Taf Fawr River Valley	8.5 (9)	Moderate
HLCA 11	Cefn-coed-y-cymmer	6	Slight
HLCA 12	Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views	10	Moderate
HLCA 13	Taf Fechan	6	Slight
HLCA 14	Graig Quarry and Tramroad	6	Slight
HLCA 15	Y Graig, Gurnos	11	Moderate
HLCA 17	Gurnos Farm and Bunkers Hill	8.75 (9)	Moderate
HLCA 18	Gurnos and Galon-Uchaf	6	Slight
HLCA 19	Bon-y-maen	7.33 (7)	Slight
HLCA 20	Bryniau Quarries	7.66 (8)	Slight
HLCA 21	Dowlais	6	Slight
HLCA 22	Pantcadifor, Rhyd-y-bedd and Caeracca	6.25 (6)	Slight
HLCA 24	Pengarnddu	8	Slight
HLCA 25	Dowlais Top	6	Slight

3. Stage 3: Assessment of Indirect Impacts

Stage 3 describes and quantifies the indirect impacts of the development on all HLCAs affected by the proposed scheme. Indirect impacts are categorised as being mainly physical or visual in nature. Physical impacts can result from an increased risk of exposure, increased management needs, the severance, fragmentation or alteration of related elements, the frustration of historic land use practices or a frustration of access. Indirect non-physical (visual) impacts can occur as a result of impacts on elements of an HLCA from which a development can be seen, impact on the visual connection between elements, the creation of inappropriate connections between elements and visual impact of the development itself resulting from its form or appearance.

Indirect non-physical (visual) impacts have been identified as a result of a walkover survey. HLCAs predicted to experience indirect non-physical (visual) impacts as a result of the proposed scheme are presented in Table 3.1 and shown on Figure 1 (Annex 3).

Table 3.1 : HLCAs which would experience indirect non-physical impacts from the proposed scheme

HLCA	Name
HLCA 7	Coed Meurig
HLCA 10	Taf Fawr River Valley
HLCA 11	Cefn-coed-y-cymmer
HLCA 12	Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views
HLCA 13	Taf Fechan
HLCA 14	Graig Quarry and Tramroad
HLCA 15	Y Graig, Gurnos
HLCA 17	Gurnos Farm and Bunkers Hill
HLCA 18	Gurnos and Galon-Uchaf
HLCA 19	Bon-y-maen
HLCA 20	Bryniau Quarries
HLCA 21	Dowlais
HLCA 22	Pantcadifor, Rhyd-y-bedd and Caeracca
HLCA 24	Pengarnddu
HLCA 25	Dowlais Top
HLCA 26	Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun

3.1 Results of Assessment

The proposed scheme would indirectly impact 16 of the 79 HLCAs that contribute to the MTLOHI. Indirect physical and non-physical impacts on each HLCA are presented in Table 3.2 to Table 3.33. A summary of the magnitude of indirect impacts on each HLCA is presented in Table 3.34.

3.1.1 HLCA 7: Coed Meurig

Table 3.2 : Indirect physical and non-physical impacts on HLCA 7: Coed Meurig

Indirect, physical impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Severance of fields within a unified landscape from one another	C = 2	Slight = 2
Frustration of historic landscape use	C = 2	Slight = 2
Indirect (non-physical) visual impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Development form and appearance – embanked road introduced into landscape element	C = 2	Moderate = 3

Table 3.3 : Overall magnitude of indirect physical and non-physical impacts on HLCA 7: Coed Meurig

Score	**Grading**
(2 + 2) + (2 + 2) ÷ 2 = 4 (2 + 3) ÷ 1 = 5 (4 + 5) x 28 ÷ 20 = 12.6 (13)	Moderate

3.1.2 HLCA 10: Taf Fawr River Valley

Table 3.4 : Indirect physical and non-physical impacts on HLCA 10: Taf Fawr River Valley

Indirect, physical impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Amenity value of woodland element reduced	U = 1	Slight = 2
Amenity value of field element reduced	U = 1	Slight = 2
Indirect (non-physical) visual impacts		
Impacts	**Category and Score**	**Magnitude & Score**
Development form and appearance – introduction of bridge and supports into woodland elements	U = 1	Severe = 5
Development form and appearance – introduction of bridge and supports into field elements	U = 1	Severe = 5

Table 3.5 : Overall magnitude of indirect physical and non-physical impacts on HLCA 10: Taf Fawr River Valley

Score	**Grading**
(1 + 2) + (1 + 2) ÷ 2 = 3 (1 + 5) + (1 + 5) ÷ 2 = 6 (3 + 6) x 28 ÷ 20 = 12.6 (13)	Moderate

3.1.3 HLCA 11: Cefn-coed-y-cymmer

Table 3.6: Indirect physical and non-physical impacts on HLCA 11: Cefn-coed-y-cymmer

Indirect, physical impacts		
Impacts	**Category and Score**	**Magnitude and Score**
No indirect physical impacts	-	-
Indirect (non-physical) visual impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Development form and appearance – offline widening	D = 1	Slight = 2
Development form and appearance – alteration/introduction of tracks / roads	D = 1	Slight = 2

Table 3.7: Overall magnitude of indirect physical and non-physical impacts on HLCA 11: Cefn -coed-y-cymmer

Score	**Grading**
(1 + 2) + (1 + 2) ÷ 2 = 3 3 x 28 ÷ 20 = 4.2 (4)	Slight

3.1.4 HLCA 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views

Table 3.8: Indirect physical and non-physical impacts on HLCA 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views

Indirect, physical impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Amenity value of registered park and garden / cemetery area	C = 2	Moderate = 3
Fragmentation of registered park and garden / cemetery area	C = 2	Moderate = 3
Indirect (non-physical) visual impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Development form and appearance – introduction of bridge and supports into registered park and garden / cemetery area	C = 2	Severe = 5
Development form and appearance – introduction of bridge and supports into registered park and garden / cemetery area	C = 2	Severe = 5

Table 3.9 : Overall magnitude of indirect physical and non-physical impacts on HLCA 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views

Score	**Grading**
(2 + 3) + (2 + 3) ÷ 2 = 5	

Score	Grading
(2 + 5) + (2 + 5) ÷ 2 = 7 (5 + 7) x 28 ÷ 20 = 16.8 (17)	Considerable

3.1.5 HLCA 13: Taf Fechan

Table 3.10 : Indirect physical and non-physical impacts on HLCA 13: Taf Fechan

Indirect, physical impacts		
Impacts	**Category and Score**	**Magnitude and Score**
No indirect physical impacts	-	-
Indirect (non-physical) visual impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Development form and appearance – offline widening	D = 1	Slight = 2
Development form and appearance – alteration/introduction of tracks/roads	D = 1	Slight = 1

Table 3.11 : Overall magnitude of indirect physical and non-physical impacts on HLCA 13: Taf Fechan

Score	Grading
(1 + 2) + (1 + 1) ÷ 2 = 2.5 2.5 x 28 ÷ 20 = 3.5 (4)	Slight

3.1.6 HLCA 14: Graig Quarry and Tramroad

Table 3.12 : Indirect physical and non-physical impacts on HLCA 14: Graig Quarry and Tramroad

Indirect, physical impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Amenity value of reduced due to removal of trees around bridge	D = 1	Slight = 2
Indirect (non-physical) visual impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Development form and appearance – offline widening of bridge	D = 1	Slight= 2

Table 3.13 : Overall magnitude of indirect physical and non-physical impacts on HLCA 14: Graig Quarry and Tramroad

Score	Grading
(1 + 2) ÷ 1 = 3 (1 + 2) ÷ 1 = 3	

Score	Grading
(3 + 3) x 28 ÷ 20 = 8.4 (8)	Slight

3.1.7 HLCA 15: Y Graig, Gurnos

Table 3.14 : Indirect physical and non-physical impacts on HLCA 15: Y Graig, Gurnos

Indirect, physical impacts		
Impacts	**Category & Score**	**Magnitude & Score**
Severance of scrub and woodland element	U = 1	Moderate = 3
Severance of trackways element	D = 1	Moderate = 3
Amenity value of scrub and woodland element reduced	U = 1	Slight = 2
Indirect (non-physical) visual impacts		
Impacts	**Category & Score**	**Magnitude & Score**
Development form and appearance – introduction of large-scale banked road into scrub and woodland element	U = 1	Moderate = 3
Development form and appearance – introduction of large-scale banked road into scrub and woodland element	D = 1	Moderate = 3

Table 3.15 : Overall magnitude of indirect physical and non-physical impacts on HLCA 15: Y Graig, Gurnos

Score	Grading
(1 +3) + (1 + 3) + (1 + 2) ÷ 3 = 3.66 (1 + 3) + (1 + 3) ÷ 2 = 4 (3.66 + 4) x 28 ÷ 20 = 10.72 (11)	Moderate

3.1.8 HLCA 17: Gurnos Farm and Bunkers Hill

Table 3.16 : Indirect physical and non-physical impacts on HLCA 17: Gurnos Farm and Bunkers Hill

Indirect, physical impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Severance of open field element	C = 2	Moderate = 3
Severance of woodland	C = 2	Moderate = 3
Amenity of value of open field element reduced with creation of drainage ponds	C = 2	Moderate = 3

Indirect (non-physical) visual impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Development form and appearance – offline widening	C = 2	Moderate = 3
Development form and appearance – introduction of drainage ponds	C = 2	Moderate = 3
Development form and appearance – alteration / introduction of tracks/roads	D = 1	Slight = 2

Table 3.17 : Overall magnitude of indirect physical and non-physical impacts on HLCA 17: Gurnos Farm and Bunkers Hill

Score	Grading
(2 + 3) + (2 +3) + (2 + 3) ÷ 3 = 5 (2 + 3) + (2 + 3) + (1 + 2) ÷ 3 = 4.33 (5 + 4.33) x 28 ÷ 20 = 13.06 (13)	Moderate

3.1.9 HLCA: 18 Gurnos and Galon-Uchaf

Table 3.18 : Indirect physical and non-physical impacts on HLCA 18: Gurnos and Galon-Uchaf

Indirect, physical impacts		
Impacts	**Category & Score**	**Magnitude & Score**
Severance of woodland	D = 1	Slight = 2
Indirect (non-physical) visual impacts		
Impacts	**Category & Score**	**Magnitude & Score**
Development form and appearance – offline widening	D = 1	Slight = 2
Development form and appearance – alteration/introduction of tracks / roads	D = 1	Slight = 2

Table 3.19 : Overall magnitude of indirect physical and non-physical impacts on HLCA 18: Gurnos and Galon-Uchaf

Score	Grading
(1 + 2) ÷ 1 = 3 (1 + 2) + (1 + 2) ÷ 2 = 3 (3 + 3) x 28 ÷ 20 = 8.4 (8)	Slight

3.1.10 HLCA 19: Bon-y-maen

Table 3.20 : Indirect physical and non-physical impacts on HLCA 19: Bon-y-maen

Indirect, physical impacts		
Impacts	**Category & Score**	**Magnitude & Score**
No indirect physical impacts	-	-
Indirect (non-physical) visual impacts		
Impacts	**Category & Score**	**Magnitude & Score**
Development form and appearance – offline widening	D = 1	Slight = 2
Development form and appearance – alteration/introduction of tracks / roads	D = 1	Moderate = 3

Table 3.21 : Overall magnitude of indirect physical and non-physical impacts on HLCA 19: Bon-y-maen

Score	**Grading**
(1 + 2) + (1 + 3) ÷ 2 = 3.5 3.5 x 28 ÷ 20 = 4.9 (5)	Slight

3.1.11 HLCA 20: Bryniau Quarries

Table 3.22 : Indirect physical and non-physical impacts on HLCA 20: Bryniau Quarries

Indirect, physical impacts		
Impacts	**Category & Score**	**Magnitude & Score**
Amenity of value reduced with creation of drainage ponds	C = 2	Slight = 2
Indirect (non-physical) visual impacts		
Impacts	**Category & Score**	**Magnitude & Score**
Development form and appearance – embanked road introduced into landscape element	C = 2	Moderate = 3
Development form and appearance – introduction of drainage ponds	C = 2	Moderate = 3

Table 3.23 : Overall magnitude of indirect physical and non-physical impacts on HLCA 20: Bryniau Quarries

Score	**Grading**
(2 + 2) ÷ 1 = 4 (2 + 3) + (2 + 3) ÷ 2 = 5 (4 + 5) x 28 ÷ 20 = 12.6 (13)	Moderate

3.1.12 HLCA 21: Dowlais

Table 3.24 : Indirect physical and non-physical impacts on HLCA 21: Dowlais

Indirect, physical impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Severance of open field element	D = 1	Slight = 2
Severance of woodland	D = 1	Slight = 2
Amenity of value of field element reduced with creation of drainage pond	D = 1	Slight = 2
Indirect (non-physical) visual impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Development form and appearance – offline widening	D = 1	Moderate = 3
Development form and appearance – introduction of drainage pond	D = 1	Moderate = 3

Table 3.25 : Overall magnitude of indirect physical and non-physical impacts on HLCA 21: Dowlais

Score	**Grading**
(1 + 2) + (1 + 2) + (1 + 2) ÷ 3 = 3 (1 + 3) + (1 + 3) ÷ 2 = 4 (3 + 4) x 28 ÷ 20 = 9.8 (10)	Moderate

3.1.13 HLCA 22: Pantcadifor, Rhyd-y-bedd and Caeracca

Table 3.26 : Indirect physical and non-physical impacts on HLCA 22: Pantcadifor, Rhyd-y-bedd and Caeracca

Indirect, physical impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Severance of open field element	C = 2	Slight = 2
Indirect (non-physical) visual impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Development form and appearance – offline widening	D = 1	Slight = 2
Development form and appearance – alteration / introduction of trackways	D = 1	Moderate = 3

Table 3.27 : Overall magnitude of indirect physical and non-physical impacts on HLCA 22: Pantcadifor, Rhyd-y-bedd and Caeracca

Score	**Grading**
(2 + 2) ÷ 1 = 4 (1 + 2) + (1 + 3) ÷ 2 = 3.5 (4 + 3.5) x 28 ÷ 20 = 10.5 (11)	Moderate

3.1.14 HLCA 24: Pengarnddu

Table 3.28 : Indirect physical and non-physical impacts on HLCA 24: Pengarnddu

Indirect, physical impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Severance of open field element	C = 2	Moderate = 3
Amenity value of field element reduced	C = 2	Moderate = 3
Indirect (non-physical) visual impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Development form and appearance – offline widening and embankments	C = 2	Slight = 2
Development form and appearance – structure over reservoir	C = 2	Moderate = 3
Development form and appearance – alteration / introduction of trackways	C = 2	Severe = 5

Table 3.29 : Overall magnitude of indirect physical and non-physical impacts on HLCA 24: Pengarnddu

Score	**Grading**
(2 + 3) + (2 + 3) ÷ 2 = 5 (2 + 2) + (2 + 3) + (2 + 5) ÷ 3 = 5.33 (5 + 5.33) x 28 ÷ 20 = 14.46 (14)	Considerable

3.1.15 HLCA 25: Dowlais Top

Table 3.30 : Indirect physical and non-physical impacts on HLCA 25: Dowlais Top

Indirect, physical impacts		
Impacts	**Category and Score**	**Magnitude and Score**
No indirect physical impacts	-	-
Indirect (non-physical) visual impacts		
Impacts	**Category and Score**	**Magnitude and Score**
Development form and appearance – offline widening and embankments	D = 1	Slight = 2
Development form and appearance – alteration / introduction of trackways	D = 1	Slight = 2

Table 3.31 : Overall magnitude of indirect physical and non-physical impacts on HLCA 24: Pengarnddu

Score	**Grading**
(1 + 2) + (1 + 2) ÷ 2 = 3 3 x 28 ÷ 20 = 4.2 (4)	Slight

3.1.16 HLCA 26: Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun

Table 3.32 : Indirect physical and non-physical impacts on HLCA 26: Dowlais Great Tip, Trecatti and Twyn-y-Waun

Indirect, physical impacts		
Impacts	**Category & Score**	**Magnitude & Score**
No indirect physical impacts	-	-
Indirect (non-physical) visual impacts		
Impacts	**Category & Score**	**Magnitude & Score**
Development form – introduction of infrastructure into landscape area	D = 1	Moderate = 3

Table 3.33 : Overall magnitude of indirect physical and non-physical impacts on HLCA 26: Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun

Score	**Grading**
(1 + 3) ÷ 1 = 4 4 x 28 ÷20 = 5.6 (6)	Slight

3.1.17 Summary

A summary of overall magnitude of direct impacts on each HLCA is presented in Table 3.34.

Table 3.34 : Summary of overall magnitude of indirect impacts on HLCAs.

HLCA	**Name**	**Score**	**Magnitude**
HLCA 7	Coed Meurig	12.6 (13)	Moderate
HLCA 10	Taff Fawr River Valley	12.6 (13)	Moderate
HLCA 11	Cefn-coed-y-cymmer	4.2 (4)	Slight
HLCA 12	Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views	16.8 (17)	Considerable
HLCA 13	Taf Fechan	3.5 (4)	Slight
HLCA 14	Graig Quarry and Tramroad	8.4 (8)	Slight
HLCA 15	Y Graig, Gurnos	10.72 (11)	Moderate
HLCA 17	Gurnos Farm and Bunkers Hill	13.06 (13)	Moderate
HLCA 18	Gurnos and Galon-Uchaf	8.4 (8)	Slight
HLCA 19	Bon-y-maen	4.9 (5)	Slight
HLCA 20	Bryniau Quarries	12.6 (13)	Moderate
HLCA 21	Dowlais	9.8 (10)	Moderate
HLCA 22	Pantcadifor, Rhyd-y-bedd	10.5 (11)	Moderate

HLCA	Name	Score	Magnitude
	and Caeracca		
HLCA 24	Pengarnddu	14.46 (14)	Considerable
HLCA 25	Dowlais Top	4.2 (4)	Slight
HLCA 26	Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun	5.6 (6)	Slight

4. Stage 4: Evaluation of Relative Importance

Stage 4 evaluates the relative importance of the HCLAs directly and / or indirectly affected by the development, undertaken in relation to:

a) the whole of the HLCA concerned;

b) the whole of the historic landscape on the Register; and

c) an evaluation of the relative importance of affected HLCAs in a national context and a determination of the average overall value of the HLCAs affected.

It has been established that the proposed scheme would result in a direct physical impact on 15 HLCAs (as set out in Table 2.1) and indirect non-physical impacts on 16 HLCAs (as set out in Table 3.1) of this report. An evaluation of the relevant importance of each HLCA is presented in Tables 4.3 to 4.17 A summary of the average overall values for HLCAs affected by the proposed scheme is presented in Table 4.18.

It should be noted that in relation to nine of the 16 HLCAs, this concerns: Cefn-coed-y-cymmer (HLCA 11), Taf Fechan (HLCA 13), Graig Quarry and Tramroad (HLCA 14), Gurnos and Galon-Uchaf (HLCA 18), Bon-y-maen (HLCA 19), Bryniau Quarries (HLCA 20), Dowlais (HLCA 21), Pantcadifor, Rhyd-y-bedd and Caeracca (HLCA 22) and Dowlais Top (HLCA 25), the elements of these HLCAs which are included within the footprint of the proposed scheme comprise scrub and woodland, existing roads / tracks / bridges and areas of existing modern hardstanding. Therefore only one table, Table 4.1 has been included which is relevant to each of these nine HLCA, to ensure unnecessary duplication of tables.

Table 4.1 : Evaluation of relative importance HLCA 11, 13, 14, 18, 19, 20, 21, 22 and 25

Value	Very High / Very Good	High / Good	Moderate	Low	Poor / None
In relation to	**(a) Relative to whole of historic landscape character area**				
Rarity					X
Representativeness					X
Documentation					X
Group Value					X
Survival					X
Condition					X
Coherence					X
Integrity					X
Potential					X
Amenity					X
Associations					X
In relation to	**(b) Relative to whole of historic landscape area on the Register**				
Rarity					X
Representativeness					X
Documentation					X
Group Value					X
Survival					X
Condition					X
Coherence					X
Integrity					X

Value	Very High / Very Good	High / Good	Moderate	Low	Poor / None
Potential					X
Amenity					X
Associations					X
In relation to	(c) Relative importance of HLCA in the national context				
Rarity					X
Representativeness					X
Documentation					X
Group Value					X
Survival					X
Condition					X
Coherence					X
Integrity					X
Potential					X
Amenity					X
Associations					X

These nine HLCAs comprise residential settlements, transport corridors, industrial extractive and modern urban landscapes. The small elements within these HLCAs which would be effected by the proposed scheme comprise scrub and woodland, existing roads/tracks/bridges and areas of existing modern hardstanding. These elements are not listed as key characteristics for the HLCAs, therefore these areas have been assessed to be of Very Low overall value in relation to the Registered Landscape as a whole and nationally (see Table 4.2).

Table 4.2 : Overall score for evaluation of relative importance stages a) – c) for HLCA 11, 13, 14, 18, 19, 20, 21, 22 and 25

Score a	Score b	Score c	Overall Score
(11 x Poor @ 1) = 11 ÷ 55 x 100 = 20	(11 x Poor @ 1) = 11 ÷ 55 x 100 = 20	(11 x Poor @ 1) = 11 ÷ 55 x 100 = 20	(20 + 20 + 20) ÷ 16 = 3.75

4.1.1 HLCA 7: Coed Meurig

Table 4.3 : Evaluation of relative importance HLCA 7: Coed Meurig

	Very High / Very Good	High / Good	Moderate	Low	Poor / None
In relation to	(a) Relative to whole of historic landscape character area				
Rarity				X	
Representativeness				X	
Documentation			X		
Group Value				X	
Survival		X			
Condition		X			
Coherence	X				
Integrity	X				
Potential				X	

	Very High / Very Good	High / Good	Moderate	Low	Poor / None
Amenity				X	
Associations					X
In relation to	**(b) Relative to whole of historic landscape area on the Register**				
Rarity		X			
Representativeness				X	
Documentation			X		
Group Value				X	
Survival					X
Condition		X			
Coherence		X			
Integrity	X				
Potential				X	
Amenity				X	
Associations					X
In relation to	**(c) Relative importance of HLCA in the national context**				
Rarity					X
Representativeness				X	
Documentation			X		
Group Value				X	
Survival				X	
Condition			X		
Coherence	X				
Integrity		X			
Potential			X		
Amenity			X		
Associations					X

HLCA 07 (Coed Meurig) comprises an agricultural landscape characterised by traditional drystone and hedged boundaries and sheep pens. The area includes a number of post-medieval farms, areas of ancient woodland and only minor intrusion from historic industrial activity. The elements within this HLCA which would be affected by the proposed scheme comprise woodland, open fields, tracks and scrub and woodland. Only a small part of these elements are key characteristics for the HLCA (such as the woodland and open fields), therefore the areas of the HLCA which would be effected by the proposed scheme have been assessed to be of Low overall value in relation to the Registered Landscape as a whole and nationally (see Table 4.4).

Table 4.4 : Overall score for evaluation of relative importance stages a) – c) for HLCA 07 Coed Meurig.

Score a	Score b	Score c	Overall Score
(2 x Very High @ 5) + (2 x High @ 4) + (1 x Moderate @ 3) + (5 x Low @ 2) + (1 x Poor @ 1) = 32 ÷ 55 x 100 = 58.18	(1 x Very High @ 5) + (3 x High @ 4) + (1 x Moderate @ 3) + (4 x Low @ 2) + (2 x Poor @ 1) = 30 ÷ 55 x 100 = 54.54	(1 x Very High @ 5) + (1 x High @ 4) + (4 x Moderate @ 3) + (3 x Low @ 2) + (2 x Poor @ 1) = 29 ÷55 x 100 = 52.72	(58.18 + 54.54 + 52.72) ÷ 16 = 10.34

4.1.2 HLCA 10: Taf Fawr River Valley

Table 4.5 : Evaluation of relative importance HLCA 10: Taf Fawr River Valley

Value	Very High / Very Good	High / Good	Moderate	Low	Poor / None
In relation to	**(a) Relative to whole of historic landscape character area**				
Rarity					X
Representativeness			X		
Documentation				X	
Group Value					X
Survival			X		
Condition		X			
Coherence					X
Integrity		X			
Potential					X
Amenity			X		
Associations					X
In relation to	**(b) Relative to whole of historic landscape area on the Register**				
Rarity			X		
Representativeness				X	
Documentation					X
Group Value					X
Survival					X
Condition			X		
Coherence					X
Integrity			X		
Potential					X
Amenity			X		
Associations					X
In relation to	**(c) Relative importance of HLCA in the national context**				
Rarity					X
Representativeness			X		

Value	Very High / Very Good	High / Good	Moderate	Low	Poor / None
Documentation			X		
Group Value				X	
Survival			X		
Condition		X			
Coherence					X
Integrity			X		
Potential					X
Amenity			X		
Associations					X

HLCA 10 (Taf Fawr River Valley) comprises the valley of the Afon Taf to the north of the Cyfarthfa Ironworks. The character of the area has been affected by the establishment of Cefn Cemetery in 1858. The area also formed the corridor of the construction railway for the Llwyn-Onn Reservoir, built between 1914 and 1927. The elements within this HLCA which would be affected by the proposed scheme comprise woodland, open fields and scrub and woodland. These elements are not listed as key characteristics for the HLCAs, therefore these areas which would be affected have been assessed to be of Low overall value in relation to the Registered Landscape as a whole and nationally (see Table 4.6).

Table 4.6 : Overall score for evaluation of relative importance stages a) – c) for HLCA 10: Taf Fawr River Valley.

Score a	Score b	Score c	Overall Score
(2 x High @ 4) + (3 x Moderate @ 3) + (1 x Low @ 2) + (5 x Poor @ 1) = 24 ÷ 55 x 100 = 43.63	(4 x Moderate @ 3) + (1 x Low @ 2) + (6 x Poor @ 1) = 20 ÷ 55 x 100 = 36.36	(1 x High @ 4) + (5 x Moderate @ 3) + (1 x Low @ 2) + (4 x Poor @ 1) = 25 ÷ 55 x 100 = 45.45	(43.63 + 36.36 + 45.45) ÷ 16 = 7.84

4.1.3 HLC 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views

Table 4.7 : Evaluation of relative importance HLC 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views

	Very High / Very Good	High / Good	Moderate	Low	Poor / None
In relation to	(a) Relative to whole of historic landscape character area				
Rarity				X	
Representativeness			X		
Documentation				X	
Group Value					X
Survival			X		
Condition			X		
Coherence	X				
Integrity	X				
Potential				X	

	Very High / Very Good	High / Good	Moderate	Low	Poor / None
Amenity					X
Associations				X	
In relation to	**(b) Relative to whole of historic landscape area on the Register**				
Rarity				X	
Representativeness				X	
Documentation					X
Group Value					X
Survival					X
Condition				X	
Coherence			X		
Integrity			X		
Potential					X
Amenity					X
Associations					X
In relation to	**(c) Relative importance of HLCA in the national context**				
Rarity					X
Representativeness				X	
Documentation					X
Group Value					X
Survival					X
Condition				X	
Coherence				X	
Integrity				X	
Potential					X
Amenity					X
Associations					X

HLCA 12 (Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views) comprises the Cefn Coed Cemetery which is still extant in its original layout. This area is also included within a Registered Park and Garden. The area experiences intrusion from the existing A465 and A470 road network. The area within the proposed scheme comprises of scrub and woodland associated with the Registered Park and Garden and thus has been assessed to be of Low overall value in relation to the Registered Landscape as a whole and nationally (see Table 4.8).

Table 4.8 : Overall score for evaluation of relative importance stages a) – c) for HLC 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views

Score a	Score b	Score c	Overall Score
(2 x Very High @ 5) + (3 x Moderate @ 3) + (4 x Low @ 2) + (2 x Poor @ 1) = 29 ÷ 55 x 100 = 52.72	(2 x Moderate @ 3) + (3 x Low @ 2) + (6 x Poor @ 1) = 18 ÷ 55 x 100 = 32.72	(4 x Low @ 2) + (7 x Poor @ 1) = 15 ÷ 55 x 100 = 27.27	(52.72 + 32.72 + 27.27 ÷ 16 = 7.04

4.1.4 HLCA 15: Y Graig, Gurnos

Table 4.9 : Evaluation of relative importance HLCA 15: Y Graig, Gurnos

Value	Very High / Very Good	High / Good	Moderate	Low	Poor / None
In relation to	(a) Relative to whole of historic landscape character area				
Rarity					X
Representativeness				X	
Documentation			X		
Group Value				X	
Survival				X	
Condition				X	
Coherence			X		
Integrity			X		
Potential					X
Amenity					X
Associations					X
In relation to	(b) Relative to whole of historic landscape area on the Register				
Rarity				X	
Representativeness				X	
Documentation			X		
Group Value				X	
Survival				X	
Condition				X	
Coherence				X	
Integrity			X		
Potential			X		
Amenity			X		
Associations					X
In relation to	(c) Relative importance of HLCA in the national context				
Rarity					X
Representativeness				X	
Documentation			X		
Group Value				X	
Survival					X
Condition				X	
Coherence				X	
Integrity			X		
Potential					X
Amenity					X
Associations					X

HLCA 15 (Y Graig, Gurnos) comprises an area of scrubland, open fields and trackways. The area is a remnant of land associated with Gurnos Farm, but severed from it by the existing A465. Historic mapping shows that the area contained a network of tracks leading to the Taf Fechan Valley and the Gurnos Quarry and lime kilns. A small number of extractive features are present, possibly gravel pits. HLCA 15 has been assessed to be of Low overall value in relation to the Registered Landscape as a whole and nationally (see Table 4.10).

Table 4.10 : Overall score for evaluation of relative importance stages a) – c) for HLCA 15: Y Graig, Gurnos

Score a	Score b	Score c	Overall Score
(3 x Moderate @ 3) + (4 x Low @ 2) + (4 x Poor @ 1) = 21 ÷ 55 x 100 = 38.18	(4 x Moderate @ 3) + (6 x Low @ 2) + (1 x Poor @ 1) = 25 ÷ 55 x 100 = 45.45	(2 x Moderate @ 3) + (4 x Low @ 2) + (5 x Poor @ 1) = 19 ÷ 55 x 100 = 34.54	(38.18 + 45.45 + 34.54 ÷ 16 = 7.38

4.1.5 HLCA 17: Gurnos Farm and Bunkers Hill

Table 4.11: Evaluation of relative importance HLCA 17: Gurnos Farm and Bunkers Hill

Value	Very High / Very Good	High / Good	Moderate	Low	Poor / None
In relation to	**(a) Relative to whole of historic landscape character area**				
Rarity				X	
Representativeness				X	
Documentation			X		
Group Value				X	
Survival		X			
Condition		X			
Coherence	X				
Integrity	X				
Potential				X	
Amenity				X	
Associations					X
In relation to	**(b) Relative to whole of historic landscape area on the Register**				
Rarity			X		
Representativeness				X	
Documentation			X		
Group Value				X	
Survival					X
Condition		X			
Coherence		X			
Integrity	X				
Potential				X	
Amenity				X	
Associations					X
In relation to	**(c) Relative importance of HLCA in the national context**				

Value	Very High / Very Good	High / Good	Moderate	Low	Poor / None
Rarity					X
Representativeness				X	
Documentation			X		
Group Value				X	
Survival				X	
Condition			X		
Coherence	X				
Integrity		X			
Potential			X		
Amenity			X		
Associations					X

HLCA 17 (Gurnos Farm and Bunkers Hill) comprises an agricultural landscape characterised by medium-large regular enclosures with associated dry stone walls. It also includes a transport corridor comprising a tramroad to Morlais Castle Quarries, and a possible route of a Roman road associated with the crossing of the Taf Fechan at Pont Sarn. The elements within this HLCA which would be affected by the proposed scheme comprise woodland, open fields, tracks and scrub and woodland. Only the open fields are listed as a key characteristic for this HLCA, therefore the areas that would be effected have been assessed to be of Low overall value in relation to the Registered Landscape as a whole and nationally (see Table 4.12).

Table 4.12 : Overall score for evaluation of relative importance stages a) – c) for HLCA 17 Gurnos Farm and Bunkers Hill

Score a	Score b	Score c	Overall Score
(2 x Very High @ 5) + (2 x High @ 4) + (1 x Moderate @ 3) + (5 x Low @ 2) + (1 x Poor @ 1) = 32 ÷ 55 x 100 = 58.18	(1 x Very High @ 5) + (2 x High @ 4) + (2 x Moderate @ 3) + (4 x Low @ 2) + (2 x Poor @ 1) = 29 ÷ 55 x 100 = 52.72	(1 x Very High @ 5) + (1 x High @ 4) + (4 x Moderate @ 3) + (3 x Low @ 2) + (2 x Poor @ 1) = 29 ÷55 x 100 = 52.72	(58.18 + 52.72 + 52.72 ÷ 16 = 10.22

4.1.6 HLCA 24: Pengarnddu

Table 4.13: Evaluation of relative importance HLCA 24: Pengarnddu

Value	Very High / Very Good	High / Good	Moderate	Low	Poor / None
In relation to	(a) Relative to whole of historic landscape character area				
Rarity				X	
Representativeness			X		
Documentation				X	
Group Value			X		
Survival		X			
Condition		X			
Coherence		X			
Integrity		X			

Value	Very High / Very Good	High / Good	Moderate	Low	Poor / None
Potential					X
Amenity					X
Associations			X		
In relation to	(b) Relative to whole of historic landscape area on the Register				
Rarity					X
Representativeness			X		
Documentation					X
Group Value				X	
Survival				X	
Condition			X		
Coherence		X			
Integrity		X			
Potential					X
Amenity					X
Associations				X	
In relation to	(c) Relative importance of HLCA in the national context				
Rarity					X
Representativeness				X	
Documentation					X
Group Value					X
Survival				X	
Condition			X		
Coherence		X			
Integrity			X		
Potential					X
Amenity					X
Associations					X

HLCA 24 (Pengarnddu) comprises a transport corridor associated with the limestone quarries at Twynau Gwynion. The landscape also comprises extensive remains of the Dowlais Free Drainage System. The elements within this HLCA which would be affected by the proposed scheme comprise open fields, scrub and woodland and reservoirs. Only the reservoir is listed as a key characteristic for this HLCA, therefore the areas which would be effected have been assessed to be of Low overall value in relation to the Registered Landscape as a whole and nationally (see Table 4.14).

Table 4.14 : Overall score for evaluation of relative importance stages a) – c) for HLCA 24: Pengarnddu

Score a	Score b	Score c	Overall Score
(4 x High @ 4) + (3 x Moderate @ 3) + (2 x Low @ 2) + (2 x Poor @ 1) = 31 ÷ 55 x 100 = 56.36	(2 x High @ 4) + (2 x Moderate @ 3) + (3 x Low @ 2) + (4 x Poor @ 1) = 24 ÷ 55 x 100 = 43.63	(1 x High @ 4) + (2 x Moderate @ 3) + (2 x Low @ 2) + (6 x Poor @ 1) = 20 ÷ 55 x 100 = 36.36	(56.36 + 43.63 + 36.36 ÷ 16 = 8.52

4.1.7 HLCA 26: Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun

Table 4.15 : Evaluation of relative importance HLCA 26: Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun.

Value	Very High / Very Good	High / Good	Moderate	Low	Poor / None
In relation to	**(a) Relative to whole of historic landscape character area**				
Rarity					X
Representativeness				X	
Documentation					X
Group Value					X
Survival					X
Condition					X
Coherence					X
Integrity					X
Potential					X
Amenity					X
Associations					X
In relation to	**(b) Relative to whole of historic landscape area on the Register**				
Rarity					X
Representativeness				X	
Documentation					X
Group Value					X
Survival					X
Condition					X
Coherence					X
Integrity					X
Potential					X
Amenity					X
Associations					X
In relation to	**(c) Relative importance of HLCA in the national context**				
Rarity					X
Representativeness				X	
Documentation					X
Group Value					X
Survival					X
Condition					X
Coherence					X
Integrity					X
Potential					X
Amenity					X
Associations					X

HLCA 26 (Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun) comprises an industrial landscape associated with Dowlais Ironworks. The area includes industrially altered upland Common: intensive area of extractive features; including early to mid-19th century coal and ironstone workings and dominated by tippings. HLCA 09 has been assessed to be of Very Low overall value in relation to the Registered Landscape as a whole and nationally (see Table 4.16).

Table 4.16 : Overall score for evaluation of relative importance stages a) – c) for HLCA 26: Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun.

Score a	Score b	Score c	Overall Score
(1 x Low @ 2) + (10 x Poor @ 1) = 12 ÷ 55 x 100 = 21.81	(1 x Low @ 2) + (10 x Poor @ 1) = 12 ÷ 55 x 100 = 21.81	(1 x Low @ 2) + (10 x Poor @ 1) = 12 ÷ 55 x 100 = 21.81	(21.81 + 21.81 + 21.81 ÷ 16 = 4.08

4.1.8 Summary

Table 4.17 : Summary of overall scores for evaluation of relative importance and grade of overall value of each HLCA

HLCA	Score	Grade
HLCA 7. Coed Meurig	(58.18 + 54.54 + 52.72) ÷ 16 = 10.34	Low
HLCA 10: Taf Fawr River Valley	(43.63 + 36.36 + 45.45) ÷ 16 = 7.84	Low
HLCA 11: Cefn-coed-y-cymmer	(20 + 20 + 20) ÷ 16 = 3.75	Very Low
HLCA 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views	(52.72 + 32.72 + 27.27 ÷ 16 = 7.04	Low
HLCA 13: Taf Fechan	(20 + 20 + 20) ÷ 16 = 3.75	Very Low
HLCA 14: Graig Quarry and Tramroad	(20 + 20 + 20) ÷ 16 = 3.75	Very Low
HLCA 15: Y Graig, Gurnos	(38.18 + 45.45 + 34.54 ÷ 16 = 7.38	Low
HLCA 17: Gurnos Farm and Bunkers Hill	(58.18 + 52.72 + 52.72 ÷ 16 = 10.22	Low
HLCA 18: Gurnos and Galon-Uchaf	(20 + 20 + 20) ÷ 16 = 3.75	Very Low
HLCA 19: Bon-y-maen	(20 + 20 + 20) ÷ 16 = 3.75	Very Low
HLCA 20: Bryniau Quarries	(20 + 20 + 20) ÷ 16 = 3.75	Very Low
HLCA 21: Dowlais	(20 + 20 + 20) ÷ 16 = 3.75	Very Low
HLCA 22: Pantcadifor, Rhyd-y-bedd and Caeracca	(20 + 20 + 20) ÷ 16 = 3.75	Very Low
HLCA 24: Pengarnddu	(56.36 + 43.63 + 36.36 ÷ 16 = 8.52	Low
HLCA 25: Dowlais Top	(20 + 20 + 20) ÷ 16 = 3.75	Very Low
HLCA 26: Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun	(21.81 + 21.81 + 21.81 ÷ 16 = 4.08	Very Low

Table 4.18: Overall score for evaluation of relative importance and grade of overall value of the MTLOHI

Score	Grade of overall value
10.34 + 7.84 + 3.75 + 7.04 + 3.75+ 3.75 + 7.38 + 10.22 + 3.75 + 3.75 + 3.75 + 3.75 + 3.75 + 8.52 + 3.75 + 4.08) ÷ 16 = 5.57 (6)	Low

4.2 Assessment of Value

Merthyr Tydfil Registered Historic Landscape is a fragmented industrial landscape with elements dating from the 17th to 19th centuries. The landscape comprised HLCAs ranging in value from Very Low to Low in relation to the entire landscape on the register as well as in a national context. HLCA 7, Coed Meurig, HLCA 10: Taf Fawr River Valley, HLCA 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views, HLCA 15: Y Graig, Gurnos, HLCA 17: Gurnos Farm and Bunkers Hill and HLCA 24: Pengarnddu have been assessed to be of Low value. The other 10 HLCAs have been assessed to be of Very Low value. The average overall value of the HLCAs has been assessed to be of Low value as a result of the contribution made by their industrial and agricultural character to our overall understanding of the landscape on the register.

5. Stage 5: Assessment of Overall Significance of Impact

Stage 5 combines the results of assessment undertaken during Stages 1 to 4. Stage 5 assesses the overall significance of the impact of the proposed scheme and the effect of it on the overall historic landscape area as recorded on the Register.

Overall significance is established through a scoring of the value of each HLCA affected in relation to the effect of the proposed scheme and the consequent reduction in value of the historic landscape area as recorded on the Register.

Table 5.1 presents an assessment of the value of each HLCA, the predicted impact of the proposed development on them and consequential reduction of the value of each HLCA on the register. Table 5.1 also presents the overall significance of impact the proposed scheme would have on each HLCA. The significance of impact has been determined with consideration of the value of the HLCA, the level of impact of the proposed scheme would have on the HLCA and the predicted reduction of the value of the HLCA due to that impact.

Table 5.1 : Value of and impact on HLCA as a result of the proposed development

HLCA	Value of HLCA	Impact of development	Reduction of Value of the HLCA on Register	Total Score for historic landscape character
HLCA 7 - Coed Meurig	Low – 2	Medium – 4	Low – 3	Slight
HLCA 10: Taf Fawr River Valley	Low – 2	Medium – 4	Low – 3	Slight
HLCA 11: Cefn-coed-y-cymmer	Very Low – 1	Low – 2	Very Low – 1	Slight
HLCA 12: Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views	Low – 2	High - 7	Medium – 6	Moderate
HLCA 13: Taf Fechan	Very Low – 1	Very Low – 1	Very Low – 1	Very Slight
HLCA 14: Graig Quarry and Tramroad	Very Low – 1	Low – 3	Low – 2	Slight
HLCA 15: Y Graig, Gurnos	Low – 2	Low – 2	Low – 2	Slight
HLCA 17: Gurnos Farm and Bunkers Hill	Low – 2	Medium – 4	Medium – 4	Moderate
HLCA 18: Gurnos and Galon-Uchaf	Very Low – 1	Low – 2	Low – 2	Slight
HLCA 19: Bon-y-maen	Very Low – 1	Very Low – 1	Very Low – 1	Very Slight
HLCA 20: Bryniau Quarries	Very Low – 1	Medium – 4	Medium – 4	Slight
HLCA 21: Dowlais	Very Low – 1	Low – 3	Low – 3	Slight
HLCA 22: Pantcadifor, Rhyd-y-bedd and Caeracca	Very Low – 1	Low – 3	Low – 2	Slight
HLCA 24: Pengarnddu	Low – 2	Medium – 4	Medium – 4	Moderate
HLCA 25: Dowlais Top	Very Low – 1	Very Low – 1	Very Low – 1	Very Slight
HLCA 26: Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun	Very Low – 1	Low - 2	Very Low - 1	Slight

Overall impact of development on the historic landscape on the Register: Slight

Defined by ASIDOHL2 as there will be some marginal land loss and / or visual intrusion to each of the HLCAs resulting in some elements to be removed or changed.

Reduction of value of the historic landscape on the Register: Medium to Very Low

Defined by ASIDOHL2 as the impact of a development on key elements of the historic landscape such that the value of some HLCAs will be changes but will still be appreciable, whilst other HLCAs will remain essentially unchanged.

5.1 Mitigation

Landscape survey work would provide a descriptive and interpretative record of the relevant landscape, producing an analysis of its development and use. Level 1 is a basic visual record of the location, date, type and condition of the monument in question. It comprises a written account and drawing and will be informed by consultation of readily available documentary information. Level 2 is a more detailed investigation than Level 1. It comprises a descriptive and interpretative record of the monument in question and its wider landscape, based on photographic, documentary and cartographic research.

Landscape survey to Level 1 standards (English Heritage, 2007) are proposed for Y Graig, Gurnos (HLCA 15).

The mitigation measures presented below will provide a record of the landscape associated with the Cefn Coed Cemetery and Jewish Burial Ground (HLCA 12) Grade II Registered Park and Garden in advance of construction.

The following measures are proposed for impacts predicted to result from construction:

- a Level 1 landscape survey (English Heritage, 2007); and
- a Level 2 landscape survey (English Heritage, 2007).

The following measures are proposed for impacts predicted to result from operation (please refer to ES Chapter 5: Proposed Scheme Description):

- sympathetic building materials and design; and
- landscaping and screen planting.

In addition, mitigation for individual heritage assets is provided within Chapter 9: Cultural Heritage of the ES on a case by case basis.

6. Concluding Statement

The proposed scheme comprises online dualling of the existing A465 between Hirwaun and Dowlais Top, with some off-line elements at the Hirwaun end. The A465 runs east to west and bisects the northern half of the MTLOHI. The MTLOHI comprises 79 distinct HLCAs, the majority of which have a connection to the extractive and mineral processing industries prevalent in the area from the late eighteenth to the early twentieth centuries. It is this industrial heritage that gives the MTLOHI its distinctive character.

Assessment has identified 15 HLCAs that would experience direct physical impacts as a result of construction of the proposed scheme. Sixteen HLCAs would also experience an indirect (non-physical) visual impact as a result of operation of the proposed scheme. The relative importance of impacted areas of the HLCAs has been assessed to be Low overall.

HLCAs predicted to experience an impact as a result of the proposed scheme demonstrate an agricultural or otherwise non-industrial character (e.g. HLCA 7, HLCA 10, HLCA 12, and HLCA 17), poor legibility (HLCA 15), residential settlement (e.g. HLCA 11, HLCA 21 and HLCA 22), industrial (e.g. HLCA 14 and HLCA 20) or comprise predominantly industrial land (e.g. HLCA 18, HLCA 19, HLCA 25 and HLCA 26).

The overall impact of the development on the historic landscape on the Register has been assessed to be Slight. This is a result of professional judgement in consideration of the following:

- Assessment has identified High impact on one HLCA, Medium impacts on five HLCAs, Low impacts on seven HLCAs and Very Low impacts on the remaining three HLCAs;
- Of the HLCAs, the proposed scheme would only have an impact on two industrial historic landscapes within the MTLOHI. This concerns HLCA 14: Graig Quarry Tramroad on which a Low impact is predicted to occur and HLCA 20: Bryniau Quarries on which a Medium value impact is predicted to occur. However the value of the areas of these HLCAs which would be impacted has been assessed to be very low given that they comprise scrub and woodland;
- The proposed scheme would be seen in the context of the existing A465. While new elements of infrastructure would be visible from 16 of the 79 HLCAs comprising the historic landscape on the register, this would not:
    - impact on visual connections between related elements within the historic landscape on the Register or those within individual HLCA;
    - create inappropriate visual connections between elements; or
    - visually intrude or encroach on the historic landscape on the Register.

Overall, the proposed scheme would impact on the historic landscape on the Register in such a way that identified physical impacts are unlikely to affect its overall value. However, the proposed scheme may result in a Medium to Very Low (non-physical) reduction in the overall value of the landscape due to the introduction of new elements of infrastructure into the landscape.

7. References

Ancient Monuments and Archaeological Areas Act 1979 (c. 46). London: Her Majesty's Stationery Office.

Cadw. 1998. *Landscapes of Historic Interest In Wales. Part 2 of the Register of Landscapes, Parks and Gardens of Special historic Interest in Wales. Part 2.1: Landscapes of Outstanding Historic Interest.* Countryside Council for Wales, Cadw ICOMOS UK.

Cadw, Countryside Council for Wales and Welsh Assembly Government. 2007. *Guide to Good Practice on Using The Register of Landscapes of Historic Interest in Wales in the Planning and Development Process.* Cardiff: Cadw.

English Heritage. 2007. Understanding the Archaeology of Landscapes: A guide to good recording practice. London: English Heritage

GGAT 2017. Merthyr Tydfil Main. [online] [Accessed 6 Jan. 2017] Available from: Available at: http://www.ggat.org.uk/cadw/historic_landscape/Merthyr%20Tydfil/English/Merthyr_Main.htm

Highways Act 1980 (as amended). London: Her Majesty's Stationary Office

Historic England. 2015. The Setting of Heritage Assets. Historic Environment Good Practice Advice in Planning: 3. [Online] [Accessed: December 2016] Available from: https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets

Landmap-maps.naturalresources.wales. 2017. Map. [online]. [Accessed January 2017]. Available from: http://landmap-maps.naturalresources.wales

Merthyr Tydfil County Borough Council (MTCBC) Local Development Plan 2006-2021 (2011) (Adopted May 2011) [online] [Accessed December 2016] Available from: http://www.merthyr.gov.uk/resident/planning-building-control/local-development-plan/

Planning (Listed Buildings and Conservation Areas) Act 1990 (c. 9). London: Her Majesty's Stationery Office.

Rhondda Cynon Taf County Borough Council (RCTCBC) Local Development Plan up to 2021 (2011) (Adopted March 2011) [online] [accessed December 2016]. Available from: http://www.rctcbc.gov.uk/EN/Resident/PlanningandBuildingControl/LocalDevelopmentPlans/LocalDevelopmentPlan20062021.aspx

Welsh Office. 1996b. Circular 61/96 Planning and the Historic Environment: Historic Buildings and Conservation Areas. [Online] [Accessed: December 2016] Available from: http://gov.wales/docs/desh/policy/961205circular6196en.pdf

Welsh Assembly Government. 2008. Wales Spatial Plan (WSP): People, Places, Futures . [Online] [Accessed: December 2016] Available from: http://gov.wales/docs/desh/publications/130701wales-spatial-plan-2008-update-en.pdf

Welsh Assembly Government. 2014. Technical Advice Note (Wales) 12: Design. [Online] [Accessed: December 2016] Available from: http://gov.wales/docs/desh/publications/160316-technical-advice-note-12-en.pdf

Welsh Assembly Government. 2016a. Planning Policy Wales (PPW) – Edition 9, Chapter 6: 'The Historic Environment'. [Online] [Accessed: December 2016] Available from: http://gov.wales/docs/desh/publications/161117planning-policy-wales-edition-9-en.pdf

Welsh Assembly Government. 2016b. Historic Environment (Wales) Act. [online] [Accessed December 2016]. Available from: http://senedd.assembly.wales/mgIssueHistoryHome.aspx?IId=12573

Annex 1 – Legislative and Policy Background

Legislation or policy	Relevant points
The Highways Act 1980	The Highways Act 1980 is an Act of the Parliament dealing with the management and operation of the road network in England and Wales. It consolidates (with amendments) several earlier pieces of legislation.
Planning (Listed Buildings and Conservation Areas) Act 1990	Planning authorities are required to have special regard to the desirability of preserving a Listed Building, its setting or any features of special architectural or historic interest which it may possess. Designation as a Listed Building provides planning authorities with additional controls over the demolition and alteration of historic buildings through the process of gaining Listed Building Consent (LBC).
Wales Spatial Plan (Welsh Assembly Government, 2008)	The Wales Spatial Plan (WSP) sets out to ensure that planning proposals throughout Wales are integrated, sustainable and made in compliance with the shared vision described in the WSP for managing change in the historic environment.
Planning Policy Wales Edition 9 (PPW) (Welsh Assembly Government December 2016)	Local authorities to consider protection of the historic environment in decision-making and in the preparation of their plans and strategies.
Circular 60 / 96 Planning and the Historic Environment: Archaeology (Welsh Government, 1996a)	Where nationally important designated or undesignated archaeological remains are likely to be affected by a proposed development there should be a presumption in favour of their preservation in situ. Remains of local or regional importance may also be worthy of preservation in situ or, alternatively, preservation by record.
Historic Environment (Wales) Act, 2016	An Act of the National Assembly of Wales to make provision amending certain aspects of the law relating to scheduled monuments and Listed Buildings; to establish a Register of Historic Parks and Gardens; to require local planning authorities to establish historic environment records relating to their areas; to establish an Advisory Panel for the Welsh Historic Environment; and for connected purposes.
Circular 61 / 96 Planning and the Historic Environment: Historic Buildings and Conservation Areas (Welsh Government , 1996b)	A central objective of central government policy is to secure the preservation of Listed Buildings and any features of special architectural or historic interest which they might possess.
Technical Advice Note (Wales) 12: Design (Welsh Government, 2014)	The setting and views of historic buildings, parks and gardens and archaeological sites should be considered during the planning process and the design of a development of a proposed scheme and, if necessary, how setting and views should be protected.
Rhondda Cynon Taf County Borough Council Local Development Plan up to 2021 (LDP) (Adopted March 2011) (RCTCBC, 2011)	Policy CS 1: Development in the North In the Northern Strategy Area the emphasis will be on building strong, sustainable communities. This will be achieved by:- 1. Promoting residential and commercial development in locations which will support and reinforce the roles of Principal Towns and Key Settlements; 2. Providing high quality, affordable accommodation that promotes diversity in the residential market; 3. Ensuring the removal and remediation of dereliction by promoting the re-use of under used and previously developed land and buildings; 4. Promoting large scale regeneration schemes in the Principal Town of Aberdare and in the Key Settlements of Mountain Ash, Ferndale and

Legislation or policy	Relevant points
	Treorchy; 5. Promoting accessibility by securing investment in new roads, public transport improvements, walking and cycling; 6. Encouraging a strong, diverse economy which supports traditional employment and promotes new forms of employment in the leisure and tourism sectors; 7. Protecting the cultural identity of the Strategy Area by protecting historic built heritage and the natural environment, 8. Promoting and enhancing transport infrastructure services to support growth and investment, and 9. Reducing daily out commuting by private car and promoting sustainable forms of travel. Policy EB101: The Historic Built Environment (SPG) 2010 This Supplementary Planning Guidance (SPG) gives detailed guidance to owners and occupiers of land and buildings within the historic built environment, and anyone wishing to develop within it or make alterations to it, and is a material consideration in the determination of relevant planning applications.
Merthyr Tydfil County Borough Council Local Development Plan 2006-2021 (LDP) (Adopted May 2011) (MTCBC, 2011)	*Strategic Objective 11* To ensure the continued protection and enhancement of the natural, cultural, built and historic environment. *Policy BW6: Townscape and Built Heritage* The Council will protect and support the enhancement of the unique built heritage of the County Borough. Development proposals will only be permitted where it can be demonstrated they would preserve or enhance the architectural quality, character and setting of any of the following: 1. Listed Buildings; 2. Scheduled Ancient Monuments; 3. Conservation Areas; 4. Registered Historic Parks and Gardens of Special Historic Interest; 5. townscape character and the local distinctiveness of settlements; and 6. other historic, archaeological and cultural features of acknowledged importance. Policy AS4: Historic Landscape There will be a presumption in favour of the protection, conservation and enhancement of: 1. Gelligaer Common, and 2. the main settlement of Merthyr Tydfil in accord with their status as landscapes of Historic Interest in Wales. The extent of these areas is shown on the LDP Proposals Map and proposals for development will only be permitted where they would maintain or enhance the character and integrity of the landscape.

Annex 2 – Citation in Register

Merthyr Tydfil occupies a natural basin at the head of the Taf valley. High hills and ridges reach 450 m above OD on all sides, with development constrained to the basin floor and smaller tributary valleys of the Taf, which itself provides the only natural route out of the basin to the south east. However, it is not topography alone that has shaped the town, but the mineral resources contained within its hinterland. It was probably the largest iron-making town in the world in the early to mid-1900s, with an output calculated to be a quarter of that of the entire United States of America. The town, and its associated landscape, was rapidly transformed from a modest village in the 1750s to the largest town in Wales by 1801.

Despite extensive recent land reclamation and the sanitisation of the surrounding waste tips, overall Merthyr still retains its industrial landscape character as the most significant Welsh town of the Industrial Revolution. The town and its environs remain a potent example of an internationally renowned industrial landscape of the 18th and 19th centuries and a permanent reminder of man's exploitation of the landscape.

The primarily late 18th to 19th centuries landscape comprises numerous relict elements and foci set within the present landscape. These individual elements consist of the remains of large ironworks, remnants of the associated coal mining industry, water power eats, an early iron bridge, communication systems, including early tramroads, tips, terraced industrial housing, and the ironmasters house, Cyfarthfa Castle. Merthyr Tydfil, however, retains not only its economic significance, but also its importance as a religious, literary and political centre.

The area identified here contains many and diverse elements, which include Merthyr's Dowlais Ironworks, established in 1759, and probably the first such works to use coke in South Wales. It was followed by the foundation of other ironworks such as Plymouth in 1763, Cyfarthfa in 1765 and Penydarren in 1784. Other subsidiary works were created in the early 19th century at Ynysfach by Cyfarthfa, Ivor by Dowlais, Dyffryn by Plymouth, with further forges at Pentrebach, a part of Plymouth.

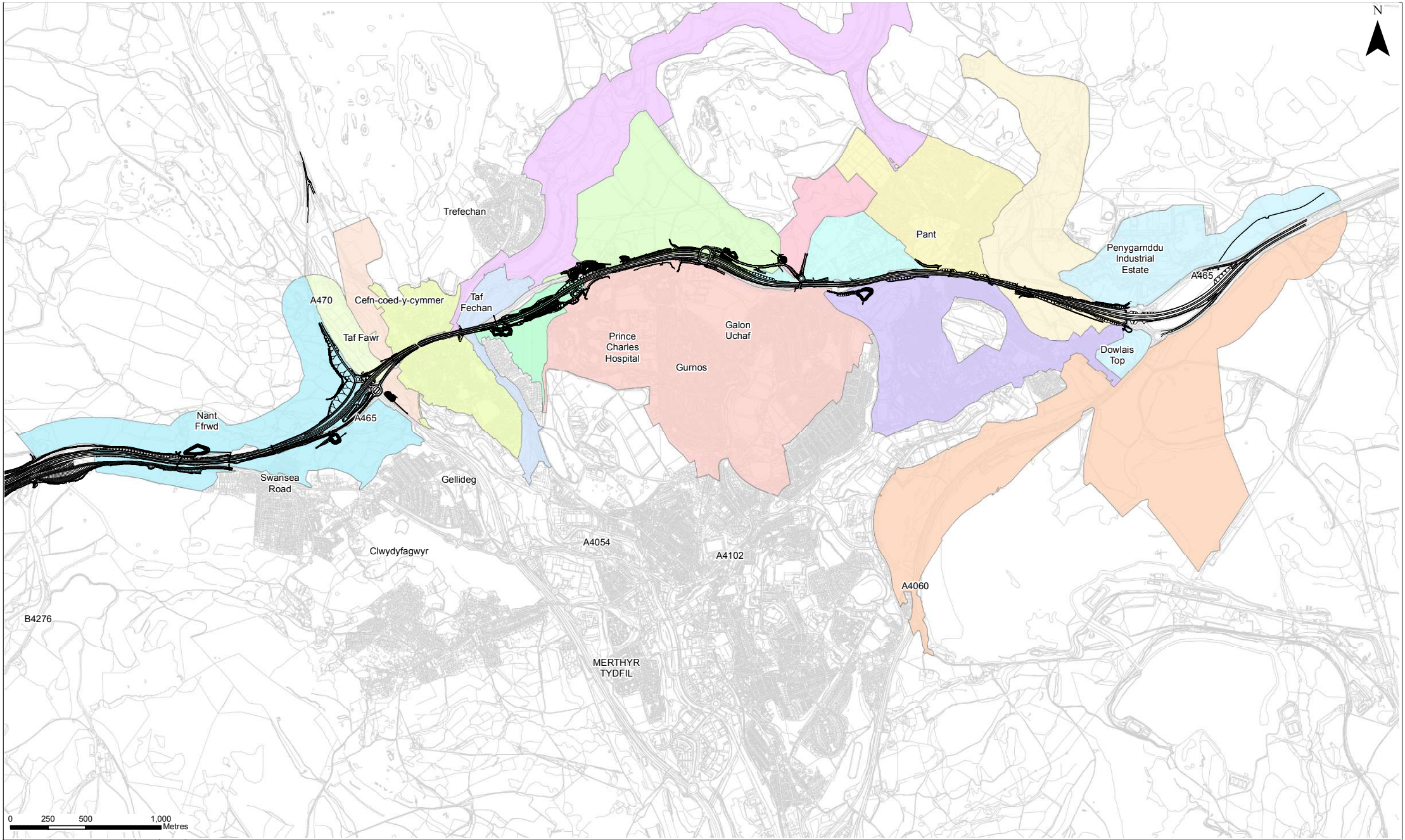
Surviving remains include the renowned furnace bank at the Cyfarthfa Ironworks, where six out of its seven late 18th century blast-furnaces, and its ranges of calcining kilns, survive substantially intact. At the Dowlais Ironworks the remains include the great stables and the blast-engine house, which have been restored. The remains of the Ynysfach Ironworks consist of one blast engine house and four early 19th century furnaces. The engine house is also restored and acts as a museum of the iron industry.

Locally, early communication systems survive, though to varying degrees. Adjoining the Cyfarthfa Ironworks lies the Pontycafnau bridge built in 1793, and the first ever iron railway bridge to be built. The bridge has added significance in that it had a combined use as an aqueduct. The Gurnos tramroad which used the Pontycafnau bridge carried limestone from the Gurnos quarries and exists today as a scenic footpath retaining its stone sleeper blocks. The remains of limekilns and fulling mills survive on either side of the route. Elsewhere, the line of the Penydarren tramroad, built in 1802 to carry iron by horse-drawn tram, survives and is also historically significant as the route of the first steam-hauled railway journey by Richard Trevithick's 1804 locomotive. The tramroad also includes a tunnel constructed under the Plymouth Ironworks.

Short sections of the famous Glamorganshire Canal, built in the 1790s, also survive as important landscape features, including a restored section in front of Chapel Row. This is crossed by the relocated Rhydycar bridge which is an early iron girder bridge dating from the 1790s. Chapel Row itself was built by the Cyfarthfa Iron Company as workers' houses, one of which is restored, both as an example of a period ironworker's cottage and also as the birthplace of the renowned composer Dr Joseph Parry. In a sharp distinction which reflects the other social extreme of the Merthyr ironmasters' activities, Cyfarthfa Castle, overlooking the Cyfarthfa Ironworks, was the largest and grandest ironmaster's house in Merthyr Tydfil, and amongst the most notable surviving industrialist's house in Wales. The house is situated in 64 ha of grounds, which were landscaped by the Crawshay family to include woodlands and a lake. This grand house and its parkland setting also provide an interesting and important contrast to the other relict landscape features of Merthyr.

Annex 3 – Figure 1

See following page.



0	JULY17	FINAL	RM	ED	GT	WB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Apprv'd

© Crown copyright and database rights 2016 Ordnance Survey 0100031673

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Legend

- Scheme design
- HLCA 7 - Coed Meurig
- HLCA 10 - Taff Fawr River Valley
- HLCA 11 - Cefn Coed-y-Cymmer
- HLCA 12 - Cefn Coed Cemetery & Jewish Burial Ground and Essential Setting with Significant Views
- HLCA 13 - Taff Fechan
- HLCA 14 - Graig Quarry and Tramroad
- HLCA 15 - Y Graig, Gurnos
- HLCA 17 - Gurnos Farm and Bunkers Hill
- HLCA 18 - Gurnos and Galon-Uchaf
- HLCA 19 - Bon-y-maen
- HLCA 20 - Bryniau Quarries
- HLCA 21 - Dowlais
- HLCA 22 - Pantcadifor, Rhyd-y-bedd and Caeracca
- HLCA 24 - Pengarnddu
- HLCA 25 - Dowlais Top
- HLCA 26 - Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun

Llywodraeth Cymru
Welsh Government

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FINAL
Project	A465 HEADS OF THE VALLEYS SECTIONS 5 AND 6 DOWLAIS TOP TO HIRWAUN
Title	Affected Historic Landscape Character Areas
Scale	1:10,000 @ A3 — DO NOT SCALE
Drawing No.	Figure 1 — Rev 0

Page left intentionally blank.

Appendix 9E – Archaeological Fieldwork Reports

The four reports in this appendix are ordered as follows:

- Environmental Statement Cultural Heritage Chapter– Volume 2.2 (October 1997) – 142 pages
- A465 Abergavenny to Hirwaun Archaeological Survey Phase I Report (July 1996) – 124 pages
- Abergavenny to Hirwaun: Dowlais Top to Taf Fawr – Section 5: Archaeological Fieldwork Report (July 2004) – 42 pages
- Abergavenny to Hirwaun: Taf Fawr to Hirwaun – Sections 6 and 7: Archaeological Fieldwork Report (May 2006) – 136 pages

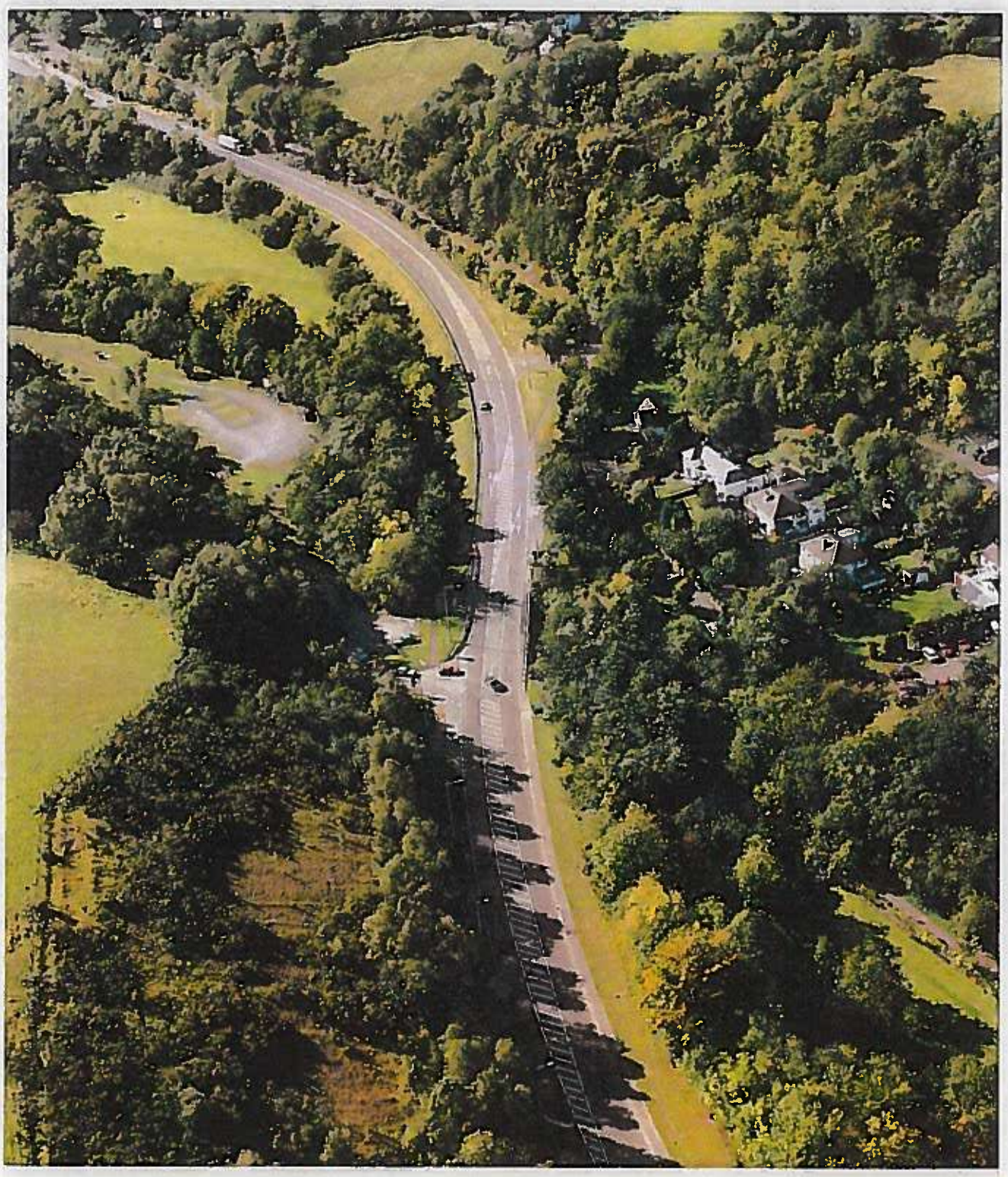
See following page.

Appendix 9E – 1997 Environmental Statement Cultural Heritage Chapter – Volume 2.2

See following page.

Page left intentionally blank

A465 ABERGAVENNY TO HIRWAUN DUALLING



Environmental Statement
Cultural Heritage
31 October 1997

Volume 2.2

Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffrydd
Welsh Office
Highways Directorate

Babtie

STRUCTURE OF THE ENVIRONMENTAL STATEMENT

The proposed scheme would commence at Abergavenny and terminate at Hirwaun, and has been divided into seven Sections:

Section One:	Abergavenny to Gilwern
Section Two:	Gilwern to Brynmawr
Section Three:	Brynmawr to Tredegar
Section Four:	Tredegar to Dowlais Top
Section Five:	Dowlais Top to A470 Junction
Section Six:	A470 Junction to Baverstock
Section Seven:	Baverstock to Hirwaun

The draft Line Order would apply to all Sections. In addition, draft Side Roads Orders and Compulsory Purchase Orders have been published for Sections One and Four.

An environmental assessment has been undertaken of the proposed scheme and each of its Sections. This Environmental Statement reports the results of the environmental assessment. The Environmental Statement comprises two Volumes and a Non-Technical Summary.

The Non-Technical Summary provides a bilingual (English and Welsh) summary, in non-technical language, of the environmental assessment. It is available as a separate document and is also bound into the front of Volume 1.

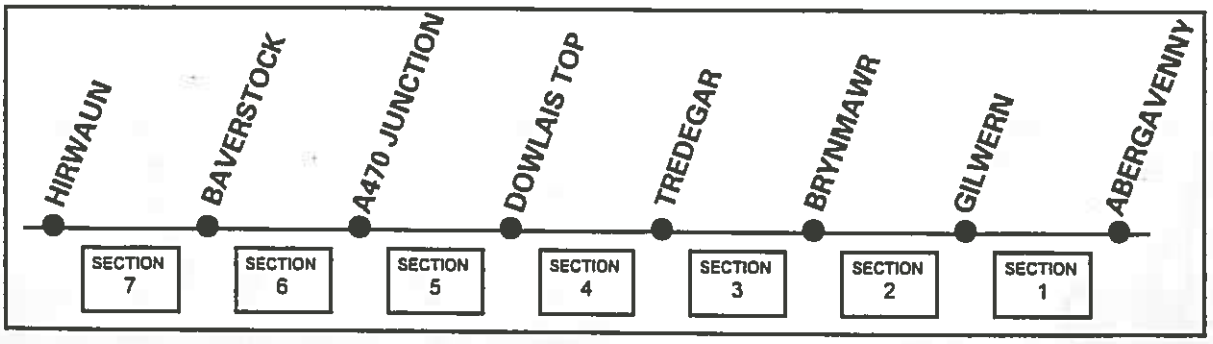
Volume 1 of the Environmental Statement provides a more detailed report of the environmental assessment and comprises the following documents:

Volume 1.0	Introduction to the Environmental Assessment
Volume 1.1	Assessment of Section One: Abergavenny to Gilwern
Volume 1.2	Assessment of Section Two: Gilwern to Brynmawr
Volume 1.3	Assessment of Section Three: Brynmawr to Tredegar
Volume 1.4	Assessment of Section Four: Tredegar to Dowlais Top
Volume 1.5	Assessment of Section Five: Dowlais Top to A470 Junction
Volume 1.6	Assessment of Section Six: A470 Junction to Baverstock
Volume 1.7	Assessment of Section Seven: Baverstock to Hirwaun
Volume 1.8	Summary and Overall Assessment of Proposed Scheme
Volume 1.9	Drawings Folder

Volume 2 provides the detailed environmental assessment of certain environmental factors, and comprises the following specialist reports:

Volume 2.1	Air Quality
Volume 2.2	Cultural Heritage and Gazeteer
Volume 2.3	Ecology
Volume 2.4	Landscape and Visual (including Visual Impact Schedules)
Volume 2.5	Noise

This document comprises Volume 2.2 Cultural Heritage.



WELSH OFFICE HIGHWAYS DIRECTORATE
A465 ABERGAVENNY TO HIRWAUN DUALLING

ENVIRONMENTAL STATEMENT
VOLUME 2.4 CULTURAL HERITAGE

TABLE OF CONTENTS

			PAGE NUMBER
GLOSSARY			
1.0	Introduction		
	1.1	Introduction to Cultural Heritage	1
	1.2	Current Legislative and Policy Framework	1
	1.3	Purpose of the Assessment	2
	1.4	Layout of the Document	2
2.0	Methods		
	2.1	Volume 11 of the Design Manual for Roads and Bridges	3
	2.2	Stage 1 Assessment	3
	2.3	Stage 2 Assessment	4
	2.4	Stage 3 Assessment	5
	2.5	Geophysical Survey	6
		Introduction	
		Magnetometry: technique and equipment configuration	
		Sampling interval, depth of scan, resolution and data capture	
		Processing, presentation of results and interpretation	
	2.6	Test Pit Programme	8
	2.7	Assessment of Palaeoenvironmental Potential	11
	2.8	Evaluation Trial Trenching	12
	2.9	Assessment Criteria	14
		Establishing existing value	
		Site assessment	
		Site categorisation	
	2.10	Site Impact	16
	2.11	Proposed Mitigation Measures	17
3.0	Historical Background		
	3.1	Introduction	18
	3.2	Prehistoric Period (before 55 BC)	18
	3.3	Roman Period (55 BC - AD 450)	19
	3.4	Medieval Period (1066-1600)	20
	3.5	Post-Medieval Period (1600-1950)	20
	3.6	Post-Industrial Period (1950-present)	23
	3.7	Overall Context	24
		Cultural heritage designations	
		Summary of discoveries	
4.0	Section One: Abergavenny To Gilwern		
	4.1	Existing Context	27
		General	
		Geophysical survey and test pitting programme	
	4.2	Impacts and Mitigation	31

5.0 Section Two: Gilwern To Brynmawr
5.1 Existing Context 33
General
5.2 Impacts and Mitigation 40

6.0 Section Three: Brynmawr To Tredegar
6.1 Existing Context 43
General
Geophysical survey and test pitting programme
6.2 Impacts and Mitigation 46

7.0 Section Four: Tredegar To Dowlais Top
7.1 Existing Context 48
General
Geophysical survey and test pitting programme
7.2 Impacts and Mitigation 52

8.0 Section Five: Dowlais Top To A470 Junction
8.1 Existing Context 55
General
Geophysical survey and test pitting programme
8.2 Impacts and Mitigation 59

9.0 Section Six: A470 Junction To Baverstock
9.1 Existing Context 61
General
Geophysical sruvey and test pitting programme
9.2 Impacts and Mitigation 61

10.0 Section Seven: Baverstock To Hirwaun
10.1 Existing Context 64
General
Geophysical survey and test pitting programme
10.2 Impacts and Mitigation 68

11.0 Summary And Conclusions
11.1 Introduction 70
11.2 Existing 70
11.3 Impacts and Mitigation 72
Section One: Abergavenny to Gilwern
Section Two: Gilwern to Brynmawr
Section Three: Brynmawr to Tredegar
Section Four: Tredegar to Dowlais Top
Section Five: Dowlais Top to A470 Junction
Section Six: A470 Junction to Baverstock
Section Seven: Baverstock to Hirwaun
11.4 Conclusions 75

APPENDICES

I	Archeological Ground Surveys
II	Test-pit Programme
III	Palaeoenvironmental Report

LIST OF TABLES

Table 2.1	Sites subject to evaluation trial trenching
Table 2.2	Assessment of significance
Table 4.1	Summary of archeological sites in Section One
Table 4.2	Impact and mitigation measures in Section One
Table 5.1	Summary of archeological sites in Section Two
Table 5.2	Impact and mitigation measures in Section Two
Table 6.1	Summary of archeological sites in Section Three
Table 6.2	Impact and mitigation measures in Section Three
Table 7.1	Summary of archeological sites in Section Four
Table 7.2	Impact and mitigation measures in Section Four
Table 8.1	Summary of archeological sites in Section Five
Table 8.2	Impact and mitigation measures in Section Five
Table 9.1	Summary of archeological sites in Section Six
Table 9.2	Impact and mitigation measures in Section Six
Table 10.1	Summary of archeological sites in Section Seven
Table 10.2	Impact and mitigation measures in Section Seven
Table 11.1	Number of sites per cultural heritage category in each Section
Table 11.2	Number of sites and magnitude of impact
Table 11.3	Significance of impact by Section

Glossary

Ashlar
decorative masonry formed from stone blocks which fit accurately together so that only fine mortar joints are required between them. The blocks are finely worked and the external faces are finished to form a uniform, flat surface.

Adit
a tunnel into a coal level, used either as an entrance to the mine or as a means of drainage.

Barrow
includes several types of earth covered funerary mounds with cremated or inhumed remains, primarily dating from the Neolithic (long barrows) and Early Bronze Age (round barrows) periods.

Cairn
a stone mound covering a cremation or inhumation found mainly in the Bronze Age periods.

Cropmark
a mark visible on aerial photographs caused by differential growth and colouration of field of crops over the archaeological features.

Crows-foot tips
a series of early spoil heaps formed by tipping from a barrow or cart forming a distinctive star-shaped pattern.

Find-spot
the site of a random or isolated or stray find which may indicate further archaeological material is present nearby.

Holloway
an early farm or parish road consisting of an unmetalled surface surrounded by high banked hedges formed through the erosion over time of the track.

Leat
an artificial watercourse made to channel water from source to an area for industrial usage.

Lithic scatter
a series of flint artifacts found on the surface and usually exposed by erosion or ploughing. Dating from the Palaeolithic to Early Bronze Age periods.

Motte and bailey castle
a defensive structure erected during the early stages of the Norman invasion consisting of a large artificial mound, or motte, surmounted by a wooden, and later a stone, keep (tower). The whole structure was surrounded by a large wooden bailey, often later replaced by a stone curtain wall.

Palaeoenviromental
the scientific technique of determining ancient landscapes and environment and climate characteristics from looking at macro fossils, pollen and faunal remains, often from within wetland sites.

Relict palaeosols
an ancient soil surface which has survived, often by being completely buried (e.g. under barrows).

Rusticated masonry
stone that has been worked on the external face to produce different effects from cyclopean (or rock-faced) to vermiculated (a worm-track effect).

Ridge & Furrow
the pattern formed by strip farming of land based on the medieval system of 'open' field agriculture. Medieval ridge and furrow tends to form the soil into a larger series of troughs and banks than those found in post-medieval ridge and furrow.

Stratified deposits
the layers of natural/soils and man-made deposits which build up over a long timespan on an archaeological site. The stratigraphy can be examined to determine the sequence and timespan of the site.

Tramroad
a rail or plateway carrying goods carts/trams and usually drawn by ponies.

Turfstone walling
boundary walls formed from an internal drystone core covered by a layer of earth and turves for added stability.

Quoins
the stones found at the corner of an external wall which support the greater stresses found there; usually of higher quality than ordinary stonework.

Voussoirs
the wedged-shaped blocks of stone which form the curve of an arch.

1.0 Introduction

1.1 Introduction to Cultural Heritage

1.1.1 The modern landscape is the result of human activity over thousands of years. It contains traces of settlements and of remains of human actions going back over 10,000 years. Many of these traces are not obvious and are often found as sub-surface remains or as field and enclosure systems. The remains of castles and abbeys are perhaps obvious but equally obvious and relevant are the remains of industrial workings and buildings whose impact on both the landscape and the fabric of society have been great. Archaeological remains are a finite and non-renewable resource, often vulnerable to damage and destruction.

1.2.1 Current Legislative and Policy Framework

1.2.2 The 1979 Ancient Monuments and Archaeological Areas Act is the primary legislation for cultural heritage remains and, among other issues, deals with Scheduled Ancient Monuments and their protection.

1.2.3 The built heritage is generally dealt with and protected by the Planning (Listed Buildings and Conservation Areas) Act 1990 and Regulations (SI No 90/1519).

1.2.4 Cadw: Welsh Historic Monuments is an executive agency of the Welsh Office which has the responsibility for dealing with the archaeological and the built heritage of Wales.

1.2.5 The policy framework for dealing with archaeological remains and the built heritage in Wales is established in Planning Guidance for Wales (1996) and supplemented in WO Circular 60/96 Planning and the Historic Environment: Archaeology and in WO Circular 61/96 Planning and the Historic Environment: Historic Buildings and Conservation Areas. These policies establish that where nationally important archaeological remains, whether scheduled or not, and their settings are affected by proposed development there should be a presumption in favour of their physical preservation. Remains of local importance may also be particularly worthy of preservation and identified in development plans. Where preservation *in situ* is not possible the remains should be fully recorded.

1.2.6 It is an objective of central government policy to secure the preservation of historic buildings, and the demolition of Grade I or Grade II* listed buildings should occur only in wholly exceptional circumstances. The first option when considering the future of listed buildings should be the continuation or reinstatement of the original use of the building.

Within Conservation Areas the purpose of actions must be to either enhance or maintain the character or appearance of a Conservation Area.

1.2.7 Cadw is in the process of compiling a Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales. A draft was issued for consultation in 1996. Although the Register conveys no statutory control, full account should be taken of Historic Landscapes, Parks and Gardens when dealing with development proposals.

1.2.8 As well as the designations of Scheduled Ancient Monuments, Listed Buildings and Conservation Areas (which are protected by the legislation identified in paragraphs 1.21 and 1.22), there are sites of historic interest which are not given statutory designations. These sites are usually protected from development by policies contained within Structure and Local Plans. They include:

- sites held on the regional Sites and Monuments Record (SMR); and
- sites identified as being of historic importance by the planning authority, for example, Historic Landscapes and Heritage Routes.

1.3 Purpose of the Assessment

1.3.1 The purpose of assessment of cultural heritage remains is:

- to determine the extent and importance of such remains;
- to consider their value;
- to identify the potential impacts of the proposed scheme, including their magnitude and significance; and
- to propose mitigation of the impact.

1.4 Layout of the Document

1.4.1 Volume 2.2 is organised in eleven chapters. This first chapter introduces the current legislative and policy framework concerning cultural heritage. The second is concerned with the methods used in the archaeological programme to date and outlines criteria for assessing site value and the magnitude and significance of impact. The third chapter describes the historical background of the area from prehistoric times to present day. Chapters 4 to 10 set out the existing cultural heritage data, the impacts and the mitigation proposals for each of the seven Sections. Chapter 11 summarises the key points of the assessment and provides its conclusions. The cultural heritage sites are described in detail in the Gazeteer. Supporting survey information is provided in the appendices.

2.0 Methods

2.1 Volume 11 of the Design Manual for Roads and Bridges

2.1.1 Volume 11 (Section 3, Part 2) of the Design Manual for Roads and Bridges (DMRB) outlines three stages of assessment for archaeological remains (DMRB, Chapter 8) and for the built heritage (DMRB, Chapter 13).

2.1.2 For assessment of both archaeological remains and the built heritage the three stages are broadly similar, but more detailed work is required at each stage in assessing archaeological remains, particularly at Stage 3. In view of the nature of the majority of the archaeological remains and the built heritage (i.e. most of the relevant built heritage is industrial archaeology), both aspects have been dealt with as a single study which covers Stages 2 and 3.

2.1.3 The study for Stages 2 and 3 was based on a brief prepared by Cadw for the Welsh Office (CO15L986 PP) and the proposals submitted by Babtie Group. The CADW brief outlined the key issues for study, which comprised:

- a walk-over survey;
- documentary research;
- a photographic survey; and
- an earthwork survey.

2.1.4 Stage 2 culminated in a report, which recommended further action including an archaeological evaluation and test-pit programme, and palaeoenvironmental and geophysical surveys. These recommendations were accepted by Cadw.

2.1.5 The study was carried out primarily within a corridor extending 50m either side of the proposed scheme, but went beyond this limit for extended sites or groups of sites and linear features. A wider search area was not deemed necessary, since the intention of the study was to focus on the Preferred Route which had already been announced (July 1995). The Stage 2 assessment started in January 1996 and the Stage 3 assessment in September 1996.

2.2 Stage 1 Assessment

2.2.1 The Stage 1 assessment was carried out by two organisations. The first, the Glamorgan-Gwent Archaeological Trust, was commissioned to do preliminary studies of the route and

published its report in 1994. This report was then supplemented in July 1995 by a rapid walkover survey of the route, including standing structures, by Dr. Peter Wakelin of Cadw. These two pieces of work highlighted the archaeological potential of the area, especially in terms of industrial archaeology.

2.2.2 The Stage 1 assessment included:

- the collation of all data held in the regional Sites and Monuments Record (SMR);
- a review of readily available vertical and oblique aerial photographic information;
- a review of first edition Ordnance Survey maps and other readily available historic maps; and
- field visits to determine the present condition of all known archaeological sites.

2.3 Stage 2 Assessment

2.3.1 The Stage 2 assessment was undertaken in 1996, and involved a detailed desk top study, a walkover survey, a photographic and ground survey of buildings, and a ground survey of earthwork sites, which excluded areas of dry stone or turf stone walling.

2.3.2 The desk top study included:

- collation of data on archaeological sites held by the regional SMR and confirmation of any new information added to the SMR since the Stage 1 assessment;
- information contained within Cadw's supplementary survey;
- information from Cadw relating to Scheduled Ancient Monuments, Listed Buildings and the Register of Historic Parks, Gardens and Landscapes;
- information on Listed Buildings and Conservation Areas held by the local planning authorities;
- examination of aerial photographs held by the Royal Commission on Ancient and Historical Monuments (Wales), as well as oblique aerial photographs of the proposed scheme which were commissioned by the Welsh Office Highways Directorate;
- the study of local information from museums and libraries and some personal recollections; and
- the commissioning of documentary and cartographic research, with Cadw's approval, from Mr. Philip Riden. The research involved examination of the Badminton Estate maps of the 18th Century, 19th Century tithe and Ordnance Survey maps, the Quarter Sessions deposited plans of public works in the Gwent Record Office and other secondary sources. Additional historical research has been undertaken by John van Laun.

2.3.3 The walkover survey involved:

- the whole 41.5 km length of the proposed scheme;
- the recording of all sites within a 50m corridor either side of the proposed scheme and in certain instances extending up to 100m, for example where linear or landscape features extended beyond the 50m corridor;
- the plotting of each site with a unique number on 1:2500 Ordnance Survey base maps;
- the compilation of field notes onto pro-forma recording sheets; and
- walking each parcel of land twice.

2.3.4 The photographic and ground survey was limited to buildings and structures most likely to suffer an impact:

- a photographic record of occupied buildings using 35mm and medium format cameras. 57 buildings and structures were recorded in this way; and
- a photographic record, supplemented by ground survey, of unoccupied buildings or structures. 20 buildings and structures were recorded in this way.

The photographs were taken for archiving purposes and are not included in this Environmental Statement.

2.3.5 Earthwork sites which were likely to suffer an impact due to their proximity to the proposed scheme boundaries (nine in number) were also subjected to ground survey.

2.3.6 The Stage 2 Assessment walkover survey recorded 282 sites and features of archaeological and cultural heritage interest which included leats, industrial buildings, earthwork sites, tramroads, industrial settlements, railways, Turnpike roads, culverts, farm buildings, holloways and landscapes of dry stone walls or turf walls.

2.3.7 The report from this Stage 2 assessment led to the Welsh Office commissioning further site surveys. These surveys formed the Stage 3 assessment.

2.4 Stage 3 Assessment

2.4.1 The Stage 3 assessment included:

- geophysical survey;
- the excavation of test pits;
- one palaeoenvironmental study; and
- archaeological evaluation trial trenches.

2.4.2 The details of these surveys are contained in sub-chapters 2.5 to 2.8.

2.5 Geophysical Survey

Introduction

2.5.1 Three geophysical survey locations were agreed with the Welsh Office to assist in assessing the archaeological potential of areas with no apparent archaeology in three distinct topographic zones, to ascertain whether further investigations (e.g. excavation) should be undertaken. Details are contained in Appendix I. The survey sites were selected on the basis of their perceived suitability on geological and topographical grounds as sites for past human activity. The three zones comprised the Usk Valley, the south-facing slopes to the east of Hirwaun, and upland pastures west of Cefn Coed-y-Cymmer. For the Usk Valley and the land east of Hirwaun it was considered that the underlying deposits were likely to be receptive to magnetometry. The upland areas were included to help assess the potential for and cost-effectiveness of geophysical survey on the remainder of the unimproved upland along the proposed scheme.

2.5.2 A general description of the survey areas follows:

- Area 1 east of Hirwaun, SO 9680 0530 to SO 9740 0550, Chainage 3900 to 4000, was on a south-facing slope above the River Cynon (Figure 22/24, Volume 1.9). The soil is a fine loamy upland type overlying sandstone.
- Area 2 west of Cefn Coed-y-Cymmer, SO 0230 0750 to SO 0270 0780, Chainage 30700 to 30950, was on a south-facing pasture slope (Figure 22/19, Volume 1.9). The soil is a fine loamy waterlogged upland type overlying sandstone.
- Area 3 east of Blaencarno Common, SO 0993 0928 to SO 1018 0936, Chainage 12350 to 12600 (Figure 22/14, Volume 1.9). The soil is a fine loamy waterlogged type overlying sandstone.
- Area 4 west near Pen-y-Worlod SO 2930 1340 to SO 2980 1320, Chainage 39400 to 39550, is in the River Usk valley (Figure 22/2, Volume 1.9). The soil is a coarse loamy type over sandstone.
- Area 4 west of River Usk SO 2850 1370 and SO 2870 1370, Chainage 40300 to 40750, is in the River Usk valley and close to the find spot of Neolithic and Bronze Age lithics at Llanfoist sewage treatment works (Figure 22/2, Volume 1.9).

2.5.3 The geophysical survey was undertaken by Stratascan between 21st and 28th January 1997 and used only magnetometry.

Magnetometry: technique and equipment configuration

2.5.4 Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.2 nanoTesla (nT) in an overall field strength of 48,000nT can be accurately detected using an appropriate instrument.

2.5.5 The mapping of the anomaly in a systematic manner will provide an indication of the type of material present beneath the surface. Strong magnetic anomalies will be generated by buried iron-based objects or by kilns or hearths. More subtle anomalies such as pits and ditches can be seen if they contain more humic material which is normally rich in magnetic iron oxides when compared with the subsoil. For example, the cutting and subsequent silting or backfilling of a ditch may result in a larger volume of weakly magnetic material being accumulated in the trench compared to the undisturbed subsoil. A weak magnetic anomaly should therefore appear in plan along the line of the ditch.

2.5.6 The magnetic survey was carried out using an FM36 Fluxgate Gradiometer, manufactured by Geoscan Research. The instrument consists of two fluxgates mounted 0.5m vertically apart, and very accurately aligned to nullify the effects of the earth's magnetic field. Readings relate to the difference in localised magnetic anomalies compared with the general magnetic background.

Sampling interval, depth of scan, resolution and data capture

2.5.7 Readings were taken at 0.5m centres along traverses 1m apart. This equates to 800 sampling points in a full 20m x 20m grid. All traverses were surveyed in a 'parallel' rather than 'zigzag' mode. The FM36 has a typical depth of penetration of 0.5m to 1.0m. This would be increased if strongly magnetic objects have been buried in the site. The collection of data at 0.5m centres provides an optimum resolution for the technique. The readings were logged consecutively into the data logger which in turn was daily down-loaded into a portable computer whilst on site. At the end of each survey area, data was transferred to the office for processing and presentation.

Processing, presentation of results and interpretation

2.5.8 Processing was performed using specialist software known as Geoplot 2. This can emphasise various aspects contained within the data but which are often not easily seen in the raw data. Basic processing of the magnetic data involves 'flattening' the background levels with respect to adjacent traverses and adjacent grids. 'Despiking' is also performed

to remove the anomalies resulting from small iron objects often found on agricultural land. Once the basic processing has flattened the background it is then possible to carry out further processing which may include low pass filtering to reduce 'noise' in the data and hence emphasise the archaeological or man-made anomalies.

2.5.9 The following schedule shows the basic processing carried out on all processed magnetometer data used in this report:

Zero mean grid	Threshold = 0.25 standard deviation
Zero mean traverse	Last mean square fit = off
Despike	X radius = 1 Y radius = 1
	Threshold = 3 standard deviation
	Spike replacement = mean

2.5.10 The presentation of the data for each site involves a print-out of raw data both as grey scale and trace plots, together with grey scale plots of the processed data and, if appropriate, after further processing to emphasise various aspects within the data. Magnetic anomalies have been identified and plotted into the 'Abstraction of Anomalies' drawing for each site (Figures 13, 19, 25 and 31), numbered for ease of reference.

2.6 Test Pit Programme

2.6.1 The test pit programme was designed to examine 16 areas along the proposed scheme which, although containing no obvious archaeology, were considered to have potential to contain archaeological remains on the basis of their topographic location in relation to the underlying geology. This programme was complementary to the geophysical survey. It was agreed that the areas should be sampled by the hand excavation of 69 pits, 2m x 2m square, approximately every 100m along the length of each area with additional pits in some areas or where warranted by the results of the geophysical survey. The test pit survey was undertaken in September and October 1996 and 59 of the pits were excavated. A general description of the survey areas follows. Further details are contained in Appendix II.

2.6.2 Area 1

South-facing land overlooking River Cynon between SO 9680 0530 and SO 9740 0550, Chainage 3900 to 4000 (Figure 22/22, Volume 1.9). Total length 580m, 6 test pits. Test pits not excavated because of access problems.

2.6.3 Area 2

Land between SO 9780 0580 and SO 9800 0620, Chainage 4100 to 4400 (Figure 22/22, Volume 1.9). Programme included land north and south of the A465 which comprised rough pasture plus a series of nineteenth century (or earlier) drystone walled enclosures, 2 holloways and sheep corralling channels (running north/south). Length 460m, 5 test pits excavated.

2.6.4 Area 3

Between SO 9860 0660 and 9885 0690, Chainage 5000 to 5500 (Figure 22/21, Volume 1.9). The area included a series of nineteenth century (or earlier) drystone walled enclosures, a holloway, and Post-Medieval coppiced woodland. Length 300m, 5 test pits excavated.

2.6.5 Area 4

Between SO 9960 0700 and SO 9990 0700, Chainage 6200 to 6500 (Figure 22/20, Volume 1.9). This area is located south of the A465 within rough heathland pasture with a high water catchment. Interspersed within this area is evidence of early industrial activity including a substantial metalled track running from north to south, the remnants of a dam, a sluice system and quarry tipping. North of these features, but south of the A465, the land remains undisturbed suggesting the potential for later prehistoric activity. Length 320m, 3 test pits excavated.

2.6.6 Area 5

Between SO 0130 0720 and SO 0160 0720, Chainage 7400 to 7700 (Figure 22/19, Volume 1.9). This small area of marshy pasture land is located between the old A465 and the present A465 (to the south). To the northwest and southwest are the remains of a Bronze Age landscape. It would appear that this strip of land has been little disturbed. Length 340m, 4 test pits excavated.

2.6.7 Area 6

Between SO 0230 0750 and SO 0270 0780, Chainage 9050 to 9400 (Figure 22/19, Volume 1.9). Area surveyed follows the proposed scheme across Nant Ffrwd and the western slopes of Taf Fawr. Within this area is (little disturbed) improved pasture land (south-facing) which is enclosed within a drystone walled landscape, early nineteenth century in date. Length 520m, 5 test pits excavated.

2.6.8 Area 7

Between SO 0360 0820 and SO 0410 0840, Chainage 10200 to 10750 (Figure 22/18, Volume 1.9). Within this area, south of the present A465, is a drystone wall landscape. Length 490m, 5 test pits excavated.

2.6.9 Area 8

Between SO 0545 0862 and SO 0570 0867, Chainage 11700 to 12250, east of Gurnos Farm (Figure 22/18, Volume 1.9). Particular interest was placed on a circular drystone walled feature and rough pasture directly to the east, where a possible prehistoric quern stone (Site No. 201) suggests prehistoric activity. The sample was increased so that 13 test pits were excavated over a length of 260m.

2.6.10 Area 9

Between SO 0993 0928 and SO 1018 0936, Chainage 12350 to 12600. This area south of the A465 is rough grazing and is little disturbed. Length 300m, 3 test pits proposed but not excavated due to access problems.

2.6.11 Area 10

Between SO 1160 0997 and SO 1180 1012, Chainage 18500 to 18700 (Figure 22/13, Volume 1.9). There is a record of a Bronze Age hoard being found in this area when the A465 was constructed in 1964. Length 250m, 3 test pits were excavated.

2.6.12 Area 11

Between SO 1327 1075 and SO 1340 1076, Chainage 20300 to 20550 (Figure 22/12, Volume 1.9). Within land between the Sirhowy River and Nant-y-Bwch is a sequence of drystone walls and earthworks that possibly pre-date industrialisation of the valley. Length 150m, 2 test pits excavated.

2.6.13 Area 12

Between SO 1132 1422 to SO 1164 1443, Chainage 22200 to 22350, north and south of the proposed scheme (Figure 22/11, Volume 1.9). Within this area there are slightly undulating, south-facing slopes with drystone walled field enclosures with associated sheep folds and barns and a well-preserved section of the Trefil Tramroad. Length 350m, 4 test pits excavated.

2.6.14 Area 13

Between SO 1652 1283 and SO 1700 1284, Chainage 23300 to 23700 (Figure 22/10, Volume 1.9). Within this area are substantial peat deposits and a possible (ancient) relict landscape with the potential for prehistoric material. Length 510m, 6 test pits excavated. A pollen analysis was undertaken (see sub-chapter 2.7).

2.6.15 Area 14

In Clydach Dingle around site No.120, SO 1920 1284, Chainage 26150 to 26600, there is an industrial settlement and related small-scale quarrying/mining with a tramroad incline (Figure 22/8, Volume 1.9). Length 170m, 2 test pits.

2.6.16 Area 15

Between SO 2067 1243 and SO 2090 1246, Chainage 28850 to 28950 (Figure 22/7, Volume 1.9). The area is undisturbed south-facing pasture land, north of the A465, between Brynmawr sewage treatment works and water works, above the Clydach Gorge. Oblique aerial photographs show possible circular features close to the survey area. Length 220m, 2 test pits excavated with no archaeological remains.

2.6.17 Area 16

Between SO 2298 1347 and SO 2320 1369, Chainage 30700 to 30950 (Figure 22/6, Volume 1.9). Part of early industrial landscape near leat keeper's cottage. Length 300m, 3 pits proposed but not excavated following observations of ground investigation trial pits in area.

2.6.18 Area 17

Archaeological test pit programme and a geophysical survey of land between SO 3297 2133 and SO 3291 2138, chainage 33500 to 33800. Approximately 130m north of the present road, Neolithic and Bronze Age lithics were recovered when the Llanfoist sewage treatment works was constructed in 1965. The area slopes gently east towards the River Usk. An additional area for geophysical survey, included within Area 17, is located east of Pen-y-Worlod Farm (between SO 3287 2137 and SO 3285 2137). The results of the geophysical survey are provided in Appendix II. It was intended that test pitting in this area would relate to the results of the geophysical survey. At the time of writing, these test pits have not been excavated.

2.7 Assessment of Palaeoenvironmental Potential

2.7.1 Peat was identified as suitable to contain pollen which might inform the palaeoenvironmental record. This peat was in an unimproved upland pasture area north and east of Garn Lydan, and in test pits in Area 10. Assessment of palaeoenvironmental potential was undertaken for the Garn Lydan site only. Analysis was undertaken by Professor M. J. C. Walker at the Department of Geography, University of Wales, Lampeter. A full copy of the palaeoenvironmental report is contained in Appendix III.

2.7.2 Excavation through a possible tramroad (Site No. 123) near SO 175 126 revealed a thin peat lens (approximately 20cm in thickness) beneath some 50cm of made ground. A 30cm monolith was taken through the peat sequence and the underlying minerogenic deposits.

2.7.3 Samples for pollen analysis were removed from the monolith at 2cm intervals and subjected to standard laboratory treatment, including digestion in 10% potassium hydroxide (KOH), heating in 40% hydrofluoric acid (HF) and acetolysis (Moore *et al.*, 1991). The residues were mounted in safranin-stained glycerine jelly and counted under x400 magnification. No pollen was recovered from the lowermost samples (22 and 24cm), and only trace pollen was present in the sample from 20cm. All the remaining samples proved to be polleniferous. As this was a preliminary analysis (i.e. partial rather than full), a sum of 100 land pollen only was examined.

2.8 Evaluation Trial Trenching

2.8.1 The Stage 2 assessment identified 43 sites that required evaluation by trenching to help in the assessment of the nature, importance and state of preservation of archaeological remains likely to suffer an impact by the proposed scheme and to assist in determining the appropriate level of mitigation. The Stage 3 evaluation works comprised hand and machine excavation. Evaluation strategies were implemented according to site type and are described in paragraphs 2.8.2 to 2.8.5.

2.8.2 For tramroads, railways and similar remains the evaluation technique aimed to assess the state of preservation as well as identifying relevant dimensions of structural remains. The recording of stratified deposits established the sequential phasing in time of each feature. The evaluation involved hand excavation down to track/sleeper level and careful recording of track-related remains. Machine trenching of the body of the earthwork was designed to minimise the disturbance of surviving remains, such as sleepers, while providing a cross section through the feature. Where appropriate, more than one evaluation trench was excavated in order to establish the direction of the feature, continuity of stratification within the section and the possible recovery of any railway/tramroad furniture.

2.8.3 For leat systems the trenches were hand excavated, in order to reduce possible interference with existing groundwater and drainage conditions.

2.8.4 More specific evaluation proposals were developed and implemented for the leat keeper's cottage (No. 99) and weir system (No. 100), for the Dukestown cast iron weir (No. 145) and a settlement and field system at Baverstock (No. 232).

Table 2.1 Sites subject to evaluation trial trenching

Site No.	Name/description	Method of excavation
3	Tramroad/cart track, Llanfoist Farm	*Hand excavation followed by machine trenching*
4	Merthyr, Tredegar & Abergavenny Railway SO 2902 1353	*Hand excavation followed by machine trenching*
4(i)	Llanvihangel Railway, Llanfoist	*Hand excavation followed by machine trenching*
11	Track/road, Pen-y-Worlod Farm, Llanfoist SO 2828 1383	*Machine trenching, hand excavation in places*
31	Abergavenny-Merthyr Turnpike Road SO 2597 1432	*Hand excavation followed by machine trenching*
36	Canal bridge (eccentric arched), Gilwern SO 2537 1452	*Hand clearance of surface*
50	Primitive Methodist Chapel and grave yard SO 2427 1428	*Machine clearance of tarmac, and debris followed by hand excavation*
51	Llam-march Tramroad, Gilwern	*Hand excavation followed by machine trenching*
70	Llam-march Tramroad, Saleyard	*Hand excavation followed by machine trenching*
78	Clydach Railroad, Cheltenham SO 2222 1275	*Hand excavation followed by machine trenching*
86	Merthyr-Govilon Turnpike Road (Main Road) SO 1968 1216	*Machine trenching followed by hand excavation*
91	Track between Blackrock and Cheltenham SO 2160 1264	*Hand excavation followed by machine trenching*
98	Revetting within bank of River Clydach	*Hand clear and excavate where necessary*
99	Leat keeper's cottage & outbuildings, Clydach SO 2298 1342	*Hand excavation followed by machine trenching*
100	Weir, sluice and leat system, Clydach	*Hand excavation, only within sensitive areas under threat from proposed scheme*
107	Industrial settlement, Nant Gwyn	*Clearance followed by hand excavation*
111	Llangattock Tramroad, Brynmawr SO 1967 1236	*Clearance followed by hand excavation*
113	Clydach Railroad branch & colliery level SO 2003 1218	*Hand excavation followed by machine trenching*
114	Merthyr, Tredegar & Abergavenny Railway SO 1972 1208	*Hand excavation followed by machine trenching*
120	Industrial settlement, Clydach Dingle	*Limited hand excavation within the Dingle area. Debris clearance and evaluation around the industrial buildings and watercourses*
123	Tramroad, Garn Lydan SO 1753 1269	*Hand excavation followed by machine trenching*
133	Trefil Tramroad, Nant y Croft SO 1427 1152	*Hand excavation followed by machine trenching*
138	Rassau Tramroad, Nant y Croft	*Hand excavation followed by machine trenching*
142	Merthyr, Tredegar & Abergavenny Railway SO 1354 1084	*Hand excavation followed by machine trenching*
145	Cast Iron weir, Dukestown SO 1342 1077	*Hand excavation*
150	Bronze Age find spot, Tafarnaubach SO 1170 1010	*Machine trenches followed by hand excavation*
192	Branch line of Brecon & Merthyr Railway SO 0678 0856	*Hand excavation followed by machine trenching*
202	Drystone walled landscape and sheep pen, Gurnos	*Hand excavation*
216	Stone structure, Cefn Coed-y-Cymmer	*Hand clearance and excavation where necessary.*
229	Track, Lech Sychrhyd SO 9959 0700	*Machine trenching and limited hand excavation*
232	Settlement and field systems, Baverstock SO 0073 0730	*Machine trenching followed by hand excavation*
252	Bute Colliery R (Tower Road), Hirwaun SO 9523 0517	*Machine trenching followed by hand excavation*
255 A	Aberdare & Rhondda Railway SO 9535 0508	*Hand excavation followed by machine trenching*
255 B	Tramroad B, branch of Aberdare & Rhondda SO 9583 0496	*Hand excavation followed by machine trenching*
255 C	Tramroad C, Hirwaun SO 9579 0496	*Hand excavation followed by machine trenching*
260	Walled enclosure, Pen-Twyn, Gilwern	*Debris clearance followed by machine trenching*
263	Section of Clydach Railroad, Pont Harn Issac SO 2045 1233	*Hand excavation followed by machine trenching*
264	West section of Clydach Railroad, Brynmawr SO 1968 1215	*Hand excavation followed by machine trenching*
265	Disgwylfa Tramroad branch, Clydach Dingle SO 1928 1280	*Hand excavation followed by machine trenching*
273	Tramroad, Hirwaun SO 9562 0497	*Hand excavation followed by machine trenching*
275	Tramway branch-Hirwaun Common Railway SO 9597 0500	*Hand excavation followed by machine trenching*
276	The Hirwaun Common Railway, Hirwaun SO 9617 0499	*Hand excavation followed by machine trenching*
277	Branch-line of Hirwaun Common Railway SO 9616 0498	*Hand excavation followed by machine trenching*

2.8.5 For standing structures, it was important to determine the state of preservation, define the limit of the historic fabric and to assess the potential range of associated sub-surface features, such as those around the leat keeper's cottage (Site No. 99). This involved hand and machine excavation of associated features to define their maximum extents.

2.8.6 Details of the sites evaluated, and the method of excavation are provided in Table 2.1. Site locations are shown on Figures 22/1-24 in Volume 1.9.

2.9 Assessment Criteria

Establishing existing value

2.9.1 Sites have been assessed for their importance using a set of scoring criteria, and values have been assigned to them, according to categories established by Cadw.

Site assessment

2.9.2 Non-statutory criteria for assessing the national importance of archaeological remains have been published in Annex 4 of Planning Policy Guidance Note 16: Archaeology and Planning. Six criteria have been adopted as guidance for this assessment. Scores have been awarded to each guidance criterion (as indicated below) and added together for each site. The higher the score the more important the site:

- Period: Each site is categorised according to its archaeological/historic period: Prehistoric, Roman and Medieval score 2 and all others score 0.
- Rarity: The rarity value has been assessed as either common (1), moderate (2) or scarce (3). It should be noted that sites which portray the typical and commonplace as well as the rare are important within a national and regional context.
- Documentation: The archaeological significance of each monument may be enhanced by the existence of supporting documentary evidence and is graded none (1), with cartographic evidence (2) and including documentary history (3).
- Group Value: The value of a single monument may be greatly enhanced by its association with related contemporary monuments. The category is graded into none (1), minor group value (2) and including , major sites and /or linear features (3).
- Survival/Condition: The survival and condition of each monument is important to assess the archaeological value both above and below ground. Survival/condition is graded poor (1), moderate (2) and good (3).

- Diversity: This classifies the archaeological diversity of the features present in terms of period and typology. Diversity is graded as single-phase (1) and multi-phase monuments (2).

2.9.3 Of the eight criteria, those relating to fragility/vulnerability and potential were not considered appropriate for the proposed scheme. "Potential" relates to the potential of the site to have archaeological remains. Many of the sites did not have potential as a result of their nature (for example, a tramway) or being above ground level. "Fragility/vulnerability" relates to the vulnerability of the site to damage. This potential for damage has been taken into account in the impact assessment; accordingly, this criterion has not been used, so as to avoid double-counting of the same factor.

Site categorisation

2.9.4 The categories defined by Cadw and the criteria for classification are outlined in the following paragraphs.

Category A - Sites of National Importance
These include Scheduled Ancient Monuments, Listed Buildings and those sites which meet Cadw criteria for scheduling or listing. These sites are to be preserved *in situ*.

Category B - Sites of Regional or County Importance
These include sites that do not meet the criteria for scheduling or listing, but are nevertheless of particular importance within the region. Preservation *in situ* is the preferred option but if loss or damage cannot be avoided, appropriate detailed recording will be undertaken.

Category C - Sites of District or Local Importance
These include sites which are not of sufficient importance to justify preservation if threatened. Category C will merit adequate recording in advance of loss or damage.

Category D - Minor or Damaged Sites
These include sites of minor importance or so badly damaged that little remains to justify their inclusion into a higher category. Rapid recording, either in advance or during destruction is required.

2.9.5 The site assessment scoring system has been related to site classification categories defined by Cadw as follows:

- sites with scores ranging from 13-15 have been classified as Category A;
- sites with scores ranging from 11-12 have been classified as Category B;
- sites with scores ranging from 9-10 have been classified as Category C; and
- sites with scores ranging from 0-8 have been classified as Category D.

2.10 Site Impact

2.10.1 Site impact can be either direct or indirect and result in:

- loss;
- damage;
- severance of linear features;
- reduction of the group value of associated features; and
- adverse affects on the setting of features.

2.10.2 The magnitude of impact on each site can be assigned to one of four categories:

- slight: sites affected by the proposed scheme but where the impact on the site and/or its setting is minimal;
- moderate: sites which would be affected by the proposed scheme but where loss or impact on the setting would be partial (including severance);
- severe: sites which will be affected, but not completely lost, by the proposed scheme; and
- very severe: sites which will be affected by the proposed scheme and which would have a maximum effect on the site or the setting.

Impact has been assessed irrespective of the status and value of the site.

2.10.3 Significance of impact has been assigned for each affected site, taking into account the value of the site and the magnitude of the impact. The definition of significance is set out in Table 2.2.

Table 2.2 Assessment of significance

	Impact magnitude			
Site value	Very severe	Severe	Moderate	Slight
Category A	Very significant	Very significant	Significant	Minor
Category B	Significant	Significant	Minor	Not significant
Category C	Minor	Minor	Not significant	Not significant
Category D	Not significant	Not significant	Not significant	Not significant

2.11 Proposed Mitigation Measures

2.11.1 Mitigation measures have been proposed for each site which would be affected by the proposed scheme. The degree of mitigation proposed depends on the archaeological interest of the site and the extent to which it could be affected. Where archaeological action would be required, measures fall into ten categories:

- full excavation;
- limited excavation;
- strip and record;
- detailed earthworks survey;
- detailed building survey to standards set by RCHME 1991 or equivalent levels for structures:

  Level 1: Visual survey- basic sketch plan - photograph of the setting - exterior record

  Level 2: Descriptive survey - scale ground plan, elevation photographs, exterior/interior record

  Level 3: Fully analytical survey - written description of development and use, including survey at levels 1 and 2

  Level 4: Full survey - for buildings of special importance. Includes 3D drawings, internal detail of room plans and including external detail to level 3
- photographic record;
- watching brief;
- palaeoenvironmental sampling;
- preserve in *situ*;
- no access to construction activity including site compounds and storage facilities etc; and
- consultation with the engineering team regarding the detailed design.

3.0 Historical Background

3.1 Introduction

3.1.1 Past developments affect the potential for survival of prehistoric, Roman and Medieval remains. Indeed, continuing development in the Post-Medieval period will have destroyed earlier remains. During the construction of the existing road in the 1960s, much of the immediate area either side of the road was damaged. Indeed, a number of settlements were partially destroyed including those of Blackrock (Clydach Gorge) and Cefn Coed-y-Cymmer. Along with many buildings, agricultural and industrial landscapes were also damaged including Post-Medieval drystone and turfstone walled field systems and an industrial heritage that is dominant throughout this region of Wales.

3.2 Prehistoric Period (before 55 BC)

3.2.1 Within the 50m corridor of the A465, the evidence for prehistoric activity is restricted to four areas:

- the flood plain of the River Usk, south of Abergavenny;
- the industrial estate at Tafarnaubach;
- Blaencarno Common, north of Merthyr Tydfil; and
- improved pastures north of Gurnos.

3.2.2 Each area has revealed limited evidence, usually in the form of find spots. The exception is near Tafarnaubach Industrial Estate, where a significant hoard from the Bronze Age was discovered. There is no evidence for any earlier prehistoric activity either within or outside the 50 metre corridor.

3.2.3 A Neolithic flint scatter, found prior to the construction of Llanfoist sewage treatment works, is similar to part of a contemporary assemblage retrieved from an excavation in Flannel Street, Abergavenny in 1965.

3.2.4 Within the Clydach Gorge there appears to be no evidence of any prehistoric activity, although two hillforts are located north and south of the gorge. A Bronze Age settlement has been recorded below the Blorange, close to the village of Llanfoist.

3.2.5 Either side of the A465, near Baverstock but outside the 50m corridor, a number of Bronze Age barrows and cairns occur, clustered into cemeteries. Barrow/cairn cemeteries are located north and south of the Baverstock settlement (No.232) and north of Merthyr Common. Possibly related to the latter cemetery is a small Bronze Age cairn (No.175), on a south-facing slope, north of the A465 on Blaencarno Common.

3.2.6 At Gurnos there is fragmentary evidence of prehistoric activity, although the potential for prehistoric finds is restricted by the present road, limestone quarrying and town development. One hundred and fifty metres east of Gurnos Farm, and recorded during the walkover survey, was a large single stone with an acute smooth-bowled surface on one edge which could be a quernstone.

3.3 Roman Period (55 BC - AD 450)

3.3.1 There is no evidence of Roman remains within the 50 metre corridor. Within the general area there appear to be only two sites of Roman date, the town of Abergavenny, known to the Romans as Gobannium, and a possible Roman road west of Gurnos Farm. At Abergavenny a fort and settlement were established around AD 50 and, according to the derivation of its name, possible pre-Roman iron-working was already in operation at that time (Rivet & Smith 1979:369).

3.3.2 The fort, close to the site of the later Medieval castle, would have had commanding views across the Usk valley to the west. Excavations of the fort revealed a structure of substantial size and proportion. Gobannium was one of a series of four forts/towns along the Usk. To the south was Burrium (Usk) and Isca (Caerleon) and to the north, Cicucium (Brecon). It is therefore important to consider the Usk as a route between the four fortified settlements.

3.3.3 Further west, and close to Gurnos Farm, is the possible route of a north/south aligned Roman road that would have linked the fort and settlement at Brecon with the Roman legionary fortress at either Isca (Caerleon) or the fort at Tamium (Cardiff). Documentation is confused and any possible road may have since been destroyed due to quarrying activity or commercial forest planting west of Gurnos Farm. No definitive evidence of the road has been found. A single sherd of Roman pottery was found in a trial trench near Gurnos.

3.4 Medieval Period (1066-1600)

3.4.1 There appears to be little or no visible evidence of settlement during the early Medieval period either within or outside the study area. Much of the early Post-Medieval industrial activity within the Clydach Gorge commenced around the 1660s. There is a possiblity that settlement prior to 1550 did exist, although Riden (1996) has suggested the contrary.

3.4.2 In Abergavenny the site of a Norman motte and bailey castle stands overlooking the Usk Valley. To the west of the castle the town retains part of the Medieval street plan. Both the castle and Medieval town were probably influenced by the Roman Fort and later Romano-Celtic settlement (Olding, pers.com.).

3.4.3 At Cefn Coed-y-Cymmer an Early Medieval coin hoard (No.215) dating from the 1340s was discovered approximately 50 metres south of the A465, during construction of St John's Church in 1880. Close to Grawen Cottages (No.218) a series of hut circles, considered to be of Early Medieval date, was uncovered during the construction of the existing A465.

3.4.4 There is a possibility that much of the drystone and, in particular, turfstone walling along the entire route of the A465 could date to either the late Medieval or Post-Medieval periods. Tithe maps of 1819, around the Llanfoist area for example, suggest little or no deviation or change within the surviving walled field systems recorded within the walkover survey.

3.5 Post-Medieval Period (1600-1950)

3.5.1 This period marks a dramatic change to both the landscape and settlement either side of the present A465. The majority of sites recorded in the walkover survey date from this period Early Post-Medieval industrial activity is confined to one area, the Clydach Gorge. This area, approximately 4 km by 0.5 km, marks the birthplace of the Industrial Revolution in Wales, between 1700 and 1800.

3.5.2 Industrialisation spread rapidly throughout the Gorge. During this period new towns emerged throughout the valleys. Each industrial complex was served by a complex network of tramroads, leats, canals and roads. These were later superseded with the emergence of the railways. The Abergavenny, Tredegar & Merthyr Railway was the first of a number of communication links that ran roughly along the same route as the present A465. At Dowlais, east of Merthyr Tydfil, a series of railway lines converged and linked mid Wales with the 'Valleys'. The 'Heads of the Valley' line had become, by 1870, part of a fully

integrated railway network. The demise of the railways during the 1960s also marks a decline and change in industrial practice, from heavy to light industry.

3.5.3 Prior to the railways, there appears to have been a limited road network which linked the larger settlements along the present route. The walkover survey did locate a number of roads/tracks that ran between Abergavenny and Llanfoist, Llanfoist and Gilwern, and Gilwern and Brynmawr. These were later amalgamated into a Turnpike road in 1812 that ran between Abergavenny and Merthyr. The Turnpike road remained the only main road until the opening of the existing road in 1966.

3.5.4 The purpose of the transport network was to serve industry, not necessarily the community. Both canals and tramroads were the main transportation routes for raw materials. Tramroads transported the raw material (coal, limestone and ironstone) from the quarry to the furnace, then from the furnace to the foundry and finally, from the foundry to the canal. Before this, during the initial stages of the Industrial Revolution, pack-horses would have served a similar function. Using the horse, coal, ironstone and limestone were transported from quarries and mines to the furnaces and then onto the canals for export via horse-drawn trucks suspended on rails. From the latter part of the 18th century, pack-horses were replaced by railroads and tramroads.

3.5.5 The Clydach Railroad, for example, built and financed by the Brecknock & Abergavenny Canal Co. in 1793, served as a link between collieries at Brynmawr, at the head of the Clydach Gorge and a long established iron forge at Glangrwyney on the Usk, a short distance downstream from the mouth of the Clydach. Initially, the railroad was laid as an edge-rail which was cast in 4ft sections.

3.5.6 This tramroad was later connected to two others which ran parallel to it and down the Gorge to the Brecon & Abergavenny Canal at Gilwern and Govilon. Further west, between Brynmawr and the head of the Rhymney Valley, other tramroads were laid from the ironworks in each valley to run north to collieries, ironstone pits and limestone quarries. Some were linked together to create a rudimentary west-east route, giving the ironworks access to the Brecon & Abergavenny Canal as well as the two branches of the Monmouthshire Canal which ran to Crumlin and Pontypool.

3.5.7 Many of the earliest tramroads now run close to or are bisected by the present road. At Hirwaun, at least six tramroads (and two railway lines), all dating from the early to mid 19th century, are severed by the existing A465. A number of tramroads dating from the late 18th and early 19th centuries are dispersed along the present route, and include the Bailey's Disgwylfa Tramroad (c.1818), Bailey's Llangattock Tramroad (c.1830s), Brinore Tramroad

(c.1815), Castle Morlais Quarries Tramroad (c.1803), Clydach Railroad (c.1793), Gurnos Tramroad (c.1792), Hirwaun to Aberdare Tramroad (c.1790s), Llam-march Tramroad (c.1795 and 1811) and the Trefil Tramroad (c.1797).

3.5.8 The most complex section of tramroad is located within the Clydach Gorge and involves two tramroads, the Clydach Railroad (No.44) and Llan-march Tramroad (No.51). Both run, in places, parallel to one another and served similar purposes in providing raw materials to the local ironworks and forges within the lower Clydach at Saleyard, Clydach Village and Llanelly.

3.5.9 By the time the Heads of the Valley Railway was promoted in the late 1850s, much of its proposed route followed a line already adopted by existing tramroads. Despite this, the construction of a locomotive-operated railway through rugged terrain was a formidable challenge and proved too expensive for the Merthyr, Tredegar & Abergavenny Railway. The project was finally completed by the London and North Western Railway in 1862. Other sections and branch lines were later added, some jointly built with Rhymney Railway and the Brecon & Merthyr Railway. The route to Merthyr was completed in 1879. This line was principally built to transport iron, and in later years coal, from works at the Heads of the Valley to the Midlands. Passenger traffic was minimal. The route was considered a major engineering accomplishment, with some of the steepest gradients and tightest curves in Britain. Because of this massive engineering feat with the construction of embankments, revetting, viaducts and cuttings, the line can never have been in profit, especially at a time when the iron industry in this part of Britain began its slow demise. The route was finally closed in 1958, but after this date, there were plans to build a new trunk road on much the same route as the railway which would link the Midlands with Swansea and Neath, the new rising centres for heavy industry. The road was originally conceived as long ago as 1947, although detailed planning did not commence for another ten years. Construction started in 1960 and was completed in 1966. The route linked the Ross Spur of the M5 (now the M50) with the A40 through to Neath and Swansea. As with their railway counterparts a century earlier, road engineers were faced with considerable engineering problems, especially through the Clydach Gorge and across a number of wide river valleys and ravines. In places, the road simply overlaid existing former London, Northern & Western Railway (LNWR) trackbeds.

3.5.10 The emerging transport network appears to have been constructed as an integrated system around industry. Areas such as the Clydach Gorge, Brynmawr, Merthyr Tydfil and Hirwaun were ideal locations for early entrepreneurs; the raw material, the manufacturing base and the ease of transportation to market formed the basis of the Industrial Revolution in Wales. The ability to utilise raw materials, such as ironstone, limestone and coal, and manufacture

the product nearby was to set standards for industrialisation elsewhere in Britain. Within the Clydach Gorge, the iron industry was concentrated around the settlements of Maes-y-Gwartha and Saleyard. Indeed, the growth of both settlements is attributed to demand for iron.

3.5.11 One of the earliest commercial furnaces within the region was established at Llanelly, several kilometres west of Gilwern. Schubert (1957: 371) has suggested that there was a furnace at Llanelly (No.66) as early as 1590, which was rebuilt on a new site in 1606. However, the earliest recorded evidence appears to be an agreement of 1663 under which Capel Hanbury, who had another ironworks at Pontypool, was 'allowed to have liberty' to build a weir to divert water from the River Clydach to his ironworks in Llanelly (Riden 1993: 23). The gorge was too remote for a forge alone to have been built: such a scheme would only have been feasible if a source of pig-iron from a blast furnace was nearby.

3.5.12 A blowing-house, containing the bellows which powered the furnace, stood on the opposite side of the furnace from the bank, with the water-wheel at its western end. There appears to be no trace of either the head- or tail-race which carried water to and from the wheel. In line with Cadw's report, the walkover survey identified 'ponds, arches and terraces' to the west and north of the furnace, which must be connected with the supply of water to the furnace. Nothing of this sort is noted on the tithe map, which does not mark any watercourse approaching the furnace from the north, but there may be better evidence on John Aram's plan.

3.5.13 Llanelly Forge (No.58) stood a short distance lower down the valley than the furnace, beyond the grounds of Clydach House on the northern bank of the river. It was powered by water carried along by a leat which left the Clydach just downstream of the mouth of Nant Dyar and ran along the northern bank of the river to near the bottom of the lane running down from Clydach House. Here it swung away from the river, skirting the garden of Clydach House on the west and a large storage pond. The tithe map shows a weir on the leat feeding the west end of the pond and the leat continuing around the north side of the pond to end at a point level with the dam wall of the pond.

3.6 Post-Industrial Period (1950-present)

3.6.1 The decline in Britain's industrial and manufacturing base can be roughly traced back to the early post-war era. This decline is most noticeable in South Wales. Along the 'Heads of the Valley' road, the traditional manufacturing base has been replaced over the past twenty years by a number of large trading estates which are mainly component and service

industry based. Recorded within the study area (50m corridor) are various elements of the road itself (including three viaducts [Nos. 206, 221a, 221b] and two fast-food restaurants (Nos. 33 and 196). The 'Heads of the Valley' road, designed and constructed during the 1950s and 60s was considered at the time to be a major link between the two industrial heartlands of the Midlands and South Wales. However, as the traditional industries have declined and new smaller hi-tech industrial units emerge, the demand for a more integrated traffic system has not.

3.7 Overall Context

Cultural heritage designations

3.7.1 Within the wider context of the proposed road scheme there are several cultural heritage sites which enjoy statutory and non-statutory protection, through designation. Most of these sites lie well outside of the possible effects of the proposed road scheme. These designations comprise:

- Scheduled Ancient Monuments;
- Listed Buildings;
- Conservation Areas; and
- Landscapes, Parks and Gardens of Special Interest.

3.7.2 At the eastern end of the A465, the designated cultural heritage sites are clustered in Section One of the proposed scheme, especially around the town of Abergavenny. The long history of this town as a Roman fort, a relatively prosperous medieval market town and later a communications junction for industrial exports, is attested by the designation of Abergavenny Bridge as a Scheduled Ancient Monument (SAM MM010), and of Abergavenny Conservation Area within the town. These sites both would fall outside the wider impact of the proposed scheme.

3.7.3 Further west along the A465 there are important designations within the Clydach Gorge in Section Two. This locality's importance during the Industrial Revolution in south Wales is reflected by the designation of two Scheduled Ancient Monuments. One area centres on Llanelly Furnace (SAM BR 160) (site No.66) and the Clydach Ironworks and Smart's Bridge (site Nos. 93 & 94)(SAM BR 161). Clydach House (site No.64) at Saleyard, dated to 1693, is a Grade II* Listed Building. These sites all would fall within the immediate road corridor, although impacts are likely to be confined to their setting.

3.7.4 Within Section Three of the proposed scheme, at Dukestown, the Nine Arches viaduct (site No. 143), built for the Merthyr, Tredegar and Abergavenny line in 1864, is a Listed Building. This would fall outside the scope of the proposed scheme, although the associated disused railway line (site No.142) would be affected.

3.7.5 In Section Four, at Butetown, the existing A465 runs close to a Conservation Area and a Scheduled Ancient Monument. The Butetown Conservation Area lies approximately 300m to the south of the proposed road scheme and centres on an area of well-preserved historic worker's housing. Within Butetown Conservation Area there are three Listed Buildings. To the east of this area, south of Llechryd, there are two further Listed Buildings. The proposed scheme at this point would have no direct impact on the Conservation Area, although it may have an effect on its setting, through the proposed improvements to the adjacent slip roads. Rhymney Upper Furnace is a Scheduled Ancient Monument (SAM GM 403), but lies well outside the effects of the proposed scheme.

3.7.6 In 1996 Cadw issued a draft consultation Register of Landscapes, Parks and Gardens of Special Interest. Part 2.1 of the Register deals with landscapes of exceptional and great historic interest, of which No.14 is Merthyr Tydfil Landscape of exceptional historic interest. This designation falls within Section Five of the proposed scheme.

3.7.7 Within Section Six, at Cefn Coed-y-Cymmer, the existing road viaduct (site No. 206) carries the A465 directly over the course of the Gurnos Tramroad and Leat (site Nos. 207 and 208), which together are a Scheduled Ancient Monument (SAM GM478). No direct impact from the proposed scheme is anticipated. The Tai Mawr leat for Cyfartha Ironworks is also a Scheduled Ancient Monument (SAM GM 479) and is located well beyond the proposed scheme, approximately 0.5km to the south.

3.7.8 In Section Seven, the A465 passes approximately 0.5km to the south of the Scheduled Ancient Monument of Hirwaun Ironworks (SAM BR 157). No direct impact is anticipated.

3.7.9 In summary, the Scheduled Ancient Monuments along the proposed scheme comprise:

- Abergavenny Bridge (SAM MM010);
- Llanelly Furnace (SAM BR 160) (site No.160);
- Clydach Ironworks and Smart's bridge (site Nos. 93 & 94) together form SAM BR 161;
- Rhymney Upper Furnace (SAM GM 403);
- Gurnos Tramroad and leat (site Nos. 207 & 208) (SAM GM478);
- Tai Mawr leat (SAM GM 479); and
- Hirwaun Ironworks (SAM BR 157).

3.7.10 The two Conservation Areas along the proposed scheme comprise:

- Abergavenny Conservation Area; and
- Butetown Conservation Area.

3.7.11 The important Listed Buildings along the proposed scheme comprise:

- Clydach House at Saleyard, (site No.64); and
- Dukestown, the Nine Arches viaduct (site No. 143).

3.7.12 The Borough of Merthyr Tydfil is No.14 in the Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales.

Summary of discoveries

3.7.13 The range of cultural heritage sites identified within the 50m corridor along the proposed scheme include:

- prehistoric sites, including lithic scatters, cairns, stone monuments, stray finds and cropmarks;
- Post-Medieval agricultural features, including farm houses/cottages and farm buildings, field buildings, holloways/tracks, and drystone and turfstone walling;
- early Post-Medieval industrial sites and features, including 17th-18th century leats, sluice and weir systems, canals, tramroads, bridges and associated dwellings/ buildings;
- late Post-Medieval industrial sites and features, including 19th-mid 20th century mineral extraction and processing, railways, tramroads, associated buildings and furniture, reservoirs and associated leats, tracks and pumping houses, bridges and roads;
- Post-Industrial buildings and features, including mid 20th century to present fast-food restaurants, roads, bridges and transport furniture (milestones, sign-posts, lamp-posts and railway fencing);
- Post-Medieval religious buildings and associated features, including chapels, churches and associated graveyards; and
- sites of palaeoenvironmental interest, including peat and relict palaeosols.

4.0 Section One: Abergavenny To Gilwern

4.1 Existing Context

General

4.1.1 Archaeological sites along Section One comprise:

- prehistoric sites, including lithic scatters;
- post-medieval agricultural features, including farm dwellings and outbuildings, field boundaries, field systems, holloways and tracks;
- post-medieval industrial sites and features including a canal, canal wharf and embankment, tramroad tunnel, railways, tramroads, associated furniture, bridges and dwellings, and a public house;
- Post-Industrial features including restaurants, roads and bridges; and
- a site of religious significance with a chapel and cemetery.

4.1.2 A total of 40 sites were recorded in this area. Of these:

- 4 are of national importance (Category A);
- 15 are of regional importance (Category B);
- 7 are of local importance (Category C); and
- 14 are minor or damaged sites (Category D).

4.1.3 Details of these sites are provided in Table 4.1. Site locations are provided on Figures 22/1-4 in Volume 1.9.

Geophysical survey and test pitting programme

4.1.4 Within this Section, two areas were investigated for archaeological remains using geophysical survey (Areas 17 and 18). No significant archaeological features or remains were recorded.

Table 4.1 Summary of archaeological sites in Section One

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific date	Description
1	Ysbytty Farm, Abergavenny	SO 3032 1293	B	Buildings and Cropmarks	Farmhouse & outbuildings	Post-Medieval	-	Late 18th/19th farmhouse and buildings with associated cropmarks to the east.
2	Prehistoric find spot, Llanfoist water treatment works, Abergavenny	SO 2980 1330	B	Findspot	Prehistoric lithic scatter	Neolithic/ Bronze Age	-	Findspot includes a barbed and tanged arrowhead and associated lithics.
3	Cart track, Llanfoist Farm	SO 2945 1331	D	Linear Feature	Trackway	Post-Medieval	-	Linear fenced track to north of Llanfoist Farm. Evaluation reveals earlier refuge dump (c.20th material recovered).
4	Merthyr, Tredegar & Abergavenny Railway	SO 2900 1350	B	Linear Feature	Railway	Post-Medieval	1862	Dismantled line of MT&A Railway. Line follows the route of the earlier Llanvihangel Railway. MT&A Railway taken-over by London & North-Western Railway.
4(i)	Llanvihangel Railway, Llanfoist	SO 2900 1350	B	Linear Feature	Tramroad	Post-Medieval	1812	Llanvihangel opened 1812 and later bought-out by the MT&A Railway in 1862. Linked Govilon to Llanvihangel via Abergavenny.
5	Railway furniture, Llanfoist	SO 2889 1355	D	Site	Fence-post	Post-Medieval	-	Railway fence post within field boundary. Iron maker: E.Hampton, Abergavenny
6	Evesham House & lodge, Llanfoist	SO 2870 1360	B	Buildings	Domestic dwelling	Medieval	-	Early Post-Medieval House with associated lodge. At rear of Evesham House is an early oak door casement of possible 16th century date.
7	Evesham House outbuildings, Llanfoist	SO 2870 1362	B	Buildings	Outbuildings	Post-Medieval	-	Late 18th/early 19th farm buildings. Later converted for domestic habitation. Outbuildings consist of a substantial stone-clad roof.
8	Turnpike Road, under skew bridge, Llanfoist	SO 2795 1387	D	Linear Feature	Road	Post-Medieval	1812	Route of Merthyr-Abergavenny Turnpike road.
9	Railway skew bridge, Llanfoist	SO 2800 1385	A	Structure	Railway bridge	Post-Medieval	1862	A masonry skew bridge carrying the MT & A Railway above the Merthyr-Govilon Turnpike Road.
10	Pen-y-Worlod Farm & outbuildings, Llanfoist	SO 2838 1388	B	Buildings	Farmhouse & outbuildings	Medieval		A substantial farmhouse with many original features including an ingelnook fireplace and bressumer and large oak door with iron batten and studding. To west of the farmhouseare a series of outbuilding including cowshed and threshing barn - typical of the local vernacular.
11	Track/road, Pen-y-Worlod Farm, Llanfoist	SO 2830 1383	D	Linear Feature	Road	Post-Medieval	1812	Route of original Turnpike road and includes a single-arched bridge and substantial earthen cutting towards Abergavenny.

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific date	Description
12	Footbridge, Pen-y-Worlod Cottages, Llanfoist	SO 2863 1374	C	Structure	Footbridge	Post-Medieval	-	A single large slabbed footbridge spanning across a small brook, east of Pen-y-Worlod Farm.
13	Cadfor farmhouse & outbuildings, Llanfoist	SO 2765 1413	B	Buildings	Farmhouse & outbuildings	Post-Medieval	-	Two separate farm units (eastern & western) with late 18th/early 19th century outbuildings and later farmhouses.
14	Worker's cottage and bridge, Govilon	SO 2674 1427	C	Building and Structure	Domestic dwelling and road bridge	Post-Medieval	-	The partly demolished remains of a two-storey cottage and associated bridge, dating from the mid 19th century.
15	House platform, Nr. Cwm Shenkin	SO 2672 1430	D	Site	Demolished dwelling	Post-Medieval	-	The remains of a masonry house platform.
16	Field barn, Govilon	SO 2657 1432	B	Building	Field barn	Post-Medieval	1808	A threshing field-barn with a datestone of 1808.
17	Field barn, Govilon	SO 2659 1432	C	Building	Field barn	Post-Medieval	-	A partly rebuilt field-barn. Possibly contemporary with site No.16
18	Farm building platform, Hopyard Farm	SO 2632 1430	D	Site	Demolished farm building	Post-? Medieval	-	The remains of a cellared building found below a 17th/18th century barn.
19	Rose Cottage, Govilon	SO 2675 1423	C	Building	Domestic dwelling	Post-Medieval	1865	A small, two-storey cottage with a date stone of 1865.
20	Drystone wall./Ridge & Furrow landscape, Govilon	SO 2650 1420	D	Field Enclosure & Cropmarks	Drystone walled field boundaries and ridge & furrow	Post-Medieval ?	-	An extensive drystone walled landscape with ridge and furrow.
21	Farm cottages, Maes-y-Berllan, Govilon	SO 2698 1424	D	Buildings	Domestic dwellings	Post-Medieval	-	A small farmstead complex north of the A465.
22	Ty-Clyd, Govilon	SO 2691 1404	C	Building	Domestic dwelling	Post-Medieval	-	A house of special architectural interest.
23	Farm complex, Govilon	SO 2673 1415	D	Buildings	Agricultural outbuildings	Post-Medieval	-	A series of three farm outbuildings forming part of an L-shaped courtyard.
24	Ridge and furrow landscape, Cadfor Farm	SO 2750 1400	D	Cropmarks	Ridge & furrow	Post-Medieval	-	Poorly defined Post-Medieval ridge and furrow marks.
25	Hopyard Farm, Glanbaiden	SO 2620 1440	B	Buildings	Farmhouse & outbuildings	Post-Medieval	-	A late 17th/early 18th century farmhouse with cross-passage way.
26	Remains of walled garden, Hopyard Farm, Glanbaiden	SO 2622 1435	D	Site	Enclosed garden	Post-Medieval	-	The remnants of a walled garden associated with Glanbaiden House estate.
27	Glanbaiden House, Glanbaiden	SO 2614 1438	B	Building	Domestic dwelling	Post-Medieval	-	An early 18th century Georgian manor house built in the classical style of architecture.
28	Glanbaiden Farm, Glanbaiden	SO 2615 1442	B	Buildings	Farmhouse & outbuildings	Post-Medieval	-	A 17th farmhouse and outbuildings.
29	Glanbaiden Lodge and drive, Glanbaiden	SO 2613 1422	B	Building & Linear Feature	Domestic dwelling and road	Post-Medieval	-	A picturesque gatehouse serving Glanbaiden House.
30	Parkland, Glanbaiden House, Glanbaiden	SO 2610 1435	D	Landscape Feature	Parkland	Post-Medieval	-	The remnants of a parkland landscape associated with Glanbaiden House.

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific date	Description
31	Abergavenny-Merthyr Turnpike Road, Glanbaiden	SO 2599 1431	D	Linear Feature	Road	Post-Medieval	1812	The line of the Abergavenny/Merthyr Turnpike road of 1812.
32	Aberbaiden Lodge, Aberbaiden	SO 2582 1444	B	Building	Domestic dwelling	Post-Medieval	-	A two-storey classically derived gatehouse belonging to Aberbaiden Farm.
33	Little Chef Restaurant, Gilwern	SO 2572 1444	D	Building	Restaurant	Post-Industrial	1979	A modern restaurant.
34	Brecknock & Abergavenny Canal	SO 2540 1453 to SO 2568 1434	A	Linear Feature	Canal	Post-Medieval	1798	The Brecknock & Abergavenny Canal Act was passed in 1793 and the canal was completed in 1798. Further tramroads were built to the canal as an added transport link.
35	Canal bridge (eccentric arched), Gilwern	SO 2569 1434	A	Structure	Canal bridge	Post-Medieval	1798	A small eccentrically arched bridge contemporary with the construction of the canal.
36	Canal bridge (eccentric arched), Gilwern	SO 2537 1452	A	Structure	Canal bridge	Post-Medieval	1798	A small eccentrically arched bridge contemporary with the construction of the canal.
39	Drystone wall landscape, Gilwern	SO 2520 1440	D	Field System	Drystone walled field boundaries	Post-Medieval	c.1798	A drystone walled landscape with many mature taxa.
40	Holloway/road, Gilwern	SO 2539 1447	D	Linear Feature	Road	Post-Medieval	-	The remnant of a small parish road which originally ran over the eccentric bridge (No.36).
260	Walled enclosure, Pen-Twyn, Gilwern	SO 2457 1442	D	Site	Enclosed Garden	Post-Medieval	-	Drystone walled enclosure probably once a walled (vegetable and fruit) garden, circular in shape and located on a north facing slope. Evaluated
261	Walled road, Govilon	SO 2620 1437 to SO 2710 1433	C	Linear Feature	Road	Post-Medieval	-	Between Govilon and Glanbaiden Farm is a narrow country lane which has drystone walling either side. Present on 19th century tithe maps.

4.2 Impacts and Mitigation

4.2.1 The potential impacts on the cultural heritage sites in Section One comprise:

- loss;
- damage;
- severance of linear features;
- reduction of the group value of associated features; and
- adverse affects on the setting of features.

4.2.2 Details of the potential impacts, their magnitude and significance for each site which may be affected by the proposed scheme are provided in Table 4.2.

4.2.3 Measures to mitigate adverse impacts in this Section include:

- full excavation;
- limited excavation;
- ground/building survey and abandon;
- preservation *in situ*; and
- consultation over detailed design.

In addition, all areas outside the known archaeology will be subject to a watching brief during construction.

4.2.3 Details of measures proposed to mitigate the effects on each site and subsequent residual impact are provided in Table 4.2.

Table 4.2 Impact and mitigation measures in Section One

Site no	Approx chainage	Description	Site value	Potential impact	Impact magnitude	Significance of impact	Mitigation	Residual impact
19	37500	Rose Cottage - building	C	total loss of building	Very severe	Minor	Building Survey Level 3	n/a
20	37300-37400	DSW/Ridge & Furrow landscape	D	further severance	Slight	Not significant	Limited Excavation	n/a
24	38400	Ridge and Furrow landscape	D	further severance	Moderate	Not significant	Limited Excavation	n/a
31	36600-36900	Abergavenny-Merthyr Turnpike Road, Glambaiden	D	encroachment of embankment	Severe	Not significant	Strip & record	n/a
32	36600	Aberbaiden Lodge, Aberbaiden - building	B	effect on setting	Slight	Not significant	Building Survey Level 2	n/a
33	36500	Little Chef Restaurant Gilwern - building	D	total loss of building	Very severe	Not significant	Building Survey Level 2	n/a
34	35200-36700	Brecknock & Abergavenny Canal	A	re-alignment of canal either side of road.	Moderate	Significant	Strip & record	n/a
36	36200	Canal Bridge (eccentric arched), Gilwern	A	possible alteration of abutments	Severe	Very significant	Strip & record	n/a
39	36100-35800	Drystone wall landscape, Gilwern	D	further severance of walls	Moderate	Not significant	Limited Excavation	n/a
40	36200	Holloway/road, Gilwern	D	further severance of road	Slight	Not significant	Limited Excavation and Strip & record	n/a

5.0 Section Two: Gilwern To Brynmawr

5.1 Existing Context

General

5.1.1 Archaeological sites along Section Two comprise:

- Post-Medieval agricultural features, including farm dwellings and outbuildings, field boundaries, field systems, holloways and tracks;
- Post-Medieval industrial ironworks, furnace and forge (2 Scheduled Ancient Monuments) sites and features including a canal, a railway, a Turnpike road, tramroads, associated furniture, bridges, worker housing, industrial settlement, a weir and leat system, a public house, limeworks and quarries;
- Post-Industrial features including roads and bridges; and
- sites of religious significance including two chapels and a cemetery.

5.1.2 A total of 87 sites were recorded in this area. Of these:

- 12 are of national importance (Category A);
- 28 are of regional importance (Category B);
- 28 are of local importance (Category C); and
- 19 are minor or damaged sites (Category D).

5.1.3 Details of these sites are provided in Table 5.1. Site locations are provided on Figures 22/5-8 in Volume 1.9.

Geophysical survey and test pitting programme

5.1.4 Within this Section, one area was investigated using archaeological test pitting (Area 15). No significant archaeological features or remains were recorded.

Table 5.1 Summary of archaeological sites in Section Two

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific date	Description
37	Canal workers cottages, Gilwern	SO 2471 1454	C	Buildings	Domestic dwellings	Post-Medieval	-	Two small sets of workers cottages facing onto the canal.
38	Navigation Inn, Gilwern	SO 2458 1450	B	Building	Public house	Post-Medieval	-	A two-storey, purpose-built inn, adjacent to the Brecknock & Abergavenny Canal.
41	Leat below Gilwern Embankment	SO 2443 1450	A	Linear Feature	Leat	Post-Medieval	-	A leat system built to serve Danybont woolen mill.
42	Gilwern Embankment - Brecknock & Abergavenny Canal	SO 2446 1446	A	Earthworks	Embankment	Post-Medieval	1797	A stretch of embankment built in 1797 over the Clydach River and incorporating two masonry aqueducts.
43	Canal aqueducts, Gilwern	SO 2439 1451	A	Structure	Aqueduct	Post-Medieval	1797	Two masonry aqueducts carrying the B & A Canal over the Clydach River and the Clydach Railroad.
44	Clydach Railroad, Gilwern to Cheltenham	SO 2300 1369 to SO 2437 1448	B	Linear Feature	Railroad	Post-Medieval	1794	A railroad built by the B & A Canal Company to link the collieries at Brynmawr to the iron forge Glangrwyne on the Usk.
45	Pack-horse bridge, Gilwern	SO 2441 1442	B	Structure	Pack-horse bridge	Post-Medieval	-	A small bridge over a canal sluice system, which was possibly used as a pack-horse bridge.
46	Lean-to building and drystone wall, Gilwern	SO 2440 1442	D	Building and Field System	Outbuilding and Drystone walled field boundaries	Post-Medieval	-	A lean-to structure belonging to now demolished building.
47	Overflow sluice system, B & A Canal, Gilwern	SO 2442 1443	B	Structure	Sluice	Post-Medieval	1797	An overflow system used to control water levels in the canal.
48	Lion Hotel, Gilwern	SO 2437 1438	C	Building	Hotel	Post-Medieval	1840-1880?	A much altered building built between the OS mapping of the area in 1840 and 1880 and related to an adjacent terrace of cottages.
49	Terrace cottages, Gilwern	SO 2433 1436	C	Buildings	Domestic dwellings	Post-Medieval	1840-1880?	A row of terraced worker's cottages consisting of three dwellings built in the same architectural style as the Lion Hotel, and three earlier dwellings to the east and west.
50	Primitive Methodist Chapel and grave yard, Gilwern	SO 2427 1429	B	Building	Chapel	Post-Medieval	1838	A former Primitive Methodist chapel and cemetery built in 1838 and now derelict.
51	Llam-march Tramroad, Gilwern	SO 2440 1439 to SO 2328 1379	B	Linear Feature	Tramroad	Post-Medieval	1795	Built in 1795 to connect the Clydach Ironworks to the collieries and ironstone mines on the hillside to the south and laid with edge rail. It was extended to the canal wharf at Gilwern in 1809.
52	Machine House , Clydach Railroad	SO 2419 1439	B	Building	Weighbridge	Post-Medieval	1798	A machine house built as a toll house with weighbridge in 1798.

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific date	Description
53	Forge Hammer Inn, Gilwern	SO 2378 1408	C	Building	Public house	Post-Medieval	-	A two-storey public house which served the iron-making community during the latter half of the 19th.
54	Pwll Rhys waterfall footbridge	SO 2375 1410	D	Structure	Footbridge	Post-Medieval	-	A cast-iron footbridge over the Clydach River with masonry abutments.
55	Branch of the Llam-march Tramroad, Llanelly.	SO 2355 1396 to SO 2378 1408	B	Linear Feature	Tramroad	Post-Medieval	1795	The branch line of the Llam-march Tramroad.
56	A465 concrete revetting, Gilwern	SO 2420 1423	D	Structure	Revetting	Post-Industrial	-	Concrete revetting under present A 465 (visible on northern side).
57	Culvert/buttress, River Clydach, Maes-y-Gwartha	SO 2365 1410	D	Structure	Culvert	Post-Medieval	-	Remains of two arched culverts, probably contemporary and related to the nearby forge
58	Llanelly Forge, Maelog Bungalow, Maes-y-Gwartha	SO 2355 1405	B	Site	Iron forge	Post-Medieval	1663 - 1884	Site of Llanelly Forge which dates back to before 1663. Forge stands close to Llam-march Tramroad. Later it was used to produce tin plate. It closed in 1884. Remains of a leat, pond and dam system are located to the north and west of site.
59	Dam and parallel leat, Llanelly Forge, Maes-y-Gwartha	SO 2351 1402	B	Earthworks & Linear Feature	Industrial water courses	Post-Medieval	1663	The earthwork remains of a dam and parallel leat system which once fed the Llanelly Forge. Both earthworks are located north of the forge.
60	Forge House, Tin plate works, Maes-y-Gwartha	SO 2352 1399	B	Buildings	Tin plate works	Post-Medieval	-	Part of Llanelly Forge complex includes the tin plate works, now a domestic building. Continued in use until the late 19th century.
61	Llanelly Bridge, Maes-y-Gwartha	SO 2353 1396	A	Structure	Tramroad bridge	Post-Medieval	1795	A masonary bridge with two phases of construction over River Clydach. Its initial use would have been transportation of raw materials and goods to and from the forge by pack-horses. Later, the second phase accommodated the Llam-march Tramroad.
62	Forge Row, Llanelly, Maes-y-Gwartha	SO 2345 1392	B	Buildings	Domestic dwellings	Post-Medieval	c.1813	A row of 20 workers cottages that date possibly to the 17th century. The central row have steeper pitched roofs suggesting that they were once thatched.
63	Culvert, River Clydach, Saleyard	SO 2339 1383	C	Structure	Culvert	Post-Medieval	-	On the north bank of the River Clydach is a dry-block stone culvert which fed water into the Clydach from industrial buildings located north of Clydach House (No.64).
64	Clydach House, Saleyard	SO 2325 1382	A	Building	Domestic dwelling	Post-Medieval	1693	A three-storey Grade II listed house with an extensive ornamental front garden and built around 1693. House was the residence for the clerk of the Clydach Ironworks.

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific date	Description
65	Industrial buildings, Clydach House, Saleyard	SO 2331 1392	D	Buildings	Industrial complex	Post-Medieval	-	Located to the rear of Clydach house is a substantial building which probably has an industrial use and is associated with the nearby Llanelly Furnace.
66	Llanelly Furnace, Saleyard	SO 2323 1386	B	Site	Iron furnace	Post-Medieval	c.1684	Site is west of Clydach House: dates from mid 17th century. There are remains of a charcoal-fired blast furnace. Although a SAM, site has been extensively developed.
67	Terraces, arches and ponds, Llanelly Furnace, Saleyard	SO 2318 1377	C	Earthworks	Industrial watercourses	Post-Medieval	c.17th	West of the Llanelly furnace are the earthwork remains of a series of terraces, arches and ponds. These features dates from the late 17th century.
68	Former road bridge, Saleyard	SO 2330 1375	C	Structure	Road bridge	Post-Medieval	-	To the south of the present A465 at the Saleyard junction is a former road bridge that spans the River Clydach. Visible are the abutments and iron parapet.
69	Llam-march Tramroad bridge, Saleyard	SO 2329 1373	B	Structure	Tramroad	Post-Medieval	1795	Between the present A465 and former Llam-march Tramroad is a probable purpose-built Tramroad bridge which dates to 1812 (or earlier). Either side, on the north and south banks of the Clydach are related revetting and water channeling.
70	Llam-march Tramroad, Saleyard	SO 2327 1367	C	Linear Feature	Tramroad	Post-Medieval	1795	The Llam-march Tramroad was built in order to transport raw materials and goods from Saleyard to the Canal at Gilwern.
71	Farmstead, Brunant	SO 2375 1394	D	Buildings	Farmhouse & outbuildings	Post-Medieval	-	To south of Saleyard, located on an east-west ridge is a farmstead known as Burnant. Architecture and materials used suggest an 18th century date.
72	Clydach Villa, Cheltenham	SO 2291 1348	C	Building	Domestic dwellings	Post-Medieval	-	A substantial Victorian detached gentry house.
73	Lamb House and industrial unit, Cheltenham	SO 2282 1333	C	Buildings	Domestic dwelling and industrial unit	Post-Medieval	-	A group of buildings located east of Cheltenham on Main Road consisting of a 19th century cottage, a three-storey industrial warehouse(?) and small utility building.
74	Sunnyside - Terrace cottages, Cheltenham	SO 2279 1332	C	Buildings	Domestic dwelling	Post-Medieval	-	A terrace of four workers cottages - 18th/19th century date.
76	Worker's cottages incl. Oak Cottage, Cheltenham	SO 2267 1313	B	Buildings	Domestic dwelling	Post-Medieval	-	A row of four workers cottages including Oak Cottage (detached) next to the route of the Clydach Railroad within the village of Cheltenham. Early 19th century date.
77	Great Western Railway notice, Cheltenham	SO 2270 1318	B	Site	Sign-post	Post-Medieval	c.1920	Located next to Oak Cottage and on route of the Clydach Railroad is a G.W.R. sign dating to 1920.

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific date	Description
78	Clydach Railroad, Cheltenham	SO 2195 1274 to SO 2300 1369	C	Linear Feature	Railroad	Post-Medieval	1794	Running east-west through Cheltenham is the route of the central section of the Clydach Railroad.
79	Oak House, Cheltenham	SO 2258 1302	B	Building	Domestic dwelling	Post-Medieval	-	Part of a row of three houses dating from the late 18th/early 19th centuries.
75	Terrace cottages, Craig Amy, Cheltenham	SO 2273 1323	C	Buildings	Domestic dwelling	Post-Medieval	-	A terrace of three workers cottages - 18th/19th century date.
80	Ebenezer Welsh Chapel, Cheltenham	SO 2255 1397	C	Building	Chapel	Post-Medieval	-	A 19th century chapel located to the south of the Main road.
81	English Wesleyan Chapel, Cheltenham	SO 2250 1292	B	Building	Chapel	Post-Medieval	1829	A chapel built in 1829 and rebuilt in 1891 with attached school.
82	James Terrace cottages, Cheltenham	SO 2246 1290	C	Buildings	Domestic dwelling	Post-Medieval	-	A group of six terraced cottages to the north of Main road.
83	Siloam Chapel Graveyard, Cheltenham	SO 2247 1281	C	Site	Cemetery	Post-Medieval	-	A walled cemetery dating from the mid-19th century to 1968, the related chapel has been demolished.
84	Spring, gully and drystone wall., Cheltenham	SO 2239 1283	D	Site	Water-course	Post-Medieval	-	A spring, gully and extensive drystone wall.
85	Penrheol Las and Big House, Cheltenham	SO 2223 1281	D	Buildings	Domestic dwellings	Post-Medieval	-	An early to mid.-19th century farm cottage.
86	Merthyr -Govilon Turnpike Road (Main Road)	SO 1964 1213 to SO 2323 1437	C	Linear Feature	Road	Post-Medieval	1812	The route of the Turnpike road, of c.1881-12, which became Main road through Blackrock and Cheltenham.
87	Derelict cottage, Rock & Fountain Inn, Main Road	SO 2199 1278	C	Building	Domestic dwelling	Post-Medieval	-	A small, late 18th century cottage.
88	Masonry culvert, Main Road	SO 2193 1277	D	Structure	Culvert	Post-Medieval	-	An arched masonry culvert.
89i	Tramroad, Daren Ddu Limestone Quarry to Blackrock	SO 2154 1262 to SO 2190 1294	B	Linear Feature	Tramroad	Post-Medieval	-	A tramroad from Daren Ddu Limestone Quarry to Blackrock.
89ii	Tramroad, Daren Ddu Limestone Quarry to Limekilns	SO 2185 1275 to SO 2205 1287	B	Linear Feature	Tramroad	Post-Medieval	-	A tramroad from the Blackrock limekilns to Darren Ddu Quarry.
90	Blackrock Lime Kilns, Main Road	SO 2181 1275	A	Structure	Lime kilns	Post-Medieval	1889	Limekilns supplied from the Darren Ddu Quarry and linked to the Clydach Railroad.
91	Track/road between Blackrock and Cheltenham	SO 2153 1255 to SO2188 1274	C	Linear Feature	Tramroad	Post-Medieval	-	Part of the Clydach Railroad.
92	Haman's Cottages, Clydach	SO 2282 1319	B	Buildings	Domestic dwelling	Post-Medieval	-	Three-storey worker's cottages related to the nearby Clydach Ironworks.
93	Smart's Bridge, Clydach	SO 2287 1327	A	Structure	Tramroad Bridge	Post-Medieval	1824	A cast-iron bridge over the Clydach river to the Clydach Ironworks, dated 1824.

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific date	Description
94	Clydach Iron Works, Clydach	SO 2290 1320	A	Site	Ironworks	Post-Medieval	c.1797	A coke-fired ironworks in operation from 1797 to 1861 and superseded the charcoal-fired Llanelly Furnace.
95	Section of (branch) tramroad, Clydach Ironworks	SO 2289 1305 to SO 2230 1250	D	Linear Feature	Tramroad	Post-Medieval	-	Tramroad to the west of the Clydach Ironworks.
96	Site Office and dwellings, Clydach	SO 2287 1332	D	Site	Industrial and domestic units	Post-Medieval	-	The sub-surface remains of a Works Office related to the Clydach Ironworks.
97	Pant Glas Bridge, Clydach	SO 2293 1333	A	Structure	Tramroad bridge	Post-Medieval	-	A masonry tramroad bridge to Clydach Ironworks.
98	Masonry revetting within Clydach river bank	SO 2297 1339	C	Structure	Revetting	Post-Medieval	-	The remains of a masonry revetment along the banks of the Clydach river.
99	Leat keeper's cottage, outbuildings, weir and sluice system, Clydach	SO 2299 1344	A	Buildings & Structure	Leat cottage & water courses	Post-Medieval	pre-1797	A masonry building along the banks of the Clydach river, adjacent to the weir in the Clydach river, and the leat system supplying Llanelly Furnace.
100	Leat System, Clydach	SO 2301 1343 to SO 2315 1358	A	Linear Feature	Leat	Post-Medieval	c.1663-1797	The remains of an early drystone and earth banked leat running from the weir to supply Llanelly Furnace.
101	Hafod Inn, Blackrock	SO 2158 1261	D	Building	Public house	Post-Medieval	c.1891	A late 19th century public house which appears to have been modernised in the early 20 th century.
102	Drum & Monkey Inn, Blackrock	SO 2155 1257	C	Buildings	Public house	Post-Medieval	-	The much altered masonry-built public house formally known as the Prince Albert possibly
103	Craig Cottage, Blackrock	SO 2149 1258	C	Building	Domestic dwelling	Post-Medieval	-	A mid-19th century masonry-built cottage.
104	Cottages, Blackrock	SO 2145 1252	C	Buildings	Domestic dwelling	Post-Medieval	-	A row of much altered cottages formally known as the Rose cottage, the Old Blackrock Inn and the Crown Inn.
105	Blackrock Quarry, Blackrock	SO 2129 1250	D	Site	Mineral extraction	Post-Medieval	-	A limestone quarry.
106	Road and foot bridges, Blackrock	SO 2114 1249	D	Structures	Road bridge	Post-Medieval	c.1811-12	A masonry road bridge for the Turnpike Road (Main Road) and a parallel footbridge.
107	Squatter's settlement/industrial site, Nant Gwyn	SO 2114 1248	C	Site	Settlement	Post-Medieval	-	The remains of a industrial site and drystone walled watercourse.
108	Track and drystone wall landscape, Main Road	SO 2108 1249	D	Linear Feature & Field System	Drystone walled field boundaries	Post-Medieval	pre-1811-12	A substantial revetted east/west track.
109	Milestone, Nr. Pont Gam	SO 2096 1260	C	Site	Milestone	Post-Medieval	1812	Turnpike Road (Main Road) milestone.
110	Drystone wall landscape, Water Works, Pont Gam	SO 2077 1250	D	Field System	Drystone walled field boundaries	Post-Medieval	-	A drystone walled landscape.
111	Llangattock Tramroad, Brynmawr	SO 1945 1236 to SO 2209 1310	C	Linear Feature	Tramroad	Post-Medieval	c.1830	The course of the Llangattock to Brynmawr Tramroad.

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific date	Description
112	Clydach Railroad & Cwm Nantmelyn Bridge	SO 2022 1226	A	Linear Feature & Structure	Tramroad and Tramroad bridge	Post-Medieval	1794	The course of the Clydach Railroad and impressive causeway and bridge along the northern face of the Clydach gorge.
113	Branch line of the Clydach Railroad & colliery level	SO 2008 1218	B	Linear Feature & Site	Tramroad and mineral extraction	Post-Medieval	-	The southern branch line of the Clydach Railroad to colliery levels.
114	Merthyr, Tredegar & Abergavenny Railway	SO 1968 1207 to SO 2190 1288	B	Linear Feature	Railway	Post-Medieval	1862	The course of the MT&A railway along the southern face of the Clydach gorge and associated revetments.
115	Ffynnon Gistfaen religious waterfall, River Clydach	SO 2068 1238	D	Site	Religious site	Post-Medieval	-	A waterfall site possibly with special religious importance.
116	Devil's Bridge, Cheltenham	SO 2154 1249	B	Structure	Pack-horse bridge	Post-Medieval	-	A substantial masonry bridge over the Clydach river probably used as a pack-horse bridge to transport coal/ironstone before the advent of tramroads.
117	Clydach Bridge Cottages, Brynmawr	SO 1955 1212	B	Buildings	Domestic dwellings	Post-Medieval	1836	A row of four worker's cottages.
118	Clydach Bridge, Brynmawr	SO 1964 1213	B	Structure	Road bridge	Post-Medieval	1812	The remaining single arch of a four-arched bridge which carried the Turnpike Road across the Clydach river at Brynmawr.
119	Skew bridge, Brynmawr	SO 1979 1211	C	Structure	Footbridge	Post-Medieval	c.1862	The partial remains of an accommodation bridge over the line of the MT&A railway.
120	'Squatters' settlement & water courses, Clydach Dingle	SO 1922 1287	B	Buildings & Earthwork	Settlement	Post-Medieval	-	The remains of a squatter settlement consisting of single-unit cottages.
122	Bailey's Disgwylfa Tramroad, Clydach Dingle	SO 1905 1215 to SO 1935 1287	B	Linear Feature	Tramroad	Post-Medieval	c.1818	The course of Bailey's Disgwylfa Tramroad used to transport limestone to Bailey's Nantyglo Ironworks.

5.2 Impacts and Mitigation

5.2.1 The potential impacts on the cultural heritage sites in Section Two comprise:

- loss;
- damage;
- severance of linear features;
- reduction of the group value of associated features; and
- adverse affects on the setting of features.

5.2.2 Details of the potential impacts, their magnitude and significance for each site which may be affected by the proposed scheme are provided in Table 5.2.

5.2.3 Measures to mitigate adverse impacts in this Section include:

- full excavation;
- limited excavation;
- ground/building survey; preservation *in situ*;
- consultation over detailed design; and

5.2.4 In addition, all areas outside the known archaeology will be subject to a watching brief during construction.

5.2.5 Details of measures proposed to mitigate the effects on each site and subsequent residual impact are provided in Table 5.2.

Table 5.2 Impact and mitigation measures in Section Two

Site No	Approx Chainage	Description	Site value	Potential impact	Impact magnitude	Significance	Mitigation	Residual impact
48	35200	Lion Hotel, Gilwern	C	total loss of building	Very severe	Minor	Building Survey Level 4	n/a
49	35100	Terrace Cottages, Gilwern	C	total loss of building	Very severe	Minor	Building Survey Level 4 and Limited Excavation	n/a
50	35000	Primitive Methodist Chapel and Grave Yard, Gilwern	B	total loss of building	Very severe	Significant	Building Survey Level 4, Excavation, Grave recording and Strip & record	n/a
51	34000-35200	Llanmarch Tramroad, Gilwern	B	further severance of tramroad	Severe	Significant	Strip & record	n/a
53	34500	Forge Hammer Inn, Gilwern	C	impact on setting	Moderate	Not significant	Building Survey Level 4	n/a
69	33900	Llanmarch Tramroad Bridge, Saleyard	B	impact on setting and on bridge abutments	Moderate	Minor	Building Survey Level 4	water drainage & vehicle vibration impact
70	33800-33900	Llanmarch Tramroad, Saleyard	C	further severance of tramroad	Severe	Minor	Strip & record	n/a
83	32700	Siloam Chapel Graveyard, Cheltenham	C	impact on graveyard boundary and possibly on burials	Very severe	Minor	Photographic record, Grave recording, Ground Survey and Strip & record	n/a
86	32800-29800	Merthyr-Govilon Turnpike Road (Main Road)	C	partial re-alignment of road	Severe	Minor	Strip & record	n/a
88	32100	Masonry culvert, Main Road	D	affects course of culvert	Moderate	Not significant	Preserve in situ	water drainage and impact from vehicle vibration
91	31600-32800	Clydach Railroad between Blackrock and Cheltenham	C	further severance course of tramroad	Severe	Minor	Strip & record	n/a
97	33300	Pant Glas, Clydach	A	impact on setting	Slight	Minor	No access to construction traffic	water drainage and impact from vehicle vibration
99	33400	Leat Keepers Cottage, Outbuildings and Weir	A	effect on setting from embankment and associated leat	Severe	Very significant	Building Survey Level 4, Excavation, Consolidation of standing remains	water run-off and drainage from road embankment

Site No	Approx Chainage	Description	Site value	Potential impact	Impact magnitude	Significance	Mitigation	Residual impact
100	33400-33800	Leat System	A	total loss	Very severe	Very significant	Excavation	n/a
102	31700	Drum and Monkey Inn, Blackrock	C	total loss	Very severe	Minor	Building Survey Level 4	n/a
103	31600	Craig Cottage, Blackrock	C	effect on setting	Severe	Minor	Building Survey Level 4	n/a
104	31500-31600	Cottages, Blackrock	C	total loss	Very severe	Minor	Building Survey Level 4	n/a
106	31200	Road and Foot Bridges, Blackrock	D	alteration for additional traffic	Very severe	Not significant	Building Survey Level 3	n/a
107	31200	Industrial Settlement, Nant Gwyn	C	total loss	Very severe	Minor	Excavation	n/a
108	31200	Track and drystone wall landscape, Main Road	D	further severance of walls	Moderate	Not significant	Limited excavation	n/a
111	29800-32000	Llangattock Tramroad, Brynmawr	C	further severance of tramroad	Severe	Minor	Strip & record	n/a
112	29100.000-29500.000	Clydach Railroad and Cwm Nant Melyn Bridge	A	effect on setting and severance	Severe	Very significant	Limited excavation and Strip & record	n/a
113	29000	Branch-line of the Clydach Railroad and Colliery Level	B	further encroachment on tramroad and levels	Severe t	Significant	Excavation	n/a
114	29800-31000	Merthyr, Tredegar and Abergavenny Railway	B	substantial removal of course of line	Very severe	Significant	Limited excavation	n/a
118	29700	Clydach Bridge, Brynmawr	B	effect on setting	Slight	Not significant	Preserve in situ	n/a
119	29800	Skew bridge, Brynmawr	C	total loss	Very severe	Minor	Preserve or Building Survey Level 3	n/a
263	30600	Southern section of Clydach Railroad, Pont Harri Issac	B	further severance of tramroad	Severe	Significant	Limited excavation and Strip & record	n/a
264	30600-31000	Western section of Clydach Railroad, Brynmawr	B	further encroachment of roundabout	Very severe t	Significant	Strip & record	n/a

6.0 Section Three: Brynmawr to Tredegar

6.1 Existing Context

General

6.1.1 Archaeological sites along Section Three comprise:

- the site of a find of prehistoric Bronze Age metal hoard;
- post-medieval agricultural features, including farm dwellings and outbuildings, field boundaries, field systems, holloways and tracks;
- post-medieval industrial sites and features including railways, leat system, reservoirs, coal tips, tramroads, bridges and domestic dwellings;
- Post-Industrial features including roads and bridges;
- one site of palaeoenvironmental interest; and
- a site of religious significance including a chapel.

6.1.2 A total of 31 sites were recorded in this area. Of these:

- 2 are of national importance (Category A);
- 4 are of regional importance (Category B);
- 5 are of local importance (Category C); and
- 20 are minor or damaged sites (Category D).

6.1.3 Details of these sites are provided in Table 6.1. Site locations are provided on Figures 22/9-12 in Volume 1.9.

Geophysical survey and test pitting programme

6.1.3 Within this Section, four areas were investigated using archaeological test pitting (Areas 11, 12, 13 and 14). No significant archaeological features or remains were recorded in Areas 12, 13 and 14. From one test in Area 11 the remains of a drystone wall, possibly a field boundary, were noted. From the same test pit an unworked piece of flint was also recovered.

Table 6.1 Summary of archaeological sites in Section Three

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific date	Description
121	Local open-cast coal workings & terraces, Brynmawr	SO 1847 1288	D	Site	Mineral extraction	Post-Medieval	-	Linear platforms and open-cast workings of coal-seams.
123	Tramroad, Garn Lydan	SO 1753 1275 to SO 1756 1261	D	Linear Feature	Tramroad	Post-Medieval	-	A north/south linear platform, possibly related to a localised tramroad.
124	Farmhouse and outbuildings, Garn Lydan	SO 1747 1242	D	Buildings	Farmhouse & outbuildings	Post-Medieval	-	The remains of two dwellings and outbuildings.
125	Tramroad, Garn Lydan	SO 1803 1271 to SO 1703 1258	D	Linear Feature	Tramroad	Post-Medieval	-	An east/west tramroad to coal seams at Garn Lydan coal-seams.
126	Coal workings and quarrying, Brynmawr	SO 1800 1270	D	Site	Mineral extraction	Post-Medieval	-	Extensive disused coal and ironstone workings.
127	Cwm Gwybedog patches and leats, Garn Lydan	SO 1694 1240	C	Earthworks & Linear Feature	Mineral extraction and leat	Post-Medieval	-	Early 19th century patch workings for the supply coal and ironstone to Ebbw Vale and Beaufort Ironworks.
128	Drift mines, Garn Lydan	SO 1702 1230	D	site	Mineral extraction	Post-Medieval	-	Localised drift mines.
129	Farmhouse & DRYSTONE WALL, Afon Ebbw	SO 1646 1219	D	Buildings	Domestic dwelling & drystone walled field boundaries	Post-Medieval	-	A mid-19th century, masonry-built farmhouse and field boundaries.
130	Tramroad, Afon Ebbw	SO 1643 1209	D	Linear Feature	Tramroad	Post-Medieval	-	The line of a north/south tramroad.
131	Primrose Cottage, Rassau Brook	SO 1538 1173	D	Building	Domestic dwelling	Post-Medieval	-	A mid-19th century masonry-built cottage.
132	D.S.W landscape, Nant y Croft	SO 1400 1100	D	Field System	Drystone walled field boundaries	Post-Medieval	-	An extensive drystone walled landscape.
133	Trefil Tramroad, Nant y Croft	SO 1407 1160 to SO 1458 1158	B	Linear Feature	Tramroad	Post-Medieval	1797-1860	The line of the Trefil tramroad at its junction with the Rassau tramroad.
134	Lamp stand and manhole cover, Nant y Croft	SO 1478 1158	D	Site	Tramroad furniture	Post-Medieval	-	An early 20th century lampstand and man-hole cover along the line of the Trefil tramroad.
135	Quarry and DRYSTONE WALL, Nant y Croft	SO 1500 1160		Site & Field System	Mineral extraction and drystone walled field boundaries	Post-Medieval	-	A limestone quarry partially enclosed by drystone walling.
136	Craig House, Nant y Croft	SO 1490 1159	D	Building	Domestic dwelling	Post-Medieval	-	A early 19th century cottage.
137	Hirgan Farmstead and outbuildings	SO 1433 1134	D	Buildings	Farmhouse and outbuildings	Post-Medieval	-	A farmstead, outbuildings and sheep-fold.

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific date	Description
138	Rassau Tramroad, Nant y Croft	SO 1470 1155 to SO 1569 1154	C	Linear Feature	Tramroad	Post-Medieval	-	The line of Rassau tramroad at its junction with Trefil tramroad.
139	Mineral Line, Nant y Croft	SO 1475 1150 to SO 1500 1152	D	Linear Feature	Tramroad	Post-Medieval	-	A mineral line to Ebbw Vale possibly an extension of the Rassau tramroad.
140	Farmstead and outbuildings, Nant y Croft	SO 1517 1152	C	Buildings	Farmhouse and outbuildings	Post-Medieval	-	Two farmsteads and associated tofts.
141	Old Hargan Fach and DRYSTONE WALL landscape	SO 1372 1099	D	Building & Field System	Farmhouse, outbuildings and drystone walled field boundaries	Post-Medieval	-	A one-storey masonry-built cottage and outbuildings.
142	Merthyr, Tredegar & Abergavenny Railway	SO 1363 1083 to SO 1334 1092	C	Linear Feature	Railway	Post-Medieval	1864	Course of t MT&A railway including curved viaduct across Afon Sirhowy.
143	Railway viaduct, Dukestown	SO 1329 1093	A	Structure	Viaduct	Post-Medieval	1863	A nine arch masonry viaduct across the Afon Sirhowy, built for the MT&A railway.
144	Earthworks and DRYSTONE WALL, Dukestown	SO 1323 1083	D	Earthworks & Field System	Drystone walled field boundaries	Post-Medieval	-	A series of earthworks and platforms including a drystone walled sheepfold.
145	Cast iron weir, Dukestown	SO 1342 1077	B	Structure	Weir	Post-Medieval	-	A cast-iron and masonry weir across the Afon Sirhowy.
146	Trefil Tramroad, Nant y Bwch	SO 1295 1111 to 1313 1076	B	Linear Feature	Tramroad	Post-Medieval	1797-1860	The Trefil tramroad was built to carry limestone from the quarries at Trefil to a junction with the Rassau tramroad.
147	Merthyr, Tredegar & Abergavenny Railway, Waundeg	SO 1325 1093 to SO 1274 1064	C	Linear Feature	Railway	Post-Medieval	1863	A section of the MT&A railway.
266	Reservoir, Garn Lydan	SO 1766 1279	D	Site	Reservoir	Post-Medieval	pre-1880	A small pond, north of the Preferred Route at Garn Lydan which is the remnant of a slightly larger reservoir marked on the OS of 1880 described as belonging to Nantyglo Ironworks.
267	Blaen y Cwm Reservoir, Garn Lydan	SO 175 129	D	Site	Reservoir	Post-Medieval	post-1880	North of the preferred route at Garn Lydan is the Blaen y Cwm Reservoir. This is the post-1880 successor to the a much smaller reservoir on the same site, and supplied water to the Nantyglo Ironworks..

6.2 Impacts and Mitigation

6.2.1 The potential impacts on the cultural heritage sites in Section Three comprise:

- loss;
- damage;
- severance of linear features;
- reduction of the group value of associated features; and
- adverse affects on the setting of features.

6.2.2 Details of the potential impacts, their magnitude and significance for each site which may be affected by the proposed scheme are provided in Table 6.2.

6.2.3 Measures to mitigate adverse impacts in this Section include:

- full excavation;
- limited excavation;
- strip and record;
- ground/building survey;
- preservation *in situ;*
- palaeoenvironmental sampling; and
- consultation over detailed design.

6.2.4 In addition, all areas outside the known archaeology will be subject to a watching brief during construction.

6.2.5 Details of measures proposed to mitigate the effects on each site and subsequent residual impact are provided in Table 6.2.

Table 6.2 Impact and mitigation measures in Section Three

Site No	Approx Chainage	Description	Site Value	Potential impact	Impact magnitude	Significance	Mitigation	Residual impact
120	28900	Industrial Settlement and Drift Mines, Clydach Dingle	B	further encroachment , loss of water-courses	Severe	Significant	Limited excavation and Strip & record	n/a
123	27100	Tramroad, Garn Lydan	D	further severance	Severe	Not significant	Limited excavation	n/a
133	23400-23700	Trefil Tramroad, Nant y Croft	B	severance of course of tramroad	Severe	Significant	Excavation and Strip & record	n/a
142	21600-22600	Merthyr, Tredegar and Abergavenny Railway	C	further severance	Severe	Minor	Limited excavation (incl.strip and record)	n/a
144	22100	Earthworks and DSW, Dukestown	D	loss of some earth-works	Slight	Not significant	Excavation	n/a
145	22300	Cast Iron Weir, Dukestown	A	effect on setting	Slight	Minor	Building Survey Level 3	n/a

7.0 Section Four: Tredegar to Dowlais Top

7.1 Existing Context

General

7.1.1 Archaeological sites within Section Four comprise:

- prehistoric sites, including a Bronze Age round barrow;
- post-medieval agricultural features, including farm dwellings, farm buildings, field boundaries, field systems, holloways and tracks;
- post-medieval industrial sites and features including railways, a tunnel and bridge, station house, leat system, crows-foot, allotments, coal tips, tramroads, associated furniture and bridges and dwellings;
- Post-Industrial features including restaurants, roads and bridges; and
- sites of palaeoenvironmental interest.

7.1.2 A total of 41 sites were recorded in this area. Of these:

- none are of national importance (Category A);
- 10 are of regional importance (Category B);
- 9 are of local importance (Category C); and
- 22 are minor or damaged sites (Category D).

7.1.3 Details of these sites are provided in Table 7.1. Site locations are provided on Figures 22/12-16 in Volume 1.9.

Geographical survey and test pitting programme

7.1.4 Within this Section, one area was investigated using geophysical survey (Area 9) and one other using archaeological test pitting (Area 10). No significant archaeological features or remains were recorded in either area.

Table 7.1 Summary of archaeological sites in Section Four

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific Date	Description
148	Siloam Chapel, Tafarnaubach	SO 1204 1047	B	Building	Chapel	Post-Medieval	1844	A chapel with datestones of 1844 & 1877 plus a Welsh inscription.
149	Welfare Hall, Tafarnaubach	SO 1188 1036	C	Building	Public hall	Post-Medieval	1937	A brick-built hall of 1937.
150	Bronze Age find spot, Tafarnaubach	SO 1170 1010	C	Find spot	Prehistoric metal hoard	Bronze Age	-	The findspot of a Bronze Age hoard of two socketed palstaves.
151	Farmstead, Bryn Bach	SO 1253 1052	D	Buildings	Demolished farmhouse & outbuildings	Post-Medieval	-	The remains of a demolished farmstead.
152	Leat system and 'kettle-hole' quarries, Princetown	SO 1134 0982	D	Linear Feature & Earthworks	Leat and mineral extraction	Post-Medieval	-	An extensive industrial landscape comprising a leat system, kettle-hole quarries and crowsfoot.
153	Mining tips and quarry, Princetown	SO 111 096 to SO 112 096	D	Site and Earthworks	Mineral extraction and workings	Post-Medieval	-	Coal tips and quarrying levels.
154	Industrial building, Princetown	SO 1100 0970	C	Building	Railway building	Post-Medieval	-	A brick and concrete-built industrial building and related cropmarks to the west.
155	Demolished buildings, Princetown	SO 1111 0970	D	Site	Demolished buildings	Post-Medieval	-	A demolished masonry building probably with an industrial function.
156	Drystone wall landscape, Blaen Rhymney	SO 107 097 to SO 113 096	D	Field System	Drystone walled field boundaries	Post-Medieval	-	A drystone walled landscape.
157	Railway bridge and tunnel, Llechryd	SO 1057 0961	B	Structures	Railway bridge and tunnel	Post-Medieval	1863	A multi-phase tunnel and embankment to carry the MT&A railway over the River Rhymney.
158	Drystone wall landscape, Blaen Rhymney	SO 1054 0964	D	Field System	Drystone walled field boundaries	Post-Medieval	-	A drystone walled landscape along western the banks of the River Rhymney.
159	Drystone wall and building platforms, Afon Rhymney	SO 1050 0978	D	Field System & Earthworks	Drystone walls & demolished building	Post-Medieval	-	A drystone walled landscape along the bank of the River Rhymney, related to an agricultural building.
160	Northern section of leat system, Blaen Rhymney	SO 1045 0994 to SO 1052 0960	D	Linear Feature	Leat	Post-Medieval	-	The northern section of an earth and drystone revetted leat to the Butetown reservoir.
161	Road platform, Pleasant View, Llechryd	SO 1039 0956 to SO 1033 0953	D	Linear Feature	Road	Post-Medieval	-	The remains of a the 'B' class road to Merthyr.
162	Drystone wall & turfstone wall system, Butetown	SO 1010 0930	D	Field Systems	Drystone and turf-stone walled boundaries	Post-Medieval	-	An extensive drystone and turfstone walled landscape to the north of Bute Town reservoir.
163	Railway furniture, Butetown	SO 0960 0910	D	Site	Fence-posts	Post-Medieval	-	An east/west line of concrete posts along the course of the MT&A railway.

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific Date	Description
164	Drystone wall landscape, Butetown Reservoir	SO 0940 0900	D	Field System	Drystone walled field boundaries	Post-Medieval	-	A drystone walled landscape to the south of the A465.
165	Leat system, Butetown Reservoir	SO 0980 0927	C	Linear Feature	Leat	Post-Medieval	-	The remains of an earthen leat with drystone revetting to the Bute Town reservoir.
166	Masonary bridge, Graig Lwyd	SO 1019 0929	D	Structure	Road bridge	Post-Medieval	-	A small road bridge over a stream flowing into Bute Town reservoir.
167	Gullies and earthworks, Butetown	SO 1020 0934	D	Earthworks	Water courses	Post-Medieval	-	A series of gullies and earthworks related to the nearby leat-system.
168	Skew bridge, Llechryd	SO 1042 0944	B	Structure	Road bridge	Post-Medieval	-	A concrete road bridge over the MT&A railway.
169	Station House, Llechryd	SO 1046 0951	B	Building	Railway Building	Post-Medieval	-	The Rhymney Bridge Station House on the MT&A railway.
170	Southern section of leat system, Llechryd	SO 1052 0953 to SO 1053 0950	C	Linear Feature	Leat	Post-Medieval	-	A leat running into Bute Town Reservoir.
171	Gullies and tips, Princetown	SO 1110 0969 to SO 1111 0963	D	Earthworks	Mineral workings	Post-Medieval	-	A north/south gully possibly associated with quarrying.
172	Drystone wall , Princetown	SO 1120 0965	D	Field System	Drystone walls	Post-Medieval	-	A drystone walled landscape.
173	Drystone wall & turfstone wall landscape, Blaencarno Common	SO 0860 0890	D	Field Systems	Drystone and turf-stone walled boundaries	Post-Medieval	-	A drystone and turfstone walled landscape.
174	Ventilation/water shafts, Blaencarno Common	SO 0883 0891	D	Earthworks	Mineral extraction	Post-Medieval	-	A number of ventilation shafts associated with mining on Blaencarno Common.
175	Bronze Age Cairn, Blaencarno Common	SO 0887 0890	B	Findspot	Prehistoric funerary monument	Bronze Age	-	A small doughnut-shaped cairn, probably Bronze Age in date.
176	Industrial earthworks, Merthyr Common	SO 0851 0890	D	Earthworks	Mineral workings	Post-Medieval	-	A number of heavy scratches and coal tips, west of Blaencarno Common
177	Railway furniture, Merthyr Common	SO 0842 0862	D	Site	Fence-posts	Post-Medieval	-	A line of concrete posts delineating the course of the MT&A railway.
178	Coal tippings, Blaencarno Farm	SO 0890 0876	C	Earthworks	Mineral workings	Post-Medieval	-	Spoil tips shown on the 1880 OS.
179	'Dig for Victory' allotments, Blaencarno Farm	SO 0892 0884	B	Earthworks	Allotments	Post-Medieval	1940-1945	A series of W.W.II allotments consisting of low drystone walls.
180	Culvert, Blaencarno	SO 0899 0890	C	Structure	Culvert	Post-Medieval	1863	A culvert below the A465, probably constructed for the MT&A railway.
181	Drystone wall landscape, Blaencarno	SO 0975 0910	D	Field System	Drystone walled field boundaries	Post-Medieval	-	A drystone walled landscape and watercourses.

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific Date	Description
182	Railway furniture, Blaencarno	SO 0920 0930	D	Site	Fence-posts	Post-Medieval	-	A line of concrete posts delineating the course of the MT&A railway.
183	Station House, Dowlais Top	SO 0800 0845	B	Buildings	Railway building	Post-Medieval	-	A station house for Rhymney Bridge built along the course of the Brecon & Merthyr railway close to the junction with the LNWR Dowlais Extension.
184	Abergavenny, Tredegar & Merthyr Railway, Dowlais	SO 0804 0849 to SO 0839 0863	B	Linear Feature	Railway	Post-Medieval	1863	The main line of the Brecon & Merthyr railway.
185	Brecon & Merthyr Railway embankment, Dowlais	SO 0750 0836	C	Linear Feature	Railway embankment	Post-Medieval	1869	A section of embankment for the Brecon & Merthyr railway.
186	Eastern leat system, Upper Reservoir, Dowlais	SO 0750 0834 to SO 0729 0848	C	Linear Feature	Leat	Post-Medieval	-	A well preserved east/west leat with a brick lining, incorporating two aqueducts.
187	Aqueducts under leat, Upper Reservoir, Dowlais	SO 0733 0842	B	Structure	Aqueducts	Post-Medieval	-	Two masonry aqueducts along the length of the leat.
195	Lower Reservoir, Dowlais	SO 0730 0830	B	Structure	Reservoir	Post-Medieval	pre-1850	The smaller of two inter-linked reservoirs
196	McDonald's Restaurant, Dowlais Top	SO 0783 0822	D	Building	Restaurant	Post-Industrial	1989	Within the A465 corridor is one of two (post-industrial) fast food restaurant. The McDonald's drive-in, building with no external architectural features.
269	Merthyr, Tredegar & Abergavenny Railway, Llechryd	SO 1033 0920 to SO 1070 0962	C	Linear Feature	Railway	Post-Medieval	1863	The course of the MT & A Railway across the Afon Rhymni over a masonry and brick bridge and a leat south of Llechryd station house, below a now infilled concrete skew bridge.

7.2 Impacts and Mitigation

7.2.1 The potential impacts on cultural heritage sites in Section Four comprise:

- loss;
- damage;
- severance of linear features;
- reduction of the group value of associated features; and
- adverse affects on the setting of features.

7.2.2 Details of the potential impacts, their magnitude and significance for each site which may be affected by the proposed scheme are represented in Table 7.2.

7.2.3 Measures to mitigate adverse impacts in this Section include:

- full excavation;
- limited excavation;
- ground/building survey; preservation *in situ*; and
- consultation over detailed design.

7.2.4 In addition, all areas outside the known archaeology will be subject to a watching brief during construction.

7.2.5 Details of measures proposed to mitigate the effects on each site and subsequent residual impact are provided in Table 7.2.

Table 7.2 Impact and mitigation measures in Section Four

Site No	Approx Chainage	Description	Site value	Potential impact	Impact magnitude	Significance	Mitigation	Residual impact
150	20500	Bronze Age find spot, Tafarnaubach	C	partial removal of peat levels	Severe	Minor	Limited excavation	n/a
152	20000	Leat system and 'Kettle-hole' Quarries, Princetown	D	partial removal of quarries and kettle holes	Moderate	Not significant	Excavation	n/a
153	19900	Mining tips and Quarry, Princetown	D	partial removal of tips and quarries	Moderate	Not significant	Ground Survey, Limited excavation, Strip & record	n/a
154	19800	Industrial Building, Princetown	C	total loss	Very severe	Minor	Building Survey Level 3, Excavation (strip and record)	n/a
155	19800	Earthworks (demolished buildings), Princetown	D	total loss	Very severe	Not significant	Building Survey Level 3, Excavation (strip and record)	n/a
157	19300	Railway Bridge and Tunnel, Llechryd	B	further loads and encroachment of embankment	Moderate	Minor	Building Survey Level 3 (equiv.)	water drainage and impact from vehicle vibration
160	19200	Northern section of leat system, Blaen Rhymney	B	further severance of leat	Severe	Significant	Excavation	n/a
161	19000-19100	Road platform, Pleasant View, Llechryd	D	further severance	Severe	Not significant	Excavation	n/a
167	18800	Gullies and Earthworks, Bute Town	D	encroachment of embankment	Slight	Not significant	Limited excavation	n/a
168	19000	Skew Bridge, Llechryd	B	partial loss	Severe	Significant	Preserve in situ	n/a
169	19100	Station House, Llechryd	B	total loss	Severe	Significant	Building Survey Level 4	n/a
173	18300	Drystone wall and turfstone wall landscape, Blaencarno Common	D	severance	Slight	Not significant	Limited excavation and Strip & record	n/a

Site No	Approx Chainage	Description	Site value	Potential impact	Impact magnitude	Significance	Mitigation	Residual impact
179	17400	'Dig for Victory' allotments, Blaencarno Farm	B	further encroachment	Moderate	Minor	Limited excavation	n/a
180	17500	Culvert, Blaencarno	C	encroachment of embankment	Moderate	Not significant	Building Survey Level 3 (equiv.)	n/a
196	16200	McDonald's Restaurant	D	total loss	Very severe	Not significant	Building Survey Level 2	n/a
269	18400-18700	Merthyr, Tredegar & Abergavenny Railway, Llechryd	C	further severance	Severe	Minor	Preserve in situ	n/a

8.0 Section Five: Dowlais Top to A470 Junction

8.1 Existing Context

General

8.1.1 Archaeological sites along Section Five comprise:

- prehistoric sites, including the site of a possible prehistoric find and a possible Roman road;
- medieval hut circles, and a coin hoard;
- post-medieval agricultural features, including a model farm and outbuildings, field boundaries, field systems, holloways and tracks;
- post-medieval industrial sites and features, including railways, tramroads, associated furniture, bridges and worker housing; and
- Post-Industrial features including roads and viaducts/bridges.

8.1.2 A total of 38 sites were recorded in this area. Of these:

- 5 are of national importance (Category A);
- 11 are of regional importance (Category B);
- 9 are of local importance (Category C); and
- 13 are minor or damaged sites (Category D).

8.1.3 Details of these sites are provided in Table 8.1. Site locations are provided on Figures 22/16-19 in Volume 1.9.

Geophysical survey and test pitting programme

8.1.4 Within this Section, one area was investigated using geophysical survey (Area 6) and three others using archaeological test pitting (Areas 6, 7 and 8). No significant archaeological features or remains were recorded in Areas 6 and 7. In Area 8, a Roman pottery sherd and a piece of worked flint was recovered, close to the route of a probable Roman road, Site No. 205(ii).

Table 8.1 Summary of archaeological sites in Section Five

Site no.	Site name	Grid ref.		Form	Type	Period	Specific date	Description
188	Upper Reservoir, Dowlais	SO 0720 0850	B	Structure	Reservoir	Post-Medieval	-	Upper Reservoir, which is related to Lower Reservoir, is larger of the two and has leat systems feeding into and out of it.
189	Pumping station, Upper Reservoir, Dowlais	SO 0705 0851	B	Building	Industrial building	Post-Medieval	post-1850	A brick-built pumping station related to Upper Reservoir.
190	Inspection road, Upper Reservoir, Dowlais	SO 0728 0846 to SO 0692 0868	D	Linear Feature	Road	Post-Medieval	-	A inspection road for the Upper Reservoir.
191	Western leat system, Upper Reservoir, Dowlais	SO 0688 0867 to SO 0692 0849	B	Linear Feature	Leat	Post-Medieval	-	A north/south orientated leat with extensive brick and masonry lining.
192	Branch line of Brecon & Merthyr Railway, Dowlais	SO 0668 0887 to SO 0733 0844	C	Linear Feature	Railway	Post-Medieval	1869	The north/south cutting for the Brecon & Merthyr railway line.
193	Branch line of Brecon & Merthyr Railway, Dowlais	SO 0675 0856 to SO 0666 0859	D	Linear Feature	Railway	Post-Medieval	1869	An east/west line between the Brecon & Merthyr railway and a branch line of the Brecon & Merthyr railway.
194	Brecon & Merthyr Railway (to Pontsticill), Dowlais	SO 0664 0884 to SO 0651 0840	C	Linear Feature	Railway	Post-Medieval	1863	The Brecon & Merthyr railway main line.
197	Drystone wall landscape, Gurnos	SO 0485 0870	D	Field System	Drystone walled field boundaries	Post-Medieval	-	A drystone walled landscape.
198	Lime Kilns, Castle Morlais Tramroad, Gurnos	SO 0471 0872	B	Structure	Lime kilns	Post-Medieval	-	Three circular limekilns constructed of drystone walling adjacent to the Castle Morlais tramroad related to Gurnos Farm.
199	Coppice and drystone wall landscape, Gurnos	SO 0470 0870	D	Landscape Feature & Field System	Woodland and drystone walled field boundaries	Post-Medieval	-	An area of coppiced land.
200	Castle Morlais Quarries Tramroad, Gurnos	SO 0473 0892 to SO 0473 0867	B	Linear Feature	Mineral extraction	Post-Medieval	1803	The course of the Castle Morlais tramroad used to transport limestone to the Dowlais Ironworks.
201	Possible quern stone, Gurnos	SO 0455 0866	B	Findspot	Prehistoric quern stone	Neolithic	-	A possible quern-stone of prehistoric date.
202	Drystone wall landscape and sheep fold, Gurnos	SO 0450 0865	C	Field System	Drystone walled field boundaries and sheep fold	Post-Medieval	-	Between Gurnos Farm and the Castle Morlais Tramroad on the northern side of the A465 is an extensive drysone walled landscape including a sheepfold.
203	Gurnos Farm workers cottages, Gurnos Farm	SO 0435 0863	C	Buildings	Domestic dwellings	Post-Medieval	-	Three farm worker's cottages similar in style to Gurnos Farm
204	Gurnos 'model' Farm, Gurnos	SO 0430 0864	B	Buildings	Farmhouse and outbuildings	Post-Medieval	pre-1880	A model farm laid-out around a courtyard related to improvement of worker's cottages and agricultural land.

Site no.	Site name	Grid ref.		Form	Type	Period	Specific date	Description
205	DRYSTONE WALL landscape, Gurnos Farm	SO 0423 0860	D	Field System	Drystone walled filed boundaries.	Post-Medieval	-	A drystone walled landscape enclosing an area of coppice.
206	Viaduct, Taf Fechan, Cefn Coed-y-Cymmer	SO 0335 0815	A	Structure	Road bridge	Post-Medieval	1963	One of the A465 road bridges designed by engineers Rendel, Palmer & Tritton with twin parabolic arch ribs.
207	Gurnos Leat system, Cefn Coed-y-Cymmer	SO 0342 0829 to SO 0373 0767	A	Linear Feature	Leat	Post-Medieval	1792	A leat below the A465, built of brick and masonry it runs parallel to the Taf Fechan to Cyfartha Ironworks.
208	Gurnos Tramroad, Cefn Coed-y-Cymmer	SO 0341 0830 to SO 0372 0767	A	Linear Feature	Tramroad	Post-Medieval	-	Gurnos tramroad below the present A465 built to supply Cyfartha Ironworks.
209	Footbridge over Brecon & Merthyr Railway, Cefn	SO 0327 0821	C	Structure	Footbridge	Post-Medieval	-	An iron-girder accommodation bridge over the course of the Brecon & Merthyr railway.
210	Gurnos Limestone Quarry, Gurnos	SO 0355 0828	A	Site	Mineral extraction	Post-Medieval	-	A quarry excavated partly to supply Cyfartha Ironworks with limestone with a network of tramways on the quarry floor.
211	Railway bridge, Brecon & Merthyr line, Cefn	SO 0324 0814	C	Structure	Railway bridge	Post-Medieval	1863 rebuilt 1964	A bridge to carry the Brecon & Merthyr railway across a cutting for the A465.
212	Capel Tabor and cemetery, Cefn Coed-y-Cymmer	SO 0297 0808	B	Building and Earthworks	Chapel and cemetery	Post-Medieval	c.1850	Capel Tabor rebuilt in a Neo-classical style in 1904 with associated cemetery.
213	Medieval hut circles, Cefn Coed-y-Cymmer	SO 0297 0804	C	Site	Medieval hut circles	Medieval	-	The site of a series of hut-circles, discovered during construction of the A465????
214	St. John's Church, Cefn Coed-y-Cymmer	SO 0329 0806	B	Building	Church	Post-Medieval	1880	A 'Gothic' church designed by George Edward Robinson in 1880.
215	Medieval coin hoard, Cefn Coed-y-Cymmer	SO 0328 0805	C	Findspot	Coin hoard	Medieval	ter-minus post quem 1325	The findspot of a hoard of Medieval coins.
216	Stone structure, Cefn Coed-y-Cymmer	SO 0372 0430	D	Structure	Mineral extraction	Post-Medieval	-	Stone structure, initially considered to be of prehistoric provenance. Evaluation however, suggests that the large slabs form part of a scree slope/quarry area.
217	Drystone wall landscape, Gurnos	SO 0408 0840	D	Field System	Drystone walled field boundaries	Post-Medieval	-	A substantial drystone wall c.150m long.
218	Grawen Cottages, Cefn Coed-y-Cymmer	SO 0285 0814	B	Buildings	Domestic dwellings	Post-Medieval	-	A two-storey terrace of worker's cottages
219	Drystone wall landscape, Coed Meurig	SO 0238 0748	D	Field System	Drystone walled field boundaries	Post-Medieval	-	A drystone walled field-system related to the lofted cowshed.
220	Buttressing under the Nant Ffrwd Viaduct	SO 0248 0752	D	Structure	Road bridge section	Post-Medieval	1963	The remains of earlier masonry abutments within the Nant Ffrwd concrete viaduct.

Site no.	Site name	Grid ref.		Form	Type	Period	Specific date	Description
221	Viaducts (A465), Cefn Coed-y-Cymmer	SO 0335 0815 (A); SO 0282 0789 (B); SO 0250 0750 (C).	A	Structure	Road bridges	Post-Medieval	1963	Two 1960's concrete viaducts designed by Rendel, Palmer & Tritton using twin parabolic arch ribs.
222	Lofted cow shed, Coed Meurig Farm	SO 0226 0745	A	Building	Cow shed	Post-Medieval	pre-1850	A masonry lofted cowshed associated with Coed Meurig Farm.
270	Brecon & Merthyr Railway, Taf Fechan	SO 0343 0853 to SO 0325 0816	D	Linear Feature	Railway	Post-Medieval	1863	On the western bank of the Taf Fechan, either side of the A465 is the route of the Brecon & Merthyr Railway.
271	Coed Meurig Farm	SO 0234 0742	C	Buildings	Farmhouse and outbuildings	Post-Medieval	pre-1846	Coed Meurig homestead associated with the lofted cowshed and described in the schedule of 1846 as being a farm of 37 acres belonging to Lord Dynevor.

8.2 Impacts and Mitigation

8.2.1 The potential impacts on the cultural heritage sites in Section Five comprise:

- loss;
- damage;
- severance of linear features;
- reduction of the group value of associated features; and
- adverse affects on the setting of features.

8.2.2 Details of the location and potential impacts, their magnitude and significance for each site which may be affected by the proposed scheme are provided in Table 8.2.

8.2.3 Measures to mitigate adverse impacts in this section include:

- full excavation;
- limited excavation;
- ground/building survey;
- preservation *in situ*; and
- consultation over detailed design.

In addition, all areas outside the known archaeology will be subject to a watching brief during construction.

8.2.4 Details of measures proposed to mitigate the effects on each site and subsequent residual impact are provided in Table 8.2.

Table 8.2 Impact and mitigation measures in Section Five

Site No	Approx Chainage	Description	Site value	Potential impact	Impact magnitude	Significance	Mitigation	Residual Impact
191	15100	Western Leat system, Upper Reservoir, Dowlais	B	further severance	Slight	Not significant	Limited excavation	N/A
192	14800-15500	Branchline of Brecon-Merthyr Railway, Dowlais	C	encroachment of embankment	Severe	Minor	Preserve in situ	N/A
197	13000-13100	Drystone wall landscape, Gurnos	D	partial loss of walls	Slight	Not significant	Excavation	N/A
201	12800	Possible Quern Stone, Gurnos	B	effect on setting	Slight	Not significant	Excavation	N/A
205	12400	Drystone wall landscape (i) incorp. possible Roman Road (ii), Gurnos	D	further severance of walls and road	Severe	Not significant	Excavation, Strip & record	N/A
211	11300	Railway Bridge, Brecon and Merthyr Line, Cefn	C	total loss	Very severe	Minor	Building Survey Level 3	N/A
213	1000	Medieval Hut Circles, Cefn Coed-y-Cymmer	C	further cutting	Very severe	Minor	Strip and record	N/A
217	12000-12300	Drystone wall landscape, Gurnos	D	partial severance	Slight	Not significant	Limited excavation	N/A
219	10200	Drystone wall landscape, Coed Meurig	D	further severance	Moderate	Not significant	Limited excavation	N/A
270	11300-11600	Brecon & Merthyr Railway, Taf Fechan	D	encroachment from embankment	Moderate	Not significant	Ground Survey and Limited excavation	N/A

9.0 Section Six: A470 Junction to Baverstock

9.1 Existing Context

General

9.1.1 Archaeological sites along Section Six comprise:

- post-medieval agricultural features, including a farm house and lofted cow shed, field boundaries, field systems, holloways and tracks;
- post-medieval industrial sites and features including coal and ironstone drift mines and tips, the remains of a worker's settlement, and a public house; and
- Post-Industrial features including roads and bridges.

9.1.2 A total of 7 sites were recorded in this area. Of these:

- 2 sites are of national importance (Category A);
- none of regional importance (Category B);
- 2 are of local importance (Category C); and
- 3 are minor or damaged sites (Category D).

9.1.3 Details of these sites are provided in Table 9.1. Site locations are provided on Figures 22/19-20 in Volume 1.9.

Geophysical survey and test pitting programme

9.1.4 Within this Section, one area was investigated using archaeological test pitting (Area 5). No significant archaeological features or remains were recorded.

9.2 Impacts and Mitigation

9.2.1 The potential impacts on the cultural heritage sites in Section Six comprise:

- loss;
- damage;
- severance of linear features;
- reduction of the group value of associated features; and
- adverse affects on the setting of features.

9.2.2 Details of the potential impacts, their magnitude and significance for each site which may be affected by the proposed scheme are provided in Table 9.2.

9.2.3 Measures to mitigate adverse impacts in this Section include:

- full excavation;
- limited excavation;
- ground/building survey;
- preservation *in situ*;
- palaeoenvironmental sampling; and
- consultation over detailed design.

In addition, all areas outside the known archaeology will be subject to a watching brief during construction.

9.2.4 Details of measures proposed to mitigate the effects on each site and subsequent residual impact are provided in Table 9.2.

Table 9.1 Summary of archaeological sites in Section Six

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific date	Description
224	Coal tippings (S. of old A465), Baverstock	SO 0260 0720 to SO 0100 0720	D	Earthworks	Mineral workings	Post-Medieval	-	A sequence of coal tips related either to the Cyfartha or Llwydcoed Ironworks.
225	DRYSTONE WALL landscape and sheep fold, Coed Meurig	SO 0220 0735	D	Field System	Drystone walled field boundaries and sheep fold	Post-Medieval	-	A drystone walled complex incorporating a sheep fold, related to Coed Meurig Farm.
226	Stone rubble-demolished cottage, Baverstock	SO 0110 0740	D	Site	Demolished building	Post-Medieval	-	An area of masonry rubble indicating the site of a demolished cottage.
231	Fairfield House (Giants Head Inn), Baverstock	SO 0055 0728	C	Building	Public house	Post-Medieval	-	A modernised cottage once used as the 'Giant's Head Inn.'
232	Settlement and field system, Baverstock	SO 0073 0730	A	Earthworks & Field Systems	Settlement and enclosures	Medieval Post-Medieval	-	A complex of turfstone walled field boundaries representing gardens, enclosures and drainage systems. rubble concentrations indicate the sites of demolished cottages.
233	Coal workings and tips, Baverstock	SO 0069 0727	C	Earthworks	Mineral workings	Post-Medieval	-	The remains of early open-cast iron workings, possibly aided by water extraction located on the hill behind the Baverstock settlement.

Table 9.2 Impact and mitigation measures in Section Six

Site No	Approx Chainage	Description	Site value	Potential impact	Impact magnitude	Significance	Mitigation	Residual impact
222	10100	Lofted Cow shed, Coed Meurig	A	total loss	Very severe	Very significant	Building Survey Level 3	n/a
224	9500-8500	Mineral Workings and Drift Mines, Baverstock	D	partial loss of tips and mines	Moderate	Not significant	Ground Survey andLimited Excavation	n/a
231	8400	Fairfield House (Giant's Head Inn), Baverstock	C	total loss	Very severe	Minor	Building Survey Level 4	n/a
232	8500-8600	Settlement and Field System, Baverstock	A	total loss of settlement	Very severe	Very significant	Excavation	n/a
233	8500	Mineral Workings and Tips, Baverstock	C	partial loss of tips and mines	Severe	Minor	Photographic Record, Ground Survey and Limited Excavation	n/a

10.0 Section Seven: Baverstock to Hirwaun

10.1 Existing Context

General

10.1.1 Archaeological sites along Section Seven comprise:

- post-medieval agricultural features, including a farmstead, farm buildings, field boundaries, field systems, holloways and tracks;
- post-medieval industrial sites and features, including railways, tramroads, associated furniture, bridges and culverts, dwellings, tips, a reservoir; and
- Post-Industrial features including roads and bridges.

10.1.2 A total of 38 sites were recorded in this area. Of these:

- none are of national importance (Category A);
- 2 are of regional importance (Category B);
- 15 are of local importance (Category C); and
- 21 are minor or damaged sites (Category D).

10.1.3 Details of these sites are provided in Table 10.1. Site locations are provided on Figures 22/20-24 in Volume 1.9.

Geophysical survey and test pitting programme

10.1.4 Within this Section, one area was investigated using geophysical survey (Area 1) and three others using archaeological test pitting (Area 2, 3 and 4). No significant archaeological features or remains were recorded in any of these areas.

Table 10.1 Summary of archaeological sites in Section Seven

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific date	Description
227	Drystone wall landscape, Baverstock	SO 9970 0717	D	Field System	Drystone walled field boundaries	Post-Medieval	-	A drystone walled field-system.
228	Drystone wall & turfstone wall, Lech Sychrhyd	SO 9947 0700	D	Field Systems	Drystone and turf-stone walled boundaries	Post-Medieval	-	The remnants of a drystone and turstone walled field-system now bisected by the A465.
229	Track, Lech Sychrhyd	SO 9960 0704 to SO 9958 0680	D	Linear Feature	Farm track	Post-Medieval	-	A north/south track, visible as a slightly raised platform.
230	Dam and possible sluice system, Lech Sychrhyd	SO 9969 0690	C	Earthworks	Water courses	Post-Medieval	-	A possible small-scale damming system incorporating banks and sluice along a stream.
234	Nant Hir Reservoir	SO 9890 0690	B	Structure	Reservoir	Post-Medieval	-	The Nant Hir Reservoir built by the Aberdare Water Works Co.
235	Holloway, Nant Hir	SO 9885 0690	D	Linear Feature	Farm track	Post-Medieval	-	A small holloway parallel to the Nant Hir Reservoir.
236	Drystone wall landscape, Nant Hir	SO 9875 0684	D	Field System	Drystone walled field boundaries	Post-Medieval	-	An extensive drysatone walled landscape either side of the A465.
237	Field barn and stable, Nant Hir	SO 9885 0686	C	Buildings	Field barn	Post-Medieval	-	Masonry farmbuildings adjacent to the Nant Hir Reservoir.
238	Holloway/sheep fold, Nant Hir	SO 9883 0687 to SO 9875 0698	C	Linear Feature	Farm track and sheep fold	Post-Medieval	-	An deep holloway running north/south across the A465 incorporating mature taxa and a coralling area.
239	Drystone wall landscape, Nant Melyn	SO 9798 0625	D	Field System	Drystone walled field boundaries	Post-Medieval	-	An extensive drystone walled landscape.
240	Holloway, Nant Melyn	SO 9770 0622 to SO 9789 0623	D	Linear Feature	Farm track	Post-Medieval	-	An east/west aligned holloway connecting to a farm track leading to Nantmoel Farm.
241	Holloway, Llyncoch	SO 9768 0608 to SO 9785 0585	D	Linear Feature	Farm track	Post-Medieval	-	A north/south holloway lined with substantial rubble walls.
242	Holloway, Court Farm	SO 9734 0564 to SO 9735 0547	D	Linear Feature	Farm track	Post-Medieval	pre-1851	Remnants of the holloway/track running either side of the A465 and appears to have once served Court Farm. Truncated by the Vale of Neath Mineral railway.
243	Skew bridge over Vale of Neath Railway	SO 9727 0552	B	Structure	Road bridge	Post-Medieval	c.1851	A skew bridge built to carry the road over the Vale of Neath Mineral railway (later the GWR).
244	Rectangular platform, Hirwaun	SO 9674 0544	D	Site	Demolished industrial building	Post-Medieval	-	A rectangular building platform.
245	Drystone wall landscape, Parc-Hensol Farm	SO 9675 0528	D	Field System	Drystone walled field boundaries	Post-Medieval	-	An extensive drystone walled field system around the derelict farmstead of Parc Hensol.
246	Farmstead, Parc-Hensol	SO 9677 0526	C	Buildings	Derelict farmhouse and outbuildings	Post-Medieval	-	A partly demolished farmstead on land along te banks of the River Cynon.

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific date	Description
247	Bridge remains, River Cynon	SO 9682 0529	D	Structure	Footbridge	Post-Medieval	-	The remains of a wrought iron bridge across the River Cynon.
248	Track, River Cynon, Hirwaun	SO 9697 0529	D	Linear Feature	Track	Post-Medieval	-	A small metalled track running alongside the River Cynon.
249	Cynon farmhouse, Hirwaun	SO 9640 0526	D	Buildings	Farmhouse and outbuildings	Post-Medieval	-	A masonry cottage with modern alterations.
250	Hirwaun-Aberdare Tramroad, Hirwaun	SO 9590 0548 to SO 9667 0513	C	Linear Feature	Tramroad	Post-Medieval	c.1790-c.1870	The Hirwaun-Aberdare tramroad built for the Hirwaun Ironworks to the canal at Aberdare.
251	Pig-pens, Hirwaun	SO 9544 0535	D	Building	Pig-pens	Post-Medieval	-	Uncoursed masonry pig-pens.
252	Bute Colliery Road (Tower Road), Hirwaun	SO 9534 0527 to SO 9506 0500	C	Linear Feature	Tramroad	Post-Medieval	-	The course of the dismantled Bute Colliery to Hirwaun Tramway running along Tower Road..
253	Turfstone wall landscape, Hirwaun	SO 9525 0533	D	Field System	Turf-stone wall boundaries	Post-Medieval	-	A turfstone walled landscape.
254	Coal tips, Bryngelli Estate, Hirwaun	SO 9520 0534	D	Earthworks	Mineral workings	Post-Medieval	-	Extensive coal tippings.
255 A	Railway A, Aberdare & Rhondda Railway	SO 9578 0514 to SO 9506 0501	C	Linear Feature	Tramroad	Post-Medieval	-	The course of the Aberdare & Rhondda main line railway.
255 B	Tramroad B, Branch of Aberdare & Rhondda	SO 9581 0512 to SO 9589 0476	C	Linear Feature	Tramroad	Post-Medieval	aban-doned by 1880	A tramroad from nearby pits to the Aberrdare & Rhondda railway built on an earthen embankment.
255 C	Tramroad C, Hirwaun	SO 9587 0510 to SO 9567 0471	C	Linear Feature	Tramroad	Post-Medieval	post-1880	The course of a tramway intersects and truncates Tramroad B.
256	Culvert, Aberdare-Rhondda Tramroad, Hirwaun	SO 9582 0506	D	Structure	Culvert	Post-Medieval	-	A small culvert constructed of drystone walling beneath the course of the Aberdare-Rhondda Tramroad.
257	Culvert, Hirwaun to Aberdare Tramroad, Hirwaun	SO 9648 0519	C	Structure	Culvert	Post-Medieval	-	A culvert below the line of the Hirwaun-Aberdare Tramroad repaired with modern repairs.
258	Vale of Neath Mineral Railway (western section)	SO 9530 0617 to SO 9413 0641	C	Linear Feature	Railway	Post-Medieval	1851	The broad gauge Vale of Neath Mineral Railway, it was later re-built as a the standard gauge Great Western Railway.
259	Branch of the Hirwaun-Aberdare Tramroad	SO 9408 0591 to SO 9525 0556	C	Linear Feature	Tramroad	Post-Medieval	-	A branch of the Hirwaun-Aberdare Tramroad following the present-day Rhigos road (A 4059).
272	Neath Mineral Railway (eastern section), Hirwaun	SO 9700 0559 to SO 9760 0543	C	Linear Feature	Railway	Post-Medieval	c.1851	The Vale of Neath mineral railway survives to the east of Hirwaun below contemporary masonry road bridge on the A465.

Site no	Site name	Grid reference	Site value	Form	Type	Period	Specific date	Description
273	Tramroad, Hirwaun	SO 9566 0520 to SO 9559 0491	D	Linear Feature	Tramroad	Post-Medieval	-	A local tramroad, surviving as a track, which transported ironstone from the Knobby Drift Ironstone pit to the Hirwaun Ironworks.
274	Knobby Drift Ironstone Pit, Johnson Park, Hirwaun	SO 9559 0491	D	Site	Mineral extraction	Post-Medieval	pre-1870	This ironstone pit was served by a tramway which fell into disuse before it was surveyed for the O.S. in the 1870s (No. 273).
275	Tramway branch-Hirwaun Common Railway	SO 9597 0500 to SO 9598 0470	C	Linear Feature	Tramroad	Post-Medieval	pre-1880	A tramway survives as a north/south track and is marked on the O.S.map of 1880 and was a branch line of the Hirwaun Common Railway.
276	The Hirwaun Common Railway, Hirwaun	SO 9495 0618 to SO 9662 0481	C	Linear Feature	Tramroad	Post-Medieval	pre-1840	The Hirwaun Common Mineral Railway was marked as a tramroad on the tithe map of c.1840 and a conventional locomotive-operated railway on the O.S. map of c.1880.
277	Branch-line of Hirwaun Common Railway, Hirwaun	SO 9617 0500 to SO 9634 0478	C	Linear Feature	Tramroad	Post-Medieval	pre-1880	At the point where the Hirwaun Common Mineral Railway crosses the A465, a branch line diverges to the south and currently survives as a footpath. This branch line is marked on the 1880 O.S.

10.2 Impacts and Mitigation

10.2.1 The potential impacts on the cultural heritage sites in Section Seven comprise:

- loss;
- damage;
- severance of linear features;
- reduction of the group value of associated features; and
- adverse affects on the setting of features.

10.2.2 Details of the potential impacts, their magnitude and significance for each site which may be affected by the proposed scheme are provided in Table 10.2.

10.2.3 Measures to mitigate adverse impacts in this Section include:

- full excavation;
- limited excavation;
- ground/building survey;
- preservation *in situ*; and
- consultation over detailed design.

In addition, all areas outside the known archaeology will be subject to a watching brief during construction.

10.2.4 Details of measures proposed to mitigate the effects on each site and subsequent residual impact are provided in Table 10.2.

Table 10.2 Impact and mitigation measures in Section Seven

Site No	Approx Chainage	Description	Site value	Potential impact	Impact magnitude	Significance	Mitigation	Residual impact
235	6600	Holloway, Nant Hir	D	further severance	Slight	Not significant	Strip & record	n/a
236	6500	Drystone wall landscape, Nant Hir	D	partial loss of walls	Moderate	Not significant	Limited excavation	n/a
238	6600	Holloway/Sheep Pen, Nant Hir	C	further severance	Moderate	Not significant	Limited excavation	n/a
239	5600	Drystone wall landscape, Nant Melyn	D	partial loss of walls	Moderate	Not significant	Limited excavation	n/a
241	5100	Holloway, Llyn Coch	D	further severance	Severe	Not significant	Limited excavation	n/a
242	4500	Holloway, Court Farm	D	further severance	Slight	Not significant	Strip & record	n/a
252	2200	Bute Colliery Road (Tower Road), Hirwaun	C	severance of tramroad	Severe	Minor significance	Limited excavation and Strip & record	n/a
254	2000	Coal Workings, Bryngelli Estate, Hirwaun	D	partial loss of tips	Moderate	Not significant	Photographic Survey	n/a
255a	2700-2900	Railway A - Aberdare and Rhondda Railway	C	severance of railway	Severe	Minor	Strip & record	n/a
255b	2800-2900	Tramroad B - Branch of Aberdare and Rhondda Railway	C	severance of railway	Severe	Minor	Strip & record	n/a
255c	2200-2800	Tramroad C - Hirwaun	C	severance of tramroad	Severe	Minor	Strip & record	n/a
257	3600	Culvert, Hirwaun to Aberdare Railway, Hirwaun	C	effect on setting	Moderate	Not significant	Preserve in situ	n/a
273	2600	Tramroad, Hirwaun	D	severance of tramroad	Severe	Not significant	Limited excavation and Strip & record	n/a
275	3000	Tramroad Branch - Hirwaun Common Railway	C	severance of railway	Severe	Minor	Limited excavation	n/a
276	3200-3500	Hirwaun Common Railway, Hirwaun	C	further severance railway	Severe	Minor	Strip & record	n/a
277	3200-3300	Branch-line of Hirwaun Common Railway	C	further severance	Severe	Minor	Strip & record	n/a

11.0 Summary and Conclusions

11.1 Introduction

11.1.1 The assessment of cultural heritage has included extensive surveys of existing cultural heritage features, to enable the assessment of the potential impact of the proposed scheme on cultural heritage overall.

11.1.2 Surveys were restricted to an area 50m either side of the road corridor of the proposed scheme although, where linear features continue beyond this boundary, the survey was extended. The survey included both Stage 2 and 3 assessment and comprised:

- detailed desk-top study and walk-over survey (Stage 2);
- a photographic record of 58 buildings and structures within their settings (Stage 2);
- a detailed photographic record and ground survey of 15 building structures (Stage 2);
- ground-survey of 6 earthwork sites (Stage 2);
- evaluation trial-trenching of 43 sites (Stage 3);
- geophysical survey of three areas (Stage 3);
- test-pitting, proposed for 16 areas and completed in 14 (Stage 3);
- assessment of palaeoenvironmental potential at 1 site (Stage 3).

11.2 Existing

11.2.1 A number of statutory and non-statutory cultural heritage designations are recognised along the proposed scheme (Figures 22/1-24). These include:

- two Conservation Areas, one at Abergavenny and one at Butetown;
- the New Cemetery (Late 19th century) at Llanfoist, designated a Grade II Historic Park; and
- an Historic Landscape around Merthyr Tydfil, which will include the area north of the town including a length of the A465.

11.2.2 A total of 282 sites have been recorded within the study area (details of these sites are contained in the Gazeteer and illustrated on Figures 22/1-24). Archaeological remains date to the prehistoric and Roman periods (the Medieval period is under-represented due to the low demographics during this period). Sites recorded are of mainly Post-Medieval date and relate to industrial processes and their associated infrastructure. These include a canal, drystone and turfstone walling, earthworks sites, farm buildings, holloways, industrial buildings and settlements, leats, railways, religious sites and buildings, tramroads and turnpike roads. The largest concentration of sites, mainly of an industrial nature, is located

within the Clydach Gorge (Section Two).

11.2.3 Discoveries from the test-pitting programme have been of a possible palaeoenvironmental sequence, which may provide contemporary landscape information relevant to a Bronze Age hoard discovered nearby at Rassau, a sherd of Roman pottery east of Gurnos and a second palaeoenvironmental sequence south of Tafarnaubach.

11.2.4 Geophysical survey of three areas revealed little or no significant archaeological remains.

11.2.5 The results of the test-pitting programme and geophysical survey suggests that there is little potential for the survival of archaeological remains other than those identified by the surveys to date.

11.2.6 The sites were scored, utilising some of the Secretary of State's non-statutory criteria for scheduling Ancient Monuments, and subsequently were classified into four levels of importance. Defined by Cadw, these are:

- Category A: Sites of National Importance. These include Scheduled Ancient Monuments, Listed Buildings and those sites which meet the criteria for scheduling or listing;
- Category B: Sites of Regional or County Importance. These include sites that do not meet the criteria for scheduling or listing, but are nevertheless of particular importance within the region. Preservation *in situ* would be the preferred option but if loss or damage cannot be avoided, appropriate detailed recording will be undertaken;
- Category C: Sites of District or Local Importance. These include sites which are not of sufficient importance to justify preservation if threatened, but would merit adequate recording in advance of loss or damage; and
- Category D: Minor or Damaged Sites. These include sites of minor importance or so badly damaged that little remains to justify their inclusion into a higher category. Detailed recording, either in advance or during destruction would be required.

11.2.7 The number of each category of site in each Section is contained in Table 11.1. The largest number of sites (112) are Category D sites, of the lowest value. There are roughly the same number of sites in Categories B (70) and C (76). Category A sites comprise the least number (24).

11.2.8 Four of the Category A sites are scheduled as Ancient Monuments and one is a Grade II* listed building . One Category B site is also a Scheduled Ancient Monument.

Categories

Table 11.1 Number of sites per cultural heritage category in each Section

	Cultural heritage value				
Section	A	B	C	D	Total
1	4	14	6	17	41
2	12	30	27	18	87
3	1	3	6	21	31
4	0	11	10	22	43
5	6	10	9	11	36
6	1	0	2	3	6
7	0	2	16	20	38
Total	24	70	76	112	282
%	8.5	25	27	40	

11.3 Impacts and Mitigation

11.3.1 The potential impact on each site may be considered in terms of:

- loss;
- damage;
- severance, particularly of grouped and/or linear features;
- the group value and its relationship with other associated sites; and
- the effect on the archaeological setting.

11.3.2 Following design modifications, a total of 91 sites (approximately one-third of the total) would suffer some form of impact. The details of the impact to each site are provided in Chapters 4 to 10. The number of sites affected and the magnitude of impact is summarised in Table 11.2. Two-thirds of the sites to be affected are in the value Categories C and D. The remainder are in Category B (18) and A (9).

Table 11.2 Number of sites and magnitude of impact

	Impact				
Category	Slight	Moderate	Severe	Very Severe	Total
A	2	1	3	3	9
B	4	3	9	2	18
C	0	4	17	12	33
D	9	12	7	3	31
Total	15	20	36	20	91

11.3.3 The significance of each impact has been defined, using Table 2.2 in Chapter 2. The number of impacts and their significance, for each Section, is summarised in Table 11.3 and described in the following paragraphs.

Table 11.3 Significance of impact by Section

Section	Significance				Total	Residual
	Not significant	Minor	Significant	Very significant		
1	7	0	1	2	10	0
2	5	14	6	3	28	4*
3	2	2	2	0	6	0
4	8	5	3	0	16	1*
5	7	3	0	0	10	0
6	1	2	0	2	5	0
7	9	7	0	0	16	0
Totals	39	34	12	6	91	

* vibration, water, drainage

Section One: Abergavenny to Gilwern

11.3.4 This Section is broadly of lowland improved pasture and arable farming. The majority of the sites recorded in this Section relate to the agriculture industry, including farm buildings, holloways, field systems and dwellings. Also present are the remains of a railway and turnpike road. The nature of the cultural heritage changes around the Gilwern area as it approaches the industrial region of the Clydach Gorge.

11.3.5 The most significant sites to be affected are the Brecon and Monmouthshire Canal (Category A) and the accommodation bridge (Category A) over the canal at Gilwern. In general, the remaining impacts have been classified as not significant.

Section Two: Gilwern to Brynmawr

11.3.6 Virtually the entire Section is formed by the steep-sided Clydach Gorge which comprises a gentle gradient rising to the upland zone beyond Brynmawr. During the 17th and 18th centuries, the area was rapidly industrialised. The sites in this area include canals, tramroads, railways, leats, ironworking, quarrying and related settlement and religious sites. The importance of this area is reflected in the designation of two Scheduled Ancient Monuments, Clydach Ironworks, including Smarts Bridge (Category A), and the Llanelly Furnace (Category B), and of a Grade II* Listed Building, Clydach House (Category A), at Saleyard.

11.3.7 Section Two contains the greatest number of sites to be affected. The leat system (Category A) at Clydach would be very severely affected as well the western length of the Clydach Railroad at Brynmawr (Category A) and the Primitive Methodist Chapel (Category B) and graveyard at Gilwern. The associated leat keeper's cottage and outbuildings (Category A) would be severely affected along with lengths of the Clydach Railroad, the Llam-march

Tramroad (Category B) and a branch-line of the Clydach Railroad and colliery levels (Category B) below Brymawr. The remaining impacts would be of minor or of no significance.

Section Three: Brynmawr to Tredegar

11.3.8 The topography within this Section is predominantly of upland pasture. Sites recorded include prehistoric remains, agricultural buildings and field systems. Also present are the remains of intense 19th century industrial activity with related settlement and religious sites.

11.3.9 Within Section Three, the only two significantly affected sites are the industrial settlement and drift mines at Clydach Dingle (Category B) and the Trefil Tramroad (Category B) at Nant-y-Croft. The other impacts are confined to sites that are either minor or not significantly affected.

Section Four: Tredegar to Dowlais Top

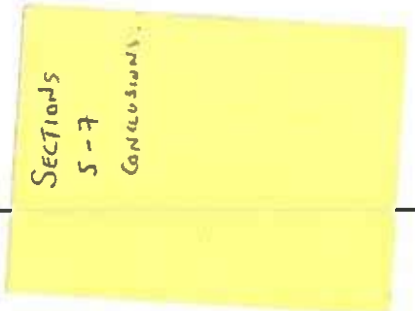
11.3.10 The topographic character of this area is defined by the prevalence of unimproved upland pasture. Sites within this Section include a prehistoric site, agricultural buildings and field systems, transport features and mineral workings.

11.3.11 Within Section Four those sites that would be significantly affected include the northern length of a leat system (Category B) at Blaen Rhymney and the skew bridge (Category B) and station house (Category B) at Llechryd. All other sites are categorised as either suffering minor or not significant impact.

Section Five: Dowlais Top to A 470 Junction

11.3.12 The topographic nature of this Section consists of undulating upland pasture. Sites recorded within this Section are chronologically diverse and include prehistoric remains, a possible Roman road, Medieval coin hoard and hut circles, Post-Medieval agricultural buildings and field systems. Also present is a Scheduled Ancient Monument, the Gurnos Tramroad (Category A) including the leat system (Category A).

11.3.13 Within this Section the majority of impacts are considered to be minor or not significant.



Section Six: A 470 Junction to Baverstock

11.3.14 The topographic character of this area consists of unimproved upland pasture. Sites recorded within this Section are mainly of Post Medieval date, consisting of a settlement, agricultural farm buildings and field systems. Industrial sites include extensive early coal and ironstone workings with associated tramroads.

11.3.15 Within this Section there would be two very significant impacts. These are the lofted cowshed (Category A) at Coed Meurig and the Baverstock settlement (Category A) and field system. The remaining impacts would be of minor or no significance.

Section Seven: Baverstock to Hirwaun

11.3.16 The topographic nature within this Section varies from unimproved upland pasture to intermediate improved upland pasture. The site distribution is concentrated towards the western part of the Section, around Hirwaun. The sites recorded towards the west of the Section include farm buildings, holloways, field systems and a 1960's viaduct. Around Hirwaun there are a series of early 19th century industrial features which include tramroads, railways and mineral workings.

11.3.17 Within this Section the potential impacts are considered to be not significant.

11.4 Conclusions

11.4.1 A number of statutory and non-statutory Cultural Heritage designations are recognised along the proposed scheme. These include:

- two Conservation Areas at Abergavenny and Butetown. Both are located outside the proposed scheme and their setting would not be directly affected;
- the New Cemetery (Late 19th century) at Llanfoist, designated a Grade II Historic Park, which would not be affected by the proposed scheme; and
- a draft Historic Landscape around Merthyr Tydfil which will include the area north of the town including a length of the A465. The setting would not be affected.

11.4.2 The impact on individual sites would be mitigated in a number of ways which include full excavation, limited excavation, strip and record, detailed earthwork survey, detailed building survey, photographic record, palaeoenvironmental sampling, preservation *in situ*, protection

from damage during construction activity, and discussion with the designers during the detailed design process. The details of the mitigation proposed for each site are contained in Volumes 1.1 to 1.7.

11.4.3 Although the geophysical survey and test-pitting programme produced limited results, it would be prudent to maintain a watching brief during construction and related works along the remainder of the proposed scheme away from the identified archaeological sites.

11.4.4 As a result of the mitigation proposed, there are only five sites (out of the original 91 affected) at which a residual impact would be present. This impact would comprise vibration from traffic and water from carriageway drainage, neither of which are considered to be significant.

Appendix I:

Archaeological Ground Surveys

Introduction

A series of archaeological ground surveys were carried out by Babtie Group surveyors under the supervision of Babtie Group's Assistant Project Archaeologist during the period from March 1996 to October 1996.

Methodology

The archaeological ground-surveys were carried out by Babtie Group surveyors using a total-station theodolite with data-loggers, digital levels and full support kit.

The resultant data was transferred to server software PC Moss (version 10.4) and then to AutoCad 12 Key Terrafirma software (version 2.0) for data manipulation and final plotting. The data was produced as a hard copy at a scale compatible with the fullest understanding of the site.

After the survey data was initially processed and contoured, visual checks were made of the surveys on a graphics screen. The initial draft plots of each survey were visually checked by the Project Manager in the field, as part of the Babtie Group Quality Assurance plan. Any amendments to the detail or format were then made and the final approved drawing was plotted at a suitable scale. These figures are attached to this appendix.

The Babtie surveyors worked to a lateral tolerance of +/-50mm on soft surfaces and a height tolerance of +/-10mm. The survey work conforms to specification of Geodetic Surveying Services SD12/96.

Results

Each survey concentrated specifically on the archaeological features, but also included spot heights, contours and sections, where these were important to understanding the nature of the site. In addition the surveys included orientation, OS datum/grid, property boundaries, topographical data and scales and the plots were annotated to highlight the most important archaeological features. The co-ordinate values shown in the drawings were determined from the existing ground controls allowing the archaeological data to be combined with the general topographical surveys and Ordnance Survey data. The relationship of the archaeology to the A465 was also shown enabling any potential impact of the proposed scheme to be determined in advance and allow design solutions to be engineered which would least affect the sites.

In the case of Site Nos.99 & 100 (leat keeper's cottage, leat, weir and sluice system) the proposed scheme design was superimposed over the site in order to determine the level of impact.

The archaeological evaluations undertaken at 'The leat keeper's cottage, weir and leat' (site Nos.99 & 100), the 'Dukestown weir' (site No.145) and the 'Baverstock settlement and field-system' (site No.232) were added to the ground surveys.

Sites Surveyed: Stage 1

Building ground surveys:

Babtie No.	Site Name/Description
14	Worker's cottage and bridge, Govilon
36	Canal bridge (eccentric arched), Gilwern
50	Primitive Methodist Chapel, Gilwern
68	Former road bridge, Saleyard
69	Llam-march Tramroad bridge, Saleyard
98	Kilns within Clydach river bank
99	Leat keeper's cottage, weir and sluice, Clydach
106	Road and foot bridges, Blackrock
107	Industrial site, Nant Gwyn
120	Squatter settlement & watercourses
145	Cast iron weir, Dukestown
154	Industrial building, Princetown
157	Railway bridge and tunnel, Llechryd
222	Lofted cow shed, Coed Meurig Farm
260	Walled enclosure, Gilwern

Earthwork Surveys:

Babtie No.	Site Name/Description
83	Siloam chapel cemetery
100	Leat system, Clydach
113	Branch line of Clydach Railroad & colliery level
155	Earthworks (demolished building), Princetown
160	Northern section of leat system, Blaen Rhymney
232	Settlement and field system, Baverstock

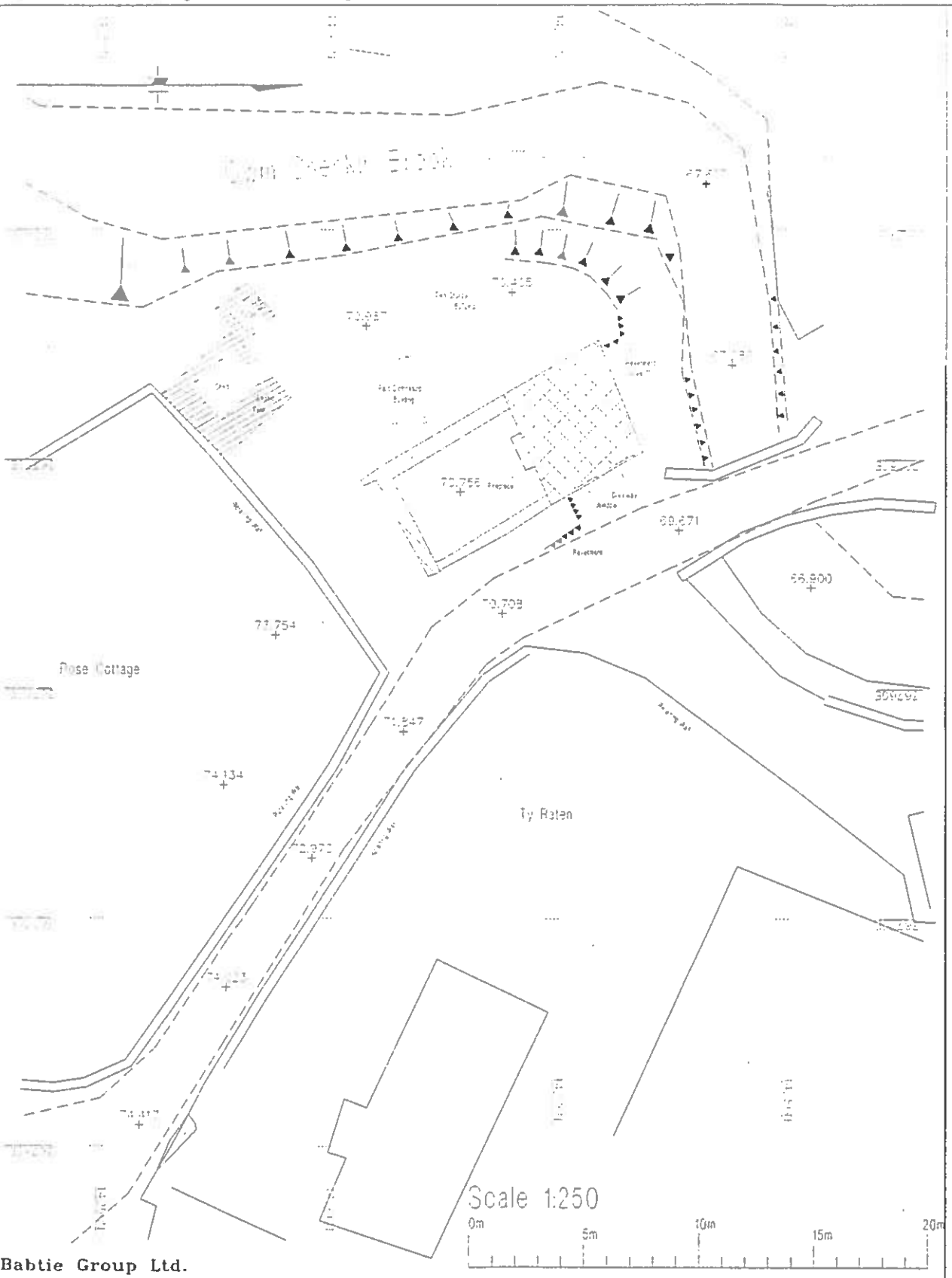
Total = 21 Archaeological ground surveys

Client WELSH OFFICE – HIGHWAYS DIRECTORATE

Job A465 ABERGAVENNY TO HIRWAUN DUALLING

Cultural Heritage: Ground Survey

Worker's cottage and Bridge (Site No.14). Govilon



© Babtie Group Ltd.

REV.

Babtie

BABTIE GROUP Ltd
multi-disciplinary consultants
ALEXANDRA HOUSE 307–315 COWBRIDGE ROAD EAST
CARDIFF CF5 1JD

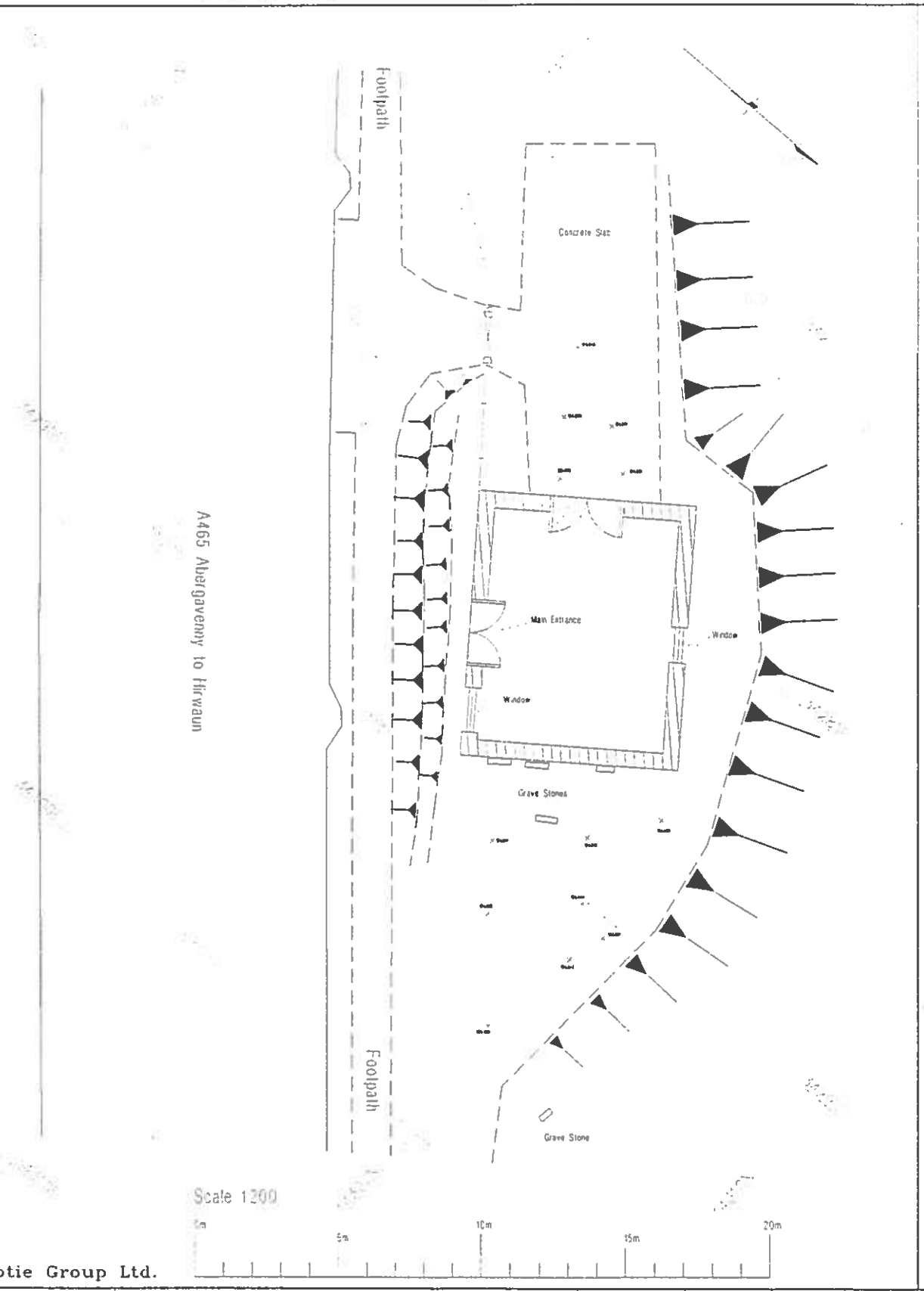
DRAWN BY	NMB	JOB No.	BTI015586
SCALE	1:250	Fig. No.	
APPROVED		DATE	27/6/97

Client WELSH OFFICE – HIGHWAYS DIRECTORATE

Job A465 ABERGAVENNY TO HIRWAUN DUALLING

Cultural Heritage: Ground Survey

Primitive Methodist Chapel (Site No.50), Gilwern



© Babtie Group Ltd.

REV.

Babtie

BABTIE GROUP Ltd
multi-disciplinary consultants
ALEXANDRA HOUSE 307–315 COWBRIDGE ROAD EAST
CARDIFF CF5 1JD

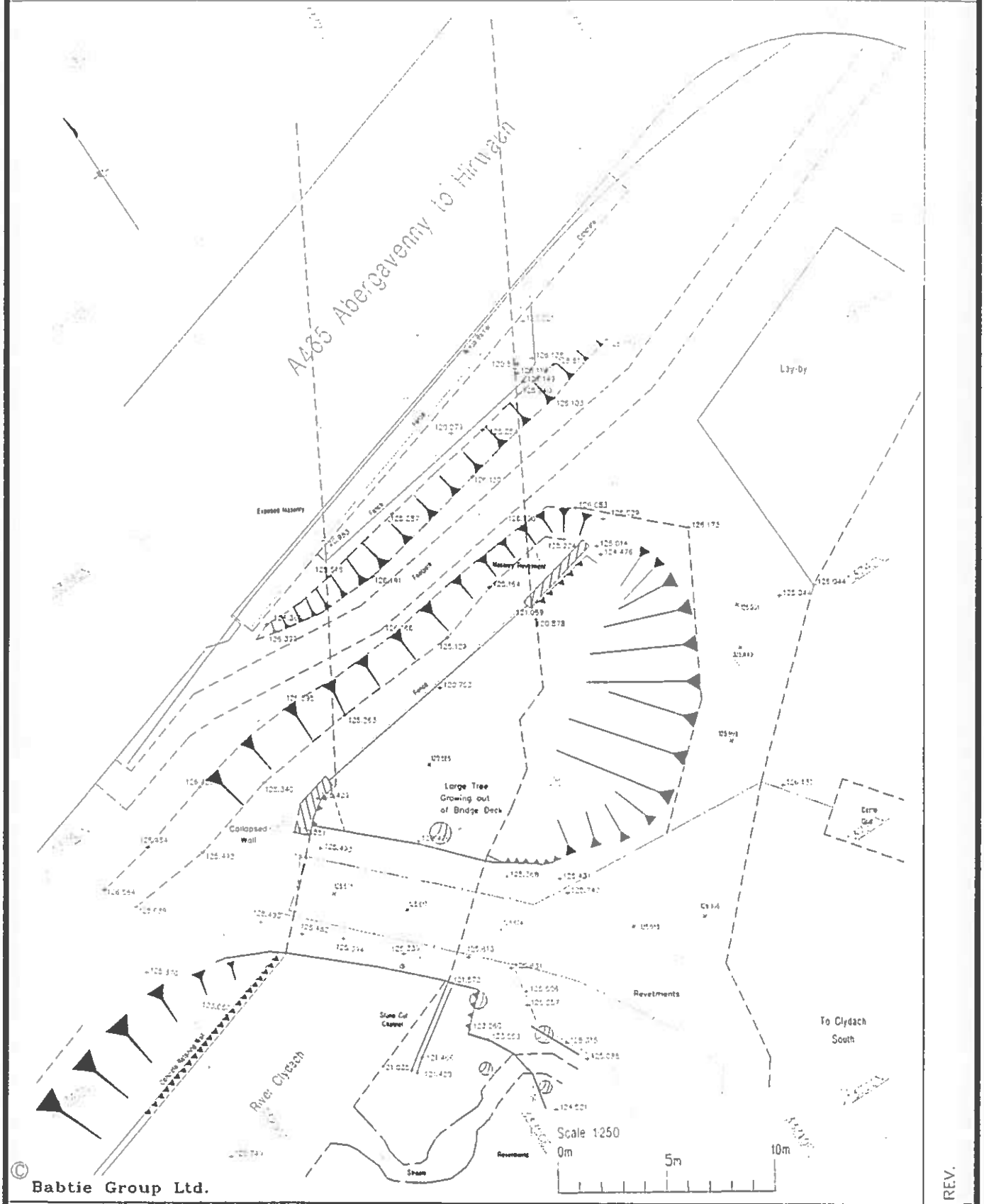
DRAWN BY	NMB	JOB No.	BTI015586
SCALE	1:200	Fig. No.	
APPROVED		DATE	27/6/97

Client WELSH OFFICE – HIGHWAYS DIRECTORATE

Job A465 ABERGAVENNY TO HIRWAUN DUALLING

Cultural Heritage: Ground Survey

Former road bridge and Llam-march tramroad (Site No.63/69), Salevers



© Babtie Group Ltd.

REV.

Babtie

BABTIE GROUP Ltd
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST
CARDIFF CF5 1JD

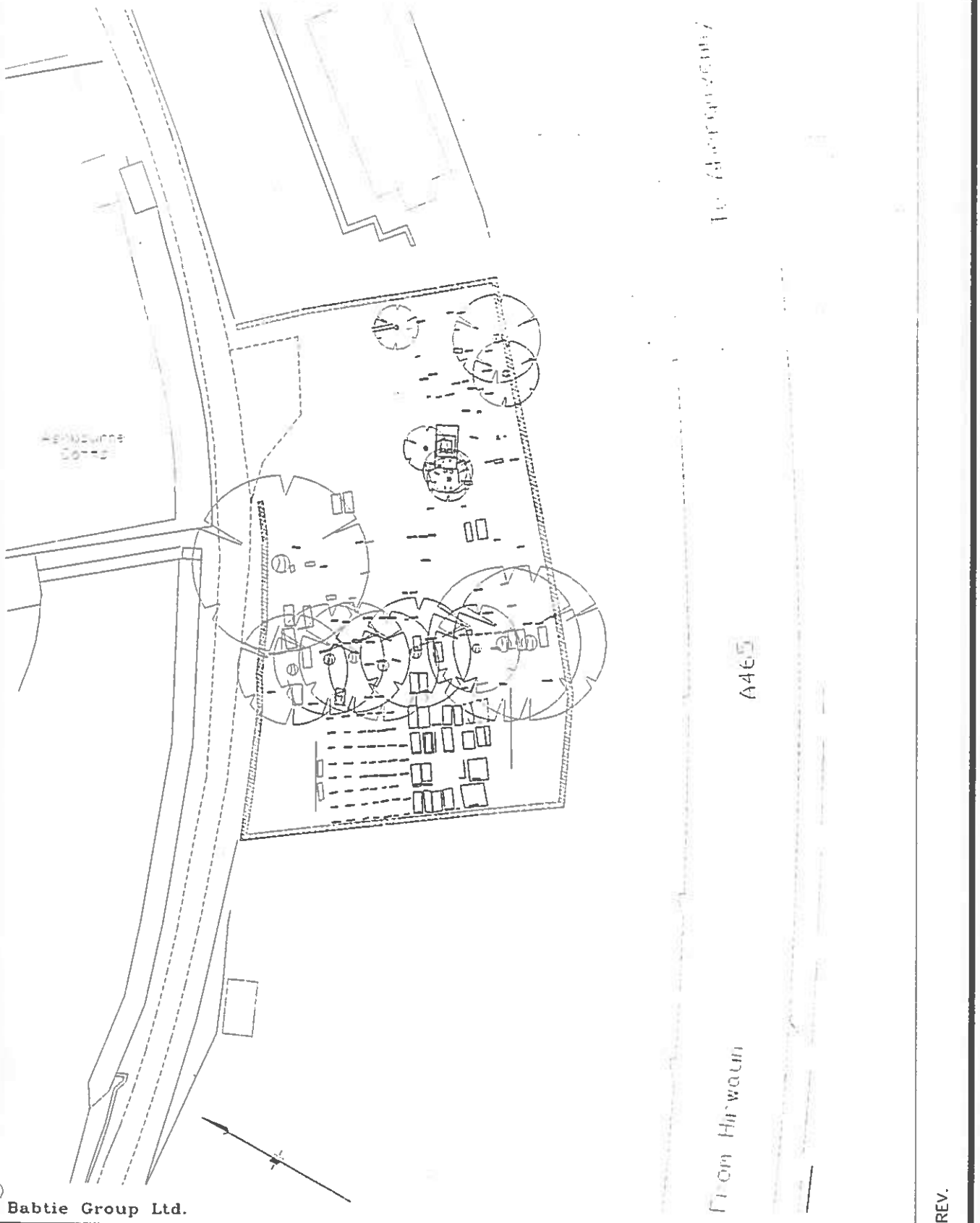
DRAWN BY	NMB	JOB No.	BTI015586
SCALE	1:250	Fig. No.	
APPROVED		DATE	27/6/97

Client WELSH OFFICE – HIGHWAYS DIRECTORATE

Job A465 ABERGAVENNY TO HIRWAUN DUALLING

Cultural Heritage: Ground Survey

Siloam Chapel Cemetery (Site No.83)



© Babtie Group Ltd.

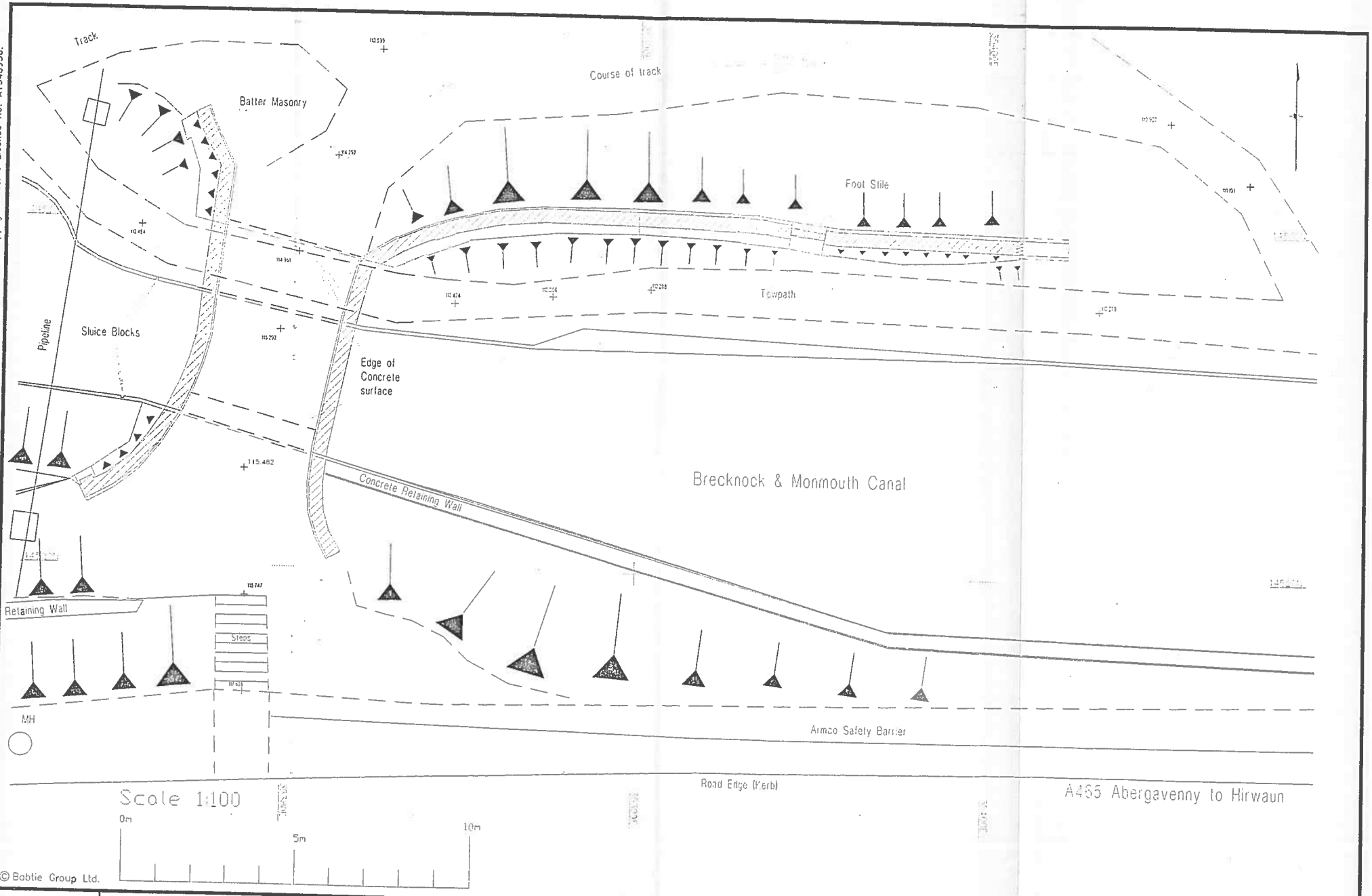
REV.

Babtie

BABTIE GROUP Ltd
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST
CARDIFF CF5 1JD

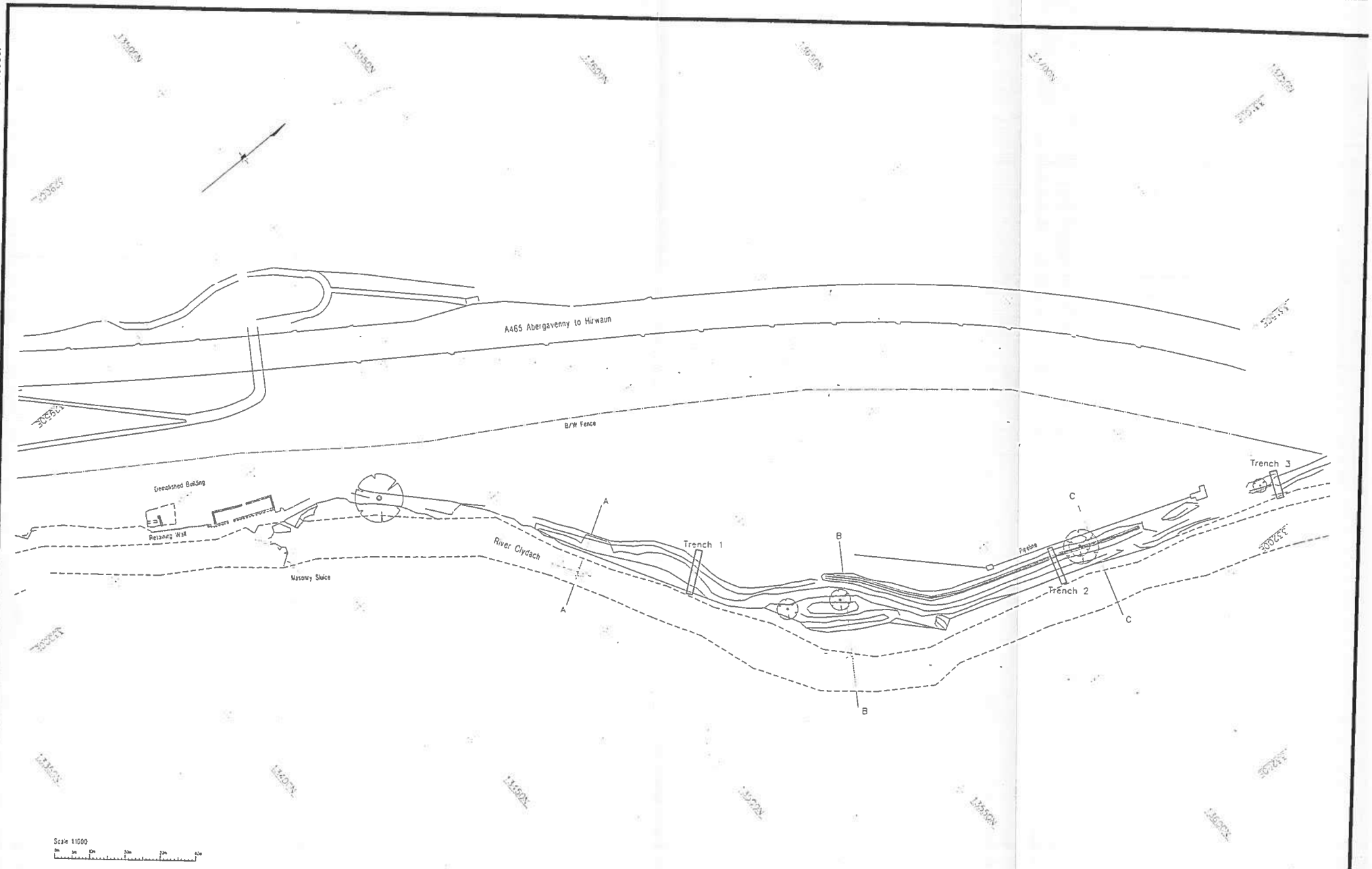
DRAWN BY	NMB	JOB No.	BTI015586
SCALE	1:500	Fig. No.	
APPROVED		DATE	27/6/97.

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: GROUND SURVEY Canal Bridge (eccentric arched) (Site No.36), Gilwern	Fig. No.
		APPROVED BY				
		SCALE	1:100			Rev.
		DATE	27/8/97			

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



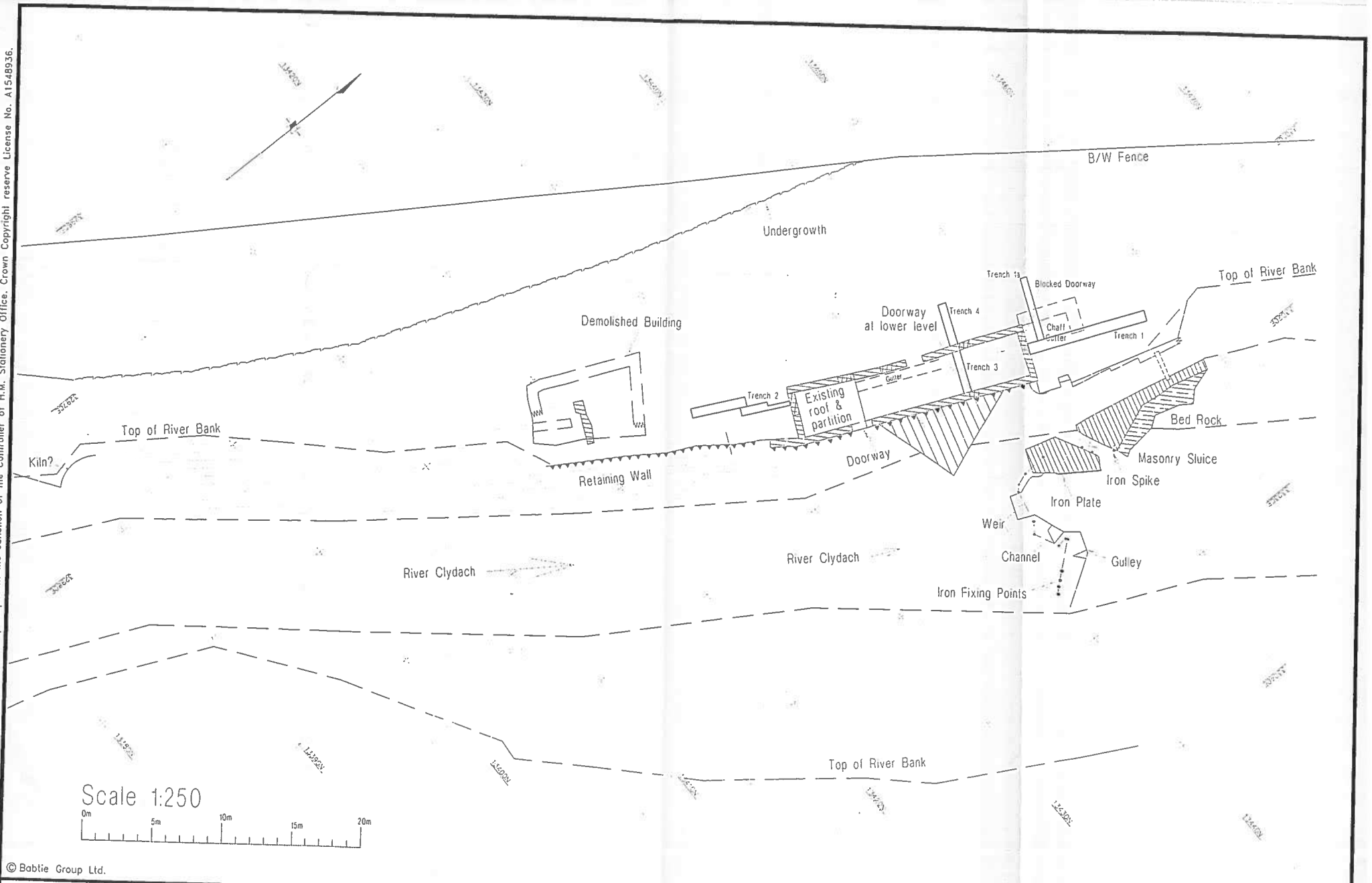
© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE - HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN-DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: GROUND SURVEY Leat keeper's cottage, weir, sluice and leat system (Site Nos. 99 and 100), Clydach
		APPROVED BY			
		SCALE	1:1000		
		DATE	27/8/97		

Fig. No.

Rev.

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



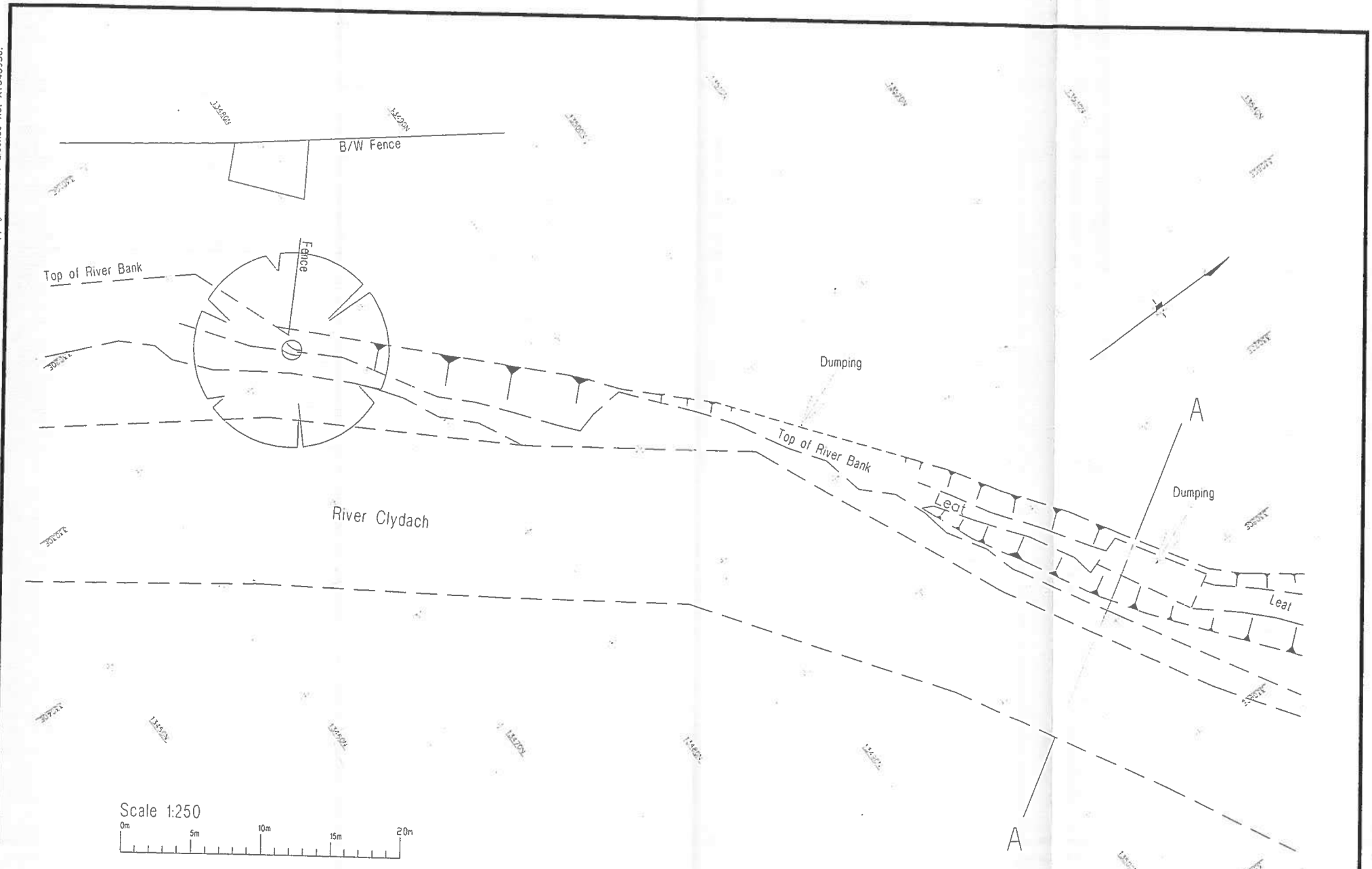
© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307–315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: GROUND SURVEY Leat keeper's cottage, weir, sluice and kilns (Site Nos. 98 and 99), Clydach
		APPROVED BY			
		SCALE	1:250		
		DATE	27/8/97		

Fig. No.

Rev.

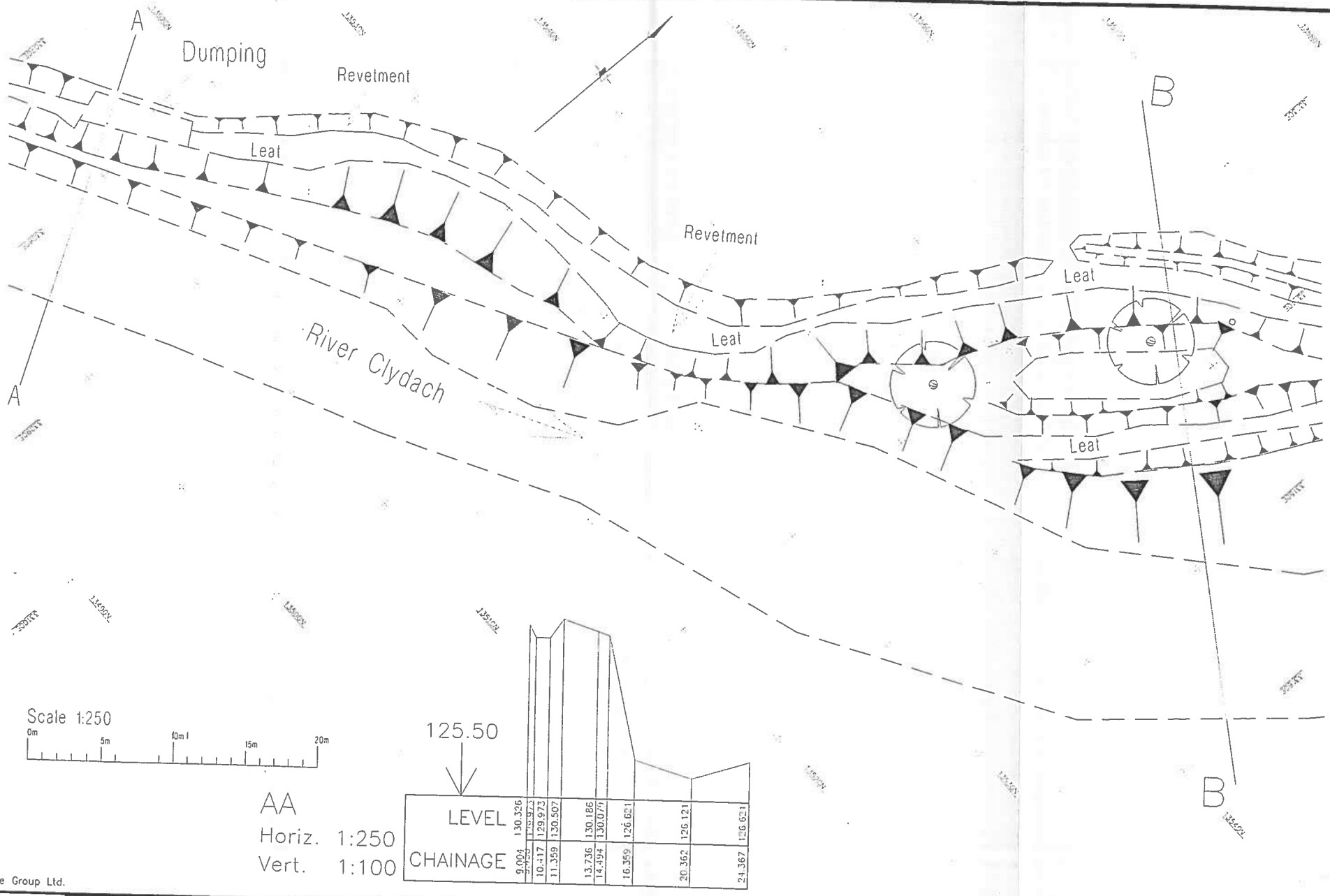
Reproduced from or based upon Ordnance Survey mapping with the permission of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE - HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN-DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: GROUND SURVEY Leat system (Site No. 100), Clydach	Fig. No.
		APPROVED BY				
		SCALE	1:250			Rev.
		DATE	27/8/97			

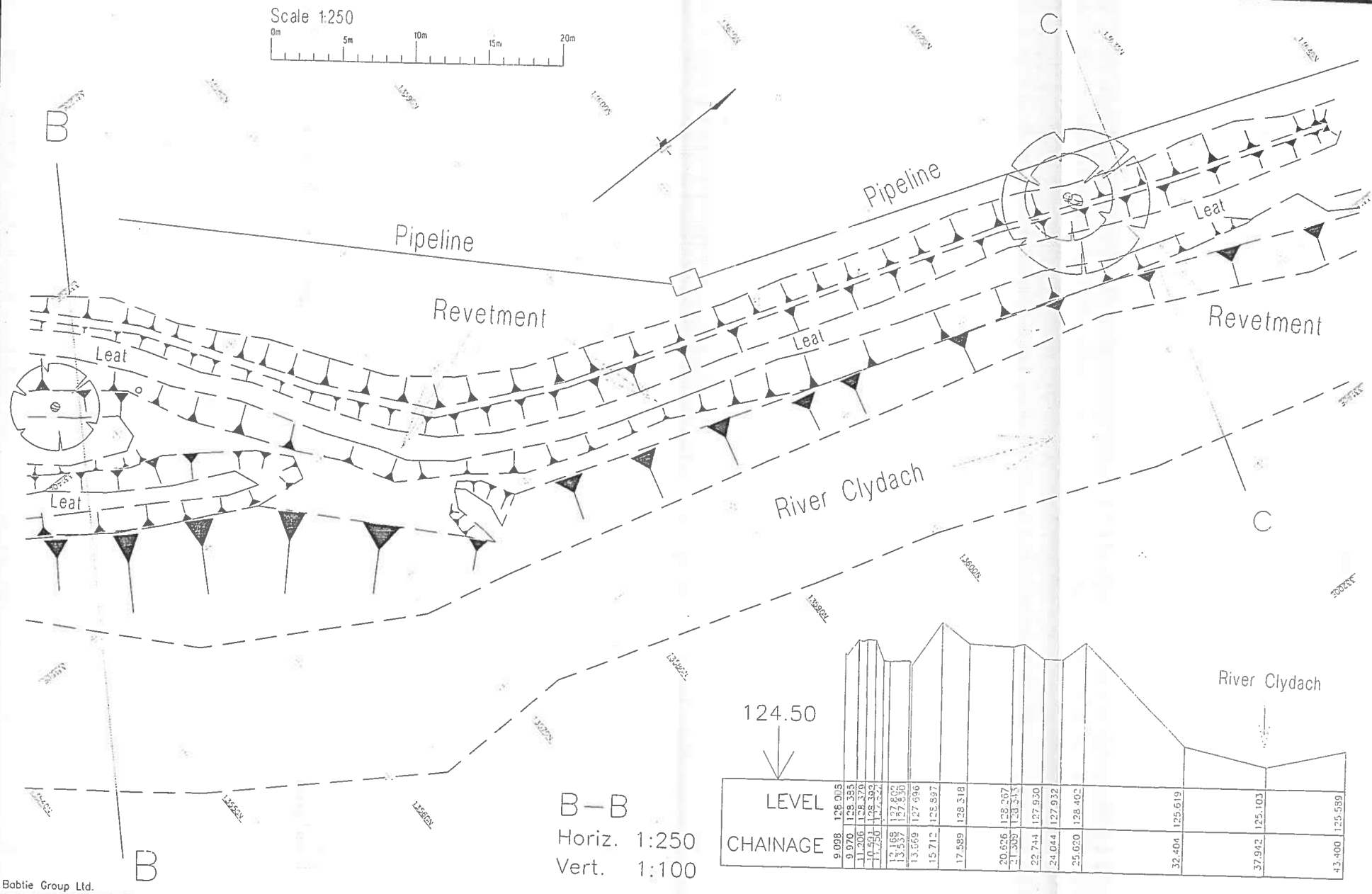
Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: GROUND SURVEY Leat System (Site No.100), Clydach	Fig. No.
		APPROVED BY				
		SCALE	1:250			
		DATE	27/8/97			Rev.

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.

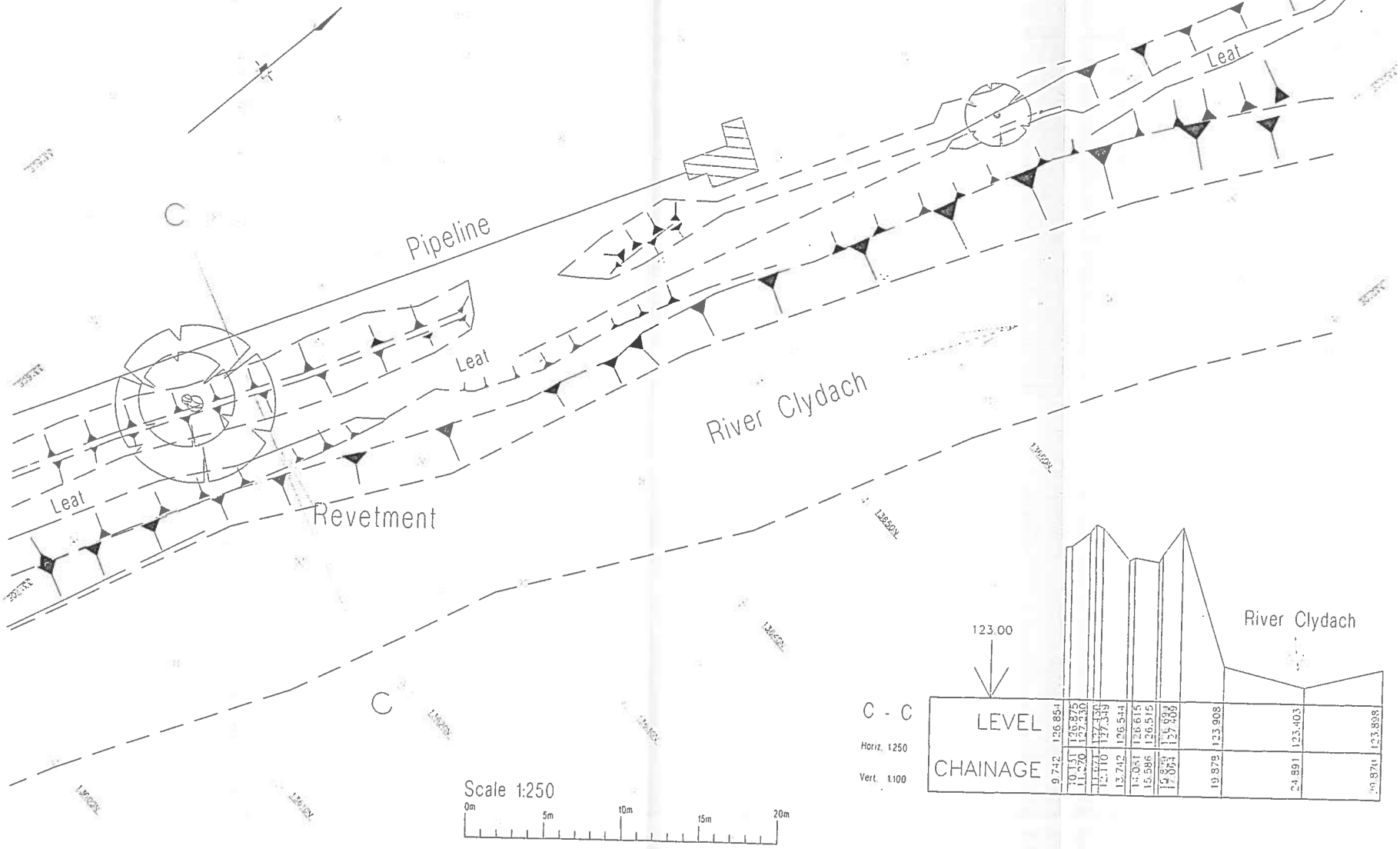


B–B
Horiz. 1:250
Vert. 1:100

© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307–315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: GROUND SURVEY Leat system (Site No.100), Clydach	Fig. No.
		APPROVED BY				
		SCALE	1:250			
		DATE	27/8/97			Rev.

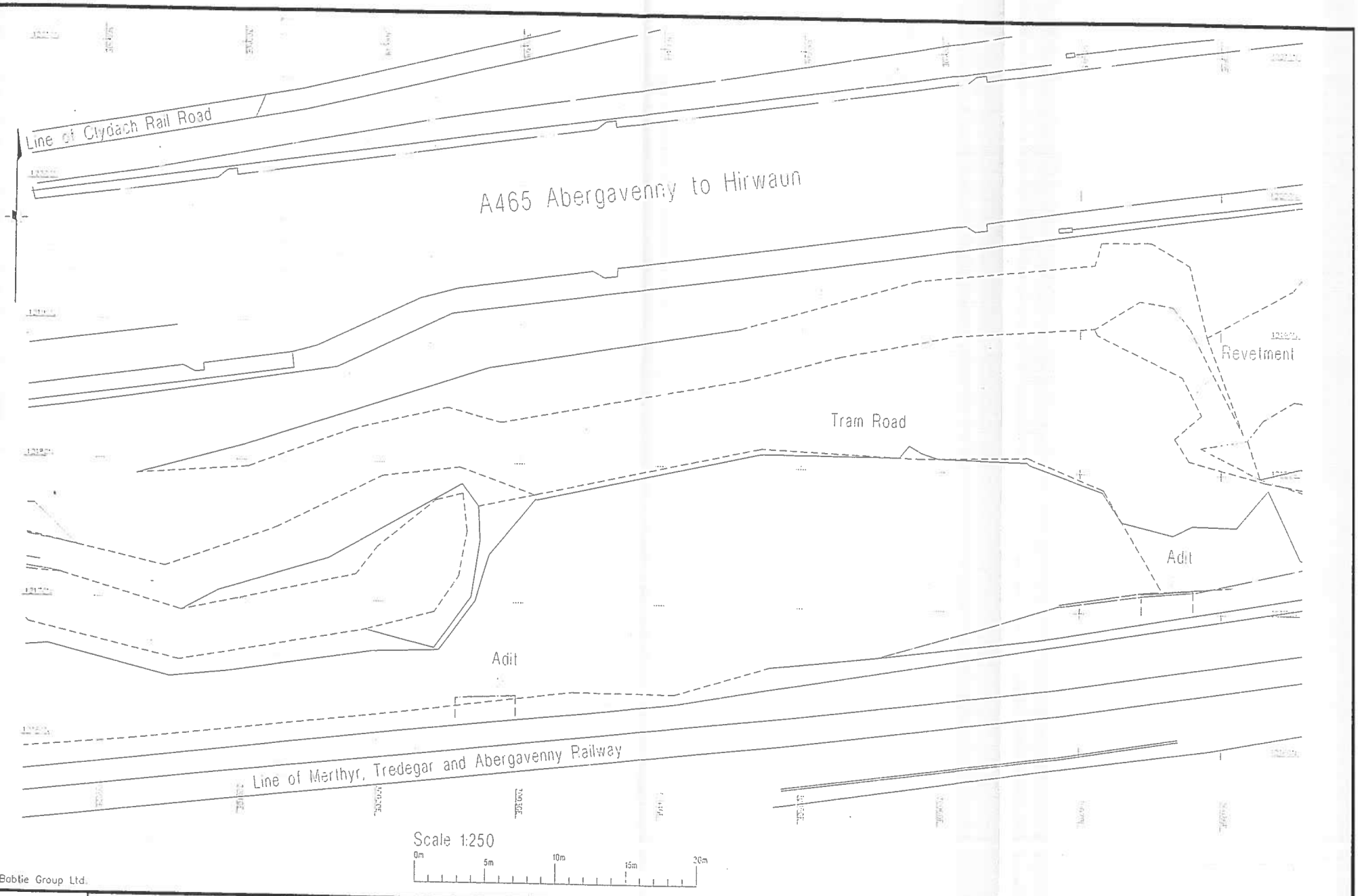
Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE - HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN-DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: GROUND SURVEY Leat system (Site No.100), Clydach	Fig. No.
		APPROVED BY				
		SCALE	1:250			
		DATE	27/8/97			Rev.

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: GROUND SURVEY Branch line of Clydach Railroad & colliery level (Site No.113)
		APPROVED BY			
		SCALE	1:250		
		DATE	27/8/97		

Fig. No.

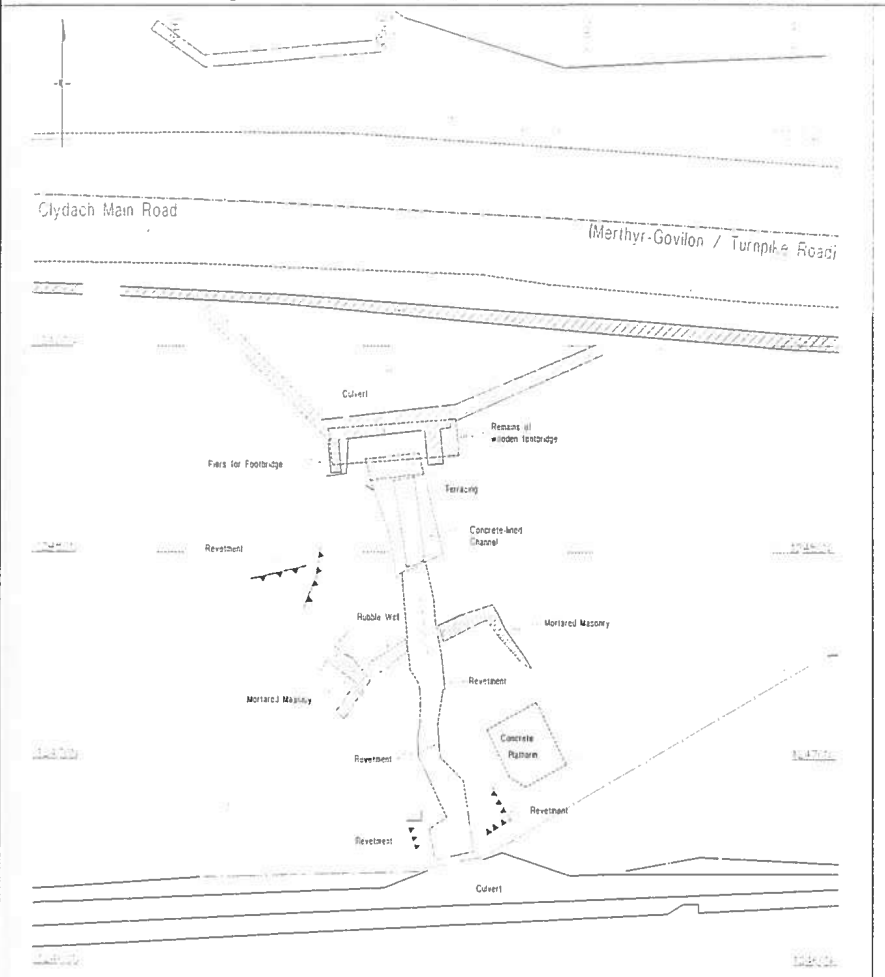
Rev.

Client WELSH OFFICE – HIGHWAYS DIRECTORATE

Job A465 ABERGAVENNY TO HIRWAUN DUALLING

Cultural Heritage: Ground Survey

Road & foot bridges & Industrial site (Site No.106/107), Blackrock



A465 Abergavenny to Hirwaun

Scale 1:250

0m 5m 10m 15m 20m

© Babtie Group Ltd.

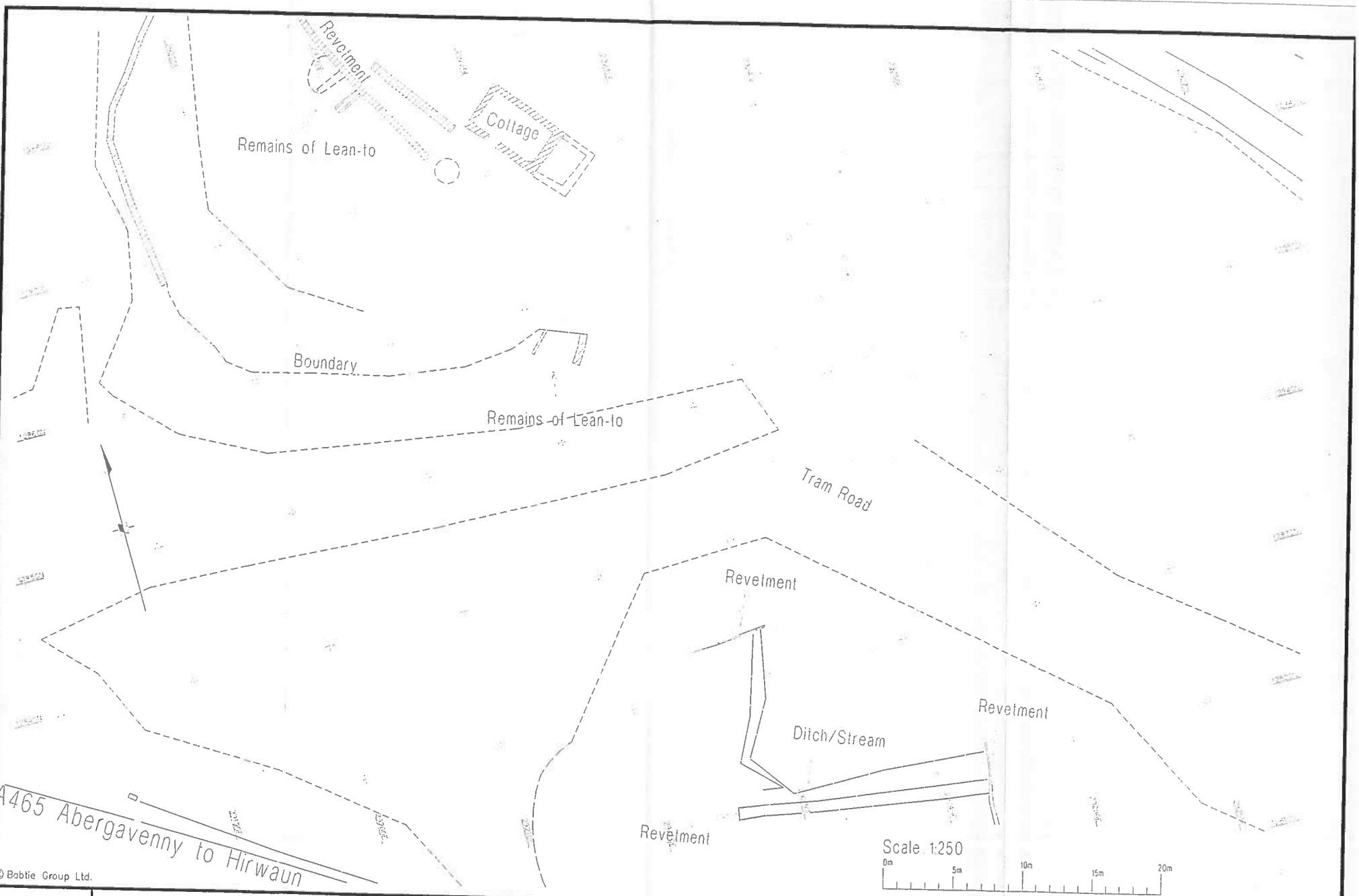
REV.

Babtie

BABTIE GROUP Ltd
multi-disciplinary consultants
ALEXANDRA HOUSE 307–315 COWBRIDGE ROAD EAST
CARDIFF CF5 1JD

DRAWN BY	NMB	JOB No.	BTI015586
SCALE	1:250	Fig. No.	
APPROVED		DATE	27/6/97

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.

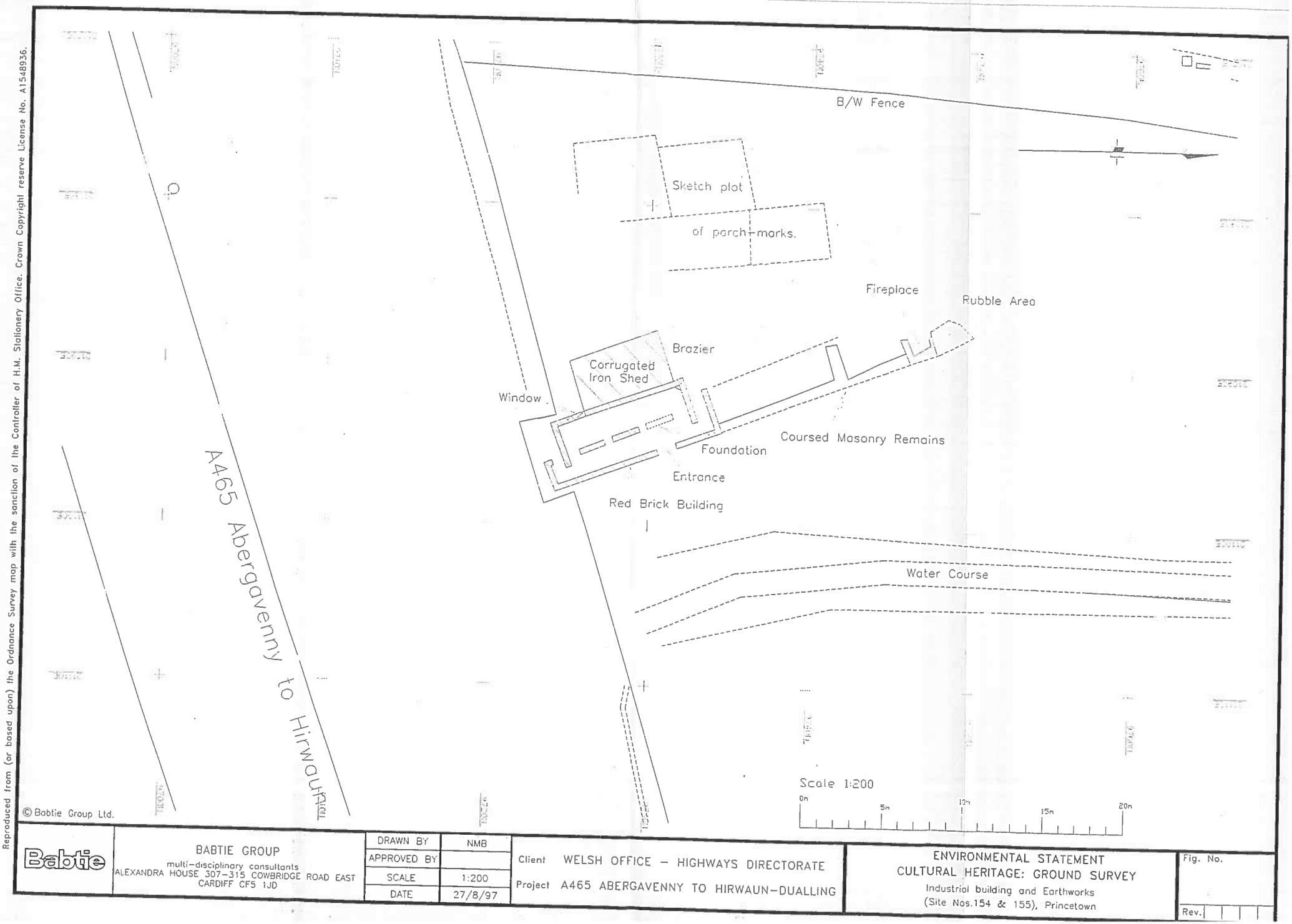


© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: GROUND SURVEY Squatter settlement and watercourses (Site No.120)
		APPROVED BY			
		SCALE	1:250		
		DATE	27/8/97		

Fig. No.

Rev.



Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.

© Babtie Group Ltd.

Babtie

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST
CARDIFF CF5 1JD

DRAWN BY	NMB
APPROVED BY	
SCALE	1:200
DATE	27/8/97

Client WELSH OFFICE – HIGHWAYS DIRECTORATE

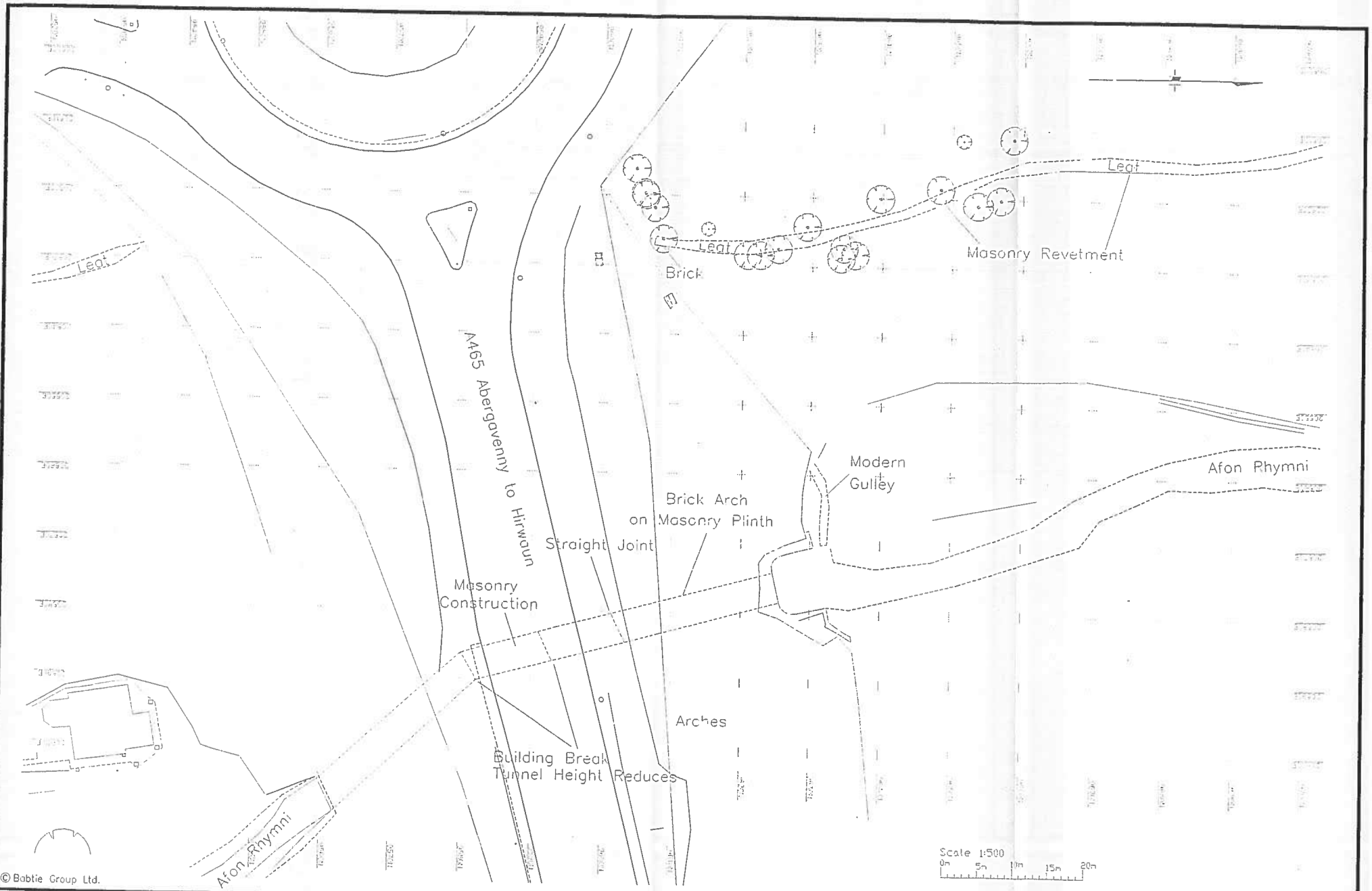
Project A465 ABERGAVENNY TO HIRWAUN–DUALLING

ENVIRONMENTAL STATEMENT
CULTURAL HERITAGE: GROUND SURVEY
Industrial building and Earthworks
(Site Nos.154 & 155), Princetown

Fig. No.

Rev.

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A15J48936.



© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: GROUND SURVEY Railway bridge, Tunnel and Northern section of leat (Site Nos.157 & 160), Llechryd
		APPROVED BY			
		SCALE	1:500		
		DATE	27/8/97		

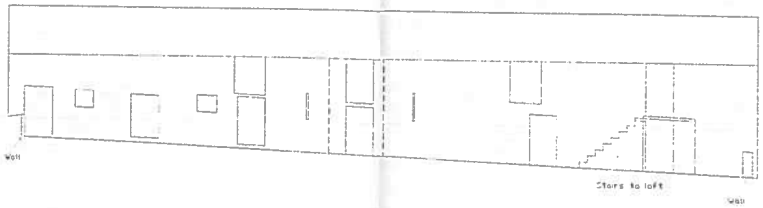
Fig. No.

Rev.

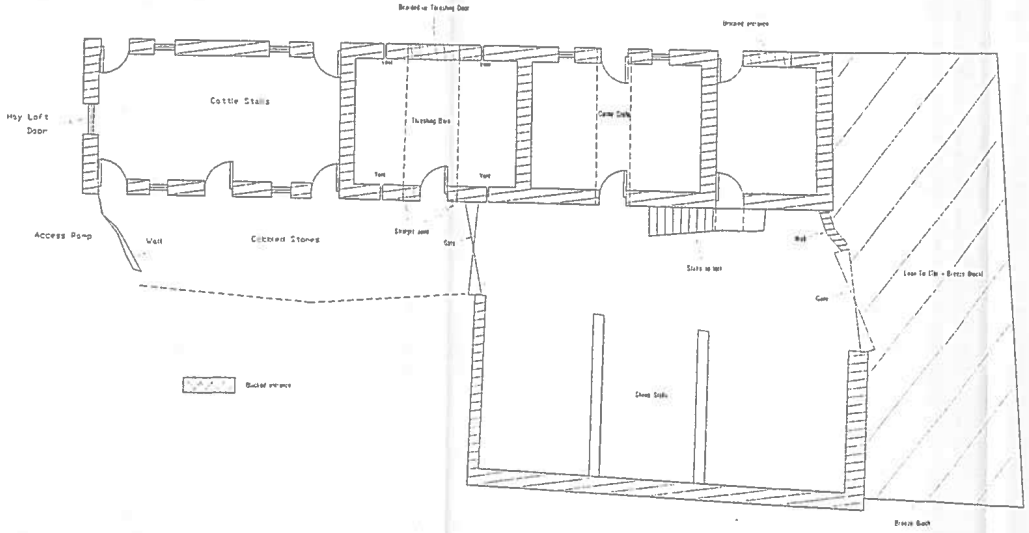
Scale 1:200

0m 5m 10m 15m 20m

Front Elevation



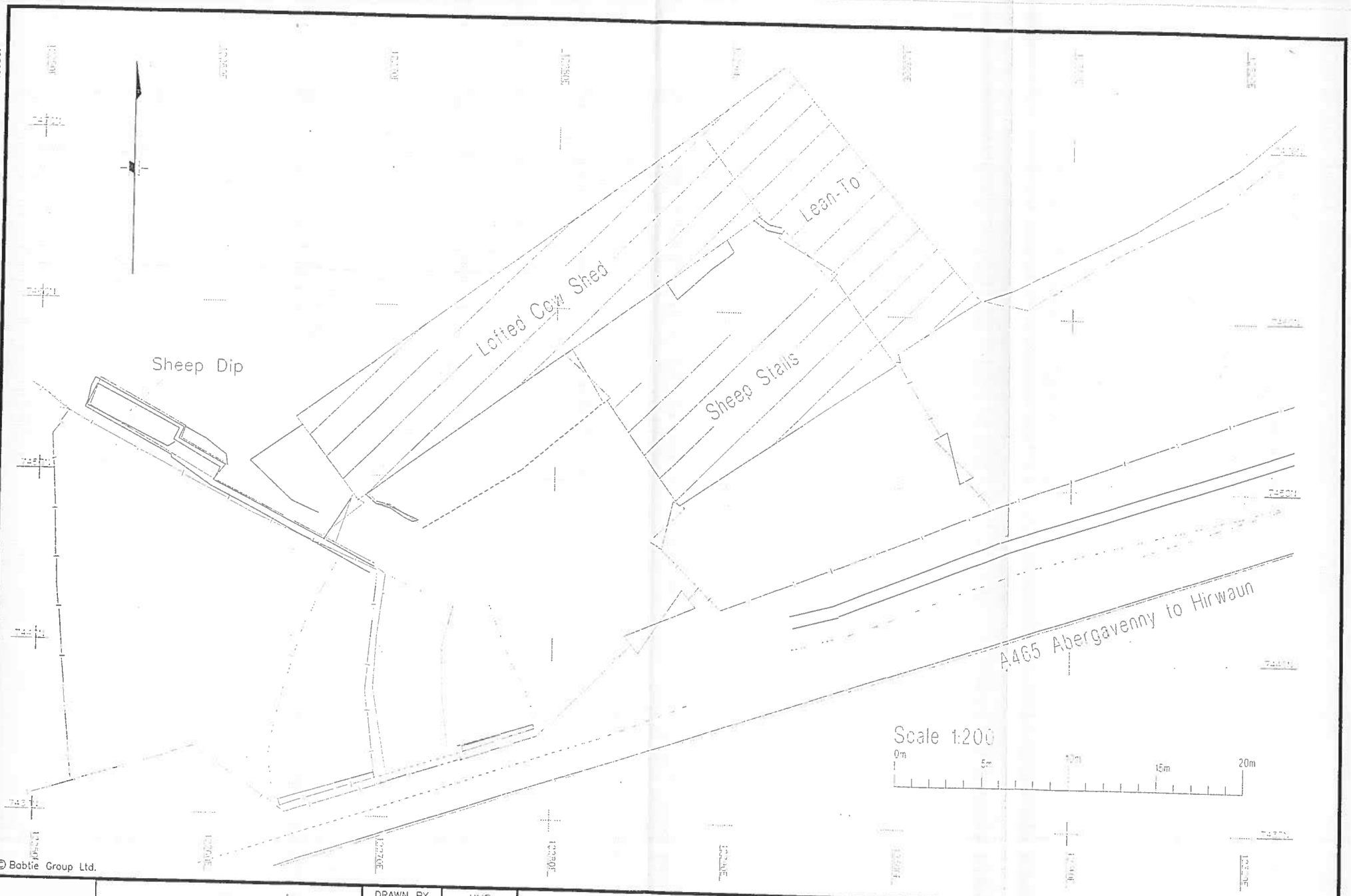
Plan View



Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.

© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307–315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: GROUND SURVEY Lofted cow shed (Site No.222), Coed Meurig Farm	Fig. No.
		APPROVED BY				
		SCALE	1:200			
		DATE	27/8/97			Rev.



Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.

© Babtie Group Ltd.

Babtie

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST
CARDIFF CF5 1JD

DRAWN BY	NMB
APPROVED BY	
SCALE	1:200
DATE	27/8/97

Client WELSH OFFICE - HIGHWAYS DIRECTORATE

Project A465 ABERGAVENNY TO HIRWAUN-DUALLING

ENVIRONMENTAL STATEMENT
CULTURAL HERITAGE: GROUND SURVEY
Lofted cow shed
(Site No.222), Coed Meurig Farm

Fig. No.

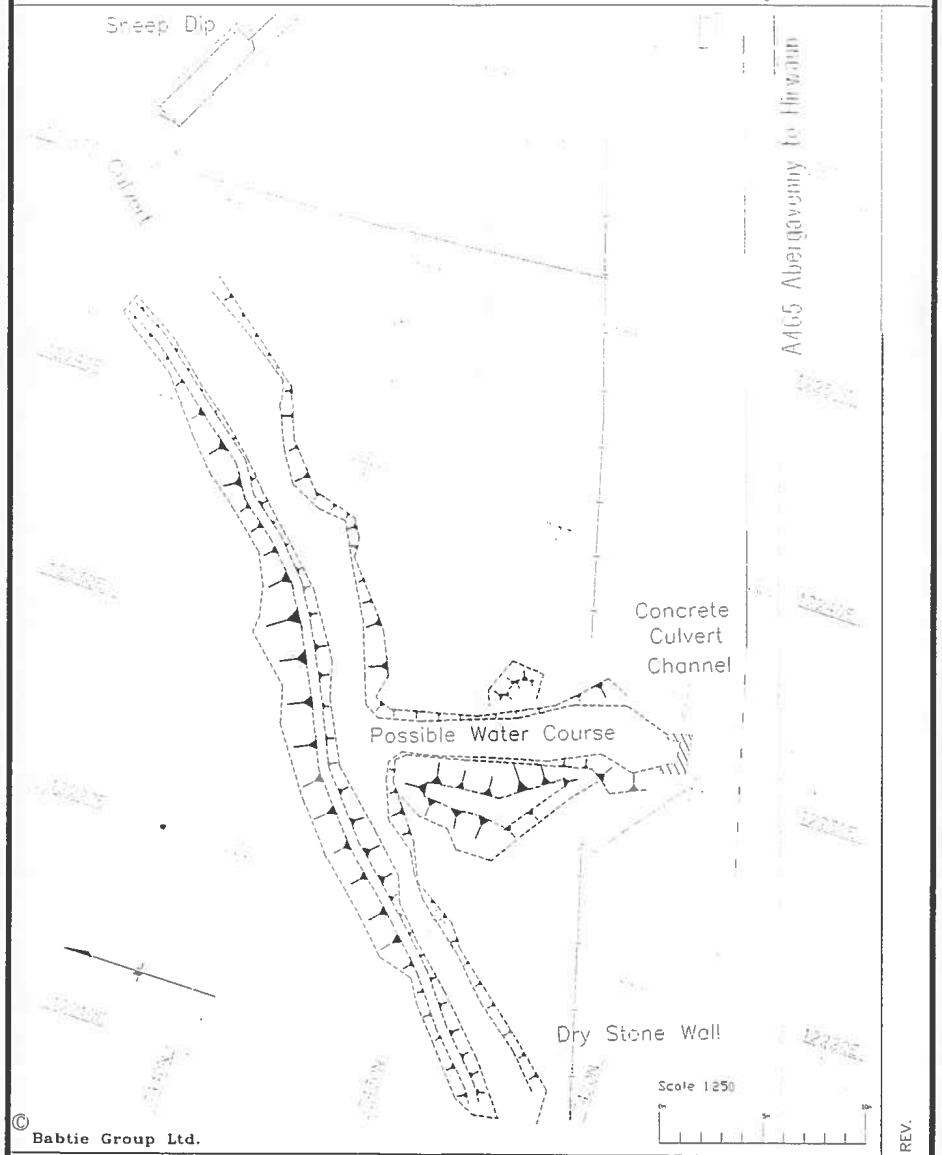
Rev.

Client WELSH OFFICE – HIGHWAYS DIRECTORATE

Job A465 ABERGAVENNY TO HIRWAUN DUALLING

Cultural Heritage: Ground Survey

Water course at Lofted cow shed (Site No.222), Coed Meurig Farm



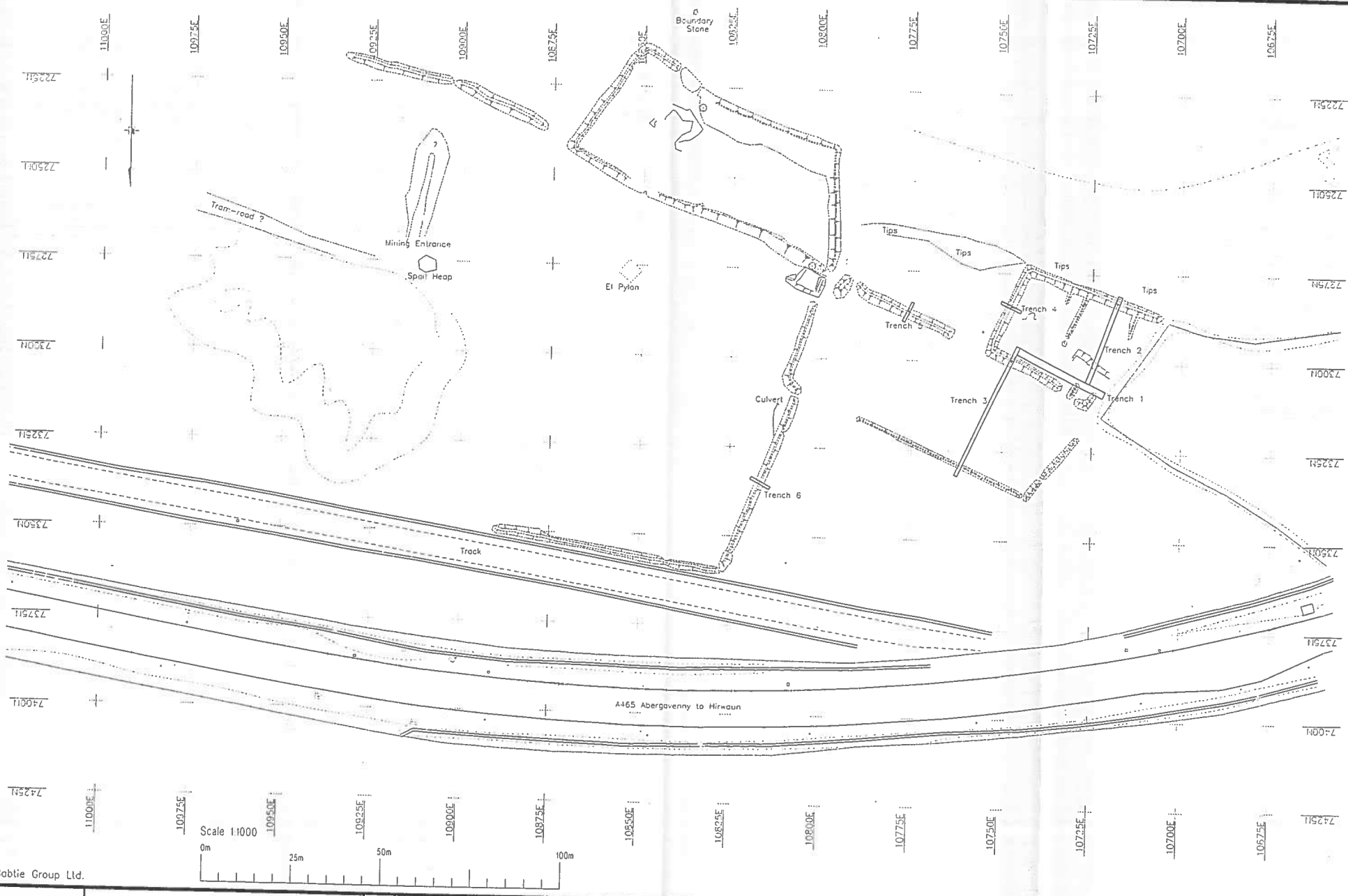
© Babtie Group Ltd.

REV.

Babtie

BABTIE GROUP Ltd
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST
CARDIFF CF5 1JD

DRAWN BY	NMB	JOB No.	BTI015586	
SCALE	1:250	Fig. No.		
APPROVED		DATE	27/6/97	



Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.

© Babtie Group Ltd.

Babtie

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST
CARDIFF CF5 1JD

DRAWN BY	NMB
APPROVED BY	
SCALE	1:1000
DATE	27/8/97

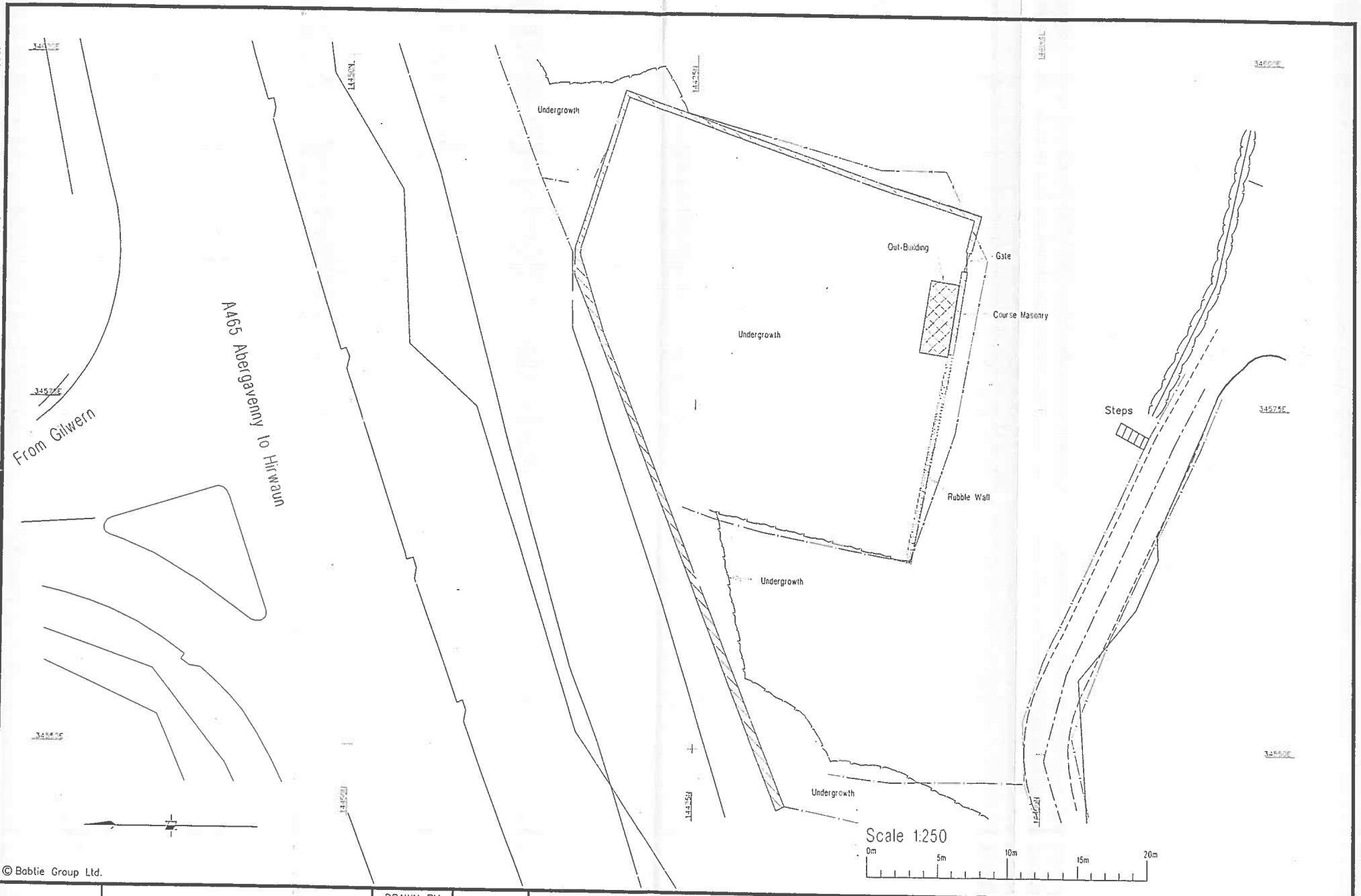
Client WELSH OFFICE - HIGHWAYS DIRECTORATE

Project A465 ABERGAVENNY TO HIRWAUN-DUALLING

ENVIRONMENTAL STATEMENT
CULTURAL HERITAGE: GROUND SURVEY
Settlement and field system
(Site No. 232), Baverstock

Fig. No.

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307–315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: GROUND SURVEY Walled enclosure (Site No. 260), Gilwern	Fig. No. Rev.
		APPROVED BY				
		SCALE	1:250			
		DATE	27/8/97			

Appendix II

Test-pit Programme

Introduction

The supplement to the Phase 1 Draft Report recommended an archaeological test-pit programme which included the excavation and recording of 72 test-pits. Sixteen areas along the proposed scheme were considered as having potential for archaeological remains on the basis of their topographic location relative to the underlying geology. As a result of these recommendations a programme of 69 test-pits was agreed by the Welsh Office, as part of the archaeological mitigation measures of the A465 Abergavenny to Hirwaun Dualling.

To date, 59 hand-excavated test-pits were completed during the period from September to October 1996. The remaining eleven test-pits could not be excavated due to conflicts with seasonal agricultural land use and a Geophysical survey. The Geophysical survey was undertaken by Stratascan on behalf of Babtie Group.

Test-pit size was standardised throughout the programme - 2m square, depth varied according to the exposure of the underlying drift or solid geology or excavation to 1.2m, whichever greater. The location and results of the completed test-pits are summarised below. The locations of the test-pits are shown on the attached figures.

Area 1.

Geophysical survey and archaeological test-pit programme of land between SO 9680 0530 and SO 9740 0550. Within this area the Geophysical survey included land south of the A465 as well as a survey north of the farmstead of Parc-Hensol (SO 9683 0533), meadow land east of the River Cynon (SO 9688 0529) and on the south-west facing ridge east of the Neath Mineral Railway. An archaeological test-pit programme will commence in May 1997.

Area 2

Archaeological test-pit programme of land between SO 9780 0580 and SO 9800 0620. Programme included land north and south of the A465 - rough pasture plus a series of nineteenth century (or earlier) drystone walled enclosures, 2 holloways and sheep corralling channels (running north/south). A Geophysical survey was completed and is reported in supplement 2.

Test pit 1:2

Excavation depth: 0.29m.

Land use: Improved pasture

Drift Geology: Cambic stagnogley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 2:2

Excavated depth: 0.53m

Land use: Improved pasture

Drift Geology: Cambic stagnogley soils

Solid Geology: Sandstone

Archaeology present: occasional slag within a mid brown clay (A horizon)

Test pit 3:2

Excavated depth: 0.55m

Land use: Improved pasture

Drift Geology: Cambic stagnogley soils

Solid Geology: Sandstone

Archaeology present: small selection of 19th pottery sherds within the upper sequence.

Test pit 4:2

Excavated depth: 0.30m

Land use: Coppice woodland

Drift Geology: Cambic stagnogley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 5:2

Excavated depth: 0.34m

Land use: Coppice woodland

Drift Geology: Cambic stagnogley

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Area 3

Geophysical survey and archaeological test-pit programme of land between SO 9860 0660 and 9885 0690. The area included a series of nineteenth century (or earlier) drystone walled enclosures as well as a holloway. Also present is evidence of a Post-Medieval coppice woodland.

Test-pit 1:3

Excavated depth: 0.38m
Land use: Improved upland pasture
Drift Geology: Cambic stagnogley soils
Solid Geology: Sandstone
No archaeological features or artifacts recorded

Test-pit 2:3

Excavated depth: 0.41m
Land use: Improved upland pasture
Drift Geology: Cambic stagnogley soils
Solid Geology: Sandstone
No archaeological features or artifacts recorded

Test-pit 3:3

Excavated depth: 0.48m
Land use: Improved upland pasture
Drift Geology: Cambic stagnogley soils
Solid Geology: Sandstone
No archaeological features or artifacts recorded

Test-pit 4:3

Excavated depth: 0.56m
Land use: Improved upland pasture
Drift Geology: Cambic stagnogley soils
Solid Geology: Sandstone
No archaeological features or artifacts recorded

Test-pit 5:3

Excavated depth: 0.48m

Land use: Improved upland pasture

Drift Geology: Cambic stagnogley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Area 4

Archaeological test-pit programme of land between SO 9960 0700 and SO 9990 0700. This area is located south of the A465 within rough heath-land pasture with a high water-catchment. Interspersed within this area is evidence of early industrial activity including a substantial metalled track running north/south, the remnants of a dam, sluice system and quarry tipping. North of these features, but south of the A465 the land remains undisturbed suggesting the potential for later prehistoric activity. Test-pit sediments within this area revealed a glacial sediment sequence constructed of a light till fabric.

Test-pit 1:4

Excavated depth: 0.51m

Land use: Unimproved upland pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test-pit 2:4

Excavated depth: 0.28m

Land use: Unimproved upland pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test-pit 3:4

Excavated depth: 0.47m

Land use: Unimproved upland pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Area 5

Archaeological test-pit programme of land between SO 0130 0720 and SO 0160 0720. This small area of marshy pasture land is located between the old A465 and the present A465 (to the south). To the north-west and south-west are the remains of a Bronze Age landscape. It would appear that this strip of land has been little disturbed.

Test-pit 1:5

Excavated depth: 0.43m
Land use: Rough upland pasture
Drift Geology: Cambic stagnohumic gley soils
Solid Geology: Sandstone
No archaeological features or artifacts recorded

Test-pit 2:5

Excavated depth: 0.55m
Land use: Rough upland pasture
Drift Geology: Cambic stagnohumic gley soils
Solid Geology: Sandstone
No archaeological features or artifacts recorded

Test-pit 3:5

Excavated depth: 0.52m
Land use: Rough upland pasture
Drift Geology: Cambic stagnohumic gley soils
Solid Geology: Sandstone
No archaeological features or artifacts recorded

Test-pit 4:5

Excavated depth: 0.63m
Land use: Rough upland pasture
Drift Geology: Cambic stagnohumic gley soils
Solid Geology: Sandstone
No archaeological features or artifacts recorded

Area 6

Geophysical survey and archaeological test-pit programme of land between SO 0230 0750 and SO 0270 0780. Area surveyed follows the proposed scheme across Nant Ffrwd and the western slopes of the Taf Fawr. Within this area is (little disturbed) improved pasture land (south-facing) which is enclosed within a drystone walled landscape, (early nineteenth century in date).

Test-pit 1:6

Excavated depth: 0.30m

Land use: Improved upland pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test-pit 2:6

Excavated depth: 0.65m

Land use: Improved upland pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

Archaeology present: Charcoal and coke fragments within [003]

Test-pit 3:6

Excavated depth: 0.72m

Land use: Improved upland pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

Archaeology present: 19th/20th century pottery and occasional coal fragments in [002]

Test-pit 4:6

Excavated depth: 0.48m

Land use: Improved upland pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test-pit 5:6

Excavated depth: 0.58m

Land use: Improved upland pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Area 7

Archaeological test-pit programme of land between SO 0360 0820 and SO 0410 0840. Within the area, south of the present A465, the proposed scheme would take an east/west direction and would potentially affect an historic landscape which includes drystone walling and possible prehistoric activity in the form of 2 large limestone slabs of uncertain provenance (now evaluated).

Test pit 1:7

Excavation depth: 1.30m.

Land use: Disused open-cast quarry

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 2:7

Excavation depth: 0.26m.

Land use: Disused open-cast quarry

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 3:7

Excavation depth: 0.46m.

Land use: Disused open-cast quarry

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 4:7

Excavation depth: 0.35m.

Land use: Improved upland pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 5:7

Excavation depth: 0.24m.

Land use: Improved upland pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Area 8

Archaeological test-pit programme of land between SO 0545 0862 and SO 0570 0867. A series of test-pits were excavated to the north of the A465, east of Gurnos Farm. Particular interest was placed on a circular drystone walled feature and rough pasture directly to the east which reveal minor prehistoric activity; a possible prehistoric quern stone (find No. 201) has been found nearby.

Test pit 1:8

Excavation depth: 0.32m.

Land use: Improved upland pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 2:8

Excavation depth: 0.60m.

Land use: Improved upland pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 3:8

Excavation depth: 0.46m.

Land use: Improved upland pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 4:8

Excavation depth: 0.36m.

Land use: Improved upland pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 5:8

Excavation depth: 0.20m.

Land use: Improved upland pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 6:8

Excavation depth: 0.35m.

Land use: Improved upland pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 7:8

Excavation depth: 0.46m.

Land use: Improved upland pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 8:8

Excavation depth: 0.80m.

Land use: Improved upland pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 9:8

Excavation depth: 0.13m.

Land use: Improved upland pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 10:8

Excavation depth: 0.29m.

Land use: Improved upland pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 11:8

Excavation depth: 0.11m.

Land use: Improved upland pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 12:8

Excavation depth: 0.60m.

Land use: Improved upland pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

Archaeology present: Slate fragments and burnt limestone within [002]

Test pit 13:8

Excavation depth: 0.96m.

Land use: Improved upland pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

Archaeology present: Roman(?) pottery sherd, 19th/20th pottery, glass, two undated nails, coal, charcoal and lime in [002]. Coke and coal in [003]

Area 9

Archaeological test-pit programme of land between SO 0993 0928 and SO 1018 0936. This area, south of the A465 is rough grazing and is little disturbed. It is proposed that test-pitting is undertaken to incorporate the drystone walled enclosures, leat system and a series of earthworks and gullies which are all within the proposed widening of the A465.

Area 10

Archaeological test-pit programme of land between SO 1160 0997 and SO 1180 1012. Due to the discovery of a Bronze Age hoard within the immediate area it was proposed that a series of test-pits and a geophysical survey was carried out on the open pasture to the south of the A465.

Test pit 1:10

Excavation depth: 1.0m.

Land use: Improved upland pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

Archaeology present: 19th/20 century pottery and iron fragments in [001]

Test pit 2:10

Excavation depth: 0.70m.

Land use: Improved upland pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 3:10

Excavation depth: 0.29m.

Land use: Improved upland pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

Archaeology present: Charcoal flecks in [002]

Area 11

Archaeological test-pit programme of land between SO 1327 1075 and SO 1340 1076. Within land between the River Sirhowy and Nant-y-Bwch is a sequence of drystone walls and earthworks that possibly pre-date industrialisation of the valley.

Test pit 1:11

Excavation depth: 0.34m.

Land use: Improved pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

Archaeology present: Drystone wall remains and a clay pipe bowl within [002]

Test pit 2:11

Excavation depth: 0.40m.

Land use: Improved pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

Archaeology present: 19th and early 20th century pottery and glass, plus one piece of (waste) flint in [002]

Area 12

Archaeological test-pit programme of land between SO 1132 1422 to SO 1164 1443 and SO 1135 1417 to SO 1167 1440 north and south of the proposed scheme. Much of the Preferred Route within the surveyed area takes in slightly undulating, south-facing slopes with drystone wall field enclosures, associated sheep folds and barns. Also directly within the line of the proposed scheme is a well-preserved section of the Trefil Tramroad.

Test pit 1:12

Excavation depth: 0.45m.

Land use: Improved upland pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 2:12

Excavation depth: 0.40m.

Land use: Improved upland pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 3:12

Excavation depth: 0.25m.

Land use: Improved upland pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test pit 4:12

Excavation depth: 0.27m.

Land use: Improved upland pasture

Drift Geology: Cambic stagnohumic gley soils

Solid Geology:

No archaeological features or artifacts recorded

Area 13

Borehole survey for peat collection, geophysical survey and archaeological test-pit programme on land between SO 1652 1283 to SO 1700 1284 and SO 1652 1280 to SO 1700 1281. Within this area are substantial peat deposits and a possible (ancient) relict landscape with the potential for prehistoric material (Pollen analysis was undertaken by Professor Mike Walker, University of Wales Lampeter - see results in Appendix III). Within this area, six test-pits were excavated.

Test-pit 1:13

Excavated depth: 0.68m

Land use: Upland open heath

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test-pit 2:13

Excavated depth: 0.53m

Land use: Upland open heath

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test-pit 3:13

Excavated depth: 0.33m

Land use: Upland open heath

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test-pit 4:13

Excavated depth: 0.36m

Land use: Upland open heath

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test-pit 5:13

Excavated depth: 0.27m

Land use: Upland open heath

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test-pit 6:13

Excavated depth: 0.50m

Land use: Upland open heath

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Area 14

Archaeological test-pit programme in and around site No. 120 (SO 1920 1284). To the north of the A465 is an industrial settlement and related small-scale quarrying/ mining with a near-by tramroad incline. Archaeological potential is therefore high. Two test-pits excavated.

Test-pit 1:14

Excavated depth: 1.05m

Land use: Disturbed scrub-land

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

Archaeology present: Pottery (c.20th century) and metal fragments within [001]

Test-pit 2:14

Excavated depth: 1.20m

Land use: Disturbed scrub-land

Drift Geology: Cambic stagnohumic gley soils

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Area 15

A geophysical survey and archaeological test-pit programme was carried out on land between SO 2067 1243 and SO 2090 1246..The area for survey is undisturbed south-facing pasture land, north of the A465, between the sewage works and water-works, above the Clydach Gorge. Oblique aerial photographs show possible circular features close to the proposed survey area. Two test-pits were excavated.

Test-pit 1:15

Excavation depth of 0.45m

Land use: Improved pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

No archaeological features or artifacts recorded

Test-pit 2:15

Excavation depth: 1.0m

Land use: Improved pasture

Drift Geology: Humo-feric podzols

Solid Geology: Sandstone

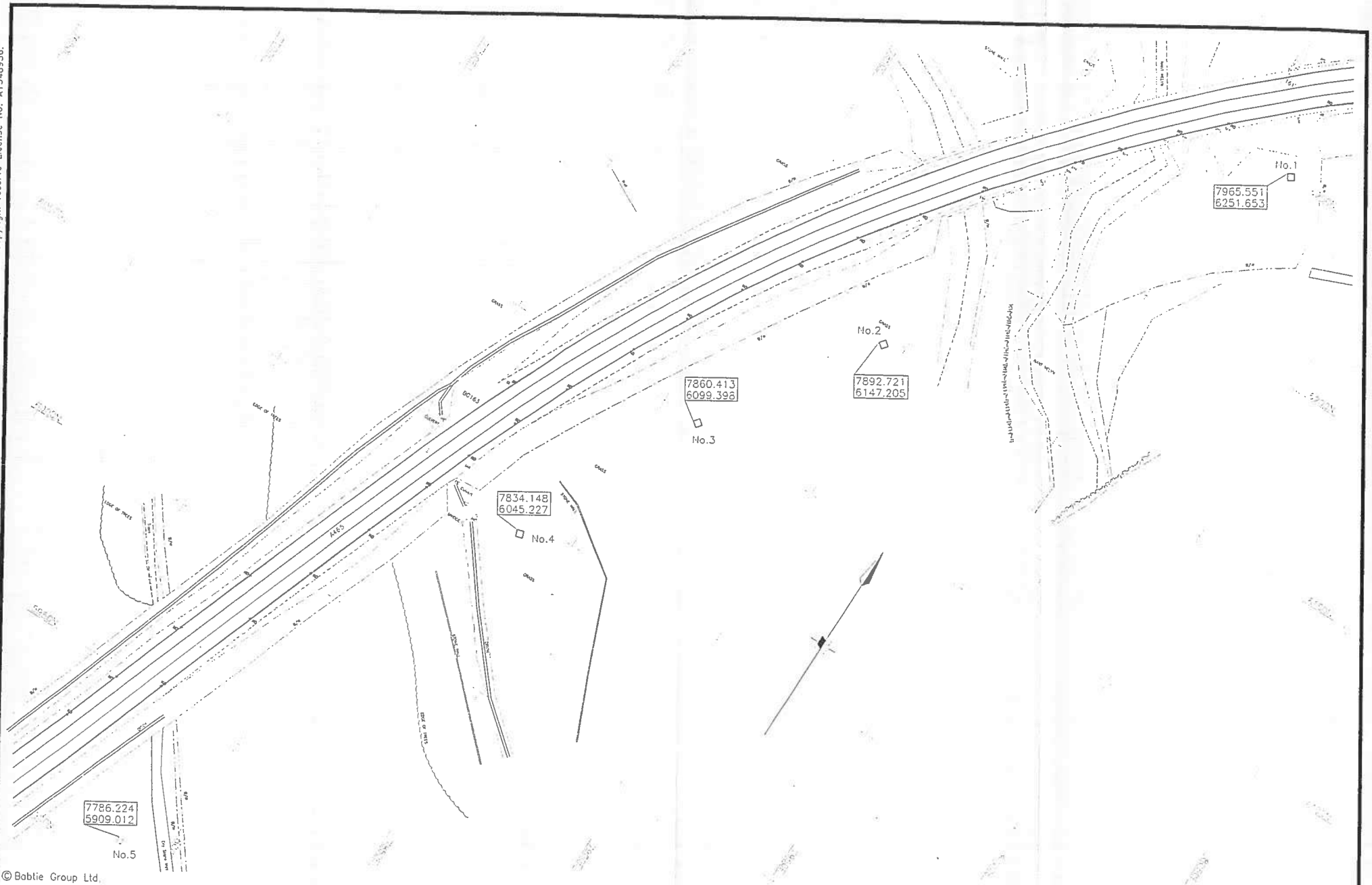
Archaeology present: Charcoal fragments within [002]

Area 16 - Not subject to any further archaeological ground investigation

Area 17

Archaeological test-pit programme and a geophysical survey of land between SO 3297 2133 to SO 3291 2138. Approximately 30m north of the present road, Neolithic and Bronze Age lithics were recovered when the Llanfoist water treatment plant was constructed in 1965. The area for investigation (water meadows) slopes gently east towards the River Usk. An additional area for geophysical survey, and included within Area 17, is land located east of Pen-y-Worlod Farm at SO 3287 2137 to SO 3285 2137. The results of the geophysical survey are published in Appendix I. Archaeological test-pitting will commence in July 1997.

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



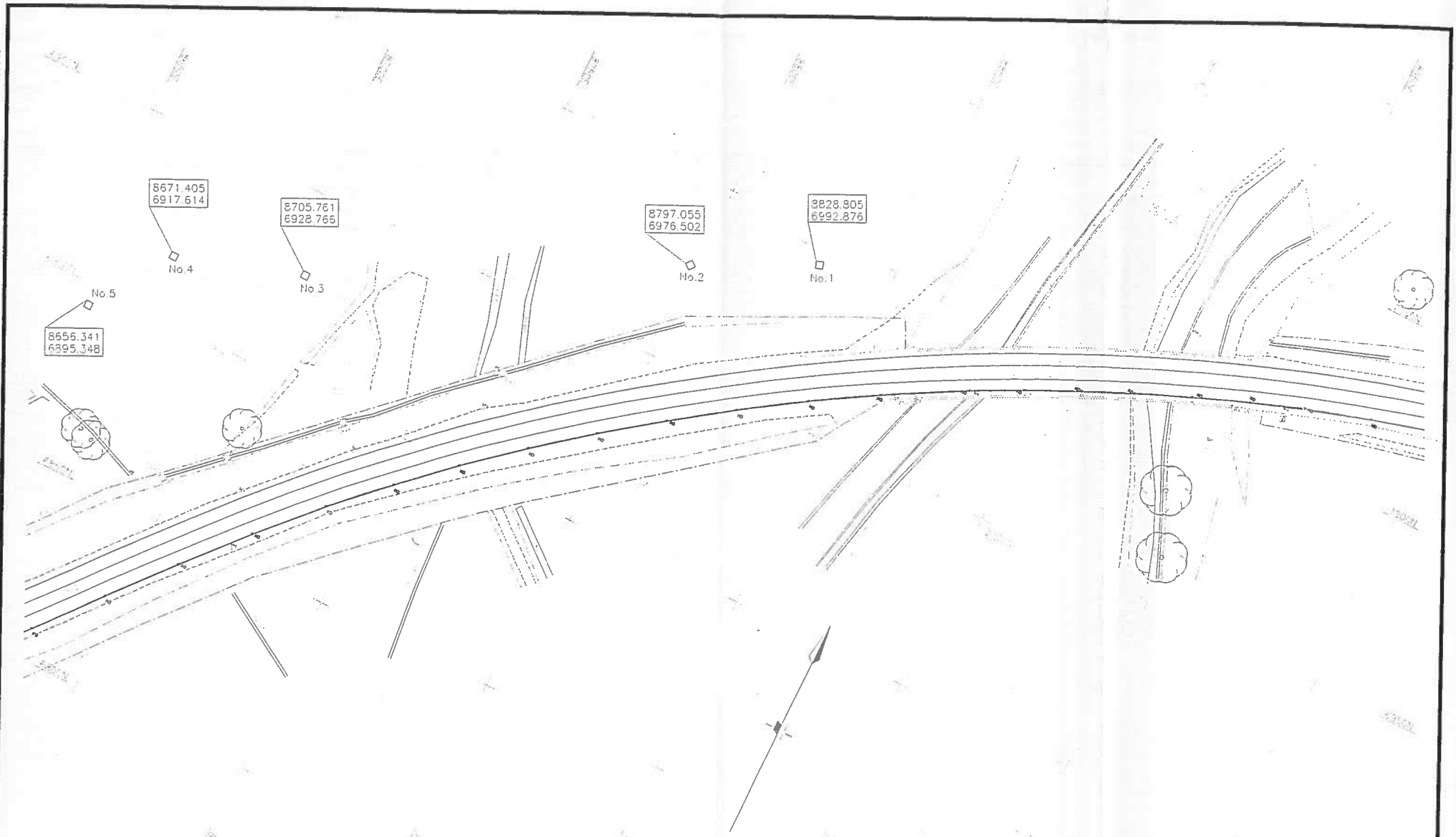
© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: TEST PIT PROGRAM AREA 2: NANT MELYN (all coordinates are on local grid)
		APPROVED BY			
		SCALE	1:1000		
		DATE	4/7/97		

Fig. No.

Rev.

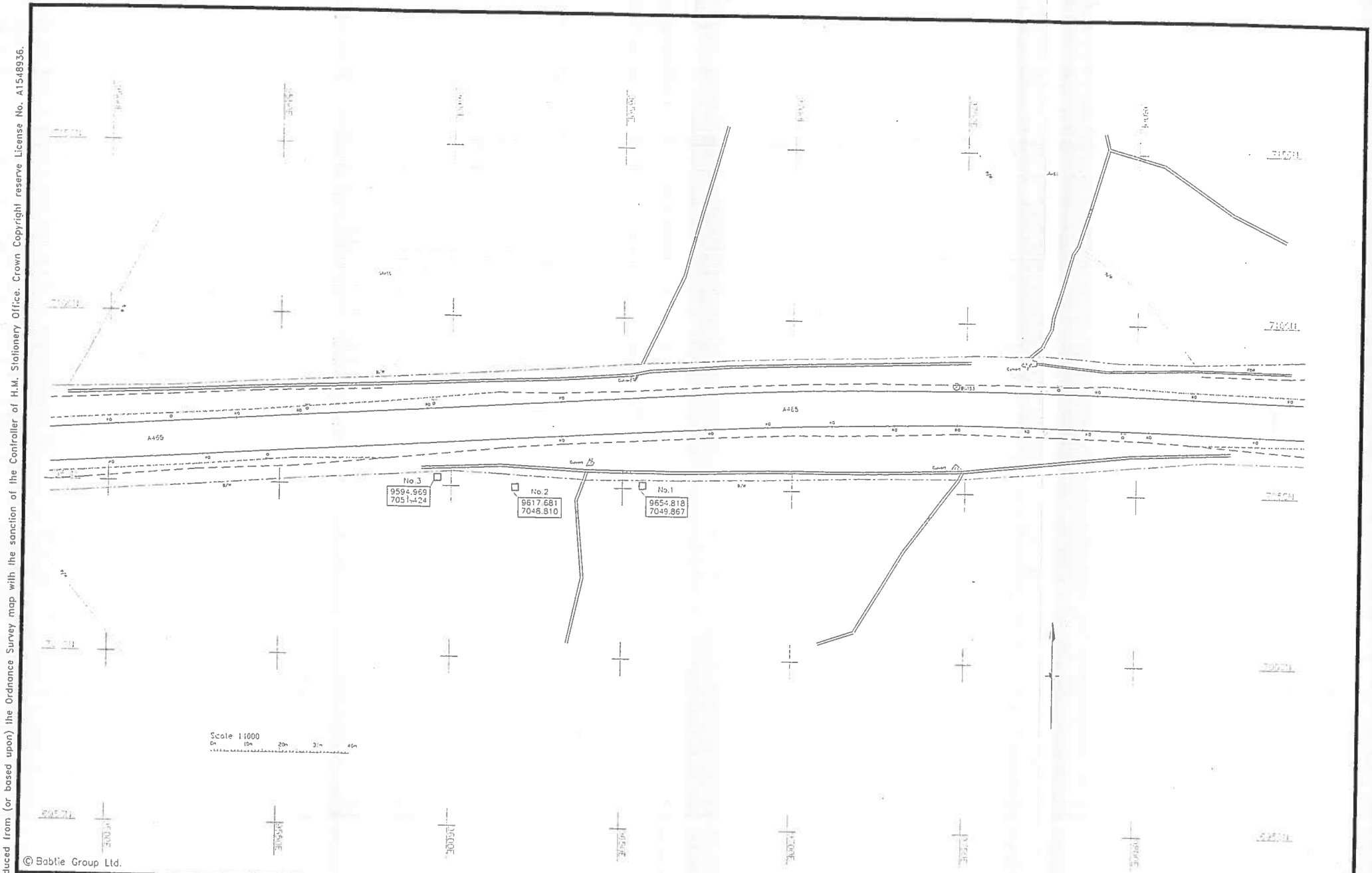
Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. AI548936.



© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: TEST PIT PROGRAM AREA 3: NANT HIR (all coordinates are on local grid)	Fig. No.
		APPROVED BY				
		SCALE	1:1000			
		DATE	4/7/97			Rev.

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



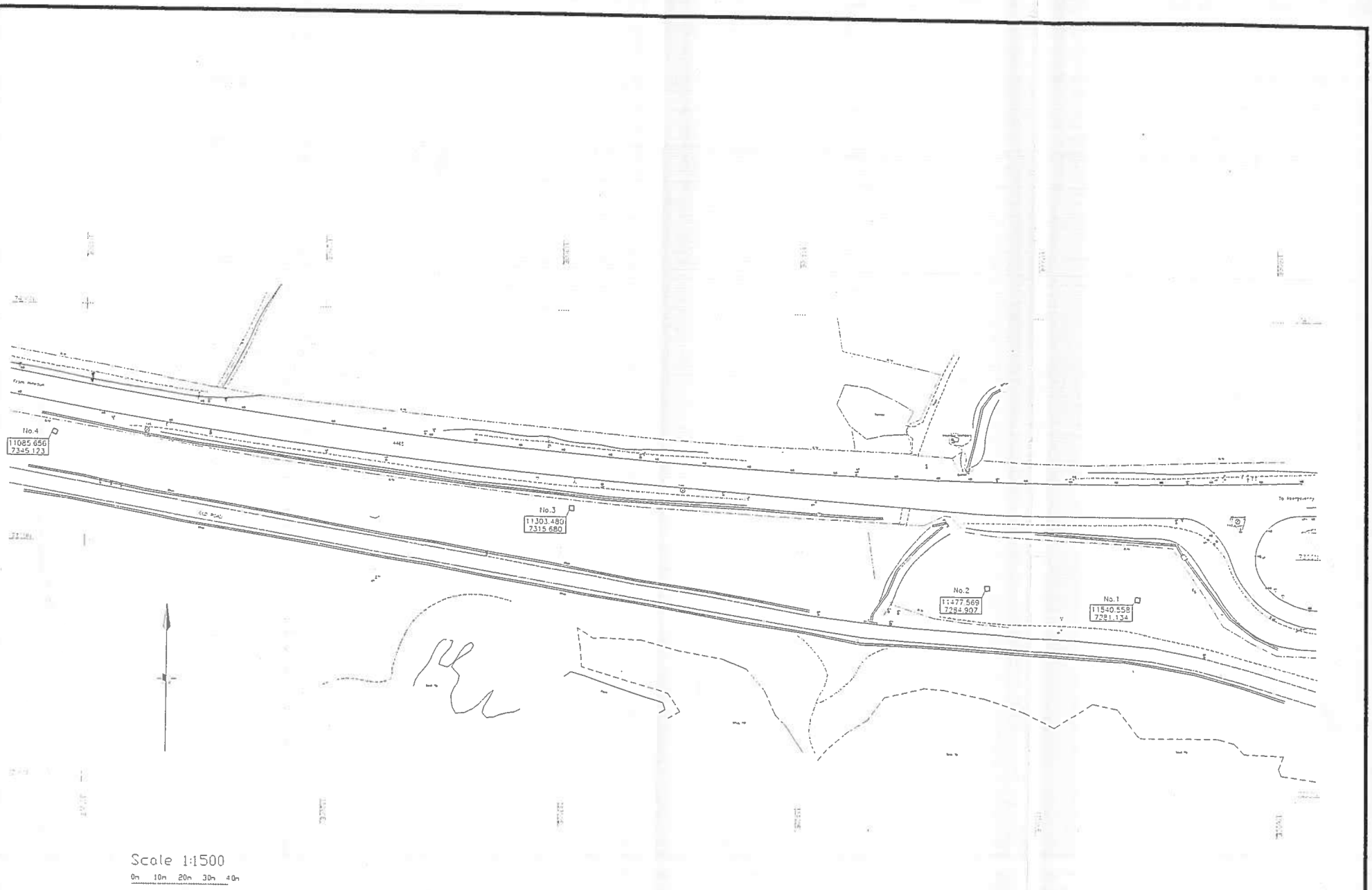
© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: TEST PIT PROGRAM AREA 4: NANT HIR (all coordinates are on local grid)
		APPROVED BY			
		SCALE	1:1000		
		DATE	17/7/97		

Fig. No.

Rev.

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



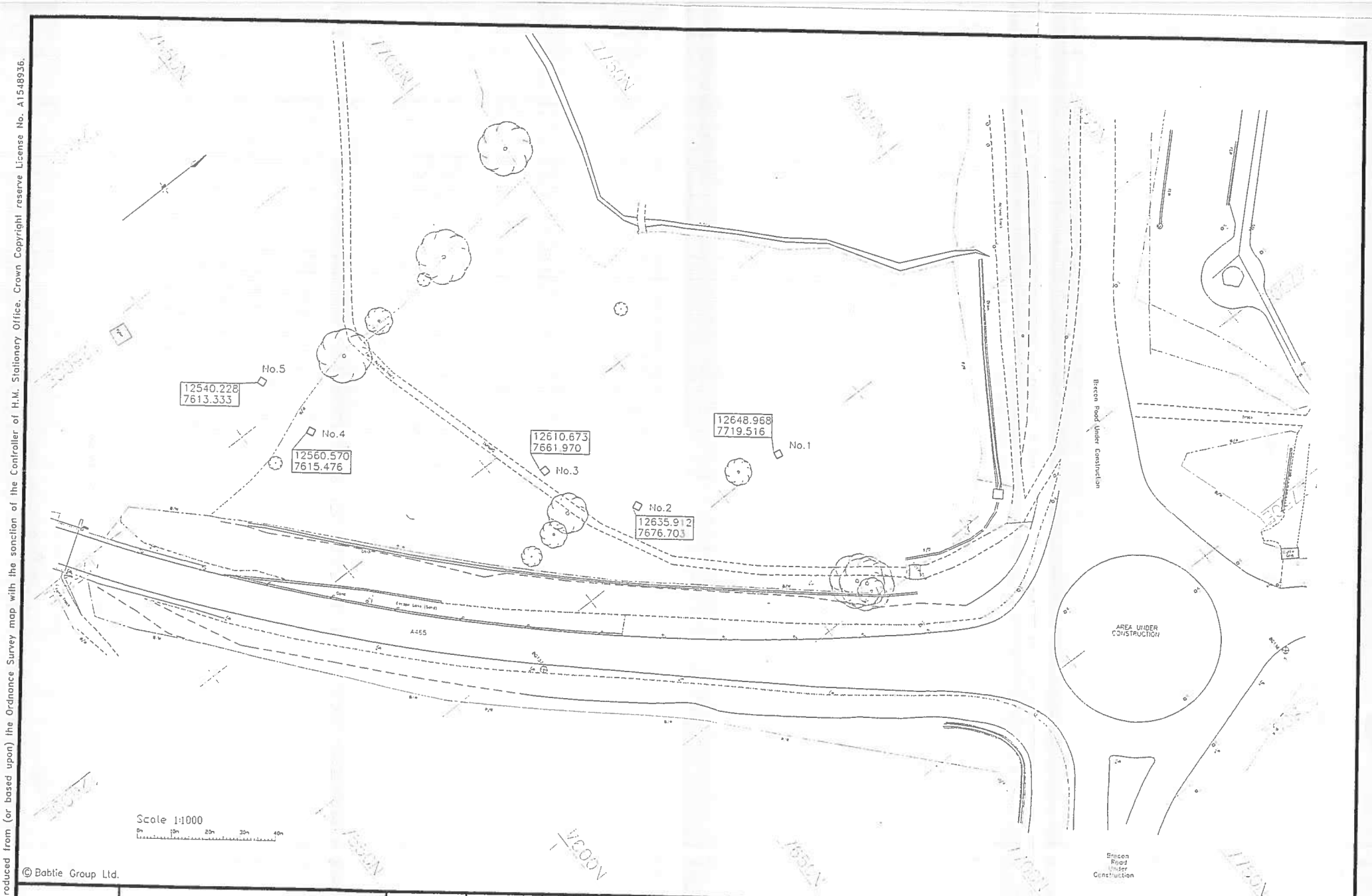
© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: TEST PIT PROGRAM AREA 5: BAVERSTOCK (all coordinates are on local grid)
		APPROVED BY			
		SCALE	1:1500		
		DATE	17/7/97		

Fig. No.

Rev.

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



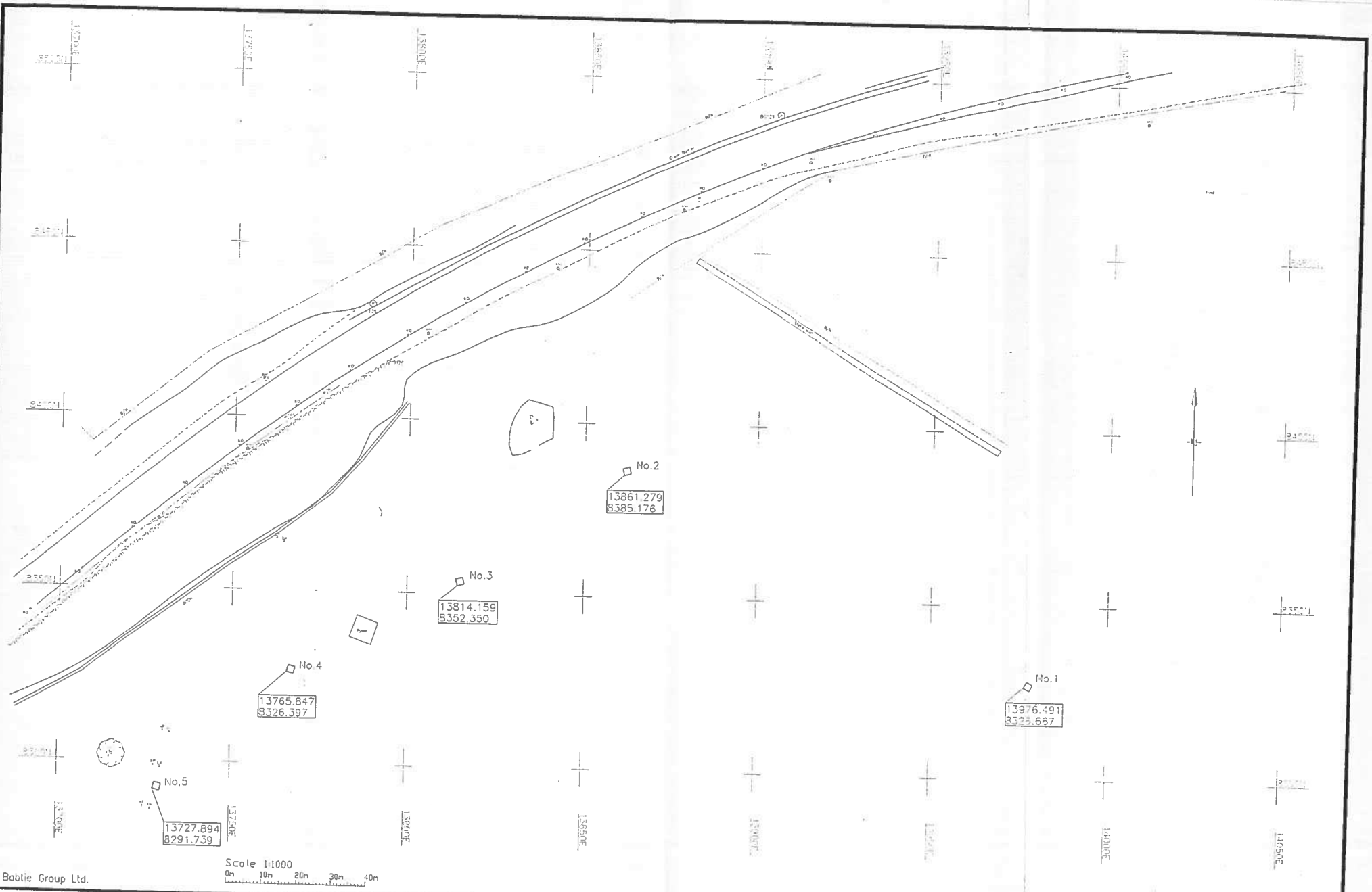
© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: TEST PIT PROGRAM AREA 6: NANT FFRWD (all coordinates are on local grid)
		APPROVED BY			
		SCALE	1:1000		
		DATE	17/7/97		

Fig. No.

Rev.

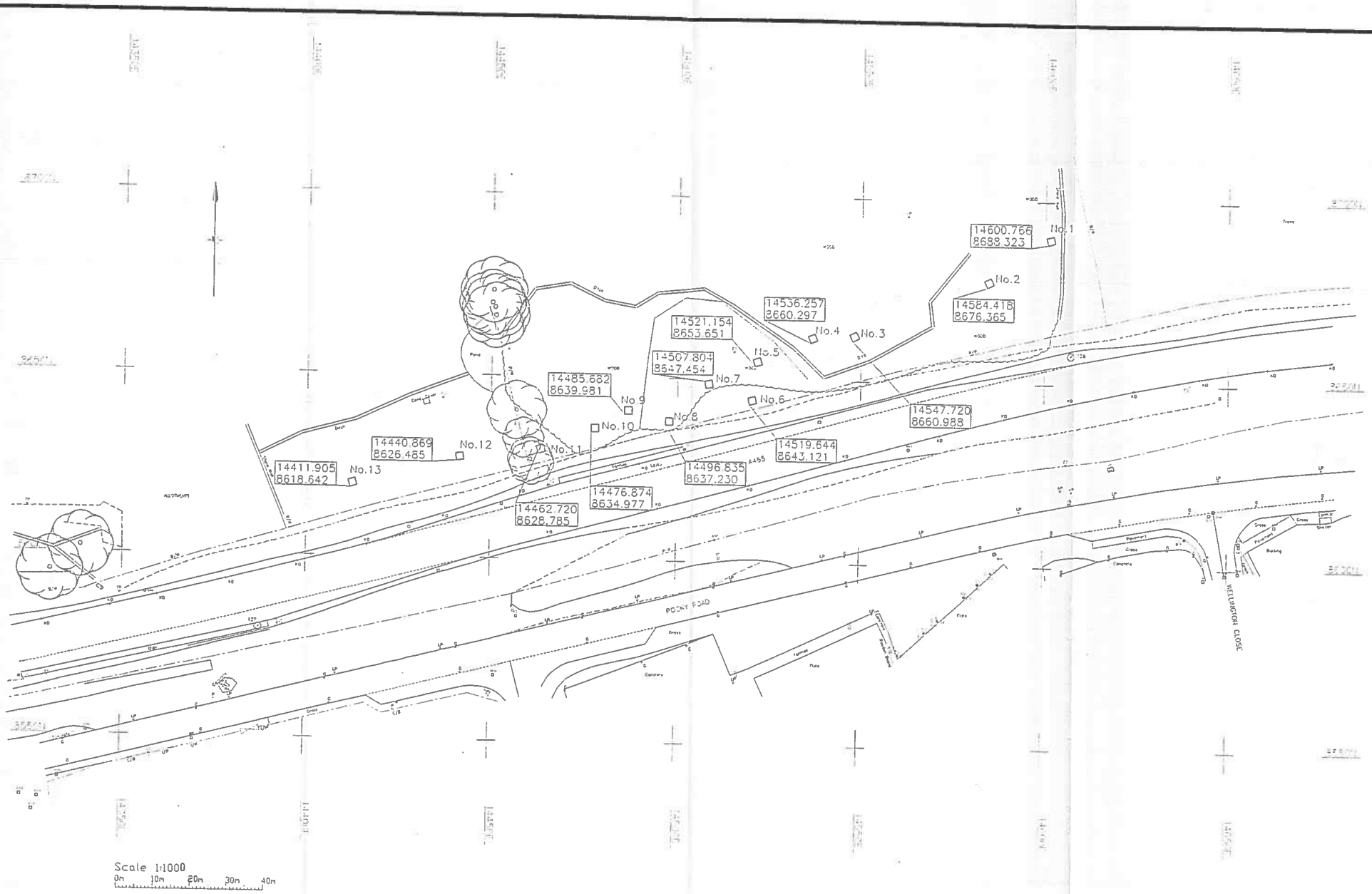
Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN-DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: TEST PIT PROGRAM AREA 7: CEFN-COED-Y-CYMMER (all coordinates are on local grid)	Fig. No. . Rev.
		APPROVED BY				
		SCALE	1:1000			
		DATE	17/7/97			

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



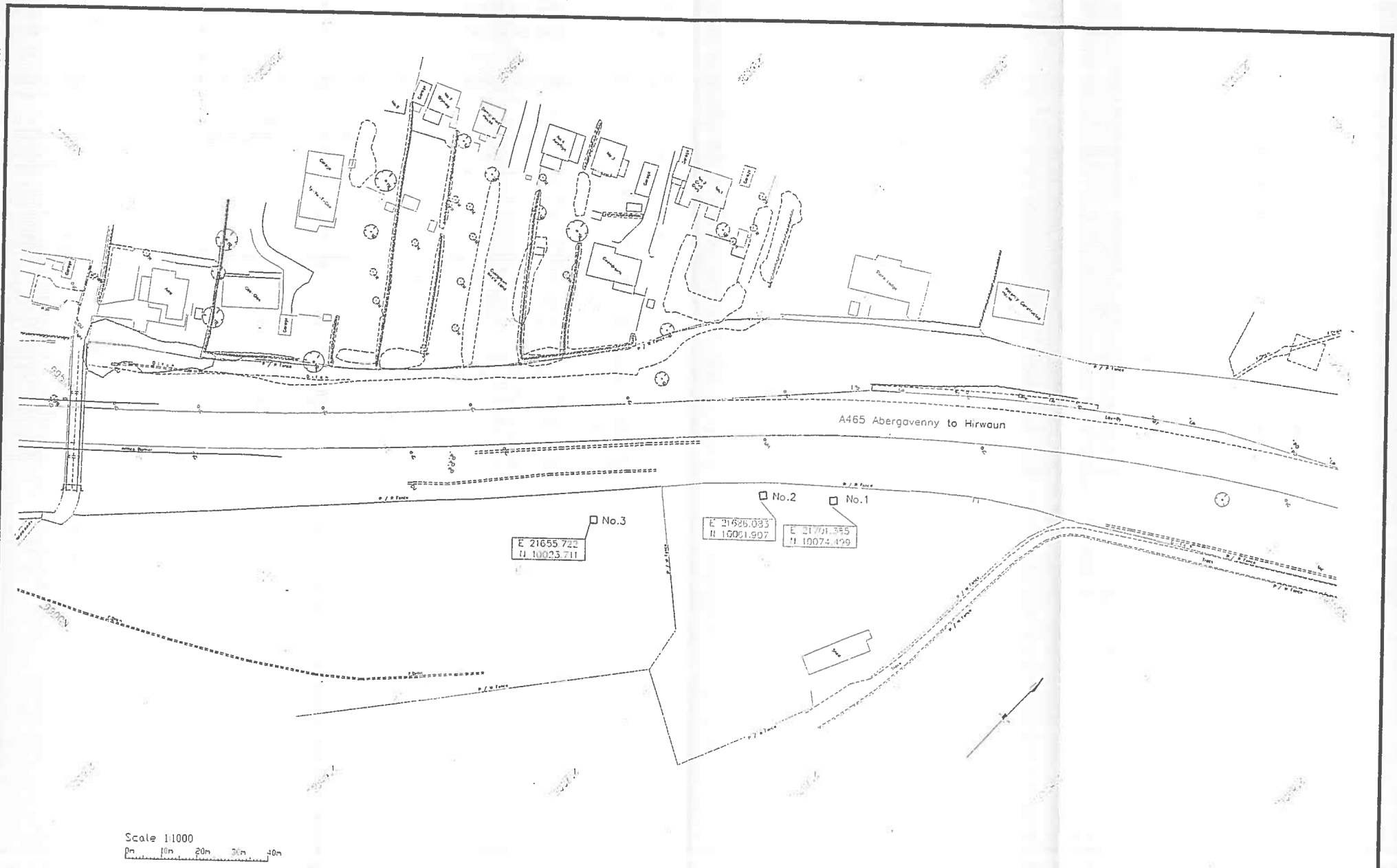
© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: TEST PIT PROGRAM AREA 8: GURNOS FARM (all coordinates are on local grid)
		APPROVED BY			
		SCALE	1:1000		
		DATE	17/7/97		

Fig. No.

Rev.

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.

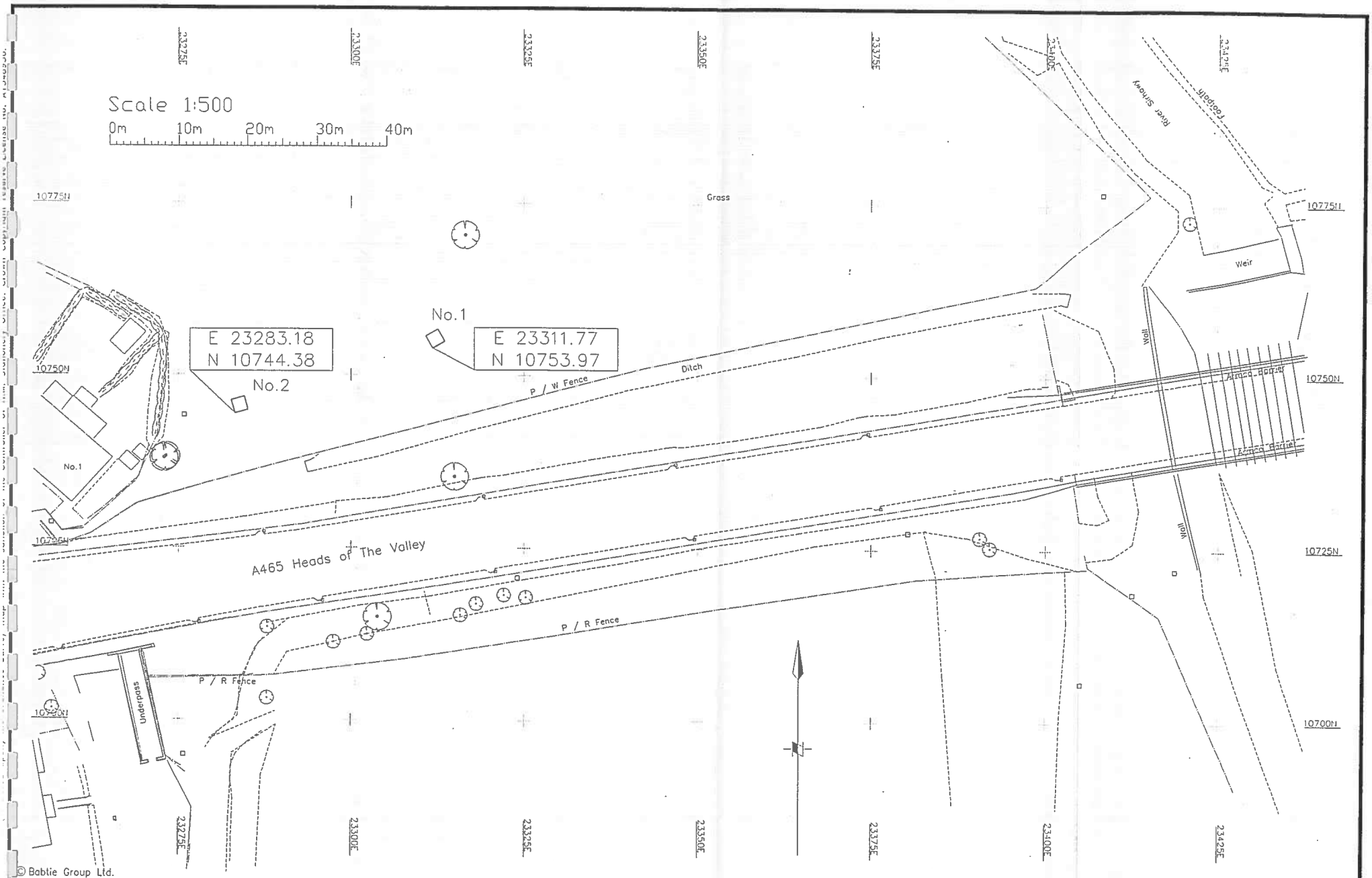


© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: TEST PIT PROGRAM AREA 10: TAFARNUBACH (all coordinates are on local grid)
		APPROVED BY			
		SCALE	1:1000		
		DATE	17/7/97		

Fig. No.

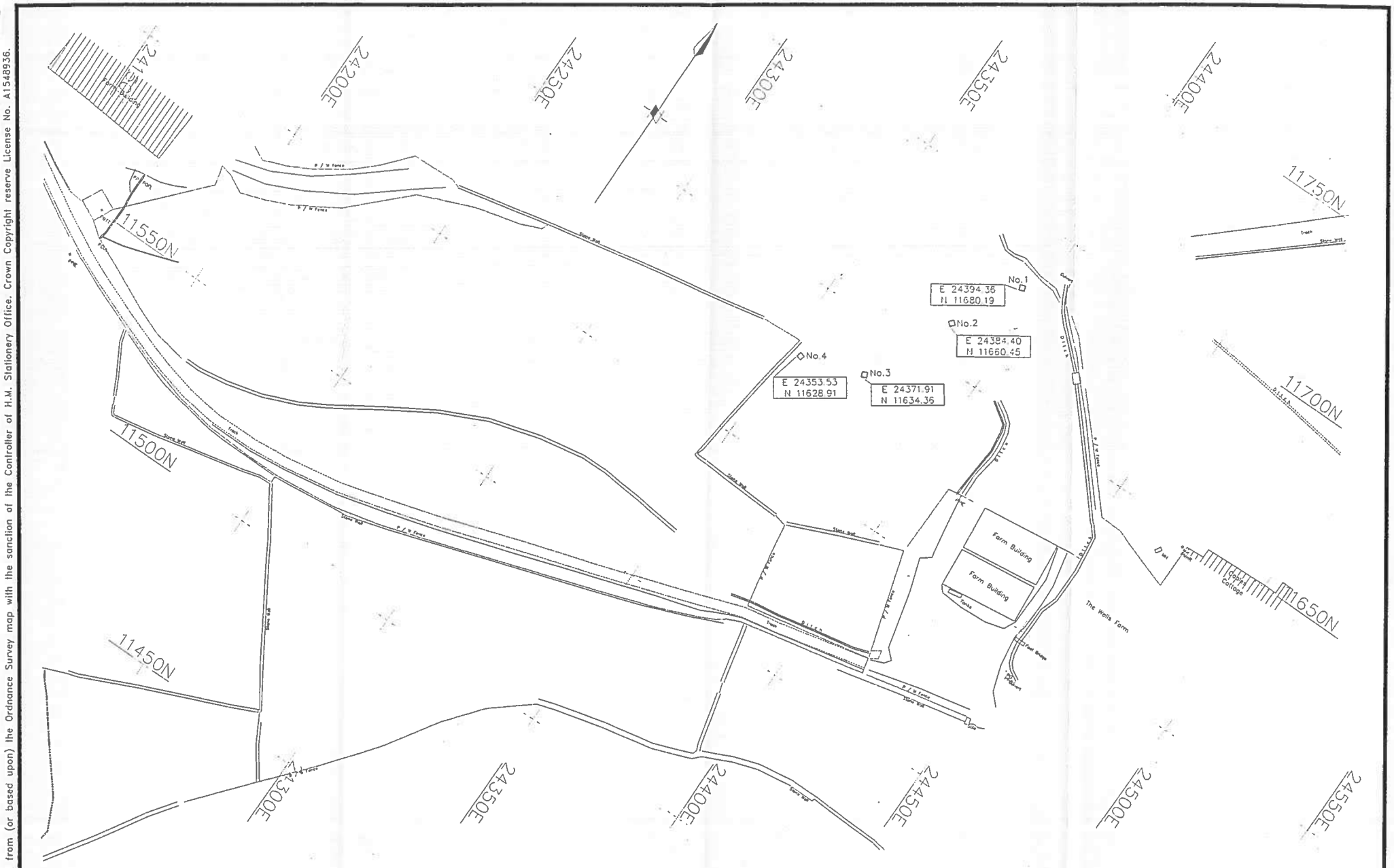
Rev.



© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: TEST PIT PROGRAM AREA 11: DUKESTOWN WEIR (all coordinates are on local grid)	Fig. No.
		APPROVED BY				
		SCALE	1:500			Rev.
		DATE	4/7/97			

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



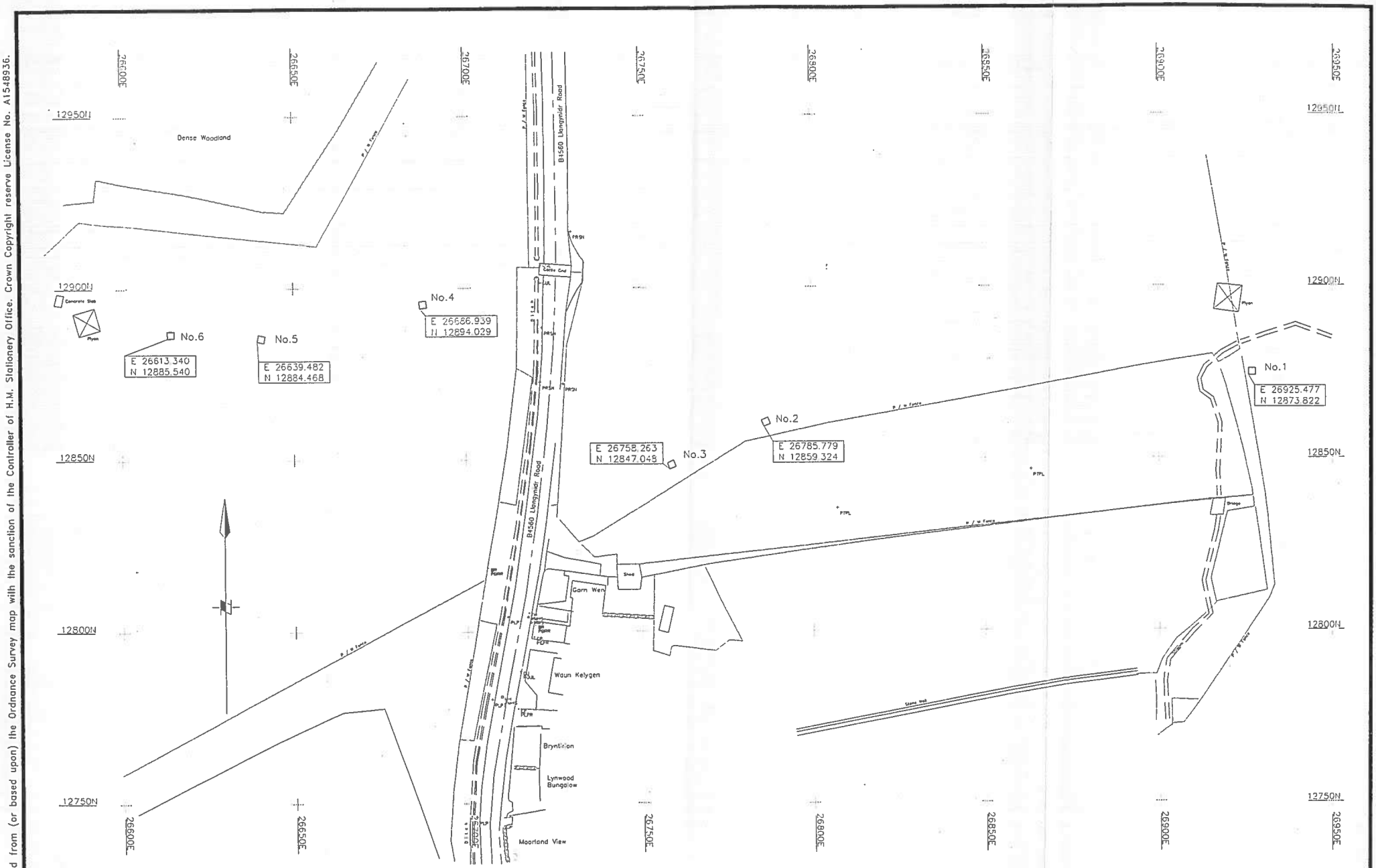
© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: TEST PIT PROGRAM AREA 12: THE WELLS FARM (all coordinates are on local grid)
		APPROVED BY			
		SCALE	1:1000		
		DATE	4/7/97		

Fig. No.

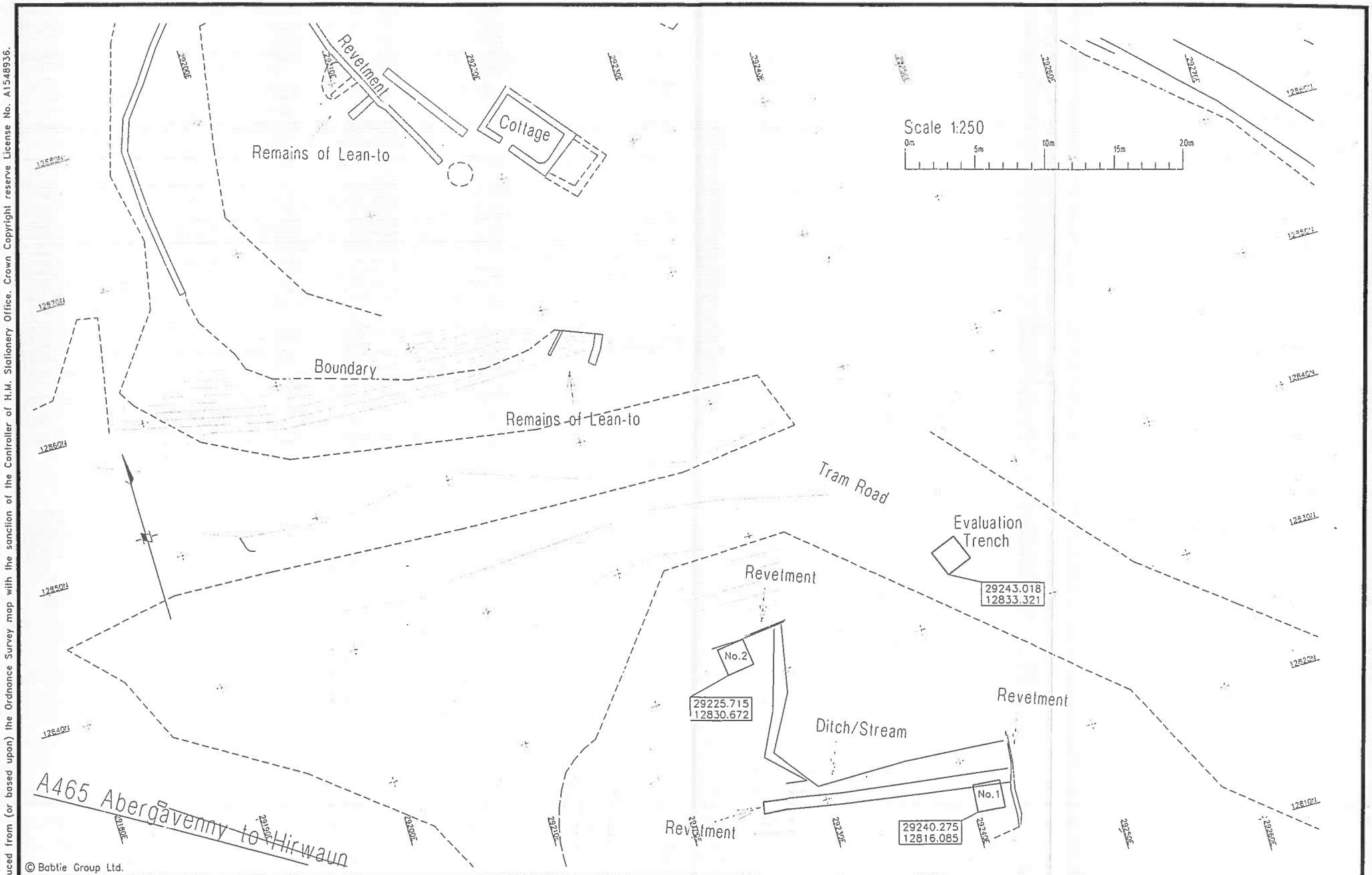
Rev.

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.



© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307–315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: TEST PIT PROGRAM AREA 13: GARN LYDAN (all coordinates are on local grid)	Fig. No.
		APPROVED BY				
		SCALE	1:1000			Rev.
		DATE	4/7/97			



© Babtie Group Ltd.

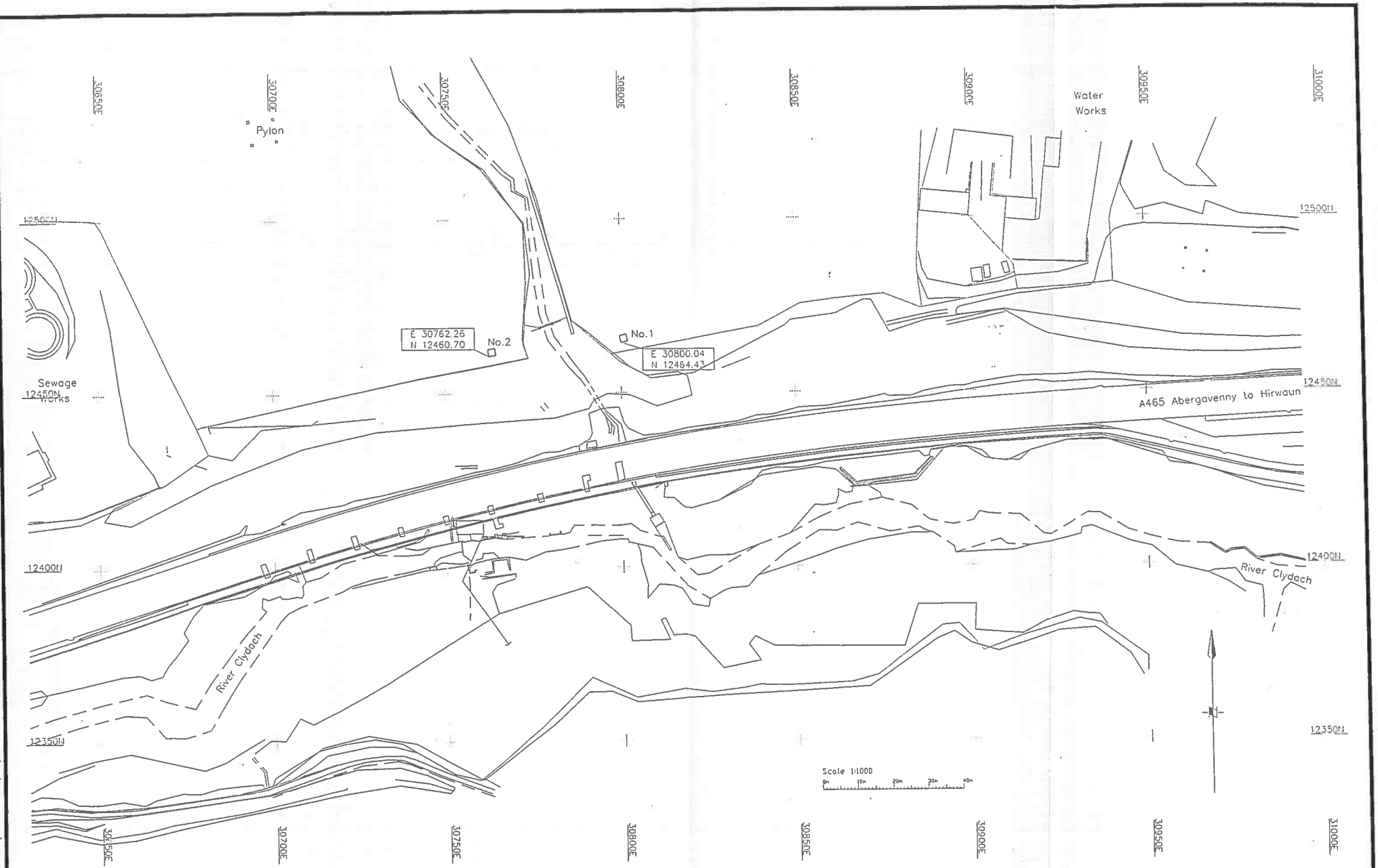
Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548936.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: TEST PIT PROGRAM AREA 14: CLYDACH DINGLE (all coordinates are on local grid)
		APPROVED BY			
		SCALE	1:250		
		DATE	4/7/97		

Fig. No.

Rev.

Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A154950.



© Babtie Group Ltd.

Babtie	BABTIE GROUP multi-disciplinary consultants ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST CARDIFF CF5 1JD	DRAWN BY	NMB	Client WELSH OFFICE – HIGHWAYS DIRECTORATE Project A465 ABERGAVENNY TO HIRWAUN–DUALLING	ENVIRONMENTAL STATEMENT CULTURAL HERITAGE: TEST PIT PROGRAM AREA 15: BLACKROCK WATERWORKS (all coordinates are on local grid)
		APPROVED BY			
		SCALE	1:1000		
		DATE	4/7/97		

Fig. No.

Rev.

Appendix III

Palaeoenvironmental Report

Pollen data from Garn Lydan, Mid-Glamorgan

M.J.C. Walker
(Department of Geography, University of Wales, Lampeter)

Introduction

This report describes the pollen record from a thin peat profile near Garn Lydan, approximately 3km to the north of Ebbw Vale, Mid Glamorgan, South Wales. The analyses were undertaken as part of the mitigation for the upgrading of the A465 Abergavenny to Hirwaun road.

Field and Laboratory Work

Excavation through a trackway near National Grid Reference SO 175 126 revealed a thin peat lens (approximately 20cm in thickness) beneath some 50cm of made ground. A 30cm monolith was taken through the peat sequence and the underlying minerogenic deposits. This was removed to the laboratory where the stratigraphy proved to be as follows:

0-1 cm	Base of made ground: fine stones and grit within a silt/clay matrix. Some organic inclusions and plant fibres recorded
1-3 cm	Dark brown organic horizon with some silt/clay material
3-16 cm	Dark-brown to black peat: very compact and fine-grained, with occasional plant fibres, but no recognisable plant macrofossils
16-18 cm	Fine-grained, paste-like organic silt/clay
18-24 cm	Fine-grained, cream-coloured clay, with fine grit particles
24-27 cm	Gritty horizon, becoming increasingly stony with depth.

The sediments probably accumulated in a pool that formed in a small depression in the bedrock. They do not appear to be the typical blanket peats that are widespread in the South Wales uplands. The upper part of the sequence has almost certainly been truncated, probably during the construction of the trackway that now runs across the site.

Samples for pollen analysis were removed from the monolith at 2cm intervals and subjected to standard laboratory treatment, including digestion in 10% KOH, heating in 40% HF and acetolysis (Moore *et al.*, 1991). The residues were mounted in safranin-stained glycerine jelly and counted under x400 magnification. No pollen was recovered from the lowermost samples 22 and 24cm), and only trace pollen was present in the sample from 20cm. All the remaining samples proved to be polleniferous. As this was a preliminary analysis, a sum of 100 land pollen only was employed.

The pollen record

The pollen results reflects a largely open landscape, but with some local stands of *Betula* (birch), *Quercus* (oak), *Alnus* (alder) and *Corylus* (hazel). Relatively high counts for *Tilia* (lime) in the sample from the base of the organic sequence indicate a local presence of this tree. Two episodes of landscape change are apparent in the record. The first is from heathland, reflected in the lower part of the pollen results by high counts for Ericaceae (heathers), *Calluna vulgaris* (ling) and *Pteridium* (bracken), to a grassland marked by the rise in Poaceae (grasses) and associated herbaceous taxa such as *Potentilla* (tormentil) and *Plantago lanceolata* (ribwort plantain). In the upper part of the results, Ericaceae and *Calluna* increase once again, suggesting a re-expansion of the local heathland.

A possible explanation for these changes is that they reflect human impact on the landscape, with the succession from heathland to grassland associated with an expansion of farming activity. This would have been predominantly pastoral in nature as indicated, for example, by the increase in *Plantago lanceolata*, a weed frequently associated in historic and prehistoric pollen records with grazing animals (Behre, 1986). However, a single grain resembling cereal pollen was recovered from 12cm suggesting, perhaps, some local arable activity. If this explanation is correct, a reduction in agricultural practices may be reflected in the upper region of the results where the fall in Poaceae pollen is accompanied by an increase in pollen of heathland taxa.

The age of the sequence cannot be established on present evidence, but it clearly postdates the expansion of *Alnus* into the South Wales uplands, and also the *Ulmus* (decline), which occurred around 7000 ^{14}C years BP and 5000 ^{14}C years BP respectively (e.g. Smith & Cloutman, 1988). One clue may lie in the presence of *Fagus* (beech) pollen, small quantities of which are found in the upper levels of the results. *Fagus sylvatica* did not arrive in Britain until around 2000 yrs BP and apparently did not expand into Wales until *c.*1000 BP (Birks, 1989). If these *Fagus* grains were derived from beech trees growing locally in the Welsh uplands, as opposed to being the product of long-distance transfer, their presence in the Garn Lydan sequence would imply that the sediments accumulated during the historic as opposed to the prehistoric period. However, radiocarbon dating is required in order to confirm this tentative suggestion.

Conclusion

The short peat sequence from Garn Lydan contains a pollen record which shows evidence of a change from open heathland to grassland and back once again to heathland. These landscape changes may reflect the expansion and subsequent contraction of agricultural activity in the area. The age of the profile cannot be established on present evidence, but may date from the historic period.

Acknowledgements

I am grateful to Ian Clewes for preparing the pollen slides.

References

Behre K.-E. (ed) (1986): *Anthropogenic Indicators in Pollen Diagrams*. Balkema, Rotterdam.

Birks H.J.B. (1989): Holocene isochrone maps and patterns of tree-spreading in the British Isles. *Journal of Biogeography*, 16, 503-540.

Moore P.D., Webb J.A. Collinson M.E. (1991): *Pollen Analysis*. 2nd edition. Blackwell, Oxford.

Smith A.G. & Cloutman E.W. (1988): Reconstruction of Holocene vegetation history in three dimensions at Waun Fignen Felen, an upland site in South Wales. *Philosophical Transactions of the Royal Society*, B322, 159-219.

Appendix 9E – A465 Abergavenny to Hirwaun Archaeological Survey Phase I Report (July 1996)

See following page.

Page left intentionally blank

BT1015586\04\11

DRAFT

WELSH OFFICE
Y SWYDDFA GYMREIG

Babtie

A465 Abergavenny to Hirwaun Archaeological Survey Phase I Report

July 1996

Welsh Office
Highways Directorate

Babtie Group Ltd.
Cardiff

BABTIE GROUP — **REPORT CHECK LIST**

Job No: BT10155586

Report Title: A465 ABERGAVENNY TO HIRWAUN DUALLING ARCHAEOLOGICAL SURVEY PHASE 1 REPORT

Date: 19/7/96

Author(s): GEORGE NASH, JONATHAN MOLLIS

Appraiser: D.J. Williams

		Author	Appraiser
1.	Is this a draft (D), interim (I), final (F) report?	D	
2.	Does report fulfil its purpose? (Y or N)	Y	Y
3.	Are conclusions/recommendations clear and acceptable? (Y or N)	Y	Y
4.	Have drawings been approved? (Y or N)	Y	
5.	Have calculations been checked? (Y or N)	Y	
6.	Have parameters been clearly recorded and correctly used? (Y or N)	Y	Y
7.	Have assumed parameters been clearly recorded and are they reasonable? (Y or N)	N/A	N/A.
8.	Does the report appear to be factually correct? (Y or N)		Y
9.	Is the report to a satisfactory presentational standard? (Y or N)	Y	Y
10.	Has the report been properly put together? (Y or N) - Contents page correct and complete - Page numbers correct - References complete - Appendices complete	Y Y Y Y	

Author: ..... (signature) date 19/7/96

Appraiser: D.J. Williams (signature) date 19/7/96

Approved by Project Director: pp D.J. Williams (signature) date 19/7/96

Note: 1) This sheet to be attached to report and submitted to the Project Director for approval. Following approval this sheet shall be fixed to the file copy of report.

2) Appraiser - shall be a staff member with sufficient experience in the subject to be able to properly review the documentation.

3) The Appraiser and Project Director may be the same individual however the author and the appraiser may not.

Revision D: Note: Item 3 to be appraised
Item 5 not to be appraised

Full issue of Procedure 5.3D not required as the text is the same.
Please remove old forms from circulation.

Andrew Freckingham

Andrew Freckingham
Document 5.3/D/6.1

A465 ABERGAVENNY TO HIRWAUN DUALLING ARCHAEOLOGICAL SURVEY PHASE 1

Contents

1. Introduction	1
2. Background	1
3. Methodology	1
4. Sources of Cultural Heritage Information	4
5. Summary of Discoveries	5
6. Historical Background	6
7. Site Categorisation	10
8. Site Impact	12
9. Recommendations for Phase 2 Evaluation	13
10. Mitigation	20
Bibliography	21
List of Local Authorities and Organisation Consulted	22
Appendix 1- Site Categorisation	27
Appendix 2 -Gazetteer of Sites	88
Archaeological Sites Location Plans (23 sheets)	
Survey of Leat Keeper's Cottage and associated weirs and leats	

A465 ABERGAVENNY- HIRWAUN DUALLING

PHASE 1 ARCHAEOLOGICAL REPORT

1. Introduction

1.1 In July 1995 the Secretary of State for Wales announced the preferred route for dualling the A465 between Abergavenny and Hirwaun. In January 1996 Babtie Group were commissioned by the Welsh Office to do a Phase 1 Archaeological Survey. This document reports on the Phase 1 Archaeological Survey.

1.2 A brief (CO15L986 PP) for the survey was prepared by Cadw on behalf of the Welsh Office and required two phases of work with reports, culminating in the Cultural Heritage sections of the Environmental Statement. Phase 1 included a walk-over survey, documentary search, photographic and earthwork survey leading to a report categorising the sites and recommending further action during the second phase. Phase 1 work is now complete although the photographic and earthwork survey data are not included within this report.

1.3 The preliminary categorisation has identified a number of sites requiring further evaluation and these have been broadly agreed with Cadw in advance of the formal submission of the Phase 1 report. In addition to the sites requiring evaluation and listed in section 9.7 there are other areas where non-intrusive (geophysical) and intrusive surveys will be required, see section 9.9. Provisional recommendations for these additional areas are included in the Phase 1 report.

2. Background

2.1 This report is the result of a walkover survey which was undertaken by Babtie between January and April 1996. Prior to the walkover, studies were conducted by Glamorgan-Gwent Archaeological Trust (GGAT) (1994) and Dr Peter Wakelin of Cadw (1995). Both studies recognised a number of archaeological sites which are covered within this report. Additional information has been supplied by Cadw and GGAT. A list of scheduled sites within one kilometre of the proposed route was obtained from Cadw and is incorporated within the Phase 1 report. Sites recorded within the Glamorgan-Gwent Archaeological Trust Sites and Monuments Record are also included. In addition, local authorities were contacted for information concerning Listed Buildings within a one kilometre corridor of the A465

3. Methodology

3.1 The walkover survey covered 41.5 kilometres between Abergavenny and Hirwaun. The aims and objectives of the survey were to identify and record new and existing sites within a 50 metre corridor either side of the present road. The survey also included sites that extended beyond the 50 metre corridor and up to 100 metres. Sites were plotted on 1:2500 Ordnance Survey maps and field notes made for each site on recording forms. Each parcel of land was walked twice and ground and weather conditions were recorded. Each site was given a unique identification number.

3.2 A total of 277 sites has been recorded, the majority of which was previously unrecorded. New sites include leats, industrial buildings, earthwork structures, tramroads, 'squatter' settlements, railways, turnpike roads, culverts, revetting, farm buildings, holloways and drystone/turfstone walled field systems. After completion of the walkover survey, the identified sites were plotted onto road design plans using Auto CAD.

3.3 The value of each site has been assessed by applying as guidance the Secretary of State's non-statutory criteria for assessing the national importance of an ancient monument as outlined in Planning Policy Guidance (PPG 16), Archaeology and Planning Annex 4. The sites have therefore been categorised as being of national (A), regional and county (B), local (C) or minor (D) importance. Sites either outside the 50 metre corridor or not directly impacted by the proposed route were categorised as NFA; No Further Action.

3.4 Agreement was reached with Cadw on which sites required photographic or earthwork surveys in Phase 1. Fifty-seven sites have been recorded photographically in both 35mm and medium format, seventeen of them also have been surveyed, and a further three have been surveyed only (see below).

Babtie No.	Site Name/Description	N.G.R.	Photo	Survey
1	Ysbytty Farm, Abergavenny	SO 3032 1293	X	
7	Evesham House outbuildings, Llanfoist	SO 2870 1362	X	
9	Railway skew bridge, Llanfoist	SO 2800 1385	X	
12	Footbridge, Pen-y-Worlod Cottages, Llanfoist	SO 2863 1374	X	
14	Worker's cottage and bridge, Govilon	SO 2674 1427	X	X
19	Rose Cottage, Govilon	SO 2675 1423	X	
25	Hopyard Farm, Glanbaiden	SO 2620 1440	X(s)	
26	Remains of walled garden, Glanbaiden	SO 2622 1435	X(s)	
27	Glanbaiden House, Glanbaiden	SO 2614 1438	X(s)	
29	Glanbaiden Lodge and drive, Glanbaiden	SO 2613 1422	X(s)	
32	Aberbaiden Lodge, Aberbaiden	SO 2582 1444	X(s)	
33	Little Chef Restaurant, Gilwern	SO 2572 1444	X	
36	Canal bridge (eccentric arched), Gilwern	SO 2537 1452	X	X
38	Navigation Inn, Gilwern	SO 2458 1450	X	
48	Lion Hotel, Gilwern	SO 2437 1438	X	
49	Terrace cottages, Gilwern	SO 2433 1436	X	
50	Primitive Methodist Chapel, Gilwern	SO 2427 1429	X	X
53	Forge Hammer Inn, Gilwern	SO 2378 1408	X(s)	
68	Former road bridge, Saleyard	SO 2330 1375	X	X
69	Llam-march Tramroad bridge, Saleyard	SO 2329 1373	X	X
97	Pant-Glas Bridge, Clydach	SO 2293 1333	X	
98	Kilns? within Clydach river bank	SO 2297 1339	X	X
99	Leat keeper's cottage & outbuildings, Clydach	SO 2299 1344	X	X
100	Weir, sluice system and leat, Clydach	SO 2301 1344	X	X
102	Drum & Monkey Inn, Blackrock	SO 2155 1257	X	
103	Craig Cottage, Blackrock	SO 2149 1258	X	

104	Cottage Terrace, Blackrock	SO 2145 1252	X	
106	Road and foot bridges, Blackrock	SO 2114 1249	X	X
107	Squatter settlement & Industrial site, Nant Gwyn	SO 2114 1248		X
112	Clydach Railroad & bridge at Cwm Nantmelyn	SO 2022 1226	X(s)	
113	Branch line of Clydach Railroad & colliery level	SO 2008 1218	X	X
118	Clydach Bridge, Brynmawr	SO 1964 1213	X	
119	Skew bridge, Brynmawr	SO 1979 1211	X	
120	Squatter settlement & watercourses	SO 1922 1287		X
137	Hirgan Farmstead and outbuildings	SO 1433 1134	X	
145	Cast iron weir, Dukestown	SO 1342 1077	X	X
152	Leat system and 'kettle-hole' quarries, Princetown	SO 1134 0982	X	
154	Industrial building, Princetown	SO 1100 0970	X	X
155	Earthworks (demolished building), Princetown	SO 1111 0970	X	X
157	Railway bridge and tunnel, Llechryd	SO 1057 0961	X	X
160	Northern section of leat system, Blaen Rhymney	SO 1045 0994	X	X
168	Skew bridge, Llechryd	SO 1042 0944	X	
169	Station House, Llechryd	SO 1046 0951	X	
180	Stone culvert, Blaencarno	SO 0899 0890	X	
186	Eastern leat system, Upper Reservoir, Dowlais	SO 0750 0834	X	
191	Western leat system, Upper Reservoir, Dowlais	SO 0688 0867	X	
196	MacDonald's Restaurant, Dowlais Top	SO 0783 0822	X	
206	Viaduct A, Taf Fechan, Cefn-coed-y-cymmer	SO 0335 0815	X	
211	Railway bridge, Brecon & Merthyr Railway	SO 0324 0814	X	
212	Capel Tabor and cemetery, Cefn-coed-y-cymmer	SO 0297 0808	X(s)	
216	Stone structure, Cefn-coed-y-cymmer	SO 0372 0430	X	
221	Viaducts B & C, Cefn-coed-y-cymmer	SO 0282 0789	X	
		SO 0250 0750	X	
222	Lofted cow shed, Coed Meurig Farm	SO 0226 0745	X	X
231	Fairfield House (Giants Head Inn), Baverstock	SO 0055 0728	X	
232	Settlement and field system, Baverstock	SO 0073 0730		X
243	Skew bridge, Vale of Neath Mineral Railway	SO 9727 0552	X	
256	Stone culvert, Aberdare-Rhondda Tramroad	SO 9582 0506	X	
257	Stone culvert, Hirwaun & Aberdare Tramroad	SO 9648 0519	X	
260	Walled enclosure, Pen-Twyn, Gilwern	SO 2457 1442	X	X
271	Coed Meurig Farm	SO 0234 0742	X(s)	

(s) = setting photograph only

3.5 Proposals have been prepared for further evaluation of some sites, see section 9.

4. Sources of Cultural Heritage Information

4.1 Information concerning archaeological and cultural heritage remains has been obtained through a number of sources in line with DMRB, Volume 11, Section 3, Chapter 8 Cultural Heritage. Sources consulted were:

- Glamorgan-Gwent Archaeological Trust Sites and Monuments Record (SMR). The SMR was consulted between January and May 1996. In addition, prior to Babtie undertaking the walkover survey (Phase 1), GGAT had been commissioned to produce a summary of the known archaeology along the route. The report, made available to Babtie included sites from the SMR plus sites recorded by their fieldworkers (Glamorgan-Gwent Archaeological Trust (1995).

- Cadw:Welsh Historic Monuments. Cadw was consulted for a list of Scheduled Ancient Monuments and Historic Parks and Listed Buildings. A list of industrial and Post-Medieval sites prepared by Cadw was also made available.

- Royal Commission on Ancient and Historical Monuments, Wales - Aerial Photographic Library. Aerial photographs of the study area held by RCAHM Wales were examined in order to assess the extent of archaeological features within the 50 metre corridor.

- Historical Research. Babtie appointed Mr Phillip Riden, a specialist in industrial archaeology, to research the historical and industrial background to the route. Mr Riden's brief included examination of the 18th century Badminton Estate maps, 19th century tithe and Ordnance Survey maps, the Quarter Sessions deposited plans of public works in the Gwent Record Office, as well as secondary sources.

- Local History Sources. Information has been obtained from various local publications as well personal comments from residents and from professional organisations including museums and libraries along the route

- Cartographic Information. Information concerning the identification and location of old and newly discovered sites has been transferred to Ordnance Survey 1:2500 maps, using Auto CAD.

5. Summary of Discoveries

5.1 The range of cultural heritage sites identified within the 50 metre corridor along the proposed A465 dualling include:

- Prehistoric sites including lithic scatters, cairns, stone monuments, stray finds and cropmarks;

- Post-Medieval agricultural features including farm houses/cottages and farm buildings, field buildings, holloways/tracks, and drystone and turfstone walling;

- Early Post-Medieval Industrial sites and features including 17th-18th century leats, sluice and weir systems, canals, tramroads, bridges and associated dwellings/ buildings;

- Late Post-Medieval Industrial sites and features including 19th-mid 20th century mineral extraction and processing, railways, tramroads, associated buildings and furniture, reservoirs and associated leats, tracks and pumping houses, bridges and roads.

- Post-Industrial buildings and features including mid 20th century to present fast-food restaurants, roads, bridges and transport furniture;

- Post-Medieval Religious Buildings and associated features including chapels, churches and associated grave yards, and

- Sites of palaeoenvironmental interest including peat and relict palaeosols.

6. Historical Background

6.1 Introduction

Past developments affect the potential for survival of prehistoric, Roman and Medieval remains. Indeed, continuing development in the Post-Medieval period will have destroyed earlier remains. During the initial construction of the road in the 1960's, much of the immediate area either side of the road was damaged. Indeed, a number of settlements were completely severed including those of Blackrock (Clydach Gorge) and Cefn-coed-y-cymmer. Along with many buildings, complete agricultural and industrial landscapes were also damaged including earlier Post-Medieval drystone and turfstone walled field systems and as well as an industrial heritage that is the 'hallmark' for this region of Wales.

6.2 Prehistoric Period

Within the 50 metre corridor of the A465, the evidence for prehistoric activity is restricted to five areas; the flood plain of the Usk, south of Abergavenny; Rassau Trading Estate, Tafarnaubach, Blaencarno Common; and the area around Gurnos and Cefn-coed-y-cymmer. Each area has revealed limited evidence, usually in the form of find spots although, near Rassau Trading Estate, a significant hoard from the Bronze Age was discovered. There is no evidence for any earlier prehistoric activity either within or outside the 50 metre corridor.

A Neolithic flint scatter, found prior to the construction of the sewage works, south of Abergavenny (close to the River Usk), is comparable with part of a contemporary assemblage retrieved from an excavation in Flannel Street, Abergavenny in 1965.

Within the Clydach Gorge there appears to be no evidence of any prehistoric activity, although two hillforts are located north and south of the gorge. A Bronze Age settlement has been recorded below the Blorange, close to the village of Llanfoist. It has been suggested that until the Iron Age, much of the lower reaches of the gorge were impassable (van Laun; pers.com.). Towards the Late Iron Age and Early Roman periods, there is evidence elsewhere in South Wales for the commercial use of wood. It is probably only then that the lower extent of the Clydach Gorge was fully exploited.

Either side of the A465, near Baverstock but outside the corridor are a number of Bronze Age barrows and cairns, clustered into cemeteries. Barrow/cairn cemeteries are located north and south of the Baverstock settlement (No.232) and north of

Merthyr Common. Possibly related to the latter cemetery is a small Bronze Age cairn (No.175), on a south facing slope, north of the A465 on Blaencarno Common.

At Gurnos and Cefn-coed-y-cymmer there is fragmentary evidence of prehistoric activity although the potential for prehistoric finds is restricted by the present road, limestone quarrying and town development. 150 metres east of Gurnos Farm, and recorded during the walkover survey was a large single stone with an acute smooth-bowled surface on one edge which could be a quernstone.

Just east of Cefn-coed-y-cymmer and south of the road, away from commercial quarrying are two large slabs of limestone partially embedded into a west facing slope. Underneath the slabs appear to be supported by small uprights. At the southern end, the slabs are submerged into disturbed earth and stone. This site although of questionable origin, may represent a chambered structure of an 'earth-fast' type.

6.3 The Roman Period (55 BC - AD 450)

There is no evidence of Roman remains within the 50 metre corridor. Within the general area there appears to be only two sites of Roman date; the town of Abergavenny, known to the Romans as Gobannium and a possible Roman road, west of Gurnos Farm. At Abergavenny a fort and settlement were established around AD 50 and according to the derivation of its name, possible pre-Roman iron-working was in operation (Rivet & Smith 1979:369).

The fort, close to the site of the later Medieval castle would have had commanding views across the Usk valley to the west. Excavations of the fort revealed a structure of substantial size and proportion and Gobannium was one of a series of four forts/towns along the Usk. To the south was Burrium (Usk) and Isca (Caerleon) and to the north, Cicucium (Brecon). It is therefore important to consider the Usk as a route-way between the four fortified settlements.

Further west, and close to the Gurnos Farm is the possible route of a north/south aligned Roman road that would have linked the fort and settlement at Brecon with the Roman legionary fortress at either Isca (Caerleon) or the fort at Tamium (Cardiff). Documentation is confused and any possible road may have since been destroyed due to quarrying activity or commercial forest planting west of Gurnos Farm. No evidence for the road has been found.

6.4 Early Medieval Period

There appears to be little or no visible evidence of settlement during the early Medieval period either within or outside the 50 metre corridor. Much of the early Post-Medieval industrial activity within the Clydach Gorge commences around the 1660s. The possibility cannot be discounted that pre-industrial settlement did not exist prior to 1600, although, Riden (1996) has suggested the contrary.

In Abergavenny the site of a Norman motte and bailey castle stands overlooking the Usk Valley. To the west of the castle the town retains part of the Medieval street

plan. Both the castle and Medieval town were probably influenced by the Roman Fort and later Romano-Celtic settlement (Olding, pers.com.).

At Cefn-coed-y-cymmer an Early Medieval coin hoard (No.215) dating from 1340s was discovered approximately 50 metres south of the A465, during construction of St John's Church in 1880. Close to Grawen Cottages (No.218) a series of hut circles, considered to be of Early Medieval date was uncovered during the construction of the A465.

There is a possibility that much of the drystone and, in particular, turfstone walling along the entire route of the A465 could date to either the early Post-Medieval or late Early Medieval periods. Tithe maps of 1819 around the Llanfoist area for example, suggest little or no deviation or change within the surviving walled field systems recorded within the walkover survey.

6.5 Post-Medieval Period

This period marks a dramatic change to both the landscape and settlement either side of the present A465. The majority of sites recorded in the walkover survey date from this period. Early Post-Medieval industrial activity is confined to one area - the Clydach Gorge. This area, approximately 4 km by 0.5 km marks the birth place of the Industrial Revolution in Wales, between 1700 and 1800.

Industrialisation spread rapidly throughout the Gorge. During this period new towns emerged throughout the valleys. Each industrial complex was served by a complex network of tramroads, leats, canals and roads. These were later superseded or integrated with the emergence of the railways. The Abergavenny, Tredegar & Merthyr Railway was the first of a number of communication links that ran roughly in the same route as the present A465. At Dowlais, north of Merthyr Tydfil, a series of railway lines converged and linked mid Wales with the 'Valleys'. The Heads of the Valley' line had become by 1870, part of a fully integrated railway network. The demise of the railways during the 1960s also marks a decline and change in industrial practice; from heavy to light 'blue-chip' industry.

Prior to the railways, there appears to have been a limited road network which linked together the larger settlements along the present route. The walkover survey did locate a number of roads/tracks that ran between Abergavenny and Llanfoist, Llanfoist and Gilwern, and Gilwern and Brynmawr. These were later amalgamated into a Turnpike road in 1812 that ran between Abergavenny and Merthyr. The Turnpike road remained the only main road until the opening of the 'Heads of the Valley' road in 1966.

The transport network served industry and not necessarily the community. Both canals and tramroads were the main source of transportation of raw materials. Tramroads transported the raw material (coal, limestone and ironstone) from the quarry to the furnace, then from the furnace to the foundry and finally, from the foundry to the canal. Before this, during the initial stages of the industrial revolution, pack-horses would have served a similar function.

In 1793, the Brecknock & Abergavenny Canal Company built the Clydach Railroad and was laid from a forge at Glangrwyney up the Clydach Gorge to Brynmawr. This tramroad was later connected to two others which ran parallel to it and down the Gorge to the Brecon & Abergavenny Canal at Gilwern and Govilon. Further west, between Brynmawr and the head of the Rhymney Valley, other tramroads were laid from the ironworks in each valley to run north to collieries, ironstone pits and limestone quarries. Some were linked together to create a rudimentary west-east route, giving the ironworks access to the Brecon & Abergavenny Canal as well as the two branches of the Monmouthshire Canal which ran to Crumlin and Pontypool.

Many of the earliest tramroads run close to or are cut by the present road. At Hirwaun, at least six tramroads (and two railway lines), all dating from the early to mid 19th century, are severed by the A465. A number of tramroads date from the late 18th, early 19th centuries and include the Bailey's Disgwylfa Tramroad (c.1818), Bailey's Llangattock Tramroad (c.1830s) Brinore Tramroad (c.1815), Castle Morlais Quarries Tramroad (c.1803), Clydach Railroad (c.1793), Gurnos Tramroad (c.1792), Hirwaun to Aberdare Tramroad (c.1790s), Llam-march Tramroad (c.1795 and 1811) and the Trefil Tramroad (c. 1797).

The most complex section of tramroad is located within the Clydach Gorge and involves two tramroads; the Clydach Railroad (No.44) and Llan-march Tramroad (No.51). Both run, in places, parallel to each other. They also served similar purposes in providing raw materials to the local ironworks and forges within the lower Clydach at Saleyard, Clydach Village and Llanelly.

The Clydach Railroad was built and financed by the Brecknock & Abergavenny Canal Co. in 1793 and served as a link between collieries at Brynmawr, at the head of the Clydach Gorge and a long established iron forge at Glangrwyney on the Usk, a short distance downstream from the mouth of the Clydach. Initially, the railroad was laid as an edge-rail which was cast in 4ft sections

By the time the Heads of the Valley Railway was promoted in late 1850s, much of the proposed route followed a line already adopted by existing tramroads. Despite this however, the construction of a locomotive-operated railway through rugged terrain was a very formidable challenge and proved too expensive for the Merthyr, Tredeger & Abergavenny Railway. The project was finally completed by the London and North Western Railway in 1862. Others sections and branch lines were later added , some jointly built with Rhymney Railway and the Brecon & Merthyr Railway. The route to Merthyr was completed in 1879. The line was principally built to transport iron, and in later years coal, from works at the Heads of the Valley to the Midlands. Passenger traffic was minimal. The route was considered a major engineering accomplishment with some of the steepest gradients and tightest curves in Britain. Despite this massive engineering feat with the construction of embankments, revetting, viaducts and cuttings, the line can never have been in profit, especially at a time when the iron industry in this part of Britain began its slow demise. The route was finally closed in 1958, but after this date, there were plans to build a new trunk road on much the same route as the railway and would link the Midlands with Swansea and Neath, the new rising centres for heavy industry. The road was originally conceived as far back as 1947, although detailed planning did not commence for another ten years. Construction started in 1960 and was completed in 1966. The route linked the Ross Spur of the M5 (now the M50) with the A 40 through to Neath and Swansea. Similar

to their railway counterparts, a century earlier, road engineers were faced with considerable engineering problems especially through the Clydach Gorge and across a number of wide river valleys and ravines. In places, the road simply overlaid existing former LNWR railway trackbeds.

Both transportation and the artificial watercourses were constructed as an integrated system around industry. Areas such as the Clydach Gorge, Brynmawr, Merthyr Tydfil and Hirwaun were ideal locations for early entrepreneurs; the raw material, the manufacturing base and the transportation to the market formed the basis of the Industrial Revolution in Wales. The need to utilise raw materials, such as ironstone, limestone and coal and manufacture the product close by was to set standards for industrialisation elsewhere in Britain. Within the Clydach Gorge, the iron industry is concentrated around the settlements of Maes y Gwartha and Saleyard. Indeed, the growth of both settlements is attributed to demand for iron.

One of the earliest commercial furnaces within the region was established at Llanelly, several kilometres west of Gilwern. Schubert (1957: 371) has suggested that there was a furnace at Llanelly (No.66) as early as 1590, which was rebuilt on a new site in 1606. However, the earliest recorded evidence appears to be an agreement of 1663 under which Capel Hanbury, who had another ironworks at Pontypool, was allowed to have liberty to build a weir to divert water from the River Clydach to his ironworks in Llanelly (Riden 1993, 23). The gorge was too remote for a forge alone to have been built: such a scheme would only have been feasible if a source of pig-iron from a blast furnace was nearby.

A blowing-house, containing the bellows which powered the furnace, stood on the opposite side of the furnace from the bank, with the water-wheel at its western end. There appears to be no trace of either the head- or tail-race which carried water to and from the wheel, although this question probably merits closer investigation. In line with Cadw's report, the walkover survey identifies `Ponds, arches and terraces' to the west and north of the furnace, which must be connected with the supply of water to the furnace. Nothing of this sort is marked on the tithe map, which does not mark any watercourse approaching the furnace from the north, but there may be better evidence on John Aram's plan.

Llanelly Forge (No.58) stood a short distance lower down the valley than the furnace, beyond the grounds of Clydach House on the left bank of the river. It was powered by water carried in a leat which left the Clydach just downstream from the mouth of Nant Dyar and ran along the left bank of the river to near the bottom of the lane running down from Clydach House. Here it swung away from the river, skirting the garden of Clydach House on the left and a large storage pond on the right. The tithe map shows a weir on the leat feeding the W end of the pond and the leat continuing around the north side of the pond to end at a point level with the dam wall of the pond.

7. Site Categorisation

7.1 The sites have been assessed for their importance in line with the categories defined in the Cadw brief. The details for categorisation are in Appendix 1

Category A - Sites of National Importance

These include Scheduled Ancient Monuments, Listed Buildings and those sites which meet the criteria for scheduling or listing. These sites to be preserved in situ.

Category B - Sites of Regional or County Importance
Sites that do not meet the criteria for scheduling or listing, but are nevertheless of particular importance within the region. Preservation *in situ* is the preferred option but if loss or damage cannot be avoided, appropriate detailed recording will be undertaken.

Category C - Sites of District or Local Importance

Sites which are not of sufficient importance to justify preservation if threatened. Category C will merit adequate recording in advance of loss or damage.

Category D - Minor or Damaged Sites

Sites of minor importance or so badly damaged that little remains to justify their inclusion into a higher category. Rapid recording, either in advance or during destruction is required.

Category E - Sites requiring further investigation

Sites whose importance or mitigation requirements can not be fully determined from Phase 1. Each site will be subject to further investigation. After which, sites can be categorised A - D.

Category N.F.A. (No Further Action)

Sites beyond the 50 metre corridor.

7.2 The 277 sites recorded at present have been categorised as follows:

7.2.1 Category A - Sites of National Importance

Seventeen sites have been classed as being of national importance; Nos. 9, 34, 35, 36, 61, 64, 90, 93, 94, 97, 99, 112, 206, 207, 208, 221,222

No. 64 is a Listed Building and Nos. 93, 94, 207/208 are Scheduled Ancient Monuments

7.2.2 Category B - Sites of Regional or County Importance.

Fifty-three have been classed as being of regional or county importance;

Nos. 1, 6, 7, 10, 26, 27, 28, 29, 32, 38, 44, 45, 47, 49, 55, 58, 59, 62, 66, 69, 76, 77, 79, 89i, 89ii, 92, 116, 117, 118, 122, 146, 152, 157, 160, 168, 169, 175, 179, 183, 184, 187, 189, 191, 195, 198, 200, 201, 204, 212, 214, 218, 234, 243

No. 66 is a Scheduled Ancient Monument

7.2.3 Category C - Sites of Local or District Importance

Fifty sites have been classified as being of local or district importance;
Nos. 12, 14, 19, 21, 22, 48, 49, 53, 63, 67, 68, 72, 73, 74, 75, 82, 83, 87, 102, 103, 104, 119, 127, 140, 147, 149, 152, 154, 165, 176, 178, 180, 185, 186, 194, 203, 209, 211, 215, 230, 231, 233, 237, 238, 246, 250, 257, 269, 271, 272

7.2.4 Category D - Minor or Damaged Sites

Ninety-one sites are of minor importance;
Nos. 5, 8, 15, 18, 20, 23, 24, 30, 33, 39, 40, 44, 45, 46, 56, 65, 71, 84, 88, 101, 105, 106, 110, 116, 121, 124, 125, 126, 128, 129, 130, 131, 132, 134, 135, 136, 137, 139, 141, 144, 151, 153, 155, 156, 158, 159, 161, 162, 163, 164, 166, 167, 170, 171, 172, 173, 174, 177, 181, 182, 190, 193, 196, 197, 199, 205, 217, 219, 220, 223, 224, 225, 226, 227, 228, 235, 236, 239, 240, 241, 242, 245, 247, 248, 249, 251, 253, 254, 256, 266, 267, 268, 274

7.2.5 Category E - Sites for further Evaluation

Forty-three sites require archaeological evaluation;
Nos. 3, 4, 4i, 11, 31, 36, 50, 51, 70, 78, 86, 91, 98, 99, 100, 107, 111, 113, 114, 120, 123, 133, 138, 142, 145, 146, 150, 192, 202, 216, 229, 232, 255A, 255B, 255C, 260, 263, 264, 265, 273, 275, 276, 277

7.2.6 No Further Action

Twenty-eight sites to receive no further action (NFA).
Nos. 2, 13, 16, 17, 25, 37, 41, 42, 43, 52, 54, 57, 60, 80, 81, 85, 95, 96, 109, 115, 143, 148, 210, 213, 244, 261, 262, 270,

7.3 Cadw have indicated that listing is under consideration for Nos. 6, 9, 10,13, 22, 27, 28, 34, 38, 61, 69, 79, 85, 90, 97, 109, 116, 143, 214; and consideration is being given to the scheduling of sites Nos. 42, 100, 112, 113

8. Site Impact

8.1 Impact on each site may be considered in terms of

- loss;
- damage;

- severance, particularly linear features;

- the group value, the relationship with other associated sites;

- and the effect on the archaeological setting.

8.2 The level of impact can be considered in one of three levels:

- slight - sites affected by the proposals but where the impact on the site and its setting is minimal;

- moderate - sites which would be affected by the route but where loss or impact on the setting would be partial (including severance);

- severe - sites which will be substantially affected or completely lost by the proposals;

8.3 A total of 130 sites will suffer some form of impact which has been provisionally assessed as:

Slight - thirty-six sites

Nos. 29, 30, 36, 51, 68, 69, 86, 99, 100, 112, 114, 123, 133, 137, 141, 152, 153, 157, 160, 167, 170, 179, 202, 219, 236, 238, 239, 241, 245, 264, 265, 268, 269, 273, 275, 276;

Moderate - sixty-five sites

Nos. 3, 4, 4i, 10, 11, 12, 20, 24, 29, 30, 31, 39, 51, 68, 69, 70, 91, 99, 110, 112, 119, 120, 133, 137, 141, 142, 152, 153, 157, 160, 167, 170, 179, 180, 192, 200, 202, 205, 219, 223, 227, 228, 229, 236, 238, 239, 241, 245, 252, 255A, 255B, 255C, 256, 260, 263, 264, 265, 268, 269, 270, 273, 275, 276

Severe - twenty-nine sites

Nos. 19, 33, 40, 48, 49, 50, 56, 83, 100, 102, 104, 106, 107, 108, 114, 123, 150, 154, 155, 161, 168, 169, 196, 211, 216, 222, 231, 232, 233.

9. Recommendations for Phase 2 Evaluation

9.1 Recommendations in this report for further action form only part of the Phase 2 Archaeological Field Evaluation. The proposals enable the correct reporting of the evaluations, incorporation of the results into the design procedure for the scheme and the production of the Cultural Heritage component of the integrated Environmental Statement being produced by Babtie. It is recommended that 43 sites be evaluated (see section 9.7). Agreement has already been reached on progressing this work.

9.2 Each evaluation action will help in assessing the nature, importance and state of preservation of archaeological remains likely to be impacted by the proposed road improvements. The evaluation actions will assist in determining the appropriate level of mitigation to be reported in the Environmental Statement. On the basis

that these sites all contain important archaeological features it is anticipated that the Phase 2 works will comprise extensive hand excavation, with some machine excavation where necessary, and survey. The type of site encountered will determine the evaluation measures pursued and will influence the proposals for the mitigation strategies. The evaluation strategies will be implemented according to site type.

9.3 For tramroads, railways and similar remains the evaluation technique will seek to assess the state of preservation and be directed towards identification of relevant dimensions and structural remains. The recording of stratified deposits will attempt to establish sequential phasing of the feature. The evaluation will involve hand excavation of a 2m length of the feature down to track/sleeper level and careful recording of track related remains. Subsequent machine trenching of the body of the earthwork will be designed to minimise the disturbance to surviving remains such as sleepers while providing a cross section through the feature. Where appropriate more than one evaluation trench will be excavated to establish the direction of the feature, continuity of stratification within the section and the possible recovery of any railway/tramroad furniture.

9.4 For leat systems trenching will be by hand to reduce possible impacts on existing ground water and drainage conditions. Trenches will be 1-2m wide as appropriate.

9.5 In evaluating standing structures, the aims will be to assist in determining importance and state of preservation, define the limit of the historic fabric and to assess the potential range of associated sub-surface features, such as burials at site No.50. This may involve hand and machine excavation of associated features to define their maximum extents. Where standing structures such as culverts and bridges are incorporated into linear features, the wider setting will be considered for its 'group value'. This point will also be applied to linear features that progress beyond the 50 metre corridor.

9.6 Evaluation strategy for other earthworks will include trial trenching of certain features to determine the likely range and value of sub-surface stratigraphy, the extents of the associated features and the state of preservation of the remains.

9.7 It is proposed to evaluate forty-three sites. The majority of these sites are of an early industrial nature and include tramroads, leats, railways and associated buildings.

Site No.	Site Name/Description	N.G.R	Class
3	**Tramroad/cart track, Llanfoist Farm** *Method of excavation: Hand excavation followed by machine trenching (two trenches)*	**SO 2945 1331**	**E**
4	**Merthyr, Tredegar & Abergavenny Railway** *Method of excavation: Hand excavation followed by machine trenching (single trench)*	**SO 2902 1353**	**E**

4(i)	**Llanvihangel Railway, Llanfoist**	**SO 2902 1353**	**E**
	Method of excavation: Hand excavation followed by machine trenching (two trenches)		
11	**Track/road, Pen-y-Worlod Farm, Llanfoist**	**SO 2828 1383**	**E**
	Method of excavation: Machine trenching, hand excavation in places (single trench)		
31	**Abergavenny-Merthyr Turnpike Road,**	**SO 2597 1432**	**E**
	Method of excavation: Hand excavation followed by machine trenching (two trenches)		
36	**Canal bridge (eccentric arched), Gilwern**	**SO 2537 1452**	**(A)E**
	Method of excavation: Hand excavation (surface clearance and evaluation)		
50	**Primitive Methodist Chapel and grave yard**	**SO 2427 1428**	**(B)E**
	Method of excavation: Machine clearance of tarmac, and debris followed by hand excavation (surface excavation and evaluate)		
51	**Llam-march Tramroad, Gilwern**	**SO 2328 1377**	**E**
	Method of excavation: Hand excavation followed by machine trenching (two trenches)		
70	**Llam-march Tramroad, Saleyard**	**SO 2329 1373**	**E**
	Method of excavation: Hand excavation followed by machine trenching (two trenches)		
78	**Clydach Railroad, Cheltenham**	**SO 2222 1275**	**(C)E**
	Method of excavation: Hand excavation followed by machine trenching (two or more trenches)		
86	**Merthyr-Govilon Turnpike Road (Main Road)**	**SO 1968 1216**	**(C)E**
	Method of excavation: Machine trenching followed by hand excavation where necessary (single trench)		
91	**Track between Blackrock and Cheltenham**	**SO 2160 1264**	**(B)E**
	Method of excavation: Hand excavation followed by machine trenching (two trenches)		
98	**Kilns (?) within Clydach river bank**	**SO 2297 1339**	**(C)E**
	Method of excavation: Hand clean, excavate where necessary (surface clearance and hand excavation)		
99	**Leat keeper's cottage & outbuildings, Clydach**	**SO 2298 1342**	**(A)E**
	Precise strategy to be determined with CADW after survey		
100	**Weir, sluice and leat system, Clydach**	**SO 2313 1355**	**(A)E**
	Method of excavation: Hand excavation, only within sensitive areas under threat (two or more trenches)		

43. Canal aqueduct over Clydach Rail Road, Gilwern **SO 2439 1451** **NFA**

Type: aqueduct

i) Period: 1797
ii) Rarity: scarce (3)
iii) Documentation: SMR, Cadw, tithe map 1847, O.S. 1880 and documentary histories (3)
iv) Group Value: associated with B & A Canal (No.34), embankment (No.42) (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase structure (1)

Impact: slight Total: 13

44. Clydach Railroad, Gilwern to Cheltenham **SO 2300 1369 to SO 2437 1448** **B**

Type: tramroad

i) Period: 1798
ii) Rarity: moderate (2)
iii) Documentation: SMR, Cadw, tithe map 1847, O.S. 1880 and documentary histories (3)
iv) Group Value: associated with the B & A Canal (No.34), embankment (No.42), aqueducts (No.34) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 11

45. Pack-horse bridge, Gilwern **SO 2441 1442** **B**

Type: bridge

i) Period: early 19th century
ii) Rarity: scarce (3)
iii) Documentation: none (1)
iv) Group Value: associated with B & A canal (No.34), lean-to building (No.46) and overflow sluice (No.47) (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase structure (1)

Impact: slight Total: 11

46. Lean-to building and D.S.W, Gilwern **SO 2440 1442** **D**

Type: building

i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated with pack-horse bridge (No.45) (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase building (1)

Impact: slight Total: 6

47. Overflow Sluice system, B & A Canal, Gilwern **SO 2442 1443** **B**

Type: artificial watercourse

i) Period: late 18th century
ii) Rarity: scarce (3)
iii) Documentation: documentary histories (van Laun 1989) (2)
iv) Group Value: associated with pack-horse bridge (No.45) and B & A Canal (No.34) (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase structure (1)

Impact: slight Total: 12

48. Lion Hotel, Gilwern **SO 2437 1438** **C**

Type: buildings
i) Period: mid 19th century
ii) Rarity: common (1)
iii) Documentation: O.S. 1880, 1891 (2)
iv) Group Value: associated with row of cottages (No.49) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase building (2)

Impact: severe Total: 9

Action: Photographic Record

49. Terrace cottages, Gilwern **SO 2433 1436** **C**

Type: buildings
i) Period: mid to late 19th century
ii) Rarity: common (1)
iii) Documentation: O.S. 1880 (2)
iv) Group Value: associated with Lion Hotel (No. 48) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase dwellings (2)

Impact: severe Total: 9

Action: Photographic Record

50. Primitive Methodist Chapel and grave yard, Gilwern **SO 2427 1429** **(B)E**

Type: building
i) Period: 1838
ii) Rarity: moderate (2)
iii) Documentation: SMR, Cadw, O.S. 1880, 1891 (3)
iv) Group Value: associated and incorporated within the settlement of Gilwern (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase building (1)

Impact: severe Total: 11

Action: Photographic Record, Ground Survey and Excavation

51. Llam-march Tramroad, Gilwern **SO 2440 1439 to SO 2328 1379** **E**

Type: tramroad
i) Period: 1795 and 1811/12
ii) Rarity: moderate (2)
iii) Documentation: SMR, O.S. 1880 and documentary histories (Rattenbury 1980, van Laun 1989) (3)
iv) Group Value: associated with bridge (No.69) and Clydach Ironworks (No.94) (3)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase linear feature (2)

Impact: high Total: 11

Action: Evaluation

52. Machine House (weighbridge), Clydach Railroad **SO 2419 1439** **NFA**

Type: building

i) Period: c.1810

ii) Rarity: scarce (3)

iii) Documentation: SMR, Cadw, O.S. 1880 and documentary histories (Rattenbury 1980) (3)

iv) Group Value: associated with Clydach Railroad (No.44) (2)

v) Survival/Condition: good (3)

vi) Diversity: single-phase building (1)

Impact: slight Total: 12

53. Forge Hammer Inn, Gilwern **SO 2378 1408** **C**

Type: building

i) Period: mid 19th century

ii) Rarity: common (1)

iii) Documentation: O.S. 1880 (2)

iv) Group Value: associated with branch line of Llam-march Tramroad (No.55) (3)

v) Survival/Condition: moderate (2)

vi) Diversity: multi-phase building (2)

Impact: moderate Total: 10

Action: Photographic Record (setting)

54. Pwll Rhys waterfall footbridge **SO 2375 1410** **NFA**

Type: bridge

i) Period: c1930

ii) Rarity: common (1)

iii) Documentation: none (1)

iv) Group Value: none (1)

v) Survival/Condition: good (3)

vi) Diversity: single-phase structure (1)

Impact: slight Total: 7

55. Branch of the Llam-march Tramroad, Llanelly. **SO 2355 1396 to SO 2378 1408** **B**

Type: tramroad

i) Period: c.1812

ii) Rarity: moderate (2)

iii) Documentation: O.S. 1880, documentary histories (Rattenbury 1980 and van Laun 1989) (3)

iv) Group Value: associated with Forge Hammer Inn (No.53), Llanelly Forge (No.58) (3)

v) Survival/Condition: moderate (2)

vi) Diversity: single-phase linear feature (1)

Impact: moderate Total:11

56. A465 concrete revetting, Gilwern **SO 2420 1423** **D**

Type: road

i) Period: pre 1963

ii) Rarity: common (1)

iii) Documentation: unknown (0)

iv) Group Value: present A465 (2)

v) Survival/Condition: unknown (0)

vi) Diversity: unknown (0)

Impact: moderate Total: 3

57. Culvert/buttress, River Clydach, Maes y Gwartha **SO 2365 1410** **NFA**

Type: artificial watercourse

i) Period: early 19th century
ii) Rarity: moderate (2)
iii) Documentation: none (1)
iv) Group Value: associated with Llanelly Forge (No.58) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase structure (1)

Impact: slight Total: 8

58. Llanelly Forge, Maelog Bungalow, Maes y Gwartha **SO 2355 1405** **B**

Type: industrial monument

i) Period: c.1660
ii) Rarity: scarce (3)
iii) Documentation: Cadw, SMR and documentary histories (Rattenbury 1980 and van Laun 1989) (3)
iv) Group Value: associated with branch line (No.55), culvert (No.57), dam/leat (No. 59) and bridge (No.61) (3)
v) Survival/Condition: poor (sub-surface feature) (1)
vi) Diversity: multi-phase monument (2)

Impact: slight Total: 12

59. Dam and parallel leat, Llanelly Forge, Maes y Gwartha **SO 2351 1402** **B**

Type: earthworks and water course

i) Period: 18th century (?)
ii) Rarity: scarce (3)
iii) Documentation: Cadw, SMR and documentary histories (Rattenbury 1980 and van Laun 1989) (3)
iv) Group Value: associated with Llanelly Forge (No.58) (2)
v) Survival/Condition: poor (earthworks and sub-surface features) (1)
vi) Diversity: multi-phase earthworks (2)

Impact: slight Total: 11

60. Forge House, Tin plate works, Maes y Gwartha **SO 2352 1399** **NFA**

Type: building

i) Period: early 19th century
ii) Rarity: moderate (2)
iii) Documentation: SMR, Cadw, tithe maps and documentary histories (van Laun 1989) (3)
iv) Group Value: associated with Llanelly Forge (No.58) and bridge (No.61) (3)
v) Survival/Condition: poor (incorporated into later building) (1)
vi) Diversity: multi-phase building (2)

Impact: slight Total: 11

61. Llanelly Bridge, Maes y Gwartha **SO 2353 1396** **A**

Type: bridge

i) Period: early 19th century (c.1812)
ii) Rarity: moderate (2)
iii) Documentation: SMR, Cadw (of historic interest), O.S. 1880 and documentary histories (3)
iv) Group Value: associated with Llanelly Forge (No.58), Tinplate Works (No.60) (3)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase structure (2)

Impact: slight Total: 13

62. Forge Row, Llanelly, Maes y Gwartha **SO 2345 1392** **B**

Type: buildings

i) Period: late 17th and 19th centuries
ii) Rarity: scarce (3)
iii) Documentation: SMR, Cadw (of historical interest), O.S.1880 and documentary histories (3)
iv) Group Value: associated with Llanelly forge (No.58) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase dwellings (2)

Impact: slight Total: 12

63. Culvert, River Clydach, Saleyard **SO 2339 1383** **C**

Type: standing structure

i) Period: 18th/19th century (?)
ii) Rarity: moderate (2)
iii) Documentation: none (1)
iv) Group Value: associated with Clydach House (No.64) (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase structure (1)

Impact: slight Total: 9

64. Clydach House, Saleyard **SO 2325 1382** **A**

Type: building

i) Period: 1693
ii) Rarity: scarce(3)
iii) Documentation: Cadw (Listed Building), SMR, O.S. 1880 and documentary histories (3)
iv) Group Value: associated with culvert (No.63)and Llanelly Furnace (No.66) (3)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase building (2)

Impact: slight Total: 14

65. Industrial buildings, Clydach House, Saleyard **SO 2331 1392** **D**

Type: industrial buildings

i) Period: 17th-18th century (?)
ii) Rarity: scarce (3)
iii) Documentation: unknown (0)
iv) Group Value: associated with Clydach House (No.64) and Llanelly Furnace (No.66) (3)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase buildings (1)

Impact: slight Total: 8

66. Llanelly Furnace, Saleyard **SO 2323 1386** **B**

Type: industrial monument

i) Period: 1684
ii) Rarity: scarce (3)
iii) Documentation: SMR, Cadw (Scheduled Monument), documentary histories (3)
iv) Group Value: associated with Clydach House (No.64), ponds, terraces and dam (No.67) (3)
v) Survival/Condition: poor (sub-surface remains) (1)
vi) Diversity: multi-phase earthworks (2)

Impact: slight Total: 12

67. Terraces, arches and ponds, Llanelly Furnace, Saleyard **SO 2318 1377** **C**

Type: earthworks and standing structures

i) Period: 17th-18th centuries
ii) Rarity: scarce (3)
iii) Documentation: Cadw, SMR, documentary histories (van Laun 1989) (3)
iv) Group Value: associated with Llanelly Furnace (No.66) (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase earthwork and structures (1)

Impact: slight Total: 10

68. Former road bridge, Saleyard **SO 2330 1375** **C**

Type: bridge

i) Period: pre 1963
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated with the original route of the pre 1963 A465 (2)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase structure (2)

Impact: high Total: 9

Action: Photographic Record and Ground Survey

69. Llam-march Tramroad bridge, Saleyard **SO 2329 1373** **B**

Type: bridge

i) Period: late 18th century
ii) Rarity: moderate (2)
iii) Documentation: SMR, O.S.1880, documentary histories (van Laun 1989) (3)
iv) Group Value: associated with Llam-march Tramroad (No.70) and road bridge (No.68) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase structure (2)

Impact: moderate Total: 12

Action: Photographic Record and Ground Survey

70. Llam-march Tramroad, Saleyard **SO 2327 1367** **E**

Type: tramroad

i) Period: 1812
ii) Rarity: moderate (2)
iii) Documentation: SMR, O.S.1880, tithe map 1847 and documentary histories (van Laun 1989) (3)
iv) Group Value: associated with tramroad bridge (No.69) and Clydach Ironworks (No.94) (3)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: high Total: 10

Action: Evaluation

71. Farmstead, Brunant **SO 2375 1394** **D**

Type: building

i) Period: 18th-19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891, tithe maps (2)
iv) Group Value: none (1)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase dwelling (2)

Impact: slight Total: 8

72. Clydach Villa, Cheltenham **SO 2291 1348** **C**

Type: building

i) Period: late 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated and incorporated within the settlement of Cheltenham (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase dwelling (1)

Impact: slight Total: 9

73. Lamb House and industrial unit, Cheltenham **SO 2282 1333** **C**

Type: buildings

i) Period: 18th-19th century
ii) Rarity: common (1)
iii) Documentation: O.S. 1880, 1891 (2)
iv) Group Value: associated and incorporated within the settlement of Cheltenham (2)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase dwellings (2)

Impact: slight Total: 10

74. Sunnyside - Terrace cottages, Cheltenham **SO 2279 1332** **C**

Type: building

i) Period: mid 19th century
ii) Rarity: common (1)
iii) Documentation: O.S. 1880, 1891 (2)
iv) Group Value: associated and incorporated within the settlement of Cheltenham (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase dwelling (2)

Impact: slight Total: 9

75. Terrace cottages, Craig Amy, Cheltenham **SO 2273 1323** **C**

Type: buildings

i) Period: mid 19th century
ii) Rarity: common (1)
iii) Documentation: O.S. 1880, 1891 (2)
iv) Group Value: associated and incorporated within the settlement of Cheltenham (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase dwellings (2)

Impact: slight Total: 9

76. Worker's cottages incl. Oak Cottage, Cheltenham **SO 2267 1313** **B**

Type: buildings

i) Period: mid 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S 1880, 1891, documentary histories (3)
iv) Group Value: associated and incorporated within the settlement of Cheltenham (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase dwellings (2)

Impact: slight Total: 11

77. G.W.R notice, Cheltenham **SO 2270 1318** **B**

Type: standing structure

i) Period: early 20th century
ii) Rarity: scarce (3)
iii) Documentation: SMR (2)
iv) Group Value: associated with Clydach Railroad (No.78) (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase monument (1)

Impact: slight Total: 12

78. Clydach Railroad, Cheltenham **SO 2195 1274 to SO 2300 1369** **(C)E**

Type: tramroad

i) Period: late 18th century
ii) Rarity: moderate (2)
iii) Documentation: SMR, Cadw, O.S.1880, tithe map 1847 and documentary histories (3)
iv) Group Value: associated with G.W.R. notice (No.77) and Cheltenham (3)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: high Total: 10

Action: Evaluation

79. Oak House, Cheltenham **SO 2258 1302** **B**

Type: building

i) Period: 18th-19th centuries
ii) Rarity: moderate (2)
iii) Documentation: SMR, O.S. 1880 (3)
iv) Group Value: associated with the settlement of Cheltenham and the Clydach Ironworks (No.94) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase dwelling (2)

Impact: slight Total: 11

80. Ebenezer Welsh Chapel, Cheltenham **SO 2255 1397** **NFA**

Type: building

i) Period: mid 19th century
ii) Rarity: moderate (2)
iii) Documentation: Cadw, SMR, O.S. 1880 and documentary histories (3)
iv) Group Value: associated with the settlement of Cheltenham (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase building (1)

Impact: slight Total: 10

81. English Wesleyan Chapel, Cheltenham **SO 2250 1292** **NFA**

Type: building

i) Period: mid to late 19th century
ii) Rarity: moderate (2)
iii) Documentation: Cadw, SMR, O.S. 1880 and documentary histories (3)
iv) Group Value: associated with the settlement of Cheltenham (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase building (2)

Impact: slight Total: 11

82. James Terrace cottages, Cheltenham **SO 2246 1290** **C**

Type: buildings

i) Period: mid 19th century
ii) Rarity: common (1)
iii) Documentation: SMR, O.S. 1880, 1891 (3)
iv) Group Value: associated and incorporated within the settlement of Cheltenham (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase dwellings (2)

Impact: slight Total: 10

83. Siloam Chapel Graveyard, Cheltenham **SO 2247 1281** **C**

Type: building

i) Period: mid to late 19th century
ii) Rarity: common (1)
iii) Documentation: SMR, O.S. 1880, 1891 (3)
iv) Group Value: associated and incorporated within the settlement of Cheltenham (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase graveyard (2)

Impact: severe Total: 10

84. Spring, gully and D.S.W., Cheltenham **SO 2239 1283** **D**

Type: standing structures

i) Period: 18th/19th century (?)
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated and incorporated within the settlement of Cheltenham (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase structures (1)

Impact: slight Total: 7

85. Penrheol Las and Big House, Cheltenham **SO 2223 1281** **NFA**

Type: building

i) Period: mid 19th century
ii) Rarity: common (1)
iii) Documentation: Cadw (2)
iv) Group Value: associated and incorporated within the settlement of Cheltenham (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase dwelling (1)

Impact: slight Total: 7

86. Merthyr -Govilon Turnpike Road (Main Road) **SO 1964 1213 to SO 2323 1437** **(C)E**

Type: road

i) Period: 1812
ii) Rarity: common (1)
iii) Documentation: O.S. 1880, documentary histories (3)
iv) Group Value: associated and incorporated within (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: high Total: 9

Action: Evaluation

87. Derelict cottage, Rock & Fountain Inn, Main Road **SO 2199 1278** **C**

Type: building

i) Period: late 18th/early 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: none (1)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase dwelling (2)

Impact: slight Total: 9

88. Masonry culvert, Main Road **SO 2193 1277** **D**

Type: standing structure

i) Period: 19th century (?)
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated with turnpike road -Main Road (No.86) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase standing structure (1)

Impact: moderate Total: 7

89i. Tramroad, Daren Ddu Limestone Quarry to Blackrock **SO 2154 1262 to SO 2190 1294** **B**

Type: tramroad

i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: documentary histories (Rattenbury 1980 and van Laun 1989) (3)
iv) Group Value: associated with the Daren Ddu Quarry and lime kilns (No.90) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 11

89ii. Tramroad, Daren Ddu Limestone Quarry to Limekilns **SO 2185 1275 to SO 2205 1287** **B**

Type: tramroad

i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: documentary histories (Rattenbury 1980 and van Laun 1989) (3)
iv) Group Value: associated with the Daren Ddu Quarry and lime kilns (No.90) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 11

90. Blackrock Lime Kilns, Main Road **SO 2181 1275** **A**

Type: industrial monument

i) Period: 1889
ii) Rarity: scarce (3)
iii) Documentation: Cadw, SMR and documentary histories (3)
iv) Group Value: associated with Daren Ddu quarry, Clydach Tramroad (No.78) and Turnpike road (No.86) (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase structure (1)

Impact: slight Total: 13

91. Track/road between Blackrock and Cheltenham **SO 2153 1255 to SO 2188 1274** **(B)E**

Type: tramroad

i) Period: late 18th century
ii) Rarity: moderate (2)
iii) Documentation: SMR, O.S. 1880, documentary histories (Rattenbury 1989 and van Laun 1989) (3)
iv) Group Value: associated with turnpike road (No.86) and Blackrock line kilns (No.90) (3)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: high Total: 10

Action: Evaluation

92. Haman's Cottages, Clydach **SO 2282 1319** **B**

Type: building

i) Period: early 19th century
ii) Rarity: scarce (3)
iii) Documentation: Cadw, SMR, O.S.1880 and documentary histories (van Laun 1989) (3)
iv) Group Value: associated with Clydach Ironworks (No.94) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase dwellings (2)

Impact: slight Total: 12

93. Smart's Bridge, Clydach **SO 2287 1327** **A**

Type: bridge

i) Period: 1824
ii) Rarity: scarce (3)
iii) Documentation: Cadw (Scheduled Monument), SMR, O.S.1880 and documentary histories (3)
iv) Group Value: associated with the Clydach Ironworks (No.94) and branch tramroad (No.95) (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase structure (1)

Impact: slight Total: 13

94. Clydach Iron Works, Clydach **SO 2290 1320** **A**

Type: industrial monument

i) Period: 1797
ii) Rarity: scarce (3)
iii) Documentation: Cadw (Scheduled Monument), SMR, O.S.1880 and documentary histories (3)
iv) Group Value: associated with Haman's Cottages (No. 92), Smart's Bridge (No.93) (3)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase industrial complex (2)

Impact: slight Total: 14

95. Section of (branch) tramroad, Clydach Ironworks **SO 2289 1305 to SO 2230 1250** **NFA**

Type: tramroad

i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, documentary histories (Rattenbury 1980) (3)
iv) Group Value: associated with the Clydach Ironworks (No.94) (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 8

96. Site Office and dwellings, Clydach **SO 2287 1332** **NFA**

Type: earthworks

i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: documentary histories (van Laun 1989) and photographic record (3)
iv) Group Value: associated with Smart's Bridge (No.93) and the Clydach Ironworks (No.94) (2)
v) Survival/Condition: unknown (under A465 embankment) (0)
vi) Diversity: unknown (0)

Impact: N/A Total: 6

97. Pant Glas Bridge, Clydach **SO 2293 1333** **A**

Type: bridge

i) Period: 1810
ii) Rarity: moderate (2)
iii) Documentation: Cadw, SMR, O.S.1880 and documentary histories (3)
iv) Group Value: associated with the Llam-march Tramroad (No.70), Clydach Ironworks (No.94) (3)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase structure (2)

Impact: slight Total: 13

Action: Photographic Record

98. Kilns (?) within Clydach river bank **SO 2297 1339** **(C)E**

Type: industrial monument

i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: none (1)
iv) Group Value: associated with Pant Glas Bridge (No.97) and leat keeper's cottage (No. 99) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase monument (1)

Impact: moderate Total: 9

Action: Photographic Record, Ground Survey and Evaluation

99. Leat keeper's cottage & outbuildings, Clydach **SO 2299 1344** **(A)E**

Type: building

i) Period: 18th century
ii) Rarity: scarce (3)
iii) Documentation: Cadw, O.S.1880, 1891 (3)
iv) Group Value: associated with kilns (No.98), weir and sluice system (No.100) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase building (2)

Impact: high Total: 13

Action: Photographic Record, Ground Survey and Excavation

100. Weir, sluice system and leat, Clydach — **SO 2301 1343 to SO 2315 1358** — **(A)E**

Type: artificial watercourse
i) Period: c.1663
ii) Rarity: scarce (3)
iii) Documentation: Cadw and documentary evidence (3)
iv) Group Value: associated with leat keeper's cottage (No.99) (2)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase structure (2)

Impact: high — Total: 13

Action: Photographic Record, Ground Survey and Excavation

101. Hafod Inn, Blackrock — **SO 2158 1261** — **D**

Type: building
i) Period: early 20th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated and incorporated within the settlement of Blackrock (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase building (1)

Impact: slight — Total: 8

102 Drum & Monkey Inn, Blackrock — **SO 2155 1257** — **C**

Type: building
i) Period: 18th century (?)
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891, documentary histories (3)
iv) Group Value: associated and incorporated within the settlement of Blackrock (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase building (2)

Impact: severe — Total: 9

Action: Photographic Record

103 Craig Cottage, Blackrock — **SO 2149 1258** — **C**

Type: buildings
i) Period: mid 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated and incorporated within the settlement of Blackrock (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase dwelling (1)

Impact: severe — Total: 9

Action: Photographic Record

104 **Cottages, Blackrock** **SO 2145 1252** **C**
Type: buildings
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated and incorporated within the settlement of Blackrock (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase dwellings (2)

Impact: severe Total: 9

Action: Photographic Record

105 **Blackrock Quarry, Blackrock** **SO 2129 1250** **D**
Type: quarry
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated and incorporated within the settlement of Blackrock (2)
v) Survival/Condition: N/A (0)
vi) Diversity: N/A (0)

Impact: slight Total: 5

106 **Road and foot bridges, Blackrock** **SO 2114 1249** **D**
Type: bridges
i) Period: early 20th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated with turnpike road [Main Road] (No.86) (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase structures (2)

Impact: severe Total: 7

Action: Photographic Record and Ground Survey

107 **Squatter's settlement/industrial site, Nant Gwyn** **SO 2114 1248** **E**
Type: standing structures and earthworks
i) Period: 18th/19th century
ii) Rarity: scarce (3)
iii) Documentation: none (1)
iv) Group Value: associated with the Clydach Railroad (No.78) (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase structures (2)

Impact: severe Total: 9

Action: Photographic Record, Ground Survey and Excavation

108 **Track and D.S.W. landscape, Main Road** **SO 2108 1249** **D**
Type: linear feature and field boundary
i) Period: 18th/19th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: moderate Total: 5

109	**Milestone, Nr. Pont Gam**	**SO 2096 1260**	**NFA**
	Type: monument		
i)	Period: 1812		
ii)	Rarity: scarce (3)		
iii)	Documentation: O.S.1880, 1891 (2)		
iv)	Group Value: associated with turnpike road (No.86) (2)		
v)	Survival/Condition: moderate (2)		
vi)	Diversity: single-phase monument (1)		
	Impact: slight	Total: 10	
110	**D.S.W. landscape, Water Works, Pont Gam**	**SO 2077 1250**	**D**
	Type: field boundaries		
i)	Period: 18th/19th century		
ii)	Rarity: common (1)		
iii)	Documentation: O.S.1880, 1891 (2)		
iv)	Group Value: none (1)		
v)	Survival/Condition: poor (1)		
vi)	Diversity: single-phase linear feature (1)		
	Impact: slight	Total: 6	
111	**Llangattock Tramroad, Brynmawr**	**SO 1945 1236 to SO 2209 1310**	**(C)E**
	Type: tramroad		
i)	Period: c.1830		
ii)	Rarity: moderate (2)		
iii)	Documentation: SMR, O.S.1880 and documentary histories (Rattenbury 1980, van Laun 1989) (3)		
iv)	Group Value: associated and incorporated within the settlement of Brynmawr (2)		
v)	Survival/Condition: poor (1)		
vi)	Diversity: single-phase linear feature (1)		
	Impact: high	Total: 9	

Action: Evaluation

112	**Clydach Railroad & Cwm Nantmelyn Bridge**	**SO 2022 1226**	**A**
	Type: tramroad and bridge		
i)	Period: 1797		
ii)	Rarity: scarce (3)		
iii)	Documentation: SMR, Cadw and documentary histories (Rattenbury 1980 and van Laun 1989) (3)		
iv)	Group Value: associated with bridge at Brynmawr (No.118) and sections of Railroad (3)		
v)	Survival/Condition: good (3)		
vi)	Diversity: single-phase linear feature and standing structure (1)		
	Impact: high	Total: 13	

Action: Photographic Record (setting)

113	**Branch line of the Clydach Railroad & colliery level**	**SO 2008 1218**	**(B)E**
	Type: tramroad and industrial site		
i)	Period: 18th/19th century		
ii)	Rarity: moderate (2)		
iii)	Documentation: Cadw and documentary histories (2)		
iv)	Group Value: associated with Clydach Railroad (No.112) and coal adits (3)		
v)	Survival/Condition: moderate (2)		
vi)	Diversity: multi-phase linear feature and industrial complex (2)		
	Impact: high	Total: 11	

Action: Photographic Record, Ground Survey and Evaluation

114 **Merthyr, Tredegar & Abergavenny Railway** **SO 1968 1207 to SO 2190 1288** **(B)E**

Type: railway
i) Period: 1862
ii) Rarity: common (1)
iii) Documentation: SMR, O.S.1880 and documentary histories (Rattenbury 1989) (3)
iv) Group Value: associated with skew bridge (119) (2)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase linear feature (2)

Impact: severe Total: 11

Action: Evaluation

115 **Ffynnon Gistfaen religious waterfall, River Clydach** **SO 2068 1238** **NFA**

Type: natural watercourse
i) Period: N/A (0)
ii) Rarity: N/A (0)
iii) Documentation: Cadw (notes) (2)
iv) Group Value: N/A (0)
v) Survival/Condition: N/A (0)
vi) Diversity: N/A (0)

Impact: slight Total: 2

116 **Devil's Bridge, Cheltenham** **SO 2154 1249** **B**

Type: bridge
i) Period: 18th century
ii) Rarity: scarce (3)
iii) Documentation: Cadw, SMR, documentary histories (van Laun 1989) (3)
iv) Group Value: none (1)
v) Survival/Condition: good (3)
vi) Diversity: single-phase standing structure (1)

Impact: slight Total: 11

117 **Clydach Bridge Cottages, Brynmawr** **SO 1955 1212** **B**

Type: buildings
i) Period: 1836
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880 (2)
iv) Group Value: associated with Clydach Railroad (No.112) and bridge (No.118) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase dwellings (2)

Impact: moderate Total: 11

118 **Clydach Bridge, Brynmawr** **SO 1964 1213** **B**

Type: bridge
i) Period: 1812
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880 and documentary histories (van Laun 1989) (3)
iv) Group Value: associated with Clydach Railroad (No.112) and Clydach Bridge cottages (No.117) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase standing structure (1)

Impact: severe Total: 11

Action: Photographic Record

SO 1979 1211 C

119 **Skew bridge, Brynmawr**

Type: bridge
i) Period: mid to late 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with M.T. & A. (LNWR) Railway (3)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase standing structure (1)

Total: 9

Impact: severe

Action: Photographic Record

120 **'Squatters' settlement & water courses, Clydach Dingle SO 1922 1287** E

Type: buildings and earthworks
i) Period: 18th/19th century
ii) Rarity: scarce (3)
iii) Documentation: none (1)
iv) Group Value: associated with Bailey's Daren Disgwylfa Tramroad (No.122) and settlement (No.121) (3)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase dwellings and earthworks (2)

Total: 10

Impact: severe

Action: Photographic Survey, Ground Survey and Evaluation

121 **Local open-cast coal workings & terraces, Brynmawr** **SO 1847 1288** D

Type: industrial earthworks
i) Period: 19th/20th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated with Bailey's Daren Disgwylfa Tramroad (No.122) and settlement (No.120) (3)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase earthworks and linear features (2)

Total: 8

Impact: slight

122 **Bailey's Disgwylfa tramroad, Clydach Dingle** **SO 1905 1215 to SO 1935 1287** B

Type: tramroad
i) Period: pre 1818
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880 and documentary histories (Rattenbury 1980) (3)
iv) Group Value: associated with settlement (No.120) and local open-cast coal workings (No.121) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Total: 11

Impact: slight

123 **Tramroad, Garn Lydan** **SO 1753 1275 to SO 1756 1261** **E**

Type: tramroad
i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: none (1)
iv) Group Value: associated with Cwm Gwybedog patches and linear watercourses (No.127) (3)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Total: 8

Impact: high

Action: Evaluation

124 **Farm house and outbuildings, Garn Lydan** **SO 1747 1242** **D**

Type: building
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase dwelling (2)

Total: 6

Impact: slight

125 **Tramroad, Garn Lydan** **SO 1803 1271 to SO 1703 1258** **D**

Type: tramroad
i) Period: 19th century (?)
ii) Rarity: moderate (2)
iii) Documentation: none (1)
iv) Group Value: associated with tramroad (No.123) and quarrying (No.126) (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Total: 7

Impact: slight

126 **Coal workings and quarrying, Brynmawr** **SO 1800 1270** **D**

Type: quarry
i) Period: 19th/20th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated with tramroad (No.125) (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase earthworks (2)

Total: 7

Impact: slight

127 **Cwm Gwybedog patches and leats, Garn Lydan** **SO 1694 1240** **C**

Type: earthworks
i) Period: early 19th century
ii) Rarity: moderate (2)
iii) Documentation: documentary histories (2)
iv) Group Value: associated with tramroad (No.123) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase earthworks (2)

Total: 10

Impact: slight

128 **Drift mines, Garn Lydan** — **SO 1702 1230** — **D**

Type: mine
i) Period: 19th/20th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase earthworks (2)

Impact: slight — Total: 6

129 **Farmhouse & D.S.W., Afon Ebbw** — **SO 1646 1219** — **D**

Type: building
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase dwelling (2)

Impact: slight — Total: 7

130 **Tramroad, Afon Ebbw** — **SO 1643 1209** — **D**

Type: tramroad
i) Period: unknown
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: slight — Total: 5

131 **Primrose Cottage, Rassau Brook** — **SO 1538 1173** — **D**

Type: building
i) Period: mid 19th century
ii) Rarity: moderate (2)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase dwelling (1)

Impact: slight — Total: 7

132 **D.S.W landscape, Nant y Croft** — **SO 1400 1100** — **D**

Type: field boundary
i) Period: unknown
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated with farmsteads (No.140) (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: slight — Total: 6

133 **Trefil Tramroad, Nant y Croft** **SO 1407 1160 to SO 1458 1158** **(B)E**

Type: tramroad
i) Period: 1797
ii) Rarity: scarce (3)
iii) Documentation: CADW, SMR, O.S.1880 and documentary histories (Rattenbury 1980) (3)
iv) Group Value: none (1)
v) Survival/Condition: good (3)
vi) Diversity: single phase linear feature (1)

Impact: high Total: 11

Action: Evaluation

134 **Lamp stand and manhole cover, Nant y Croft** **SO 1478 1158** **D**

Type: standing monument
i) Period: late 19th/early 20th century
ii) Rarity: moderate (2)
iii) Documentation: none (1)
iv) Group Value: associated with Rassau Tramroad (No.138) (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase monuments (1)

Impact: slight Total: 9

135 **Quarry and D.S.W., Nant y Croft** **SO 1500 1160** **D**

Type: quarry
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with drystone walled landscape [truncates] (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase quarrying and linear feature (2)

Impact: slight Total: 8

136 **Craig House, Nant y Croft** **SO 1490 1159** **D**

Type: building
i) Period: mid 19th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated and incorporated within the settlement of Nant y Croft (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase dwelling (1)

Impact: slight Total: 7

137 **Hirgan Farmstead and outbuildings** **SO 1433 1134** **D**

Type: buildings
i) Period: mid 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880 (2)
iv) Group Value: none (1)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase dwelling (2)

Impact: moderate Total: 7

Action: Photographic Record

138 **Rassau Tramroad, Nant y Croft** **SO 1470 1155 to SO 1569 1154** **(B)E**

Type: tramroad
i) Period: early 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891, documentary histories (3)
iv) Group Value: associated with the settlement of Nant y Croft (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 9

Action: Evaluation

139 **Mineral Line, Nant y Croft** **SO 1475 1150 to SO 1500 1152** **D**

Type: tramroad
i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880 (2)
iv) Group Value: none (1)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 7

140 **Farmstead and outbuildings, Nant y Croft** **SO 1517 1152** **C**

Type: buildings
i) Period: late 18th/early 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880 (2)
iv) Group Value: associated with surrounding field systems (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase dwelling (2)

Impact: slight Total: 9

141 **Old Hargan Fach and D.S.W. landscape** **SO 1372 1099** **D**

Type: buildings
i) Period: late 18th/19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880 (2)
iv) Group Value: associated with surrounding field systems (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-period dwelling (2)

Impact: moderate Total: 8

142 **Merthyr, Tredegar & Abergavenny Railway** **SO 1363 1083 to SO 1334 1092** **(C)E**

Type: railway
i) Period: 1859
ii) Rarity: common (1)
iii) Documentation: SMR, O.S.1880 and documentary histories including film footage (3)
iv) Group Value: associated with viaduct (No.143) (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase linear feature (2)

Total: 9

Impact: high

Action: Evaluation

143 **Railway viaduct, Dukestown** **SO 1329 1093** **NFA**

Type: standing structure
i) Period: 1859
ii) Rarity: scarce (3)
iii) Documentation: Cadw, SMR, O.S.1880 and documentary histories (3)
iv) Group Value: associated with M.T. & A. Railway (No.142) (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase standing structure (1)

Total: 13

Impact: slight

144 **Earthworks and D.S.W., Dukestown** **SO 1323 1083** **D**

Type: field boundary and earthworks
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880 (2)
iv) Group Value: none (1)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase linear features and earthworks (2)

Total: 7

Impact: slight

145 **Cast iron weir, Dukestown** **SO 1342 1077** **(B)E**

Type: standing structure
i) Period: mid 19th century
ii) Rarity: scarce (3)
iii) Documentation: SMR, O.S.1880 (3)
iv) Group Value: associated with leat system feeding the Sirhowy Ironworks (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase standing structure (1)

Total: 13

Impact: slight

Action: Photographic Record, Ground Survey and Excavation

146 **Trefil Tramroad, Nant y Bwch** **SO 1295 1111 to SO 1313 1076** **B**

Type: tramroad
i) Period: 1797
ii) Rarity: scarce (3)
iii) Documentation: SMR, O.S.1880 and documentary histories (3)
iv) Group Value: associated with limestone quarries at Trefil and Ebbw Vale Ironworks (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Total: 11

Impact: slight

147 **Merthyr, Tredegar & Abergavenny Railway, Waundeg** **SO 1325 1093 to SO 1274 1064** **C**

Type: railway
i) Period: 1862
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891, documentary histories (3)
iv) Group Value: associated with 'Station Terrace', Waundeg (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: slight — Total: 9

148 **Siloam Chapel, Tafarnaubach** **SO 1204 1047** **NFA**

Type: building
i) Period: mid 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880 (2)
iv) Group Value: associated and incorporated within the settlement of Tafarnaubach (2)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase building (2)

Impact: slight — Total: 11

149 **Welfare Hall, Tafarnaubach** **SO 1188 1036** **C**

Type: building
i) Period: 1937
ii) Rarity: moderate (2)
iii) Documentation: O.S 1957 (2)
iv) Group Value: associated and incorporated within the settlement of Tafarnaubach (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase building (1)

Impact: slight — Total: 10

150 **Bronze Age find spot, Tafarnaubach** **SO 1170 1010** **E**

Type: find spot
i) Period: Bronze Age
ii) Rarity: scarce (3)
iii) Documentation: SMR and archaeological reference (2)
iv) Group Value: none (1)
v) Survival/Condition: unknown (0)
vi) Diversity: single-period hoard (1)

Impact: high — Total: 7

Action: Evaluation

151 **Farmstead, Bryn Bach** **SO 1253 1052** **D**

Type: building
i) Period: 19th/20 century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase dwelling (2)

Impact: slight — Total: 6

152 **Leat system and 'kettle-hole' quarries, Princetown** **SO 1134 0982** **C**

Type: artificial watercourses and quarries

i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: none (1)
iv) Group Value: associated with mining tips (No.153) (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase watercourses and earthworks (2)

Impact: moderate

Total: 8

Action: Photographic Record

153 **Mining tips and quarry, Princetown** **SO 111 096 to SO 112 096** **D**

Type: industrial spoil

i) Period: 19th/20th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated with leat system and quarries (No.152) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase tippings (2)

Impact: moderate

Total: 8

154 **Industrial building, Princetown** **SO 1100 0970** **C**

Type: building

i) Period: late 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, documentary histories (3)
iv) Group Value: associated with M.T. & A Railway (No.147) and early 19th century building (No.155) (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase building (1)

Impact: severe

Total: 9

Action: Photographic Record and Ground Survey

155 **Earthworks (demolished building), Princetown** **SO 1111 0970** **D**

Type: building and earthworks

i) Period: early 19th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated with railway building (No.154) (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase building (1)

Impact: severe

Total: 6

Action: Photographic Record and Ground Survey

156 **D.S.W. landscape, Blaen Rhymney** — **SO 107 097 to SO 113 096** — **D**

Type: field boundary
i) Period: 19th century (?)
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: slight — Total: 5

157 **Railway bridge and tunnel, Llechryd** — **SO 1057 0961** — **B**

Type: bridge and tunnel
i) Period: early to mid 19th century
ii) Rarity: scarce (3)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with M.T. & A. Railway (No.147) (2)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase standing structures (2)

Impact: moderate — Total: 12

Action: Photographic Record and Ground Survey

158 **D.S.W. landscape, Blaen Rhymney** — **SO 1054 0964** — **D**

Type: field boundary
i) Period: 18th/19th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase linear feature (2)

Impact: slight — Total: 6

159 **D.S.W. and building platforms, Afon Rhymney** — **SO 1050 0978** — **D**

Type: field boundary
i) Period: 18th/19th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated with leat (No.160) (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase linear features and earthworks (2)

Impact: slight — Total: 7

160 **Northern section of leat system, Blaen Rhymney** — **SO 1045 0994 to SO 1052 0960** — **B**

Type: artificial watercourse
i) Period: 19th century
ii) Rarity: scarce (3)
iii) Documentation: O.S.1880 (2)
iv) Group Value: associated with bridge and tunnel (No.157) and leat continuation (No.170) (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase linear feature (1)

Impact: high — Total: 12

Action: Photographic Record and Ground Survey

161 **Road platform, Pleasant View, Llechryd** **SO 1039 0956 to SO 1033 0953** **D**

Type: road
i) Period: unknown
ii) Rarity: common (1)
iii) Documentation: O.S.1880 (2)
iv) Group Value: none (1)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: high

Total: 7

162 **D.S.W & T.S.W system, Bute Town** **SO 1010 0930** **D**

Type: field boundaries
i) Period: Post-Medieval
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase linear feature (2)

Impact: slight

Total: 7

163 **Railway furniture, Bute Town** **SO 0960 0910** **D**

Type: standing monument
i) Period: post 1870
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated with M.T. & A Railway (LNW) Railways (No.147) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase standing monuments (1)

Impact: slight

Total: 8

164 **D.S.W landscape, Bute Town Reservoir** **SO 0940 0900** **D**

Type: field boundary
i) Period: early Post-Medieval
ii) Rarity: common (1)
iii) Documentation: O.S.1880 (2)
iv) Group Value: associated with leat system (truncated by) (No.165) and Bute Town Reservoir (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase linear feature (2)

Impact: slight

Total: 8

165 **Leat system, Bute Town Reservoir** **SO 0980 0927** **C**

Type: artificial watercourse
i) Period: mid 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880 (2)
iv) Group Value: associated with Bute Town Reservoir and drystone walling (No.164) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: slight

Total: 9

166 **Masonary bridge, Graig Lwyd** **SO 1019 0929** **D**

Type: bridge
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: good (3)
vi) Diversity: single-phase standing structure (1)

Impact: slight Total: 7

167 **Gullies and earthworks, Bute Town** **SO 1020 0934** **D**

Type: earthworks
i) Period: unknown
ii) Rarity: commom (1)
iii) Documentation: none (1)
iv) Group Value: possibly associated with leat system (No.165) (1)
v) Survival/Condition: unknown (0)
vi) Diversity: unknown (0)

Impact: slight Total: 3

168 **Skew bridge, Llechryd** **SO 1042 0944** **B**

Type: bridge
i) Period: 20th century
ii) Rarity: moderate (2)
iii) Documentation: O.S 1957 (2)
iv) Group Value: associated with M.T. & A Railway (No.147) and Llechryd Station House (No.169) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase standing structure (1)

Impact: severe Total: 10

Action: Photographic Record

169 **Station House, Llechryd** **SO 1046 0951** **B**

Type: building
i) Period: post 1870
ii) Rarity: moderate (2)
iii) Documentation: O.S. 1957 and video archive (3)
iv) Group Value: associated with the M.T. & A Railway (No.147) and bridge (No.168) (3)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase dwelling (2)

Impact: high Total: 11

Action: Photographic Record

170 **Southern section of leat system, Llechryd** **SO 1052 0953 to SO 1053 0950** **D**

Type: artificial watercourse
i) Period: 19th century
ii) Rarity: scarce (3)
iii) Documentation: O.S.1880 (2)
iv) Group Value: associated with leat system, N of A465 (No.160) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: high Total: 10

171	**Gullies and tips, Princetown**	**SO 1110 0969 to SO 1111 0963**	**D**
	Type: earthworks		
i)	Period: 19th century		
ii)	Rarity: common (1)		
iii)	Documentation: none (1)		
iv)	Group Value: associated with leat system (No.165) (2)		
v)	Survival/Condition: poor (1)		
vi)	Diversity: multi-phase earthworks (2)		
	Impact: slight	Total: 7	
172	**D.S.W. , Princetown**	**SO 1120 0965**	**D**
	Type: field boundary		
i)	Period: 19th century		
ii)	Rarity: common (1)		
iii)	Documentation: none (1)		
iv)	Group Value: associated with coal tips (No.171) (2)		
v)	Survival/Condition: poor (1)		
vi)	Diversity: single-phase (1)		
	Impact: slight	Total: 6	
173	**D.S.W & T.S.W landscape, Blaencarno Common**	**SO 0860 0890**	**D**
	Type: field boundary		
i)	Period: Post-Medieval		
ii)	Rarity: common (1)		
iii)	Documentation: O.S. 1880 and 1891 (2)		
iv)	Group Value: associated with leat system (No.165) (2)		
v)	Survival/Condition: moderate (2)		
vi)	Diversity: single-phase linear feature (1)		
	Impact: slight	Total: 8	
174	**Ventilation/water shafts, Blaencarno Common**	**SO 0883 0891**	**D**
	Type: industrial earthworks		
i)	Period: 19th/20 century		
ii)	Rarity: common (1)		
iii)	Documentation: none (1)		
iv)	Group Value: none (1)		
v)	Survival/Condition: poor (1)		
vi)	Diversity: multi-phase earthworks (2)		
	Impact: slight	Total: 6	
175	**Bronze Age Cairn, Blaencarno Common**	**SO 0887 0890**	**B**
	Type: cairn		
i)	Period: Bronze Age (2)		
ii)	Rarity: scarce (3)		
iii)	Documentation: none (1)		
iv)	Group Value: possibly associated with cairn cemetery north of Blaencarno Common (2)		
v)	Survival/Condition: moderate (2)		
vi)	Diversity: single-phase monument (1)		
	Impact: slight	Total:11	

176 **Industrial earthworks, Merthyr Common** **SO 0851 0890** **C**

Type: industrial earthworks

i) Period: 19th-20th centuries (?)
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated with coal tips to the south (No.178) and west (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase earthworks (1)

Impact: slight Total: 6

177 **Railway furniture, Merthyr Common** **SO 0842 0862** **D**

Type: standing monument

i) Period: 20th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated with L.N.W. Railway [Brecon-Merthyr Branch] (No.184) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 7

178 **Coal tippings, Blaencarno Farm** **SO 0890 0876** **C**

Type: industrial earthworks

i) Period: 19th/20th century
ii) Rarity: common (1)
iii) Documentation: O.S. 1891 (2)
iv) Group Value: associated with coal scratches, north of A465 (No. 176) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase earthworks (2)

Impact: slight Total: 9

179 **'Dig for Victory' allotments, Blaencarno Farm** **SO 0892 0884** **B**

Type: field boundary

i) Period: 20th century
ii) Rarity: scarce (3)
iii) Documentation: Aerial Photographs (RCHMW) and personal comments (3)
iv) Group Value: associated with Blaencarno Farm (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear features (1)

Impact: moderate Total: 11

180 **Culvert, Blaencarno** **SO 0899 0890** **C**

Type: standing structure

i) Period: 19th/20th century
ii) Rarity: moderate (2)
iii) Documentation: none (1)
iv) Group Value: associated with L.N.W. Railway (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase monument (1)

Impact: moderate Total: 9

Action: Photographic Record

181 **D.S.W. landscape, Blaencarno** **SO 0975 0910** **D**

Type: field boundary
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S. 1880, 1891 (2)
iv) Group Value: associated with Blaencarno Farm and Gypsy Castle (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear features (1)

Impact: slight Total: 7

182 **Railway furniture, Blaencarno** **SO 0920 0930** **D**

Type: standing monument
i) Period: 20th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated with L.N.W. Railway [Brecon-Merthyr Branch] (No.184) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 7

183 **Station House, Dowlais Top** **SO 0800 0845** **B**

Type: building
i) Period: late 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S. 1891, video archive (3)
iv) Group Value: associated with the L.N.W. Railway (No.184) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase building (1)

Impact: slight Total: 11

184 **Abergavenny, Tredegar & Merthyr Railway, Dowlais** **SO 0804 0849 to SO 0839 0863** **B**

Type: railway
i) Period: late 19th century
ii) Rarity: common (1)
iii) Documentation: O.S. 1880, 1891, documentary histories (3)
iv) Group Value: associated with Dowlais Top station house (No.183) (3)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 9

185 **Brecon & Merthyr Railway embankment, Dowlais** **SO 0750 0836** **C**

Type: earthworks
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891, documentary histories (3)
iv) Group Value: associated with L.N.W.R (No.184) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase earthworks (1)

Impact: slight Total: 9

186 **Eastern leat system, Upper Reservoir, Dowlais** **SO 0750 0834 to SO 0729 0848** **C**

Type: artificial watercourse
i) Period: 19th century

ii) Rarity: moderate (2)
iii) Documentation: O.S. 1891 (2)
iv) Group Value: associated with two aqueducts (No.187), Upper (No.188) and Lower (No.195) Reservoirs (3)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 10

Action: Photographic Record

187 **Aqueducts under leat, Upper Reservoir, Dowlais** **SO 0733 0842** **B**
Type: standing structure
i) Period: 19th century
ii) Rarity: scarce (3)
iii) Documentation: none (1)
iv) Group Value: associated with leat system (No.186) and Upper Reservoir (No.188) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase standing structures (1)

Impact: slight Total: 11

188 **Upper Reservoir, Dowlais** **SO 0720 0850** **B**
Type: reservoir
i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891, documentary histories (3)
iv) Group Value: associated with leat (No.186), pumping house (No.189) and Lower Reservoir (No. 195) (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase earthworks (1)

Impact: slight Total: 12

189 **Pumping station, Upper Reservoir, Dowlais** **SO 0705 0851** **B**
Type: building
i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with Upper (No.188) and Lower (No.195) Reservoir (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase building (1)

Impact: slight Total: 11

190 **Inspection road, Upper Reservoir, Dowlais** **SO 0728 0846 to SO 0692 0868** **D**
Type: road
i) Period: 19th/20th century
ii) Rarity: common (1)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with Upper Reservoir (No.188) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 8

191 **Western leat system, Upper Reservoir, Dowlais** **SO 0688 0867 to SO 0692 0849** **B**

Type: artificial watercourse
i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S. 1880, 1891 (2)
iv) Group Value: associated with Upper Reservoir (188) and inspection road (No.190) (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 11

Action: Photographic Record

192 **Branch line of Brecon & Merthyr Railway, Dowlais** **SO 0668 0887 to SO 0733 0844** **(C)E**

Type: railway
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 and documentary Histories (3)
iv) Group Value: associated with two branch lines (Nos. 193 and 194) (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase linear features (2)

Impact: high Total: 9

Action: Evaluation

193 **Branch line of Brecon & Merthyr Railway, Dowlais** **SO 0675 0856 to SO 0666 0859** **D**

Type: railway
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 and documentary histories (3)
iv) Group Value: associated with two branch lines (Nos. 192 and 194) (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 8

194 **Brecon & Merthyr Railway (to Pontsticill), Dowlais** **SO 0664 0884 to SO 0651 0840** **C**

Type: railway
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880 and 1891, documentary histories (3)
iv) Group Value: associated with branch lines (Nos.192 and 193) (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase linear feature (2)

Impact: slight Total: 9

195 **Lower Reservoir, Dowlais** **SO 0730 0830** **B**

Type: reservoir

i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with Upper Reservoir (No.188) and pumping house (No.189) (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase earthworks (1)

Impact: slight Total: 11

196 **MacDonalds Restaurant, Dowlais Top** **SO 0783 0822** **D**

Type: building

i) Period: 20th century
ii) Rarity: common (1)
iii) Documentation: Aerial Photographs (2)
iv) Group Value: none (1)
v) Survival/Condition: good (3)
vi) Diversity: single-phase fast-food restaurant (1)

Impact: severe Total: 8

Action: Photographic Record

197 **D.S.W. landscape, Gurnos** **SO 0485 0870** **D**

Type: field boundary

i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1891 (2)
iv) Group Value: none (1)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 6

198 **Lime Kilns, Castle Morlais Tramroad, Gurnos** **SO 0471 0872** **B**

Type: industrial standing structure

i) Period: early 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with castle Morlais Tramroad (No.200) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase standing structures (2)

Impact: slight Total: 11

199 **Coppice and D.S.W. landscape, Gurnos** **SO 0470 0870** **D**

Type: coppice

i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with lime kilns (No.198) and Castle Morlais Tramroad (No. 200) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: unknown (0)

Impact: slight Total: 8

200 **Castle Morlais Quarries Tramroad, Gurnos** **SO 0473 0892 to SO 0473 0867** **B**

Type: tramroad

i) Period: early 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.180, 1891 and documentary histories (3)
iv) Group Value: associated with Castle Quarries and Dowlais Ironworks (3)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: moderate — Total: 11

201 **Possible quern stone, Gurnos** — **SO 0455 0866** — **B**
Type: find spot
i) Period: Neolithic (2)
ii) Rarity: scarce (3)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: good (3)
vi) Diversity: single-period artefact (1)

Impact: slight — Total: 11

202 **D.S.W. landscape and sheep pen, Gurnos** — **SO 0450 0865** — **E**
Type: field boundary
i) Period: Post-Medieval
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with Gurnos 'model' Farm (No.204) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: moderate — Total: 9

Action: Evaluation

203 **Gurnos Farm workers cottages, Gurnos Farm** — **SO 0435 0863** — **C**
Type: building
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with Gurnos 'model' Farm (No..204) (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase dwellings (1)

Impact: slight — Total: 9

204 **Gurnos 'model' Farm, Gurnos** — **SO 0430 0864** — **B**
Type: buildings
i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891 and documentary histories (3)
iv) Group Value: associated with farm worker's cottages (No.203) and drystone walling (No.205) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase dwelling (1)

Impact: slight — Total: 11

205 **D.S.W. landscape, Gurnos Farm** **SO 0423 0860** **D**

Type: field boundary

i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with Gurnos 'model' Farm (No.204) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: moderate Total: 8

206 **Viaduct, Taf Fechan, Cefn-coed-y-cymmer** **SO 0335 0815** **A**

Type: bridge

i) Period: 1964
ii) Rarity: scarce (3)
iii) Documentation: Cadw, engineering documentation (3)
iv) Group Value: associated with present A465 (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase standing structure (1)

Impact: slight Total: 13

Action: Photographic Record

207 **Gurnos Leat system, Cefn-coed-y-cymmer** **SO 0342 0829 to SO 0373 0767** **A**

Type: artificial watercourse

i) Period: 1792
ii) Rarity: scarce (3)
iii) Documentation: Cadw (Scheduled Monument), SMR, O.S.1880, 1891 (3)
iv) Group Value: associated with Gurnos Tramroad (No.208), Gurnos Quarries and Cyfartha Ironworks (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 13

208 **Gurnos Tramroad, Cefn-coed-y-cymmer** **SO 0341 0830 to SO 0372 0767** **A**

Type: tramroad

i) Period: late 18th century
ii) Rarity: scarce (3)
iii) Documentation: Cadw (Scheduled Monument), SMR, O.S.1880, 1891 (3)
iv) Group Value: associated with Gurnos Leat System (No.207), Gurnos Quarries and Cyfartha Ironworks (3)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 12

209 **Footbridge over Brecon & Merthyr Railway, Cefn** **SO 0327 0821** **C**

Type: bridge

i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891(2)
iv) Group Value: associated with Brecon-Merthyr Railway (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase standing structure (1)

Impact: slight Total: 9

210 **Gurnos Limestone Quarry, Gurnos** **SO 0355 0828** **NFA**
Type: quarry
i) Period: late 18th century
ii) Rarity: moderate (2)
iii) Documentation: Cadw, O.S.1880, 1891 (3)
iv) Group Value: associated with Gurnos Leat (No.207) and Tramroad (No.208) (3)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase monument (2)

Impact: slight Total: 13

211 **Railway bridge, Brecon & Merthyr line, Cefn** **SO 0324 0814** **C**
Type: bridge
i) Period: 20th century
ii) Rarity: common (1)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with present A465 and Brecon & Merthyr Railway (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase standing structure (1)

Impact: severe Total: 9

Action: Photographic Record

212 **Capel Tabor and cemetery, Cefn-coed-y-cymmer** **SO 0297 0808** **B**
Type: building
i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated and incorporated within the settlement of Cefn-coed-y-cymmer (3)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase building (2)

Impact: slight Total: 12

Action: Photographic Record (setting)

213 **Medieval hut circles, Cefn-coed-y-cymmer** **SO 0297 0804** **NFA**
Type: earthworks
i) Period: Medieval (2)
ii) Rarity: scarce (3)
iii) Documentation: SMR (2)
iv) Group Value: Medieval coin hoard (No.215) (2)
v) Survival/Condition: destroyed (0)
vi) Diversity: N/A (0)

Impact: N/A Total: 9

214 **St. John's Church, Cefn-coed-y-cymmer** **SO 0329 0806** **B**
Type: building
i) Period: late 19th century
ii) Rarity: moderate (2)
iii) Documentation: Cadw, SMR, O.S.1880, 1891 (3)
iv) Group Value: associated and incorporated within the settlement of Cefn-coed-y-cymmer (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase building (1)

Impact: slight Total: 11

215 **Medieval coin hoard, Cefn-coed-y-cymmer** **SO 0328 0805** **C**

Type: find spot
i) Period: 14th century (2)
ii) Rarity: scarce (3)
iii) Documentation: Cadw, SMR (3)
iv) Group Value: none (1)
v) Survival/Condition: N/A (0)
vi) Diversity: N/A (0)

Impact: slight — Total: 6

216 **Stone structure, Cefn-coed-y-cymmer** — **SO 0372 0430** **E**
Type: stone structure
i) Period: prehistoric(2)?
ii) Rarity: scarce (3)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: unknown (0)
vi) Diversity: single-period monument (1)?

Impact: severe — Total: 8

Action: Photographic Record and Evaluation

217 **D.S.W. landscape, Gurnos** — **SO 0408 0840** **D**
Type: field boundary
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: none (1)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: slight — Total: 7

218 **Grawen Cottages, Cefn-coed-y-cymmer** — **SO 0285 0814** **B**
Type: building
i) Period: mid 19th century
ii) Rarity: moderate (2)
iii) Documentation: Cadw, SMR, O.S.1880 (3)
iv) Group Value: associated and incorporated within the settlement of Cefn-coed-y-cymmer (2)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase dwellings (2)

Impact: slight — Total: 12

219 **D.S.W. landscape, Coed Meurig** — **SO 0238 0748** **D**
Type: field boundary
i) Period: 18th-19th centuries
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891, tithe maps (2)
iv) Group Value: associated with Coed Meurig cowshed (No.222) and farmhouse (No.271) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: moderate — Total: 8

220 **Buttressing under the Nant Ffrwd Viaduct** **SO 0248 0752** **D**

Type: bridge

i) Period: 20th century
ii) Rarity: moderate (2)
iii) Documentation: unresearched (0)
iv) Group Value: associated with 1964 viaduct (No.221 C) and present A465 (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase standing structure (1)

Impact: slight Total: 8

221 **Viaducts (A465), Cefn-coed-y-cymmer** **SO 0335 0815 (A)** **A**
SO 0282 0789 (B)
SO 0250 0750 (C)

Type: bridges

i) Period: 1964
ii) Rarity: scarce (3)
iii) Documentation: Cadw, engineering documentation (3)
iv) Group Value: associated with present A465 (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase standing structures (1)

Impact: slight Total: 13

Action: Photographic Record

222 **Lofted cow shed, Coed Meurig Farm** **SO 0226 0745** **A**

Type: building

i) Period: mid 19th century
ii) Rarity: scarce (3)
iii) Documentation: Cadw, SMR, O.S. 1880, 1891 (3)
iv) Group Value: associated with Coed Meurig Farm house (No.271) (2)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase building (2)

Impact: severe Total: 13

Action: Photographic Record and Ground Survey

223 **D.S.W. landscape, Nant Ffrwd** **SO 0240 0745** **D**

Type: field boundary

i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: possibly associated with Coed Meurig Farm (No.271) (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: moderate Total: 7

224 **Coal tippings (S. of old A465), Baverstock** **SO 0260 0720 to SO 0100 0720** **D**

Type: industrial earthworks
i) Period: 19th-20 centuries
ii) Rarity: common (1)
iii) Documentation: O.S. 1891 (2)
iv) Group Value: none (1)
v) Survival/Condition: associated with mineral tips north of Baverstock settlement (No.233) (2)
vi) Diversity: multi-phase earthworks (2)

Impact: slight Total: 8

225 **D.S.W. landscape and sheep pen, Coed Meurig** **SO 0220 0735** **D**

Type: field boundary
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with Coed Muerig farmhouse (No.271) and cowshed (No.222) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 8

226 **Stone rubble-demolished cottage, Baverstock** **SO 0110 0740** **D**

Type: earthworks
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated and incorporated within the Baverstock settlement (No.232) (2)
v) Survival/Condition: poor (1)
vi) Diversity: unknown (0)

Impact: slight Total: 6

227 **D.S.W. landscape, Baverstock** **SO 9970 0717** **D**

Type: field boundary
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with drystone walling (No.228) (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: moderate Total: 7

228 **D.S.W. & T.S.W. , Lech Sychrhyd** **SO 9947 0700** **D**

Type: field boundary
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with drystone walling (No.227) (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase linear feature (2)

Impact: moderate Total: 8

229 **Track, Lech Sychrhyd** **SO 9960 0704 to SO 9958 0680** **E**

Type: road/track
i) Period: unknown
ii) Rarity: unknown (0)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: sub-surface (0)
vi) Diversity: unknown (0)

Impact: high Total: 2

Action: Evaluation

230 **Dam and possible sluice system, Lech Sychrhyd** **SO 9969 0690** **C**
Type: industrial earthworks
i) Period: 19th century (?)
ii) Rarity: moderate (2)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase earthworks (2)

Impact: slight Total: 7

231 **Fairfield House (Giants Head Inn), Baverstock** **SO 0055 0728** **C**
Type: building
i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated and incorporated within the settlement of Baverstock (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase dwelling (2)

Impact: severe Total: 9

Action: Photographic Record

232 **Settlement and field system, Baverstock** **SO 0073 0730** **E**
Type: earthworks
i) Period: 19th century
ii) Rarity: scarce (3)
iii) Documentation: Cadw, SMR, O.S.1880, 1891 (3)
iv) Group Value: associated with demolished cottage (No.226) and Fairfield House (No.231) (3)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase settlement (2)

Impact: severe Total: 12

Action: Photographic Record, Ground Survey and Evaluation

233 **Coal workings and tips, Baverstock** **SO 0069 0727** **C**
Type: industrial earthworks
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with early coal tips (No.224) and Baverstock settlement (232) (2)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase earthworks (2)

Impact: high Total: 10

234 **Nant Hir Reservoir** **SO 9890 0690** **B**

Type: Reservoir

i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with holloways (Nos.235 and 238) and field barn (No.237) (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase earthworks (1)

Impact: slight Total: 11

235 **Holloway, Nant Hir** **SO 9885 0690** **D**

Type: track

i) Period: 18th-19th centuries
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with drystone walling (No.236), field barn (No.237) and holloway (No.238) (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase linear feature (2)

Impact: slight Total: 8

236 **D.S.W. landscape, Nant Hir** **SO 9875 0684** **D**

Type: field boundary

i) Period: 18-19th century
ii) Rarity: common (1)
iii) Documentation: O.S. 1880, 1891 (2)
iv) Group Value: associated with holloways (Nos.235 and 238) and field barn (No.237) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: moderate Total: 8

237 **Field barn and stable, Nant Hir** **SO 9885 0686** **C**

Type: building

i) Period: early to mid 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with drystone walling (No.236) and holloway (No.235) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase standing structure (2)

Impact: slight Total: 10

238 **Holloway/sheep pen, Nant Hir** **SO 9883 0687 to SO 9875 0698** **C**

Type: track

i) Period: 18th-19th centuries
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with holloway (No.235), drystone walling (No.236) and field barn (No.237) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase linear feature (2)

Impact: moderate Total: 10

239 **D.S.W. landscape, Nant Melyn** **SO 9798 0625** **D**

Type: field boundary
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with holloways (Nos. 235 and 238), drystone walling (No.236) and field barn (237) (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: moderate Total: 7

240 **Holloway, Nant Melyn** **SO 9770 0622 to SO 9789 0623** **D**

Type: track
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with Nantmoel Farm (1)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase linear feature (2)

Impact: slight Total: 8

241 **Holloway, Llyncoch** **SO 9768 0608 to SO 9785 0585** **D**

Type: track
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1891 (2)
iv) Group Value: possibly associated with Llyncoch Farm (1)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase linear feature (2)

Impact: high Total: 8

242 **Holloway, Court Farm** **SO 9734 0564 to SO 9735 0547** **D**

Type: track
i) Period: 18th-19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with Court Farm (1)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase linear feature (2)

Impact: slight Total: 7

243 **Skew bridge over Vale of Neath Railway** **SO 9727 0552** **B**

Type: bridge
i) Period: late 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with the Vale of Neath Mineral Railway (No.272) (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase standing structure (1)

Impact: slight Total: 11

Action: Photographic Record

244	**Rectangular platform, Hirwaun**	**SO 9674 0544**	**NFA**
	Type: building		
i)	Period: mid to late 19th century		
ii)	Rarity: unknown (0)		
iii)	Documentation: none (1)		
iv)	Group Value: none (1)		
v)	Survival/Condition: poor (1)		
vi)	Diversity: unknown (0)		
	Impact: slight	Total: 3	
245	**D.S.W. landscape, Parc-Hensol Farm**	**SO 9675 0528**	**D**
	Type: field boundary		
i)	Period: 19th century		
ii)	Rarity: common (1)		
iii)	Documentation: O.S.1880, 1891 (2)		
iv)	Group Value: associated with Parc-Hensol Farm (No.246) (2)		
v)	Survival/Condition: poor (1)		
vi)	Diversity: single-phase linear feature (1)		
	Impact: slight	Total: 7	
246	**Farmstead, Parc-Hensol**	**SO 9677 0526**	**C**
	Type: building and earthworks		
i)	Period: early 19th century		
ii)	Rarity: moderate (2)		
iii)	Documentation: O.S.1880, 1891 (2)		
iv)	Group Value: associated with drystone walling (No.245) (2)		
v)	Survival/Condition: poor (1)		
vi)	Diversity: multi-phase dwelling (2)		
	Impact: slight	Total: 9	
247	**Bridge remains, Afon Cynon**	**SO 9682 0529**	**D**
	Type: bridge platform		
i)	Period: 19th/20th century		
ii)	Rarity: moderate (2)		
iii)	Documentation: none (1)		
iv)	Group Value: associated with track (No.248) (2)		
v)	Survival/Condition: poor (1)		
vi)	Diversity: single-phase standing structure (1)		
	Impact: slight	Total: 7	
248	**Track, Afon Cynon, Hirwaun**	**SO 9697 0529**	**D**
	Type: track/road		
i)	Period: 19th century (?)		
ii)	Rarity: common (1)		
iii)	Documentation: O.S.1891 (2)		
iv)	Group Value: associated with building platform (No.244) and bridge (No.247) (2)		
v)	Survival/Condition: poor (1)		
vi)	Diversity: single-phase linear feature (1)		
	Impact: slight	Total: 7	

249 **Cynon farmhouse, Hirwaun** **SO 9640 0526** **D**

Type: building

i) Period: mid 19th century
ii) Rarity: moderate (1)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated and incorporated within the settlement of Hirwaun (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase dwelling (2)

Impact: slight Total: 8

250 **Hirwaun-Aberdare Tramroad, Hirwaun** **SO 9590 0548 to SO 9667 0513** **C**

Type: tramroad

i) Period: late 18th century
ii) Rarity: moderate (2)
iii) Documentation: Cadw, SMR, O.S.1891 (3)
iv) Group Value: associated with the Hirwaun Ironworks and branch line (No.259) (3)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 10

251 **Pig-pens, Hirwaun** **SO 9544 0535** **D**

Type: building

i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: associated with farmstead (1)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase building (2)

Impact: slight Total: 7

252 **Bute Colliery Road (Tower Road), Hirwaun** **SO 9534 0527 to SO 9506 0500** **(C)E**

Type: tramroad

i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891, documentary histories (3)
iv) Group Value: associated with the Aberdare to Rhondda Railway (No.255A) (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: high Total: 9

Action: Evaluation

253 **T.S.W. landscape, Hirwaun** **SO 9525 0533** **D**

Type: field boundary

i) Period: 18th/19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1891 (2)
iv) Group Value: none (1)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 7

254 **Coal tips, Bryngelli Estate, Hirwaun** **SO 9520 0534** **D**

Type: industrial spoil

i) Period: 19th/20th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: probably associated with collieries to the south (1)
v) Survival/Condition: good (3)
vi) Diversity: multi-phase coal tips (2)

Impact: moderate Total: 8

255A **Railway A, Aberdare & Rhondda Railway** **SO 9578 0514 to SO 9506 0501** **E**

Type: railway

i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with converging tramroads (No.255B and 255C) (3)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: high Total: 9

Action: Evaluation

255B **Tramroad B, Branch of Aberdare & Rhondda** **SO 9581 0512 to SO 9589 0476** **E**

Type: tramroad

i) Period: late 19th century tramroad
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with Aberdare & Rhondda Railway (No.255A) and tramroad (No.255C) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: high Total: 10

Action: Evaluation

255C **Tramroad C, Hirwaun** **SO 9587 0510 to SO 9567 0471** **E**

Type: tramroad

i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with Aberdare & Rhondda Railway (255A) and tramroad (No.255B) (3)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: high Total: 9

Action: Evaluation

256 **Culvert, Aberdare-Rhondda Tramroad, Hirwaun** **SO 9582 0506** **D**

Type: artificial watercourse
i) Period: early to mid 19th century
ii) Rarity: moderate (2)
iii) Documentation: none (1)
iv) Group Value: associated with tramroad (No.255B) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase standing structure (1)

Impact: high Total: 8

Action: Photographic Record

257 **Culvert, Hirwaun to Aberdare Tramroad, Hirwaun** **SO 9648 0519** **C**

Type: artificial watercourse
i) Period: early to mid 19th century
ii) Rarity: scarce (3)
iii) Documentation: none (1)
iv) Group Value: associated with Hirwaun to Aberdare Tramroad (No.250i) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase standing structure (1)

Impact: slight Total: 9

Action: Photographic Record

258 **Vale of Neath Mineral Railway (western section)** **SO 9530 0617 to SO 9413 0641** **C**

Type: railway
i) Period: 1851
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with skew bridge (No.243) (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 10

259 **Branch of the Hirwaun-Aberdare Tramroad** **SO 9408 0591 to SO 9525 0556** **C**

Type: tramroad
i) Period: late 18th century
ii) Rarity: moderate (2)
iii) Documentation: Cadw, SMR, O.S.1891 (3)
iv) Group Value: associated with the present A 4059, the Hirwaun Ironworks and branch line (No.250) (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: moderate Total: 9

260 **Walled enclosure, Pen-Twyn, Gilwern** **SO 2457 1442** **E**

Type: garden enclosure
i) Period: 19th-20th century
ii) Rarity: common (1)
iii) Documentation: O.S.1891 (2)
iv) Group Value: none (1)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase standing structure (1)

Impact: high Total: 7

Action: Photographic Record, Ground Survey and Evaluation

261 **Walled road, Govilon** **SO 2620 1437 to SO 2710 1433** **NFA**

Type: road
i) Period: Early Post-Medieval
ii) Rarity: common (1)
iii) Documentation: tithe map 1847, O.S.1880, 1891 (2)
iv) Group Value: associated with Hopyard Farm (No.25) and the worker's cottage at Govilon (No.14) (3)
v) Survival/Condition: good (3)
vi) Diversity: single-phase linear feature (1)

Impact: slight Total: 10

262 **Building foundations, Pant Glas** **SO 2298 1343** **NFA**

Type: (buried) earthworks
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 and personal comments (2)
iv) Group Value: associated and incorporated within the settlement of Clydach (south) (2)
v) Survival/Condition: unknown (0)
vi) Diversity: unknown (0)

Impact: slight Total: 5

263 **Southern section of Clydach Railroad, Pont Harri Issac** **SO 2043 1233 to SO 2130 1212** **(B)E**

Type: tramroad
i) Period: late 18th century
ii) Rarity: moderate (2)
iii) Documentation: Cadw, SMR, O.S.1880, 1891 and documentary histories (3)
iv) Group Value: associated with the M.T. & A. Railway (No.114) (3)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase linear feature (2)

Impact: high Total: 11

Action: Evaluation

264 **Western section of Clydach Railroad, Brynmawr** **SO 1949 1202 to SO 1920 1220** **(B)E**

Type: tramroad
i) Period: late 18th century
ii) Rarity: moderate (2)
iii) Documentation: Cadw, SMR, O.S.1880, 1891 and documentary histories (3)
iv) Group Value: associated with Nantmellyn Bridge (No.112) and Clydach Bridge (No.118) (3)
v) Survival/Condition: moderate (2)
vi) Diversity: multi-phase linear feature (2)

Impact: high Total: 12

Action: Evaluation

265 **Branch of Disgwylfa Tramroad, Clydach Dingle** **SO 1923 1283 to SO 1933 1277** **(C)E**

Type: tramroad
i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with the squatter's settlement (No.120) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: high Total: 9

Action: Evaluation

266 **Reservoir, Garn Lydan** **SO 1766 1279** **D**

Type: Reservoir
i) Period: mid to late 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with the Nantyglo Ironworks and Blaen y Cwm Reservoir (No.267) (3)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase earthworks (1)

Impact: slight Total: 8

267 **Blaen y Cwm Reservoir, Garn Lydan** **SO 175 129** **D**

Type: Reservoir
i) Period: 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with the Nantyglo Ironworks and reservoir (No.266) (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase earthworks (1)

Impact: slight Total: 8

268 **Carno Reservoir and filter-beds, Afon Ebbw** **SO 164 170** **D**

Type: reservoir
i) Period: 20th century
ii) Rarity: common (1)
iii) Documentation: none (1)
iv) Group Value: none (1)
v) Survival/Condition: good (3)
vi) Diversity: single-phase earthworks (1)

Impact: slight Total: 7

269 **Merthyr, Tredegar & Abergavenny Railway, Llechryd** **SO 1033 0920 to SO 1070 0962** **C**

Type: railway
i) Period: late 19th century
ii) Rarity: common (1)
iii) Documentation: SMR, O.S.1880, 1891 (3)
iv) Group Value: associated with Rhymni Bridge (No.157), leat (No.160) and skew bridge (No.168) (3)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: high — Total: 9

270 **Brecon & Merthyr Railway, Taf Fechan** **SO 0343 0853 to SO 0325 0816** **NFA**

Type: railway
i) Period: late 19th century
ii) Rarity: common (1)
iii) Documentation: SMR, O.S.1880, 1891 (3)
iv) Group Value: none (1)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: moderate — Total: 7

271 **Coed Meurig Farm** **SO 0234 0742** **C**

Type: building
i) Period: mid 19th century
ii) Rarity: common (1)
iii) Documentation: tithe map 1850, O.S.1880, 1891 (2)
iv) Group Value: associated with lofted cowshed (No.222) and surrounding drystone walling (2)
v) Survival/Condition: good (3)
vi) Diversity: single-phase dwelling (1)

Impact: moderate — Total: 9

Action: Photographic Record (setting)

272 **Neath Mineral Railway (eastern section), Hirwaun** **SO 9700 0559 to SO 9760 0543** **C**

Type: railway
i) Period: mid 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891, documentary histories (3)
iv) Group Value: none (1)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: slight — Total: 9

273 **Tramroad, Hirwaun** **SO 9566 0520 to SO 9559 0491** **E**

Type: tramway
i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with Knobby Drift Ironstone Pit (No.274) (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: high **Total: 8**

Action: Evaluation

274 **Knobby Drift Ironstone Pit, Johnson Park, Hirwaun** **SO 9559 0491** **D**

Type: quarry
i) Period: late 19th century
ii) Rarity: common (1)
iii) Documentation: O.S.1880, 1891(2)
iv) Group Value: associated with tramroad (No.273) (2)
v) Survival/Condition: poor (1)
vi) Diversity: multi-phase earthworks (2)

Impact: moderate **Total: 8**

275 **Tramway branch-Hirwaun Common Railway** **SO 9597 0500 to SO 9598 0470** **E**

Type: tramroad
i) Period: late 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with Hirwaun Common Railway (No.276) (2)
v) Survival/Condition: poor (1)
vi) Diversity: single-phase linear feature (1)

Impact: high **Total: 8**

Action: Evaluation

276 **The Hirwaun Common Railway, Hirwaun** **SO 9495 0618 to SO 9662 0481** **(C)E**

Type: railway
i) Period: 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1880, 1891 (2)
iv) Group Value: associated with a series of tramways within Hirwaun (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: high **Total: 9**

Action: Evaluation

277	**Branch-line of Hirwaun Common Railway, Hirwaun**	**SO 9617 0500 to SO 9634 0478**	**(C)E**

Type: railway
i) Period: Late 19th century
ii) Rarity: moderate (2)
iii) Documentation: O.S.1891 (2)
iv) Group Value: associated with a series of branch tramways within Hirwaun (2)
v) Survival/Condition: moderate (2)
vi) Diversity: single-phase linear feature (1)

Impact: high Total: 9

Action: Evaluation

Abbreviations
D.S.W= Drystone wall (landscape)
T.S.W.= Turf/stone wall (landscape)

Appendix 2
Gazetteer of Sites

Appendix 2
Gazetteer of Sites

1. Ysbytty Farm, Abergavenny (SO 3032 1293)
A late eighteenth century/early nineteenth century masonry farmhouse and associated farm buildings including converted threshing barn (retaining the original pitch of a thatched roof) and brick built pig pens with pantile roof. Aerial photos of the land immediately to the east show the remains of a field system, possibly early Post-Medieval in date.

2. Prehistoric find spot, Sewage Works, Abergavenny (SO 2980 1330)
Findspot of Bronze Age flint arrowheads. This site may be contemporary with Neolithic and Bronze Age material recovered from the Flannel Street excavation, Abergavenny in 1965. NB. A large mound (**GGAT/PRN 1781 G**) close to Evesham House is a naturally deposited glacial moraine.
GGAT/PRN 3974 G

3. Tramroad/cart Track, Llanfoist Farm (SO 2945 1331)
A linear fenced track in front of Llanfoist Farm and crossing to run in front of the Transfer Station. Research of the 1880 O.S. and tithe maps suggest that this feature may be a raised cart track.

4. Merthyr, Tredegar & Abergavenny Railway, Llanfoist (SO 2900 1350)
The dismantled line of the Merthyr, Tredegar & Abergavenny Railway (MT & A), originally opened in 1862, crosses the old (Merthyr/Abergavenny) Turnpike road (B4246) on a 'skew' bridge (No.9) from the south. At Llanfoist (SO 2875 1339) the railway heads north again to cross the A465 at SO 2905 1358, along a no-through road known as 'The Cutting.' The railway between Govilon and Abergavenny, largely follows the line of the earlier Llanvihangel Railway (opened 1812) which linked Govilon to Llanvihangel via Abergavenny and was one of a number of tramroads which the MT & A later bought out. The line of the MT & A was eventually taken over by the London & North Western Railway in 1866 and converted to double track railway with tunnels eleven years later. Many of the bridges between Abergavenny and Gilwern were widened to accommodate double track.
GGAT/PRN DO9

5. Railway furniture, Llanfoist (SO 2889 1355)
The remains of cast-iron railway post, re-used as a field post is inscribed 'E.Hampton, Abergavenny'. Approximately 120 metres east of this post is the route of the MT & A Railway and Llanvihangel Railway.

6. Evesham House & lodge, Llanfoist (SO 2870 1360)
A site consisting of Evesham House and Lodge, which are two attached buildings, although they have been separately owned at various times. Both are built of rubble masonry and are considered by Cadw to be 'of special architectural interest'. Evesham House, which is the earliest of the two buildings, was used as Llanfoist Rectory in 1844. The frontage of the main house is now much altered, whereas the rear (west-facing) has an original large oak door casement that is believed to be of 16th century date. Internally there are large chamfered ceiling joists within the present kitchen and the remains of a partially blocked cross-passage way, again suggesting an early Post-medieval date. Externally there have been many alterations especially to the windows during the 19th and early 20th centuries. Associated with the main house, and to the west, is a row of farm outbuildings (No.7).

7. Evesham House outbuildings, Llanfoist (SO 2870 1362)
These late 18th/early 19th century farm outbuildings were later converted to domestic use (probably during the 20th century), but are now unoccupied. The buildings, which are 7-8 bays in length, were probably originally used as a cowshed with a hay loft above. They are constructed of rubble masonry with wooden lintels over the windows. Internally a staircase, partition walls and two fireplaces have been added, but they still retain many of their original features, including part of a stone flag roof and trenched purlin roof trusses typical of local vernacular construction.

8. Turnpike Road, under skew bridge, Llanfoist (SO 2795 1387)
The route of the old Turnpike road (believed to have been built around 1812) runs along the B4246 (also No.31) at this point from Merthyr to Abergavenny. Below the Turnpike road (next to bridge No.9) is a stone culvert within 5-6 m. of the A465 which is probably contemporary with the road. The tithe map indicates that before the building of the Llanvihangel Railway the road from Merthyr to Abergavenny ran more or less east-west. From near the later skew bridge (No.9) the road originally passed close to Pen-y-Worlod cottages and then crossed the associated bridge. From here it ran to a junction with the road from Abergavenny to Llanelen just south of the bridge over the Usk. The route of the road was probably changed when the Llanvihangel Railway was built and the opportunity was taken to run a common road through the village and thus to the bridge over the Usk. This type of road improvement using tramroads

as original Rights of Way seems to have been quite common at the time and would have led to the abandonment of the earlier road past Pen- y-Worlod.

9. Railway skew bridge, Llanfoist (SO 2800 1385)
At Llanfoist the Turnpike road (No.8) is carried across the MT & A railway by a skew bridge, built of well-cut angled sandstone blocks and associated with a c.30m long contemporary wall emanating from the abutments. Underneath the bridge there is a clearly visible 'straight joint' indicating that it has been re-built at some stage of its use. The largest portion of the bridge is to the east and it is likely that this was the original size of the bridge. The most likely period for this addition is after the MT & A Railway was taken over by the LNWR in 1866 and converted to a double track line with bridges, in 1877. Many of the other bridges along the line of the MT & A exhibit similar later additions.

10. Pen-y-Worlod Farm & outbuildings, Llanfoist (SO 2838 1388)
Pen-Y-Worlod Farm ('the end of the meadow') contains several structures of special architectural interest (Cadw). It is known to have formed part of the estate of Christopher Chambre of Llanfoist House, who left the farm in trust to his wife in a will of 1793, passing to his son Francis Chambre, the owner of the 1844 tithe map. However, behind the later facade, and intrusive double-glazing, the farmhouse retains many original features including large inglenook fireplace and bressumer, and large oak front door with iron batten and studding, probably dating back to the 17th century. To the west of the house are a masonry cowshed and threshing barn. The threshing barn retains oak trusses with trenched purlins (the associated carpenter's marks are still visible) typical of the local vernacular buildings. The barn was built on a stone plinth with timber-framed walls. Between these outbuildings and the A465 there is also the remains of a masonry walled garden.

11. Track in front of Pen-y-Worlod Farm, Llanfoist (SO 2830 1383)
Between the southern extent of the walled garden (see above) and the A465 is a banked platform which leads to a east/west track, south of Pen-y-Worlod Farm. This is the remains of the Turnpike road (No.8) which originally followed the line of the B4246, but then crossed the line of the present A465. From here it followed this track down to a footpath which was then carried across a small brook, next to Pen-y-Worlod cottages, on a single-arched bridge and on to Abergavenny. Aerial photos show a fairly wide linear depression along the line of this track..

12. Footbridge, Pen-y-Worlod Cottages, Llanfoist (SO 2863 1374)
A footbridge crosses the same brook as the track No.11 close to the present A465. It is constructed of a single large slab of limestone, but with some attempt at simple decoration along its exposed edges and may be that the slab used was originally part of another building nearby (Llanfoist Priory?). The size of the bridge indicates that it was used by pedestrian traffic only.

13. Cadfor farm house & farm buildings, Llanfoist (SO 2765 1413)
Identified by Cadw as buildings of 'special architectural interest' , the property was known as Upper Cadfor Farm and formed two tenements in 1665, belonging to Walter Morgan of Ty-mawr (Bradney II.351-2). The name appears to be a shortened version of Cad-Ifor ('Ifor's Battle'). The farm and the associated farm buildings are divided into two separate farm units. The western unit is the best preserved, with the buildings forming a courtyard farm. The farmhouse dates from the mid nineteenth century whereas the farm buildings are earlier (possibly late 18th/early 19th centuries). Buildings include a lofted cowshed (uncoursed masonry with large quoin stones, wooden lintels and a Welsh slate roof), a stable complex and a threshing barn (with remains of flagstone roof, which is now part of the eastern farm unit.). The eastern farm unit consists of a modern brick built farmhouse and early outbuildings, probably contemporary with the original farm.

14. Workers cottage and bridge, Govilon (SO 2674 1427)
The partly demolished remains of a two-storey, two-bay cottage dating from the early to mid.19th century. The cottage, which is built on the revetted northern bank of the Cwm Shenkin brook, is linked to the southern bank by a small single-arched masonry bridge which carries a walled road (No.261) from Hopyard Farm to Boat Farm (SO 2709 1435). The building is constructed of large uncoursed sandstone with well-cut quoins, large masonry lintels, a pantile roof and first floor windows (now blocked). Originally a single bay cottage with a gable-end chimney and central entrance, a second room was later added to the eastern gable.

15. House platform, Nr. Cwm-Shenkin (SO 2672 1430)
The remains of a platform and the walls of a masonry-built house cut into bank adjacent walled road No.261. The building has now been largely demolished.
GGAT/PRN 4103 G

16. Field-barn, Govilon (SO 2657 1432)
A threshing barn built of well-cut, coursed sandstone blocks with full-height double doors to the front and rear elevations, air vents and a date-stone of 1808 above the doors facing onto the roadside. The building is partly incorporated into drystone walling parallel to the road. Despite its solid construction the rear of the barn has partially collapsed and this led to two the addition of two later buttresses to rear wall in an effort to support it. The location and construction of this building indicate that this was probably the field-barn of a large estate farm.

17. Field-barn, Govilon (SO 2659 1432)
Field-barn on the opposite side of the road to No.16, but considerably altered. The lower section of the barn on the east and south side is constructed of coursed masonry. The upper section reveals recent breeze-block repair work. This barn is probably later than No.16 although it may have been part of a unified farm complex.

18. Farm building platform, Hopyard Farm (SO 2632 1430)
The remains of a cellared building was found below a 17th/18th century barn at Hopyard Farm which was being converted to domestic use (See site No.25). These remains are no longer visible.

19. Rose Cottage, Govilon (SO 2675 1423)
A small two-storey farmworker's cottage with inscribed date-stone (1865) built of coursed sandstone, rusticated quoins, a Welsh slate roof and a masonry garden wall. The dwelling has two gable-end chimneys and a lean-to porch over a central entrance.

20. D.S.W./Ridge & Furrow landscape, Govilon (SO 2650 1420)
Extensive drystone walled, ridge & furrow landscape located on land either side of the A465 between Rose Cottage and Hopyard Farm. These field boundaries are cut by the A465.

21. Farm cottages, Maes y Berllan, Govilon (SO 2698 1424)
A small farmstead complex north of the A465 including a one and half storey cottage and single-storey outbuildings.

22. Ty Clyd, Govilon (SO 2691 1404)
A house of 'special architectural interest' with listing under consideration. Described as a 'sheltered house' and 'much improved' in 1906 by the then owner.

23. Farm complex, Govilon (SO 2673 1415)
A series of three buildings forming part of the remains of an L-shaped courtyard farm. The buildings are built of uncoursed masonry with well-cut quoins which were probably used as outbuildings; they have now been converted, mainly to garages. The eastern gable of building No.1 has an elaborate window surround, and many of the buildings have blocked windows and/or entrances indicating several phases of use.

24. Ridge and furrow landscape, Cadfor Farm (SO 2750 1400)
A series of poorly defined Post-Medieval ridge & furrow marks on a north/south alignment. Located west and east of the service bridge to Cadfor Farm, south of the A465.

25. Hopyard Farm, Glanbaiden (SO 2620 1440)
A late 17th/early 18th century farmhouse with cross-passage way (now blocked), stop-chamfered ceiling joists and western gable fireplace and baking oven. The remains of a cellared house platform was found beneath the floor of the associated farm outbuildings whilst under conversion to domestic use (No.18).

26. Remains of a walled garden, Hopyard Farm, Glanbaiden (SO 2622 1435)
The remnants of an extensive walled garden probably connected to the Glanbaiden House estate. The wall is constructed of masonry, but is now in a ruinous state.

27. Glanbaiden House, Glanbaiden (SO 2614 1438)
The early eighteenth century house takes its name from the brook which forms the parish and county boundary. It is a large detached Georgian manor house with a conservatory and servants quarters to the rear. Built of ashlar with a hipped-roof and classical portico with ionic columns. The fenestration consists of sixteen pane sash windows with a tall round-headed window lighting the stairs to the rear. A few metres to the east are a series of estate cottages. To the south, and beyond the present line of the A465 there are the remnants of an ornamental parkland (No. 30) and the associated driveway to Glanbaiden Lodge.

28. Glanbaiden Farm, Glanbaiden (SO 2615 1442)

A 17th century farmhouse and outbuildings which probably predates Glanbaiden House as the center of the estate.

29. Glanbaiden Lodge, Glanbaiden (SO 2613 1422)
A picturesque gatehouse serving Glanbaiden House with a high pitched roof, scalloped barge-boards, dormer windows, well-cut rusticated quoins and a large central chimney. Externally, the building has a later porch and lean-to building. The adjoining cast-iron entrance gate to the estate consists of five ashlar sandstone pillars and iron railings with fleur-de-leys and urn motifs. The remnants of a north-south track leading to the estate house from the lodge is still visible. The cottage may, originally, have been thatched and an example of a 'cottage orne'.

30. Parkland, Glanbaiden House, Glanbaiden (SO 2610 1435)
East of Aberbaiden lodge is the remnants of a parkland landscape indicated by several mature taxa including sweet chestnut and yew. The parkland is probably associated with the nearby Glanbaiden House.

31. Abergavenny/Merthyr Turnpike, Glanbaiden (SO 2599 1431)
A few metres north-east of the Govilon roundabout is the remains of the Abergavenny-Merthyr Turnpike road (B4246) road running SE-NW (also No.8) which was abandoned due to the re-alignment of the road for traffic calming measures.

32. Aberbaiden Lodge, Aberbaiden (SO 2582 1444)
A two-storey classically derived lodge with a low pitch roof, wide eaves, moulded string course, pilaster door surrounds and leaded windows. Attached to this building is an later extension with small round-headed windows. This building served as the gatehouse to Aberbaiden Farm to the north. To the east, next to the present garden layout are the remnants of parkland which is delineated by a low iron fence.

33. Little Chef Restaurant, Gilwern (SO 2572 1444)
A modern (1979) restaurant building constructed of red brick. This building is under direct impact from the road dualling.

34. Brecknock & Abergavenny Canal (SO 2540 1453 to SO 2568 1434)
The B. & A. Act was passed in 1793 and the canal was completed from Brecon as far as Gilwern in 1798. The canal was designed to provide links between the river Usk and Gilwern in order to transport coal from Brynmawr, thus providing a competitive route to the sea. The canal falls within the 50 metre corridor from Gilwern roundabout to the Gilwern embankment (No.42) (SO 2440 1446). From this point the canal turns north towards Brecon. Within the corridor are two associated, eccentric arched bridges (site nos. 35 & 36) which probably served local parish traffic.

In addition, there are a related number of canal buildings including canal cottages (site no. 37), the Navigation Inn (No.38) and the Bridge End public house (SO 2461 1455). To the west are associated features including a footbridge (No.45), a lean-to (No. 46), a sluice system (No. 47), an embankment (No.42), two aqueducts (No.43) and a series of tramroads. The tow-path is still visible although the canal seems to have been dredged and repaired in recent history. **GGAT/PRN CO6**

35. Canal bridge (eccentric arched), Gilwern (SO 2569 1434)
A small canal bridge, probably contemporary with the construction of the canal and probably used by local farm/parish traffic. Built of uncoursed sandstone with well-cut voussoirs it has a low flat arch which is eccentrically shaped due to the need to accommodate a tow-path on the northern side. The bridge is buttressed by four stone piers and has now been heavily re-pointed on the northern side.

36. Canal bridge (eccentric arched), Gilwern (SO 2537 1452)
Construction and date similar to site no. 35. This bridge however, has over time become unstable and iron rails (possibly tramrails) have been bolted underneath the arch to reinforce it. On the southern side, the buttress appears to have been incorporated into the fabric of the present A465. On the northern side the parapet wall splays onto the nearby path forming a wall. This wall must at one time have extended along this length of the canal since it incorporates a stone foot-stile indicating the need to protect livestock from the water. On either side of the canal, immediately to the west of the bridge, are two slots cut into the banks which were used to hold a temporary barrier.

37. Canal workers cottages, Gilwern (SO 2471 1454)
Two sets of small contemporary workers cottages facing onto the canal. The cottages consist of two-bay, two-storey dwellings, probably built of masonry, but now rendered externally. Both houses have asymmetrical front doors and chimneys.

38. Navigation Inn, Gilwern (SO 2458 1450)
A substantial two-storey purpose-built inn next to the Brecknock and Abergavenny Canal with at least three phases of construction. Constructed of coursed sandstone with front entrance porch and associated boundary walls, probably dating from the mid-nineteenth century and under consideration for listing.

39. D.S.W. landscape, Gilwern (SO 2520 1440)
South of the A465 at this point is a drystone walled landscape. Growing within these boundaries are a number of mature taxa including sweet chestnut and holly. The boundaries continue on the northern side of the A465, but are cut by the canal, therefore supplying a *terminus ante quem* of c.1798 for the boundaries.

40. Holloway/road, Gilwern (SO 2539 1447)
A holloway which is the remnant of a small county lane originally running southwards to cross the eccentric bridge (No.36) over the Brecknock and Abergavenny Canal. The holloway has been replaced by a traffic calming slip-road.

41. Leat below Gilwern Embankment (SO 2443 1450)
On the north side of the River Clydach is a substantial leat system with a weir just downstream form the aqueduct. The leat was built to serve Danybont woollen mill which is marked on the tithe map of 1847. The upper section of the leat has been replaced in brick.

42. Gilwern embankment-Brecknock & Abergavenny Canal (SO 2446 1446)
Built in 1797, the embankment was started in one of the first phases of construction for the canal. This substantial (size 84ft high x 90 yards long) embankment for the Brecknock & Abergavenny Canal, incorprorates two masonry aqueducts (No.43), the smaller of which carries the canal over the Clydach Railroad. There is also a small overflow with a masonry footbridge at its southern end (Nos. 47 & 45). Under consideration for Scheduling by Cadw.
GGAT/PRN 3199 G

43. Canal aqueduct over Clydach Railroad, Gilwern (SO 2439 1451)
At this point the canal veers north and is carried over the River Clydach in the gorge below by an large masonry aqueduct and over the Clydach Railroad to the north by a smaller aqueduct.
GGAT/PRN 3199 G

44. Clydach Railroad, Gilwern to Cheltenham (SO 2450 1470 to SO 2230 1275)
Built by the Brecknock & Abergavenny Canal Company and designed by John Dadford, the Clydach Railroad linked the collieries at Brynmawr to the iron forge at Glangrwyne on the Usk and was opened in 1794. The line followed the north bank of the Clydach past Blackrock and Cheltenham to Gilwern and beyond, to the Usk. The main line and all the branches were built of edge rail in 4 ft. sections and extended for seven miles and two furlongs at a cost of £26,890.

The route of the Clydach Railroad between these coordinates runs below the Gilwern embankment through a substantial masonry tunnel to the canal side wharves at Gilwern (SO 2435 1450). A branch line was laid out by 1798 to a wharf on the Brecknock & Abergavenny Canal to the north of the Gilwern embankment. Further east the main Railroad is joined by another branch of the Clydach Railroad from the north at SO 2420 1414 and at this point the weigh house (No.52, now known as 'Machine House') still stands. It then continues eastward (roughly parallel to the A465) along what is now the road through Maes y Gwartha (see also No.78).
GGAT/PRN B30

45. Pack-horse bridge, Gilwern (SO 2441 1442)
Small bridge over a sluice system (No.47) running off the Brecknock and Abergavenny Canal. It is described by van Laun (1979) as a pack-horse bridge, and was possibly linked to the Old Trap road which runs from near the end of the Forge Hammer branch of the Llam-March Tramroad (No.55) towards the Gilwern embankment.

46. Lean-to building and D.S.W, Gilwern (SO 2440 1442)
A small masonry lean-to attached to a wall, within the curtillage of a house which originally stood nearby (van Laun).

47. Overflow system, B & A Canal, Gilwern (SO 2442 1443)
An overflow system used to control water levels in the canal, and probably monitored from the nearby (now demolished) house.

48. Lion Hotel, Gilwern (SO 2437 1438)
A much altered building with successive extensions built between the OS mapping of the area in 1840 and 1880. The building has decorative lintels and window surrounds, but has been rendered externally. This style of construction is repeated in three cottages to west (No.49). An earlier two-storey, four bay building is attached to western gable of the main hotel and exhibits stone construction internally.

49. Terrace cottages, Gilwern (SO 2433 1436)
Three terraced worker's cottages (far western extent) similar in design to the main building of the Lion Hotel (and probably contemporary), with central entrances, large sash windows and end-chimneys. Two small earlier cottages stand to the east with mirror image facades and a shared central chimney. The eastern end cottage, which is probably the earliest building in the row, is of uncoursed masonry with later stone and brick repairs, inserted brick window surrounds and blocked windows and a door in east gable.

50. Primitive Methodist Chapel and grave yard, Gilwern (SO 2427 1429)
A former chapel shown on the OS map in 1880, and built in 1838, with five associated graves (earliest 1846). It is of the rectangular 'barn-like' design and is built of coursed masonry with a gabled, slate-clad roof. Externally there are south-facing double doors with a semi-circular light above and also west facing double doors with two sets of rectangular windows above (now blocked). The date-stone in west facing elevation is missing. There is a tall rectangular stair-light with a round-head in northern elevation. The revised O.S. map of 1900 simply marks this as a building with no specific purpose, probably indicating that it was already out of use by then. The building has had various changes of use and is now used for storage therefore removing the likelihood of internal fittings surviving. The cemetery was partially removed and relocated during the 1960s construction of the A465

51. Llam-March Tramroad, Gilwern (SO 2440 143 9 to SO 2328 1379)
Built at the request of the owner's of the Clydach Ironworks to connect the works to the collieries and ironstone mines on the hillside to the south. Opened in 1795, it was designed by John Dadford and laid with edge rail. The tramroad was extended from the ironworks to the canal at Gilwern in 1809. From the canal side wharves at Gilwern the Llam-March Tramroad ran eastwards through the Clydach Iron Co.'s forge (No.58) and tin-plate works (No.60). At this point it was joined by a branch of the tramroad from a roadside wharf near the Forge Hammer Inn (No.55) which crossed the River Clydach on the Llanelly bridge (No.61). The main line continued east past Forge Row and along what is now a minor road. The tramroad then ran in front of the Saleyard across the present A465 over a masonry bridge (No.68) that crosses River Clydach, and along the line of the minor road to Danycoed. Before reaching this settlement, the tramroad crosses the Nant Dyar river into the Clydach Ironworks. Above the ironworks the edge railway of 1795 was rebuilt as a plateway and partly realigned in 1811.

52. Machine House (weighbridge), Clydach Railroad (SO 2419 1439)
The Machine House was built by 1798 as a toll house for the Clydach Railroad and associated with a weighbridge. Although well outside the 50m corridor, this building is nevertheless important to the group value of the Clydach Railroad.

53. Forge Hammer Inn, Gilwern (SO 2378 1408)
A two-storey building of coursed masonry built around the middle of the nineteenth century as an inn serving the iron-making community in the gorge below. A branch of the Llam-March Tramroad ran past this site, apparently serving the works offices and then providing transport to a road-side wharf near the inn.

54. Pwll Rhys waterfall footbridge (SO 2375 1410)
A cast-iron footbridge over the River Clydach with masonry abutments. Possibly built of locally produced iron.

55. Branch of the Llam-March Tramroad, Maes y Gwartha (SO 2355 1396 to SO 2378 1408).
A branch tramroad over the Llanelly bridge (No.61) and along what is now a private track. Rattenbury (1980) suggests this branch served a roadside wharf near the Forge Hammer Inn, whereas Van Laun (1979:19) believes this branch served tramroad offices nearby. These offices may have been situated at the site presently occupied by Riverside House which is along this route. This branch line is aligned with the Old Trap Road to the south opposite the Forge Hammer Inn, (now a minor road) which loops around to the north and heads towards the small footbridge (No. 45) and the embankment portion of the Brecknock & Abergavenny canal. This may have been part of an earlier transport link. The branch to the Forge Hammer Inn is shown on the tithe map but had gone by the time of the 1880 OS.

56. A465 concrete revetting, Gilwern (SO 2420 1423)
Just west of the Primitive Methodist Chapel (No.50), and on a north section of the present A465 are the remnants of concrete revetting which stands in places up to 3-4 metres in height.

57. Culvert/buttress, River Clydach, Maes y Gwartha (SO 2365 1410)
At several points along the River Clydach on the northern bank (opposite Barnheld and Riverside houses) there are the remains of two, arched masonry culverts and a semi-circular masonry buttress between them. It is believed locally that from the size of the latter structure it once acted as part of a bridge across the River Clydach.

58. Llanelly Forge, Maelog Bungalow, Maes y Gwartha (SO 2355 1405)
The site of a forge once owned by the Clydach Ironworks and now occupied by a bungalow on the northern bank of the River Clydach. The site was powered it by the water from a leat, originating from the Nant Dyar and skirting Clydach house on the left, the tithe map shows that a weir on the leat fed the west end of a pond before continuing along the north side to end near the pond's dam wall (No.59). There seems no reason to doubt that this was the leat mentioned in an agreement of 1663 to divert water to the 'ironworks' (Riden) which together with the pond is still visible today

.
The forge continued to work alongside the charcoal-fired Llanelly Furnace (No.66) and when this site was abandoned it was later leased to the proprietors of the Clydach Ironworks. It stands alongside the line of the Llam-March tramroad which was built in 1809 from the blast furnaces to the canal via the forge and once supplied it with pig-iron. Even after the closure of the Clydach Ironworks in 1861 the forge was leased separately to John Mills, a tin-plate maker of Pontymister, in 1864. It seems that it was only from this period that the forge together with Forge House (No.60) were used to make tin-plate. The site continued in use until it was closed in 1884.
GGAT/PRN 2480 G

59. Dam and parallel leat, Llanelly Forge, Maes y Gwartha (SO 2351 1402)
The dam at this point served to store the massive quantities of water required by the Llanelly forge (No.58) in a pond. A weir on the leat from Nant Dyar served the west end of the pond and then continued to end at a point level with the ponds dam wall. This seems to be the leat built under agreement of 1663.

60. Forge House, Tin Plate works, Maes y Gwartha (SO 2352 1399)
The site of Llanelly tinplate works in the late 1870's where sheets of wrought iron were brought to be dipped into molten tin. The tithe map marks this as the site of 'Forge Buildings' suggesting that they were initially part of the Llanelly Forge (No.58) until its lease to John Mills, a tin-plate maker of Pontymister, in 1864
GGAT/PRN 2481 G

61. Llanelly Bridge, Maes y Gwartha (SO 2353 1396)
This masonry bridge over the River Clydach, is built of a low, fairly flat arch with narrow voussoirs sprung from abutments built of large boulders. It consists of at least two phases of construction with a 'straight joint' between the two which is visible underneath the bridge. This appears to be a bridge that was either adapted to tramroad traffic or was adapted to a greater traffic flow. The bridge carried the Llam-march tramroad to the road side wharf near to the Forge Hammer Inn (No.55) although it may not have been specifically constructed for this purpose.

62. Forge Row, Maes y Gwartha (SO 2345 1392)
Described by Van Laun as being 'twenty workmen's houses' in 1813 when they were mentioned as part of the sale of the Llanelly forge and associated plant. The central row have steeper pitched roofs and may well originally have been thatched, possibly dating from the period of the 17th century charcoal fired Llanelly blast-furnace (No.66).
GGAT/PRN 2486 G

63. Culvert, River Clydach, Saleyard (SO 2339 1383)
At this point there are drystone revetments and a well-built arched culvert with masonry above it standing to c.2.5 metres. The culvert served a leat to Llanelly forge and ponds.

64. Clydach House, Saleyard (SO 2325 1382)
This three-storey grade II listed building is constructed of large coursed masonry with a later outhouse and additions to the west gable. Built for the Clerk of the Clydach Ironworks with two large gable-end chimneys, twelve pane sash windows in the ground floor and first-floors, six pane windows in the third storey and no windows into the basement. A coat of arms and a date stone of 'A.D.1693' are found over French doors at the rear. The garden contains an ornamental fountain and a watercourse.
GGAT/PRN 2484 G

65. Industrial buildings, Clydach House, Saleyard (SO 2331 1392)
A series of partly demolished buildings to the north of Clydach House and across the Maes y Gwartha road. The buildings probably have an industrial use associated with the Llanelly furnace site to the south-west.

66. Llanelly Furnace, Saleyard (SO 2323 1386)
The archaeological remains of a charcoal-fired blast-furnace site, the earliest documented reference to which may date from 1663 when an agreement to build a weir to divert water to an 'ironworks at Llanelly' was made for Capel Hanbury (the owner of an ironworks at Pontypool). However, although it appears more likely that this document refers to the Llanelly Forge, since the furnaces were not powered by water from the Clydach, it does suggest an early date for iron-making in Llanelly.

The resultant pig-iron from the furnace was transported to the Llanelly Forge further downstream which was probably built at around the same time. The earliest definite documented reference to the blast furnace is in 1684 and again 1717 it is mentioned as having an output of 400 tons per year. The furnace is known to have closed during the late 1790's when the coke-fired Clydach Ironworks was built higher up the gorge and a list of sites from between 1750 and 1788 describes Llanelly furnace as 'down'.

The site of the charcoal furnace can be seen on John Aram's plan of c.1795 and was still identified as the 'Old Furnace' on the tithe map half a century later. It consisted of a square masonry furnace in front of a stone bank, with a bridge linking the charging bank to the furnace. The blowing-house stood on the opposite bank of the river to the furnace, and contained bellows which powered the furnace with the water-wheel at its west end.
The site is now a Scheduled Ancient Monument.
CADW/SAM BR160
GGAT/PRN 2485 G

67. Terraces, arches and ponds, Llanelly Furnace, Saleyard (SO 2318 1377)
To the west of Saleyard are a series of terraces, arches and ponds used to supply the water necessary for iron smelting at the Llanelly Furnace. These features are not marked on the Tithe map, but date from around the late 17th and 18th centuries.

68. Former road bridge, Saleyard (SO 2330 1375)
The abutments of a former road bridge that predates the 1960's A465 scheme and has been incorporated into the modern construction. The abutments of the bridge are constructed of sandstone masonry and now support a reinforced concrete section that spans the River Clydach.

69. Llam-march Tramroad bridge, Saleyard (SO 2329 1373)
Masonry bridge with parapet wall built to carry the Llam-march Tramroad over the River Clydach to the Clydach Ironworks. Probably contemporary with a masonry culvert under the adjacent road and revetments along which water was diverted to a watercourse on the southern bank.
GGAT/PRN 2482 G

70. Llam-march Tramroad, Saleyard (SO 2327 1367)
This tramroad was originally built to transport raw materials from the collieries and ironstone mines on the hillsides south of the gorge to the Clydach Ironworks. It was designed by John Dadford and opened in 1795 with an edge-rail, but was later rebuilt as a plateway. Furthermore, a plateway was built from the ironworks to the Brecknock and Abergavenny Canal at Gilwern in 1809 via masonry bridge over the Nant Dyar, following the right bank of the River Clydach then crossing the Clydach again to the left bank via bridge No.69 to Sale Yard. From there, the tramroad passed through the Llanelly Forge (No.58) and tin-plate works (No.60) before terminating at a canal-side wharf at Gilwern. A large section of the tramroad, within the 50m corridor, was destroyed by the construction of the A465.

A branch of the tramroad (No.55) diverted from the main line near the forge to a road-side wharf near the Forge Hammer Inn.

71. Farmstead, Burnant (SO 2375 1394)
A farmstead on the hillside to the south of the A465 with a masonry farmhouse (now partly rendered on the exterior), with evidence of a flagstone roof (now replaced) and many later additions. Associated farm buildings consist of a ventilated barn, a cowshed, an unroofed barn and a coal house; all built of uncoursed masonry with wooden lintels.

72. Clydach Villa, Cheltenham (SO 2291 1348)
A substantial detached mid.-Victorian gentry house built of sandstone with limestone quoins and brick window detailing with 12 pane sash windows. Low pitched roof of slate with red tiles at the angles and central multi-flued chimney.

73. Lamb House and industrial unit, Cheltenham (SO 2282 1333)
A group of associated buildings built above Main Rd. and served by a masonry ramp. Consisting of a 19th century cottage (Lamb House) and single-storey extension, a three-storey uncoursed sandstone building and a small stone and brick utility room between the two. The three-storey building has nine pane sash windows and a central door with a stone arched lintel. It is possible that this building had an industrial function, although it may belong to the same typological group of three-storey worker's housing exhibited at Haman's cottages, Clydach (No.92).

74. Sunnyside - Terrace cottages, Cheltenham (SO 2279 1332)
A row of four worker's cottages built of uncoursed limestone of one and a half storeys high with arched window heads. The windows, doors, chimneys and roof have been heavily modernised and there are inserted dormer windows in the roof.

75. Craig Amy - Terrace cottages, Cheltenham (SO 2273 1323)
A terrace of three worker's cottages built of uncoursed limestone. Probably originally of one and a half storeys in height, but now raised to a full two-storeys. The cottages have been heavily modernised, especially the windows, doors, chimneys and roof with evidence of several blocked openings.

76. Workers cottages incl. Oak Cottage, Cheltenham (SO 2267 1313)
A row of four workers cottages adjacent to the line of the earlier Clydach Railroad. 'Oak Cottage' is a detached house built of uncoursed limestone with a central entrance. All windows, doors and the roof have been modernised. The adjacent property, to the west, is a semi-detached sandstone cottage of two-units, with a central entrance and stone arched lintels, now much re-pointed (Next door is 'Pentusan'- a modern rendered cottage.). Further to the west is 'Mill View' a 19th century two-unit sandstone cottage built on a masonry plinth with central entrance, stone arched windows, and a later extension and lean-to to the west.

77. G.W.R notice, Cheltenham (SO 2270 1318)
Located on a minor road to the north side of Main Road and along the route followed by the Clydach Railroad, it was erected by the Great Western Railway Company after c.1920. The inscription reads 'LOCOMOTIVES, HEAVY MOTOR CARS AND ALL MOTOR VEHICLES WITH SEATS MORE THAN 15 PERSONS PROHIBITED.'

78. Clydach Railroad, Cheltenham (SO 2195 1274 to SO 2300 1369)
Built by the Brecknock and Abergavenny Canal Company after it was incorporated in 1793 from the collieries at Brynmawr to the iron-forge at Glangrwyne on the Usk.
This section of the Clydach Railroad runs from east of Church Road (SO 2300 1369) where a branch-line ran south-west to the Clydach Ironworks (No.94) (see below). The mainline continued westwards and until it crossed the Cheltenham Main Road (erstwhile Turnpike Road, No.86) and continues as a unmetalled track. It was eventually truncated by the A465 c. 70m south-west of the Rock and Fountain Inn. The railroad had ceased to carry traffic by 1908.

The branch line between the Clydach Ironworks and the Clydach Railroad, was built by the owners in 1817. Rattenbury (1980) suggests this took the form of a stone road from Smart's bridge along the river bank, and up an incline to a junction with the Railroad. This is reinforced by the existence of a cobbled road adjacent to Smart's bridge and a partly revetted embankment along the course of the present footpath between Pant-Glas and the main line of the Clydach Railroad where both lines converge at SO 2296 1364.
GGAT/PRN B30

79. Oak House, Cheltenham (SO 2258 1302)
Oak House forms part of a row of three houses which date from the late 18th/early 19th centuries. Dr.Wakelin (Cadw) suggests that due to the 'unusual depth and scale of the row' the function of Oak House may have been as a store or truckshop which would have been run by the owners of the Clydach Ironworks.

80. Ebenezer Welsh Chapel, Cheltenham (SO 2255 1397)
A nineteenth century chapel located to the south of Main Road and one of a number of religious meeting houses within the settlement of Cheltenham.
GGAT/PRN 2473 G

81. English Wesleyan Chapel, Cheltenham (SO 2250 1292)
A chapel built in 1829 and rebuilt in 1891 with an attached school, approximately 50 metres west of the Ebenezer Welsh Chapel.
GGAT/PRN 2472 G

82. James Terrace cottages, Cheltenham (SO 2246 1290)
A group of six terraced cottages known as James Terrace located north of Main Road, Cheltenham. They possibly served as workers cottages for the Clydach Ironworks.

83. Siloam Chapel Graveyard, Cheltenham (SO 2247 1281)
A walled cemetery with gravestones dating from the mid-19th century to 1968. Some stones are highly decorated and bear inscriptions in Welsh. The associated chapel, now demolished, once stood nearby to the north. To the north-east part of the cemetery has been infilled and is now used as a car-park and the site is now very dilapidated.

84. Spring, gully and D.S.W., Cheltenham (SO 2239 1283)
North of the graveyard (No.83), are a series of gullies, a spring and an extensive drystone wall. These features are contemporary with the buildings along Main Road, Cheltenham; which date to the mid 19th century.

85. Penrheol Las and Big House, Cheltenham (SO 2223 1281)
An early to mid 19th century farm cottage, possibly attached to Penrheol Las, a well preserved 19th century farmstead. Both dwellings are located either side of Main Road, west of the settlement of Cheltenham. Big House, a two-storey worker's cottage to the south of the Main Road, is now derelict.

86. Merthyr-Govilon Turnpike Road (Main Road) (SO 1964 1213 to SO 2323 1437)
The route of the Turnpike road which became the Main Road through Black Rock and Cheltenham, was built between 1811-12. However, Rattenbury (1980:78) believes the Merthyr/Abergavenny section of the Turnpike was built around 1809 and was paid for by subscription with tolls for its use. In the western section, at head of the Clydach gorge, the road crossed Clydach bridge, which now stands in the middle of the A465 roundabout, east of Brynmawr. To the east it exists up to Saleyard as the present Maes-y-Gwartha Main Road. At this point it would have crossed the Clydach over a bridge at Saleyard (No.69) and then continuing further east toward Govilon.

87. Derelict cottage, Rock & Fountain Inn, Main Road (SO 2199 1278)
A small late 18th century, coursed masonry cottage, located south of Main Road, opposite the Rock and Fountain Inn. This building was probably built in two main phases although the western gable-end exhibits three types of construction. Originally a single-storey dwelling, of which the first phase of building clearly shows uncoursed rubble stonework. Later, squared and coursed masonary was added in order to raise the level of the eaves. Towards the top of this gable there have also been later repairs in red brick. The front elevation has a small crude doorway and windows with wooden lintels. There are later additions including a lean-to (now demolished) and a chimney on the western gable end. A set of outside stairs were added to eastern gable end to serve the first floor.

88. Masonry culvert, Main Road (SO 2193 1277)
Masonry arched culvert probably nineteenth century in date. Located approximately 10m. south of Main Road, the culvert possibly continues underneath the road and probably marks the southern extent of an earlier track/road.

89(i). Tramroad, Darren Ddu Limestone Quarry to Blackrock (SO 2154 1262 to SO 2190 1294)
Identified to the west and east of Darren Ddu quarries, and north and south of the Blackrock limekilns are two tramroads. (labeled as 89(i) & 89(ii). Tramroad 89(i) starts from east of Myrll cottage (now a footpath), and travels behind the Blackrock settlement for c.450m. This tramroad would have fed the limekilns with limestone from the quarries behind. The gradients for this tramroad are relatively shallow. This line may have supplied the final product to Llangattock Tramroad to the north and the Clydach Railroad to the south.

89(ii). Tramroad, Darren Ddu Limestone Quarry to Limekilns (SO 2185 1275 to SO 2205 1287)
This tramroad starts at the south-eastern end of the Blackrock limekilns and runs due east for c.320m up a sharp incline. Again this tramroad would have supplied limestone to the kilns and is believed to have had a self-acting incline mechanism (Van Laun 1979:23). A railroad entrance to the Darren Ddu Quarry existed at SO 2176 1268 and passed under the former Turnpike road (now Main Road) by a tunnel about 20 metres long (Rattenbury 1980:79).

90. Blackrock Lime Kilns, Main Road (SO 2181 1275)
South of the Darren Ddu quarries, adjacent to Main Road, are the substantial Blackrock lime kilns. This site consists of three kilns (one is in a poor state of repair) which have a red-brick lining and are encased by a substantial coursed limestone revetment/ramp which extends back to the quarried cliff-face. This allowed access to the top of the kilns by men and trams in order to charge them. Between kilns the western and central kiln and above the eastern kiln are two date plaques one of which is clearly dated 1889. Around the outside of the kilns are the remains of the doorway furniture, and at the rear of the kilns are iron lintels which support the shafts between the main body and the charging shaft. Above the shafts are three kettle-holes from which the kilns were charged. Immediately in front of the kilns was a turnpike road (now Main Road) as well as the Clydach Railroad which continued to serve the kilns until 1908. Van Laun (1979) suggests that lime kilns dating from 1795 preceded these kilns in this area although nothing is shown on the tithe map of c.1840.
GGAT/PRN 2475 G

91. Track/road between Blackrock & Cheltenham (SO 2153 1255 to SO 2188 1274)
Intermittently dispersed between Cheltenham and Blackrock is a linear feature probably used as an agricultural track which pre-dates the Main Road. The best sections of this road are between the derelict cottage (No.87) and the culvert (No.88).

92. Haman's Cottages, Clydach (SO 2282 1319)
These cottages are associated with the nearby Clydach Ironworks and consists of a building cut into a hillside to the rear producing two-storeys with a basement level. The ground floor is built of coursed limestone blocks whereas the upper courses are of sandstone, possibly for structural reasons. The cellars are barrel-vaulted and inter-connected with internal doorways. Access from the cellar to the outside was from doors in the south elevation (which were replaced by windows). Part of the cellared area are believed to have been used as a communal workspace with wash-room/laundry facilities. This arrangement seems almost identical to a type of worker's housing known as 'dual rows' which was developed at this time in South Wales and in one range of houses formed the basement of an entirely separate row above (Lowe 1994:17). Indeed, there is evidence of small wall larders within the basement level similar to those found at the oldest such houses, Office Row, near Nantyglo Ironworks, built between 1793 and 1795. This building has been extensively altered, including the removal of seven multi-flued chimney stacks (three have since been rebuilt). The arrangement of the stacks and windows on the southern elevation suggests that there were around 14 self-contained dwellings units within this row of houses.
GGAT/PRN 3648 G

93. Smart's bridge, Clydach (SO 2287 1327)
This bridge inscribed with a date of 1824 is constructed of cast-iron members spanning the Clydach river. Either side of the bridge is evidence of a cobbled roadway which Rattenbury suggests formed a branch linking the Ironworks to the Clydach Railroad (No. 78). During the productive years of the Clydach Ironworks, the bridge was used to transport raw materials and the finished products to the Clydach Railroad via an incline.
GGAT/PRN 3204 G

94. Clydach Ironworks, Clydach (SO 2290 1320)
The ironworks was located close to sources of iron ore, coal and limestone as well as water from the River Clydach. The coke-fired Clydach Ironworks was in operation by 1797 superseding the charcoal-fired Llanelly Furnace (No.66) further down the gorge. It remained in production for a further 64 years during which time it became the main employer within the Clydach Gorge. By 1841, 1350 people were directly employed including 133 children under the age of thirteen (van Laun 1979). Besides taking over control of the Llanelly forge (No.58) to the east of the ironworks, the company also built a rolling mill further to the west along the River Clydach in order to roll pig-iron. The Llam-march Tramroad (No.70) supplied the furnaces with raw materials brought from the hillsides above the ironworks. Unfortunately the ironworks were poorly located and this meant that pig iron had to take a highly circuitous route. From the furnaces the pig-iron traveled down to the forge, back up to the rolling mills as bar iron and then returned back down to the canal at Gilwern. Before 1811 when the Llam-march Tramroad was extended to Gilwern, these journeys were made largely on wagons and pack-horses. In 1861 the Clydach ironworks were closed and by 1873 the ironworks had been sold for £220,000 to the Brynmawr Coal & Iron Co. Over-valued at the time, the company went into voluntary liquidation in 1877. There were four blast furnaces on the site and a water wheel, probably powered by water from a launder. The site was excavated in 1986-8 and the ironworks became a Scheduled Ancient Monument.
CADW/SAM BR161
GGAT/PRN 2476 G

95. Section of (branch) tramroad, Clydach Ironworks (SO 2289 1305 to SO 2230 1250)
Part of a tramroad system between the Clydach Ironworks and the companies' rolling mills existed to the west, and south of the A465. Located outside 50 metre corridor, but within the 'impact' zone.

96. Site office and dwellings, Clydach (SO 2287 1332)
The remains of a Works Office and cottages existed on the north bank of the River Clydach opposite the ironworks for which there is pre-A465 photographic evidence. These buildings were demolished in the 1960's for the construction of the A465 although some remains probably still survive below the road.

97. Pant-Glas Bridge, Clydach (SO 2293 1333)
A sandstone masonry bridge of roughly coursed stone with a double row of voussoirs over a low flat arch. The bridge was extended at some stage for additional tramroad traffic and this is still visible in the form of a 'straight joint' in the masonry underneath the arch.
GGAT/PRN 3200 G

98. Kilns (?) within Clydach river bank (SO 2297 1339)
The remains of a semi-circular masonry feature is visible in the north bank of the River Clydach and possibly charged from above. The deposits of ash nearby suggest the masonry served an industrial purpose rather than merely as revetments for the river bank. However, the site is currently very close to the course of the River Clydach below, which would have impeded its use. Revetments are also found along this riverbank and a furnace slag has also been deposited nearby in order to consolidate the bank.

99. Leat keeper's cottage & outbuildings, Clydach (SO 2299 1344)
A one-storey building over 17m in length with a central doorway and three partly blocked windows in the front elevation, a blocked door on the east gable and a blocked door and window in the west gable. Built of sandstone with lime mortar and wooden lintels, it had a Welsh slate roof at some point, but this has now been removed. The foundations of a further extension to the east gable can be seen as well as a possible extension to the west gable. The footings for a separate small outbuilding are still visible to the west. The building is unusual in being built on a river bank with a basement level exiting on to the Clydach River. Its proximity to the weir and sluice system suggest that the building was used by the occupant to regulate and monitor the flow of water to the leat, which leaves the river at this point. However, the building appears to have gone through many phases of usage and is known to have been, at one point, a soap-factory, making use of power from a water-wheel encased within the masonry piers in the river. Later on in its history the building was turned over to agricultural use during which time the demolished building on the east gable was known to have housed a hand powered 'chaffing' machine. The building is at present partly ruinous, although the west end is still used for agricultural storage.

100. Weir, sluice system and leat, Clydach (SO 2301 1344 to SO 2315 1358)
An agreement of 1663 granted Capel Hanbury (the owner of another ironworks at Pontypool) the liberty to build a weir to divert water from the River Clydach to his 'ironworks at Llanelly' (Riden 1993:23). This probably refers to the Llanelly forge (No.58) rather than the charcoal-fired blast furnaces (No.66), which were not powered by the River Clydach. The weir which forms a barrier across the river at this point consisted originally of a fixed iron plate from the north to the south bank across a natural waterfall. The weir was secured on both ends to the masonry abutments/piers, but this has now been removed although the iron fixing points are still visible in the masonry and rock in certain places. The masonry piers which are built upon the natural bedrock, extend into the River Clydach from the north bank. These form the sluice system, and are built of a central core of rubble masonry surrounded by substantial squared limestone blocks although many have now been removed. This sluice helped to channel water from the Clydach into a leat serving the Llanelly forge and its course can still be followed much of the way. Another smaller channel within a masonry pier allowed water to return to the course of the river via a water-wheel (now removed) and possibly allowed run-off during periods when the river level was too high. The leat, which leaves the river at this point to head NE towards Llanelly, no longer flows and has been partly eroded by the river. In places along its length, especially at bends it is also revetted with drystone walling. About 40m along, it is apparently joined by a second small leat which returns to the Clydach and may have acted as a water run-off. The leat and weir are now under consideration for Scheduling by Cadw (See diagram).

101. Hafod Inn, Blackrock (SO 2158 1261)
The Hafod Inn is shown on the O.S. 1891 map although the present building appears to date from c.1920-30. Built of red brick, it is now a residential building retaining 'Hafod Inn' which is cast in concrete above door. There is also a sign holder above the door and 'Rhymney & Crosswells (Brewery)' painted on both gable ends.

102. Drum & Monkey Inn, Blackrock (SO 2155 1257)
A two-storey building heavily altered in recent years though the remains of earlier masonry fabric is visible in the cellar below the western building. Possibly a building with an out-shut to the south, suggested by the pitch of the roofs. The alignment of the Clydach Railroad through the property respects the layout of the building, which suggests that it was already in existence by 1797 and that the railroad was following an earlier track/road through the property. A small outbuilding to the rear (now public house toilets) is built of roughly coursed rubble with wooden lintels, and has a roofline which has been raised above the eaves. Attached to this building is a later, barrel-vaulted coal-house to one side. The site of a further range of outbuildings, to the east of the Drum & Monkey, which are now demolished, lie below the current car-park. The Drum and Monkey was formally known as the Prince Albert.

103. Craig Cottage, Blackrock (SO 2149 1258)
A two-unit mid 19th century cottage built of well-coursed limestone and located on a south facing slope. The building is probably contemporary with the period of quarrying as with other buildings both east and west along Main Road.

104. Cottages, Blackrock (SO 2145 1252)
A row of cottages to the north of Main Road named Rose Cottage, Gelli View and Old Crown. All three have been substantially altered. Rose Cottage, a detached house to the west, was originally two dwellings and has now been converted to a single unit. Next door, to the east is Gelli View, originally known as the Old Blackrock Inn. The house furthest to the east is still known as the Old Crown (shown as the Crown Inn - O.S. 1891). Quarry Cottage which originally stood further to the west has been demolished. The three remaining buildings appear to be purpose built around the quarry industry. Prior to construction of the A465 (1963), further dwellings to the south formed part of an industrial-centered settlement and these public houses would have been an important foci for the community.

105. Blackrock Quarry, Blackrock (SO 2129 1250)
A large limestone quarry now used as a landfill site. Established during the early industrial period of the gorge (Van Laun 1979). An arch under the 1812 Turnpike road was built to accommodate a branch line from the Clydach Railroad to the quarry, but was destroyed during construction of the A465.

106. Road and foot bridges, Blackrock (SO 2114 1249)
A masonry road bridge along the line of the Turnpike road (now Main Road), and the remains of a parallel wooden footbridge supported on masonry piers below, spans the Nant Gwyn. The river is channeled below the road by a culvert. The road bridge possibly dates from 1809-1812.

107. Squatter's settlement/industrial site, Nant Gwyn (SO 2114 1248)
Below the bridge (No.106) there is uncoursed drystone masonry revetment along the banks of the Nant Gwyn associated with the remains of lime mortared walls on both sides of the of the stream. Their location next to a stream suggests that these buildings may have had an industrial use which made use of water during processing. At present the level of the Nant Gwyn appears to fluctuate, but would have originally have flowed more freely.

108. Track and D.S.W. landscape, Main Road (SO 2108 1249)
A substantial revetted track running east/west between the Main Road and the A465, associated with various drystone walled field boundaries down the slope of the hill. The track is truncated by drystone walling aligned north/south.

109. Milestone, Nr. Pont Gam (SO 2096 1260)
A milestone along the line of the old Turnpike Road built 1811-12 inscribed 'Abergavenny 7'. Rattenbury (1980) suggests that the Turnpike Road was built in 1809. This milestone is part of a mileage system along what was then the main road between Abergavenny and Brynmawr. No other milestones are recorded along this road.

110. D.S.W. landscape, Water Works, Pont Gam (SO 2077 1250)
A drystone walled field boundary running north/south. The boundary consists of a rough linear two-coursed stone bank. Either side is evidence of toppled stonework.

111. Llangattock-Brynmawr Tramroad, Brynmawr (SO 1945 1236 to SO 2209 1310)
At this point the A465 severs the line of a tramroad built in the early 1830's by J. & C. Bailey to link their ironworks at Nantyglo and Beaufort to the Brecon & Abergavenny Canal at Llangattock, passing the Darren Disgwylfa limestone quarries en route. From the 1840's locomotives were used on this route. This line was re-built as a standard gauge tramway and linked to the LNWR through Brynmawr in the 1870's.
GGAT/PRN B29

112. Clydach Railroad & bridge, Cwm Nantmelyn (SO 2022 1226)
This is a well preserved stretch of the Clydach Railroad running along the north face of the gorge and includes a masonry causeway with earthen backfill behind impressive revetting. A masonry bridge with iron cross-girders carried the tramroad over the Nantmelyn still survives. The Railroad dates from 1794 and linked the collieries at Brynmawr to the iron forge at Glangrwyne on the Usk.
GGAT/PRN B30

113. Branch line of the Clydach Railroad & colliery level (SO 2008 1218)
Masonry revetments and two coal adits (east and west) survive in the face of the cliff above the coal measures. These workings were served by early branch line tramroads which were related to the Clydach Railroad. On a cliff face, north-east of adit 'East' is an area of revetted masonry that marks the edge of a low gradient branch line.

114. Merthyr, Tredegar & Abergavenny Railway (SO 1968 1207 to SO 2190 1248)
The line of the MT & A was opened as far Brynmawr by 1862 (by 1866 this line had been taken over by the London & North Western Railway). From Abergavenny to Govilon the railway followed the alignment of the southern portion of the Llanvihangel Railway while much of the stretch from Govilon followed the route of the Bailey's tramroad which the company had acquired. The line eventually reached Merthyr Tydfil by the 1870's. The route through the Clydach gorge section is carried upon a substantial cutting into the cliff-face, to the south of the present A465. Towards the Brynmawr roundabout section of the A465 the MT & A is crossed by the remains of a skew bridge (No.119) built of large coursed masonry with a rubble core. At various places along this section of the line, on the cliffs both above and below the line, are substantial limestone revetments of a similar construction to this bridge suggesting that these were built at the same time by the MT & A Railway.

115. Ffynnon Gistfaen religious waterfall, River Clydach (SO 2068 1238)
A waterfall in the gorge below the level of the present A465, with possible religious associations.

116. Devil's Bridge, Cheltenham (SO 2154 1249)
A substantial masonry footbridge spanning the River Clydach probably dating from the eighteenth century for the transportation of minerals on pack-horses. Built of well-coursed masonry graded to smaller uncoursed stone at the upper levels. The arch is tall and regular with well-cut voussoirs, but there is evidence of collapse and re-building over the centre of the arch.

117. Clydach Bridge Cottages, Brynmawr (SO 1955 1212)
A row of four worker's cottages known as 'Clydach Bridge' cottages with a modern inscription dating them to 1836. These houses are all rendered on the outside and are covered by slate roofs. A masonry chimney is evident on the third building (from east) which may be the oldest.

118. Clydach Bridge, Brynmawr (SO 1964 1213)
A single-arched bridge incorporated within the A465 roundabout, all that remains of the original four-arched structure which carried the (1811-12) east/west Turnpike Road across the River Clydach at this point. Built of coursed limestone with evenly cut voussoirs the bridge is now partly reinforced on either side with concrete.

119. Skew bridge, Brynmawr (SO 1979 1211)
The partial remains of a coursed masonry bridge with a rubble core. The sharp dog-leg in the course of the pathway over the bridge on both sides suggests that this was built by the railway to maintain the course of an earlier tramroad or Rights of Way from the hillside above the MT & A.

120. 'Squatter' settlement & water courses, Clydach Dingle (SO 1922 1287)
A squatter settlement to the north of the A465 consisting of several small buildings built of limestone with a lime mortar bonding. Possibly related to localised open drift quarrying and coal outcroppings to the south. The main remaining dwelling, now partly demolished, is a masonry cottage built into the slope of the hillside above, and was probably originally one-storey high with an external chimney-breast and south-facing entrance. The remains of further outbuildings/cottages can be found nearby and lower down the dingle. The area is largely enclosed by drystone walling, and masonry revetments. The dried-up remains of a two culverts can be found further down the dingle adjacent to the A465. Above the dingle, to the east is an inclined linear platform which is considered to be a tramroad branch line (No.265). The culverts channel watercourses below the route of the tramroad (No.265).

121. Local open-cast coal workings & terraces, Brynmawr (SO 1847 1288)
To the south of the A465, and opposite site No.120, are a series of platforms and quarry holes which cut into the exposed coal-seams. The platforms have been interpreted as being local tramroads leading to open-cast workings. The outcrops were worked intermittently up to the 1930's (pers.com).

122. Bailey's Disgwylfa Tramroad, Clydach Dingle (SO 1905 1215 to SO 1935 1287)
Above the open-cast workings and terraces (No.121) and within the 50m corridor is a section of the Bailey's Disgwylfa Tramroad preserved on the hillside above the A465. In use by 1818, it brought limestone from the quarries at Daren Disgwylfa to Bailey's Nantyglo Ironworks. It also transported coal and ironstone which was mined either side of Clydach dingle at sites such as No.121 and No.120. The line was laid with an unusually narrow plate rail of 2ft 4in.. By the 1870's, when the O.S. surveyed the area, the section from Nantyglo to Clydach Dingle had been re-built as a standard gauge tramway and linked to the Llangattock Tramroad (No.111) whilst the remainder had been abandoned in favour of the Llangattock line.

123. Tramroad, Garn Lydan (SO 1753 1275 to SO 1756 1361)
The line of a north/south aligned tramroad crossing the course of the Preferred Route. It forms part of a localised network of tramroads either side of the A465. The function of the tramroad may have been to serve coal seams at Garn Lydan to the west. The tithe map of the area does not mark any tramroads, but only records land usage in a perfunctory manner. The 1880 O.S. does mark short lengths of tramroad in the area which appear to have been rebuilt as standard gauge railways and were connected to the main line.

124. Farm house and outbuildings, Garn Lydan (SO 1747 1242)
Remains of two dwellings and outbuildings one of which acted as a farmhouse with garden layout, drive and drystone walled boundaries. The farmhouse is brick built (probably Victorian) and was apparently unoccupied for c.40 years (pers.com). The cottage and outbuildings in the plot adjacent are built partly of uncoursed masonry with more recent additions.

125. Tramroad, Garn Lydan (SO 1803 1271 to SO 1703 1258)
Tramroad running west/east, parallel to, and south of, the A465. This tramroad was connected to the Garn Lydan Tramroad (No.123) at SO 1763 1257 and appears to serve extensive open-cast workings to the east at SO 178 126 to 193 125 (No. 121).

126. Coal workings and quarrying, Brynmawr (SO 1800 1270)
From Garn Lydan to Clydach Bridge there are extensive areas of disused coal and ironstone workings. The O.S. of the 1880's records this area as a unbroken mass of industrial activity.

127. Cwm Gwybedog patches and leats, Garn Lydan (SO 1694 1240)
An open expanse of early 19th century patch workings used for the localised extraction of outcropped iron ore and coal which served the Ebbw Vale and Beaufort Ironworks. Scratched into the surface are a number of watercourses and earthworks. To the east are a series of tramroads (Nos. 123 and 125) which provided transport for the industry.

128. Drift mines, Garn Lydan (SO 1702 1230)
To the south of the A465 and opposite a modern housing estate are at least three linear platforms extending at least 80 metres, which cut into a north facing slope. These are considered to be local coal terraces, possibly dating to this century.

129. Farmhouse & D.S.W., Afon Ebbw (SO 1646 1219)
A farmhouse located to the north of the A465, built of coursed masonry with brick window detailing, two brick gable-end chimneys and a later brick extension to the northern elevation. Behind the building is associated drystone walling.

130. Tramroad, Afon Ebbw (SO 1643 1209)
Line of a possible north/south tramroad running parallel to the Ebbw river, south of A465, not on the Preferred Route.

131. Primrose Cottage, Rassau Brook (SO 1538 1173)
A mid-19th century, two-storey, three-unit dwelling built of rubble masonry with a slate roof, two gable-end chimneys and a later porch and flat-roofed extension. The small sash windows of the first floor survive, but the others have been replaced. The building, which is enclosed within drystone walling, is bordered by a brook to the east.

132. D.S.W landscape, Nant y Croft (SO 1400 1100)
An extensive drystone walled landscape south and north of the A465 and probably associated with the two farmsteads to the south of the road (No.140).

133. Trefil Tramroad, Nant y Croft (SO 1407 1160 to SO 1458 1158)
The Trefil Tramroad was built in 1797 to carry limestone from the extensive quarries at Trefil on the eastern bank of the Sirhowy River on Mynydd Llangynidr to a connection with the Rassau tramroad at Beaufort. Today, the route of the tramroad is represented by the road leaving the A465 east of Wells Farm, passing south of the farm and continuing west and then north-east onto the mountain. In places, the tramroad is well preserved with substantial revetting either side to form a raised platform.

134. Lamp-stand and manhole cover, Nant y Croft (SO 1478 1158)
An early twentieth-century lamp-stand and man-hole cover opposite Station House, Trefil along the line of the Trefil Tramroad. Man-hole cover inscribed 'Ebbw Vale'.

135. Quarry and D.S.W., Nant y Croft (SO 1500 1160)
A limestone quarry partially enclosed by drystone walling. Part of the walling has been removed to the NE through quarrying activities suggesting that the quarrying is later than the drystone walling.

136. Craig House, Nant y Croft (SO 1493 1159)
An early 19th century cottage forming part of a row of houses along the Trefil Tramroad (the present Rassau Road) settlement of Nant y Croft. Prior to the A465's truncation of the settlement, the row of houses extended south, forming an early ribbon development.

137. Hirgan Farmstead and outbuildings (SO 1433 1134)
A farmstead with the remains of an early masonry rubble-built barn/cowshed with squared quoins forming the outshut of barn which has now been replaced in corrugated iron. A drystone wall landscape associated with this farmstead includes a sheep-fold c. 19th century surviving to c.1.5m high.

138. Rassau Tramroad, Nant y Croft (SO 1470 1155 to SO 1569 1154)
A section of the Rassau Tramroad is located south of the settlement of Nant y Croft and may link up with the Trefil Tramroad (No. 133) and Mineral Line (No. 139). The Ordnance Survey suggests that the route is a dismantled railway which possibly terminates at SO 1475 1150.

139. Mineral Line, Nant y Croft (SO 1475 1150 to SO 1500 1152)
The Mineral line to Ebbw Vale is possibly an extension of the Rassau Tramroad (No.138). Later, it is suggested that it becomes a branch-line of the London and North-Western Railway. It must be stressed that all three tramroads at the point south of Nant y Croft require further research.

140. Farmstead and outbuildings, Nant y Croft (SO 1517 1152)
Two tofts and associated dwellings. To the west is a derelict two-storey 19th century farmhouse, built of masonry but partly rendered on the outside. To the east is a small coursed masonry cottage and barns with gable-end chimney, tin roof and outshut, possibly a mid-19th century squatter's cottage.

141. Old Hargan Fach and D.S.W. landscape (SO 1372 1099)
A small, one-storey building with brick lintels over windows and door. Internally, the front room has a blocked fireplace, and externally there is a window into the loft-space above. To the rear there is an outshut with catslide roof. To the east is a two-storey extension with brick detailing around the windows, a slate roof and a brick chimney in the eastern gable. The farmstead dates from the early to mid 19th century.

142. Merthyr, Tredegar & Abergavenny Railway, Dukestown (SO 1363 1083 to SO 1334 1092)
Between Nantybwch and Dukestown, the A465 deviates from the line of the LNWR branch which it otherwise follows from Dowlais to Rassau, leaving an isolated stretch of railway track-bed to the north. This section crosses the Sirhowy River on a curved embankment and viaduct which was built for the second section of the Merthyr, Tredegar & Abergavenny line (opened between Brynmawr and Nantybach in 1864). The line cuts through the southern extent of Dukestown cemetery before being rejoined by the route of the A465. The line was closed in 1958.

143. Railway viaduct, Dukestown (SO 1329 1093)
A viaduct of nine arches, c.90 metres long, which is built of squared masonry with a four brick thickness of voussoirs over the arches and a stone parapet wall. The remains of a parallel cast-iron structure (a bridge or buttress) to the south, standing to 0.5m high in places is visible. The viaduct was built for the second section of the MT & A line which opened between Brynmawr and Nantybwch in 1864.
GGAT/PRN 3624 G

144. Earthworks and D.S.W., Dukestown (SO 1323 1083)
A series of earthworks/platforms visible including a drystone walled remains of a sheepfold; the latter is now partly truncated by a modern housing estate.

145. Cast-iron weir, Dukestown (SO 1342 1077)
A weir built of cast-iron plates across the Afon Sirhowy with intermediate area filled with squared masonry. On the down-slope end of the weir are further masonry revetments. At the top are further cast-iron plates. A possible leat runs NE above the weir to serve the Sirhowy Ironworks.

146. Trefil Tramroad, Nant y Bwch (SO 1295 1111 to SO 1313 1076)
The Trefil tramroad, Tredegar Branch was built to carry limestone from the extensive quarries at Trefil on the eastern bank of the Sirhowy River to a junction with the Rassau Road at Trefil Machine. It was approximately 4.2 km and built by T. Dadford Jr. The tramroad was in operation between 1797 and 1860.

147. Merthyr, Tredegar & Abergavenny Railway, Waundeg (SO 1325 1093 to SO 1274 1064)
A section of the MT & A Railway approximately 250 metres in length south of the settlement of Waundeg. At this point, there was probably a railway station. North of the line is a row of cottages known as 'Station Terrace' (SO 1295 1074).

148. Siloam Chapel, Tafarnaubach (SO 1204 1047)
A chapel with date plaques of 1844 & 1877, and an inscription in Welsh. The architecture of the building is typical of other chapels of this denomination and date within the region.
GGAT/PRN 4095 G

149. Welfare Hall, Tafarnaubach (SO 1188 1036)
A substantial brick building, built in 1937, and rendered externally. The date suggests that the hall was built in honour of the coronation of George VI.

150. Bronze Age find spot, Tafarnaubach (SO 1170 1010)
A findspot discovered during the course of the construction of the A465 in 1964 consisting of two damaged socketed palstaves found in what appeared to be a log-lined pit, within peat deposits. Finds now in National Museum of Wales.
GGAT/PRN 2316 G

151. Farmstead, Bryn Bach (SO 1253 1052)
The remains of a demolished farmstead with brick and masonry rubble surviving together with brick gate pillars, probably dating from the late 19th century.

152. Leat system and 'kettle-hole' quarries, Princetown (SO 1134 0982)
An extensive early to mid 19th century industrial landscape comprising of a leat system, 'kettle-hole' quarries and crowsfoot tips south of an early Turnpike road (now the B 4257). It would appear that the leat system predates these other industrial features. The coal tippings are located either side of the A465 and are probably incorporated into its foundations. The 1880 O.S. map marks a number of small tips in the locality on either side of the L.N.W.R. (the present route of the A465). To the north-east and parallel with the A465 is a leat system which served the Union Furnace at Llechryd established in 1801. This leat system has been truncated by the present A465 and was fed by the Mynydd Llangynidr.

153. Mining tips and quarry, Princetown (SO 111 096 to 112 096)
Either side of the A465 is a series of coal tips and earlier quarrying levels. These features are associated with the industrial landscape to the north and possibly date from the mid-19th century. Beneath these features and to the east is an earlier drystone walled landscape. Further to the west is a substantial gully orientated north/south (SO 1110 0965) (No. 171) and located between the A465 and a branch road of the B4257.

154. Industrial building, Princetown (SO 1110 0970)
A substantial red brick building (associated with No.155) with concrete slabbed roofing standing alongside the old Turnpike road (now the B 4257) and to the north of the A465. It was probably related to a railway/industrial since the route of the LNWR ran close by, but is now used as stables.

155. Earthworks (demolished building), Princetown (SO 1111 0970)
Attached to the above building (No.154), and pre-dating it, are the remains of a partly demolished masonry building with an internal fireplace.

156. D.S.W. landscape, Blaen Rhymney (SO 107 097 to 113 096)
Surrounding and incorporated within the early industrial landscape at Princetown is an earlier drystone walled field-system running either side of the A465.

157. Railway bridge and tunnel, Llechryd (SO 1057 0961)
A large and impressive tunnel and embankment to carry the line of the Merthyr, Tredegar & Abergavenny Railway over the Afon Rhymney. The tunnel is built in two phases with the section behind the north facade consisting of a brick arch on top of a masonry plinth. Between this section and the remainder of the tunnel to the south there is a 'straight joint' and the construction changes to large coursed limestone blocks. This indicates two separate phases of construction, with the larger section to the south probably being the earliest. The southern portion is built in two sections punctuated by 'building-breaks' at which point the height of the tunnel changes; the section furthest to the north of tunnel having the tallest, narrowest arch. The northern facade of the tunnel and the retaining walls are built of rusticated limestone and form a two metre high plinth along the length of the tunnel upon which the yellow brickwork is laid to form the construction of the arch. The masonry retains putlog holes in the stonework from the original internal formwork/scaffolding used during construction. The second section of tunnel, further to the south (the earliest phase), has a more rounded arch and is composed of rusticated masonry blocks.

158. D.S.W. landscape, Blaen Rhymney (SO 1054 0964)
An area of land to the north of the A465 and adjacent to the Afon Rhymney which is separated from the river by drystone walling. The walling is found along the stretches of low lying flood-plain land along the western bank of the river

159. D.S.W. landscape and building platforms, Afon Rhymney (SO 1050 0978)
An northern extension of the drystone walled landscape of No.158 along the flood-plain of the western bank of the Afon Rhymni. It is at this point that the boundaries are associated with the remains of a demolished masonry building, probably with an agricultural function.

160. Northern section of leat system, Blaen Rhymney (SO 1045 0994 to SO 1052 0960)
A north/south aligned leat on the hillside to the west of the course of Afon Rhymni consisting of a ditch intermittently reinforced by stone revetting along the sides, with a turf bank on the downslope (eastern) side. The leat, which no longer flows, carried water from the river to the Bute Town Reservoir, south of the A465. Bute Town Reservoir was built to serve the Rhymney Ironworks. The leat is channeled below the course of the road in a stone-lined culvert, probably built for the MT & A railway, and is still visible on the southern side of the A465. This leat is marked on the O.S. of the 1880's and appears to be the main feeder for Bute Town Reservoir; other feeders are also recorded to the west (No.165). The 1971 O.S. also records this leat as a watercourse, suggesting that it was still functioning until quite recently.

161. Road platform, Pleasant View, Llechryd (SO 1039 0956 to SO 1033 0953)
This is a road which is still visible as a linear track across a field was the original alignment of the 'B' class Merthyr common road which still survives to the west.

162. D.S.W & T.S.W system, Bute Town (SO 1010 0930)
South of the A465 and north of the Bute Town Reservoir are a complex series of drystone and turfstone walling. Both features have been truncated by later railway fencing (MT & A) and a leat system (No.165), orientated east/west. The drystone and turfstone walling is also truncated by the Bute Town Reservoir, thus pre-dating it. North of the A465, there is no evidence of any continuation of the field-boundary system therefore confirming it's status as common land.

163. Railway furniture, Bute Town (SO 0960 0910)
A line of concrete posts originally set by the MT & A railway are located approximately 5 metres to the south of the A465, on a linear platform. The line of posts extend for about 60 metres aligned east/west.

164. D.S.W landscape, Bute Town Reservoir (SO 0940 0900)
South of the A465, and incorporated around two small farmsteads known as 'Gypsy Castle', are a series of early drystone walled boundaries. Both these, and the field boundaries around Blaencarno Farm and Nant yr Helyg, would originally have been continuous.

165. Leat system, Bute Town Reservoir (SO 0980 0927)
The remains of an east/west leat consisting of a ditch with stone and turf banks extending for some 200 metres, and related to the Bute Town reservoir (which was built to serve the Rhymney Ironworks) to the south. To the north of the leat are a number of streams that feed into the leat from Blaencarno common, north of the A465. Interspersed along the leat are feeder gullies that run into Bute Town reservoir. The leat system cuts into earlier drystone walling (pre-mid nineteenth century) (No.164). The 1886 O.S. marks an arc of five leats feeding Bute Town Reservoir on its northern side, four of them originating in springs on the hillside above and the fifth leading off the Carno Brook to the west.

166. Masonary bridge, Graig Lwyd (SO 1019 0929)
A small road bridge with a masonry facade and brick interior arch over a minor stream flowing to Bute Town Reservoir. The bridge forms part of a farm track to Nant yr Helyg Farm.

167. Gullies and earthworks, Bute Town (SO 1020 0934)
South of the A465, close to Bute Town reservoir are a series of gullies and Post-Medieval (industrial) earthworks, which may be related to the nearby leat-system. The earthworks, linear in form, are orientated roughly north-south.

168. Skew bridge, Llechryd (SO 1042 0944)
A concrete bridge, built to carry the road over the cutting for the Merthyr, Tredegar & Abergavenny Railway, but now disused. Part of the iron reinforcing fabric is visible on the southern parapet wall. It is believed locally that the cutting below this bridge exceeds 6 metres in depth (pers.com.).

169. Station House, Llechryd (SO 1046 0951)
The Rhymney Bridge Station House at Llechryd on the Merthyr, Tredegar & Abergavenny Railway, now re-used as a domestic building of the same name. Situated on a bank above the present A465, the station and platforms were originally served by the railway in a cutting below the level of the present road (No.168) approaching from the south and exiting north-east following the course of the A465. The building displays no features of special architectural interest and the exterior is heavily obscured by render.

170. Southern section of leat system, Llechryd (SO 1052 0953 to SO 1053 0950)
This section of the main leat (No.160) extends under the A465 through a culvert and can be followed for approximately eight metres to the south of the road, until it terminates half way up a gradual north-facing slope. The gradient of the watercourse is slight, but it runs in a north to south direction toward Bute Town Reservoir.

171. Gullies and tips, Princetown (SO 1110 0969 to SO 1111 0963)
Orientated roughly north/south and south of the A465 is a deep gully which runs from a high embankment above the road to a side road of the B 4257. Possibly associated with quarrying to the east.

172. D.S.W. landscape, Princetown (SO 1120 0965)
Underlying, and in places overlying, coal tips are the remnants of an early drystone wall landscape which probably pre-date the industrial phase of this area.

173. D.S.W & T.S.W landscape, Blaencarno Common (SO 0860 0890)
Within the 'impact zone', north of a series of (industrial) linear scratches are the remnants of an early drystone and turfstone landscape that extends further north and east beyond the Merthyr Common road. Traces of turfstone walling can also be seen on the Blaencarno Common.

174. Ventilation/water shafts, Blaencarno Common (SO 0883 0891)
Located along the intermediate slopes of Blaencarno Common between the A465 and the Merthyr Common road are a number of circular features that are associated with the mining industry, two of which are ventilation/water-drainage holes that are located 25 metres east of the Bronze Age cairn (No.175).

175. Bronze Age Cairn, Blaencarno Common (SO 0887 0890)
Remnants of a small a dough-nut shaped cairn c.3-4 metres in diameter and about 1 metre high built of medium sized rubble probably Bronze Age in date. Although there is later material surrounding, including brick and slag, this structure does not appear to have had any industrial function. Aerial photographs show further similar features to the north and east, but outside the 50m corridor; this landscape may therefore represent the remnants of a Bronze Age cairn field.

176. Industrial earthworks, Merthyr Common (SO 0851 0890)
Located to the north of the A465, and west of Blaencarno Common are a number of heavy scratches which extend over 150 square metres. Linear in form, these features overlie earlier coal-tips. To the south, and incorporated into the A465, are extensive coal-tips (No.178). Between the scratches and the coal-tips is a small stream that feeds onto Blaencarno Common. Iron-ore deposits are visible within the bank section.

177. Railway furniture, Merthyr Common (SO 0842 0862)
A line of concrete posts delineates the northern extent of the Abergavenny, Tredegar & Merthyr Railway. Approximately two metres south the route has been infilled by later coal tips.

178. Coal tippings, Blaencarno Farm (SO 0890 0876)
These spoil-tips, which are still visible, are marked on the O.S. of 1880 and are partly incorporated into the foundations of the A465.

179. 'Dig for Victory' allotments, Blaencarno Farm (SO 0892 0884)
A series of four allotment gardens dating from the W.W.II 'Dig for Victory' campaign and originally belonging to the occupants of seven cottages (shown on tithe of 1842 and O.S. of 1880) which stood adjacent to Blaencarno Farm, but which have now been demolished. The features consist of low drystone walls which delineated the extent of the various allotments.

180. Culvert, Blaencarno (SO 0899 0890)
A culvert below the line of the present A465, constructed of well-coursed masonry and built when the Merthyr, Tredegar & Abergavenny Railway followed this route.

181. D.S.W., Blaencarno (SO 0975 0910)
To the south of the A465, and east of Gypsy Castle are the remnants of a drystone walled landscape which incorporates an 'L'-shaped feature (SO 0958 0910) which is constructed of turf and stone. To the south, the area is well-drained by several streams and artificial watercourses. To the north, the field system is truncated by the boundary of the MT & A Railway. Aerial photographic evidence also highlights a possible ringed feature nearby (SO 0968 0914), approximately 8-10 metres in diameter.

182. Railway furniture, Blaencarno (SO 0920 0930)
To the north of the A465 is a line of concrete railway posts. These delineate the northern width of the MT & A Railway. To the south of the posts are the remnants of a raised platform which marks the limit of a double track width.

183. Station House, Dowlais Top (SO 0800 0845)
Built adjacent to the Brecon & Merthyr Railway (B. & M.), close to a junction with the LNWR Dowlais Extension of 1873, which linked the Merthyr, Tredegar & Abergavenny Railway at Dowlais Top and the Brecon & Merthyr Dowlais Branch at Ivor Junction. The B. & M. line to Dowlais Top was opened in 1863 although the two-storey station house, which is constructed of rusticated coursed masonry, may be later. The building is typical of 19th century railway architectural. The platform area to the west of the station house has now been landscaped.

184. Brecon-Merthyr Railway (Dowlais Top) (SO 0804 0849 to SO 0839 0863)
The main line of the Brecon & Merthyr Railway opened in 1869 and ran from Dowlais Central to Pant, parallel for most of the way with the present road between these places. At Pant it was joined by the earlier B. & M. main line to Brecon via Pontsticill opened in 1863.

185. Brecon-Merthyr Railway embankment, Dowlais (SO 0750 0836)
A large section of embankment belonging to the Brecon & Merthyr Railway exists west of the Dowlais Top roundabout, close to the easterly section of the Upper Reservoir leat system (No.186). The route of the railway at SO 0729 0849 veers north alongside the northern bank of the Upper Reservoir towards Brecon. The original line between Dowlais Top station and SO 0750 0840 roughly follows the northern limit of the present A465.

186. Eastern leat system, Upper Reservoir, Dowlais (SO 0750 0834 to SO 0729 0848)

A well preserved leat running for approximately 300 metres and incorporating two aqueducts (No. 187) is located within a narrow piece of land belonging to Welsh Water. Orientated east/west, traces of original brick-work are visible along its entire length. This leat feeds water into the Upper Reservoir

187. Aqueducts under leat, Upper Reservoir, Dowlais (SO 0733 0842)
Two nineteenth century aqueducts constructed of unmortared sandstone masonry are located approximately 15 metres north of the A465, close to the perimeter fence of the Asda superstore (Dowlais Top). The upper lining, which is constructed of Victorian yellow-brick and in places repaired with concrete, is exposed on both aqueducts.

188. Upper Reservoir, Dowlais (SO 0720 0850)
Two reservoirs (Upper and Lower) (No.195) are located either of the A465. Upper Reservoir is the larger of the two and has two leat systems (Nos. 186 & 191) feeding into and out of it. The southern embankment is raised approximately five metres in order to overcome the natural contours of the landscape. Below the embankment to the south-west is an associated water pumping/release station (No. 189). This reservoir is the more modern of the two, and was built by the time of the preparation of the first edition of the O.S. 1:2500 map in 1872-85.

189. Pumping station, Upper Reservoir, Dowlais (SO 0705 0851)
Below the Upper Reservoir is a 19th century pumping station constructed of red brick with a later low concrete slab roof.

190. Inspection road, Upper Reservoir, Dowlais (SO 0728 0846 to SO 0692 0868)
Surrounding the Upper Reservoir is a concrete inspection road, approximately three metres in width. It appears to be equi-distant between both the Upper and Lower Reservoir as well as the leat system to the west. A smaller road links the Upper and Lower (No. 195) Reservoir via the pumping station (No. 189).

191. Western leat system, Upper Reservoir, Dowlais (SO 0688 0867 to SO 0692 0849)
To the west of the Upper Reservoir is a north/south orientated leat with an extensive brick and stone masonry lining visible. Flowing north to south, the leat is 1 metre in depth by 1.5 metres wide and runs approximately 200 metres north of the A465. The leat south of the road feeds into Lower Reservoir.

192. Branch line of Brecon & Merthyr Railway, Dowlais (SO 0668 0887 to SO 0733 0804)
To either side of, and below, the A465 is the remains of a substantial north/south cutting originally part of the branch line of the Merthyr & Brecon Railway. Opened in 1869, the branch line ran from Dowlais Central (south of A465) to Pant in the north. At Pant, the branch line converges with the main earlier Brecon & Merthyr Railway (to Brecon via Pontsticill) opened in 1863.

193. Branch line of Brecon & Merthyr Railway, Dowlais (SO 0675 0856 to SO 0666 0859)
To the north of the A465 is the course of an east/west connecting line between the main line of the Brecon & Merthyr Railway to Brecon (via Pontsicill) in the west (No.194), and the branch line of the Brecon & Merthyr Railway to the east (No.192). The route has now been substantially disturbed by development, but is still indicated by the presence of railway posts.

194. Brecon & Merthyr Railway (to Pontsticill), Dowlais (SO 0664 0884 to SO 0651 0840)
Below the A465 and to the west of the Brecon & Merthyr Dowlais Branch is the Brecon & Merthyr Railway main line to Brecon via Pontsticill - opened in 1863. At Pant, this line converges with the later Dowlais Branch of the Brecon & Merthyr Railway - opened in 1869 (No. 192). Directly below the A465 fly-over along the course of this line a set of railway signals are still visible.

195. Lower Reservoir, Dowlais (SO 0730 0830)
The smaller and more southerly of two inter-linked reservoirs, the Lower Reservoir was built prior to the completion of the Merthyr Tydfil tithe map of 1850, whereas the Upper Reservoir was added later in the century (No.188). Constructed to supply water to the Dowlais Ironworks.

196. MacDonald's Restaurant, Dowlais Top (SO 0783 0822)
Constructed during the early 1990s, this Post-Modernist fast-food restaurant is one of only a few 'Drive-thrus' situated within this part of Wales. Constructed of red brick to a 'MacDonalds' standardised design, this building will be directly impacted by the dualling.

197. DSW. landscape, Gurnos (SO 0485 0870)
To the north of the A465, east of the Castle Morlais Tramroad (No.200) is the remnants of a drystone walled landscape.

198. Lime kilns, Castle Morlais Tramroad, Gurnos (SO 0471 0872)
The remains of at least three circular, corbelled lime-kilns constructed of unmortared, uncoursed rubble stonework (standing to a height of c.1.5m) are located on the eastern edge of a large coppiced woodland, next to the Castle Morlais Tramroad (No. 199). This tramroad would have supplied the raw materials used to charge the kilns, the resultant lime was probably being used for agricultural improvement of the land surrounding Gurnos Farm (No.204).

199. Coppice and D.S.W. landscape, Gurnos (SO 0470 0870)
West of the Castle Morlais Tramroad is a large coppice area which incorporates three lime kilns (No. 198). It is possible that the coppice supplied fuel for the kilns as well for the farm.

200. Castle Morlais Quarries Tramroad, Gurnos (SO 0473 0892 to SO 0473 0867)
The course of the tramroad which was built in 1803 crosses the A465 at this point. It brought lime and limestone from Castle Morlais quarries down to the Dowlais Ironworks. The line was constructed of a plateway with mixed 2ft.9in. and 4ft. 2in. gauge track and the route is marked on the tithe map and OS of 1880.

201. Possible quern stone, Gurnos (SO 0455 0866)
Within a field (No.197), around 150 metres east of Gurnos Farm, a possible quern-stone (with acute bowling on one face) was identified, which is probably of prehistoric date.

202. D.S.W. landscape and sheep pen, Gurnos (SO 0450 0865)
Approximately 110 metres to the east of Gurnos Farm is a semi-circular drystone walled enclosure which appears to have been truncated to the south by the construction of the A465. Inside the semi-circular feature there is evidence of stone clearance, whilst externally the surrounding fields are littered with limestone outcrops and possible quarrying. Following the external circumference of the walling is a stream linked to other watercourses to the north.

203. Gurnos Farm workers cottages, Gurnos Farm (SO 0435 0863)
Three farm worker's cottages of 2 bays, and 2 storeys high with painted brick window & door detailing and coursed, rusticated masonry. Architecturally very similar to Gurnos Farm the buildings probably acted as tied cottages for agricultural laborers.

204. Gurnos 'model' Farm, Gurnos (SO 0430 0864)
Gurnos 'model' Farm was occupied, but not owned, by William Crawshay. A tithe award was prepared in 1846 and then encompassed to 209 acres. Consisting of a farmhouse covered by striated render imitating ashlar masonry, painted windows and door detailing, with a front porch and decorative barge boards. The main body is of 3 bays in length with a hipped roof. To the side is an extension with a pitched roof of Welsh slate. Either side of house are single-storey stable blocks (the western wing forming a 'c' shaped layout) built of uncoursed stone with brick detailing. At the centre of the courtyard is a lofted barn built of coursed stone. The farm is unusual in being a planned courtyard farm, and the layout dates from before 1880 O.S. It may have been erected by William Crawshay II as part of his development of the Cyfartha estate, which included a large amount of ornamental planting between Gurnos and his seat at Cyfartha Castle.

205. D.S.W. landscape, Gurnos Farm (SO 0423 0860)
Directly to the west of Gurnos Farm and incorporated into the outer walls of the farm complex is a series of drystone walling, part of which encloses a small coppice. Drystone walling also forms part of a side entrance to the farm complex.

206. Viaduct A, Taf Fechan, Cefn-coed-y-cymmer (SO 0335 0815)
One of the bridges designed by road engineers Rendel, Palmer & Tritton with Alex Gordon and Partners as consultant architects it employs twin parabolic arch ribs to carry the road above over the gorge.

207. Gurnos Leat system, Cefn-coed-y-cymmer (SO 0342 0829 to SO 0373 0767)
A leat below the present A465, and parallel to the Taf Fechan and Gurnos tramroad. Built in 1792 it is constructed of red brick with masonry coping stones. It was used to supply Cyfartha Ironworks with water and still flows to this day.
CADW/SAM GM478

208. Gurnos Tramroad, Cefn-coed-y-cymmer (SO 0341 0830 to SO 0372 0767)
The course of the Gurnos Tramroad below the present A465, and parallel to the Taf Fechan and the Gurnos leat. Built to supply limestone to the Cyfartha Ironworks.
CADW/SAM GM478

209. Footbridge over Brecon-Merthyr Railway, Cefn-coed-y-cymmer (SO 0327 0821)
Thirty metres northeast of the a railway bridge (No.211) spanning the present A465 is a four-girder iron footbridge with cross concrete plinths. The adjoining bank is revetted with rusticated ashlar masonry.

210. Gurnos Limestone Quarry, Gurnos (SO 0355 0828)
A well-preserved late eighteenth century quarry excavated to supply Cyfartha Ironworks with limestone. Described as 'Quarry and Pasture' on the tithe map and associated with a network of tramways on the quarry floor which were shown on the 1880 O.S.

211. Railway bridge, Brecon & Merthyr line, Cefn-coed-y-cymmer (SO 0324 0814)
A bridge once carrying the Brecon & Merthyr Railway across the line of the Merthyr/Abergavenny Railway (now the A465). It appears to have been replaced during construction of the A465 in 1964. The bridge is constructed iron riveted plates supported by iron girders.

212. Capel Tabor and cemetery, Cefn-coed-y-cymmer (SO 0297 0808)
Tabor chapel was built in c.1850, and rebuilt in 1904 in a Neo-classical style, as a 2 storey building with a basement. The first floor has decorative keystones and mouldings to windows on front elevation. The ground floor has decorative long/short work around the windows and corners, the side door and porch. At the basement level there is a side entrance and porch. The associated graveyard dates from c.1850 and has a number of decorated headstones, some written in Welsh. The chapel was restored in 1989.

213. Prehistoric hut circle, Cefn-coed-y-cymmer (SO 0297 0804)
An area of possible Iron Age activity west of Cefn-Coed-y-Cymmer described as a 'Celtic hut circle' (GGAT) consisting of a simple earth mound and a single broken quern stone. The area indicated by the SMR grid reference is now within a large cutting made for the A465 and has therefore been destroyed.
GGAT/PRN 1104 M

214. St. John's Church, Cefn-coed-y-cymmer (SO 0329 0806)
Designed by Cardiff architect George Edward Robinson in 1880 and typical of 'High Church' architecture of the period. The church is built in a 'Gothic' style with a tower in the north aisle, a porch over the south-eastern entrance, decorative stain-glass windows and is buttressed on all sides. The windows in the nave are decorated with gothicised tracery. The whole church is built of uncoursed masonry, except for the window ornament and the well-cut, rusticated quoins, and covered by a Welsh slate roof. Associated with a stone & brick chapel opposite.

215. Medieval coin hoard, Cefn-coed-y-cymmer (SO 0328 0805)
Close to St. John's Church, Cefn-coed-y-cymmer was discovered a hoard of 31 silver coins, all dating before A.D.1325.
GGAT/PRN 1887 M

216. Stone structure, Cefn-coed-y-cymmer (SO 0372 0430)
South of present A465, and situated at the bottom of a scree slope (south-west facing) are two large slab-stones (limestone) that are positioned over what is possibly a series of orthostats. At the southern end the larger of the two slabs is embedded into the soil; a so-called 'earth-fast monument.'
217. D.S.W. landscape, Gurnos (SO 0408 0840)
A substantial drystone wall which is partly revetted on the west side, runs for approximately 150 metres, south of the A465. It stands in places at 1.5 metres high and may have supported a trackway behind to the south.

218. Grawen Cottages, Cefn-coed-y-cymmer (SO 0285 0814)
A terrace of two-storey, two bay worker's cottages with a central entrance and a lean-to at back although many have now been altered. Built of uncoursed masonry with brick arched lintels over doors and windows, these were shown on the O.S. of 1880 and probably date from the mid-nineteenth century.

219. D.S.W. landscape, Coed Meurig (SO 0238 0748)
To the north-east of Coed Meurig farm is a drystone walled field-system which extends approximately 60 metres to the east. Associated with the lofted cow shed (No.222).

220. Buttressing under Nant Ffrwd Viaduct (SO 0248 0752)
The remains of earlier masonry abutments incorporated within the structure of the Nant Ffrwd concrete viaduct (No.221 C) (1964).

221. Viaducts (A465), Cefn-coed-y-cymmer (B=SO 0282 0789, C=SO 0250 0750)
A further two 1960's concrete viaducts are located further west of the Taf Fechan viaduct; all three won Civic Trust Awards in 1968. The road is supported by two single-span elliptical arches with vertical struts. The bridges were designed by road engineers Rendel, Palmer & Tritton with Alex Gordon and Partners as consultant architects. Those over the Taff Fechan and Nant Ffrwd employ twin parabolic arch ribs to carry the road above and the central bridge over the Taff Fawr has three spans cantilevered from two piers. No.221 A (No. 221 B (SO 0282 0789) - over Taf Fawr; No. 221 C (SO 0250 0750) - over Nant Ffrwd.

222. Lofted cow shed, Coed Meurig Farm (SO 0226 0745)
Coed Meurig lofted cowshed of six or seven bays in length with external stone staircase at the eastern end to the hayloft above. Built of uncoursed masonry with brick detailing, wooden lintels. The roof trusses have been entirely replaced and covered with a Welsh slate roof. There are the remains of full-length double doors at the rear (northern elevation), mirrored by a similar blocked entrance to the front, which appear to have been used as threshing doors. Ventilation slits either side of these entrances also suggest that fodder was stored in this building. Internally the stalls and hay racks are still present. Externally, there are associated sheep pens, a sheep dip and a cobbled yard which surrounds the cowshed. These farm-buildings are clearly marked on the Merthyr tithe map of 1850 and the schedule of 1846. The latter, lists Coed Meurig as a farm of 37 acres.

223. D.S.W. landscape, Nant Ffrwd (SO 0240 0745)
Remnants of drystone walling located south-east of Coed Meurig Farm which represents part of the associated field-system enclosing the farmstead.

224. Coal tippings, Baverstock (SO 0260 0720 to SO 0100 0720)
To the east of the Baverstock settlement and parallel to the present A465 to Cyfarthfa are sequence of coal tips. These tips are related to either the Cyfarthfa or Llwydcoed Ironworks. To the east of the settlement, are a number of horizontal mine-shafts which cut into a north facing slope of Bedd y Gwyddel, from which the waste is formed into a series of crow-foot tips to the north (See diagram).

225. D.S.W. landscape and sheep pen, Coed Meurig (SO 0220 0735)
A substantial drystone walled landscape which incorporates a sheep fold, both are at present related to Coed Meurig Farm. The walling on the southern side of the A465 is arranged in order to funnel livestock towards the lofted cow shed (No.222) at Coed Meurig Farm (north of A465).

226. Stone rubble-demolished cottage, Baverstock (SO 0110 0740)
Area of stone rubble spread suggesting the site of a cottage that was demolished 30 years ago (pers. com.). The cottage would have been part of the Baverstock settlement (No.232). Drystone walling either side of the A465 links the two sites.

227. D.S.W. landscape, Baverstock (SO 9970 0717)
Drystone wall field system running either side of A465, possibly related to drystone walling, approximately 150 metres to the west (No.228).

228. D.S.W. & T.S.W., Lech Sychrhyd (SO 9947 0700)
Remnants of a drystone walled and turf boundary landscape now bisected by A465. To the north, landscape has been much altered due to extensive forestry plantations.

229. Track, Lech Sychrhyd (SO 9960 0704 to SO 9958 0680)
A track to the south of the A465 which is visible at ground level. It has a slightly raised platform running north/south. It is possible that this track once continued further to the north of the A465, but forestry planting in this area has now destroyed any possible evidence.

230. Dam and possible sluice system, Lech Sychrhyd (SO 9969 0690)
South of A465 is a probable damming system that incorporates a substantial oval-shaped series of banks and a sluice. The banks have been cut and enlarged around a small stream

231. Fairfield House (Giant's Head Inn), Baverstock (SO 0055 0728)
Cottage adjacent site No.232, is believed by the owner to be a masonry-built public-house of at least the Victorian era, originally known as the 'Giant's Head' after the 'Giant's Grave' pillow mound on the hill to the south. The house is of two-storeys and three bay design with two gable-end chimneys and buttressing to the north gable wall, which was rebuilt in the 1970's after severe subsidence. Externally the building has concrete roof tiles and inserted double glazed windows as well as been rendered outside walls.

232. Settlement and field system, Baverstock (SO 0073 0730)
Located SE of Baverstock Hotel is a complex series of field systems of substantial turf and drystone walling representing gardens, enclosures and drainage systems. Areas of rubble concentrations seem to indicate house platforms and the associated banks may be the remains of post-medieval tofts. The surface finds of pottery and glass indicate continuing usage and the tipping of domestic refuse throughout the nineteenth century. On the hillside above the site is a multi-period landscape with a number of features including several Bronze Age ring cairns and an unusual raised turf cross described as a 'pillow mound', known locally as the 'Giant's Grave'. This latter feature, although with no supporting evidence, is indicated by the SMR as the possible site of a medieval windmill (GGAT). This, however, seems to be a somewhat unlikely inference as the surrounding landscape supplies ample opportunity for the harnessing of water-power. The Merthyr tithe map of 1850 marks two cottages, now demolished, close to the site of the Dynevor Arms, one of which is likely to be directly impacted by the dualling, whereas the other is on the edge of the 50m corridor. These may have been built by miners working the outcrops of coal and iron up slope (See diagram).

233. Coal workings and tips, Baverstock (SO 0069 0727)
The remains of early open-cast workings possibly aided by water extraction located behind the Post-Medieval settlement of Baverstock (No.232). The tippings have been purposely dumped in order not to extend beyond field boundaries close to the settlement. They stretch for approximately 110 metres and merge into substantial coal tippings running east to the settlement of Cyfarthfa.

234. Nant Hir Reservoir (SO 9890 0690)
The Nant Hir Reservoir, of mid-19th century date, was built by the Aberdare Water Works Co. The reservoir which is now bisected by the A465 is not found on the tithe map, but is shown on the O.S. of 1880. It is circumvented by a substantial mortared wall and a dam, sluice and bridge are found in the southern extent of the reservoir.

235. Holloway, Nant Hir (SO 9885 0690)
A small holloway running NE/SW and is parallel to the walls of the Nant Hir Reservoir. It merges into a more substantial holloway from the west (No.238) at a field shelter (No.237).

236. D.S.W. landscape, Nant Hir (SO 9875 0684)
An extensive drystone walled landscape which is located either side of A465, is probably contemporary with two holloways to the east (No. 238). The present road truncates the linearity of at least two walled boundaries which define an historic pastoral field system.

237. Field barn and stable, Nant Hir (SO 9885 0686)
An unusual arrangement of farm buildings constructed adjacent to Nant Hir reservoir and associated with a drystone walled landscape (No.236), the intersections of two holloways (235 & 238) and reservoir perimeter wall (No.234). To the north is the remains of a substantial building (c.4m x 6m) of coursed masonry, standing to c.2m high. The stonework is uniform with quoinstones and a cross-passage way, but no evidence of the roofing material. Attached to the eastern elevation is a later lean-to rubble masonry building. To the south of the mortared building is a drystone walled structure with a rough internal corrugated iron shack separated by a straight joint. It was probably built from the demolition material from the northern building re-used as drystone walling and acted as a stable/field-barn. The whole site is bordered on one side by the reservoirs perimeter wall which curves round to a nearby entrance gate and the intersection of two holloways which are truncated by the A465 to the north.

238. Holloway/sheep pen, Nant Hir (SO 9983 0687 to SO 9875 0698)
An extensive holloway (2-3m deep) running north/south, either side of the A465. On both sides of the holloway is a series of mature taxa possibly indicating an early date for the holloway. To the north, approximately 50 metres from the road, the holloway merges into an extensive corralling area (sheep or cattle) which is delineated by low dry-stone walling. To the south, a second holloway converges at a small field shelter (No.237), west of Nant Hir Reservoir.

239. D.S.W. landscape, Nant Melyn (SO 9798 0625)
An extensive drystone wall landscape either side of A465. Both the walled landscape and holloway are probably integrated.

240. Holloway, Nant Melyn (SO 9770 0622 to SO 9789 0623)
An east/west aligned holloway (north of A465), is at present, connected to a farm track leading to Nantmoel Farm. The present A465 has destroyed any possible indication of its southern route. However, the route probably crossed the Nant Melyn at the point now traversed by a road bridge (SO 9792 0624).

241. Holloway, Llycoch (SO 9768 0592 to SO 9785 0585)
A Holloway aligned north/south and perpendicular to A465, with substantial rubble drystone walls (c.1m high) and indicator species of birch, hazel and holly. The track appears to extend north to Llyncoch Farm and beyond. To the south, the track terminates at the southern most point of a birch coppice.

242. Holloway, Court Farm (SO 9734 0564 to SO 9735 0547)
Remnants of a holloway/track running either side of the A465 which is perpendicular to the B 4018 (an extension of the old A465). It appears to have once served Court Farm (SO 9718 0584). The holloway/track predates the Vale of Neath Mineral Railway - the railway truncates the holloway (pre 1851). It may also be contemporary with coppicing and drystone walling to the south.

243. Skew bridge over Vale of Neath Railway (SO 9727 0552)
A skew bridge which was built to carry a road over the Vale of Neath Mineral (later G.W.R. branch) Railway (Nos. 258 and 272). It is constructed of large to medium sized, coursed, rusticated, limestone blocks. Within the tunnel there is a masonry pier with angled stonework, which form the curve of the arch. The bridge has masonry abutments on all four sides.

244. Rectangular platform and earthworks, Hirwaun (SO 9674 0544)
Approximately 80 metres north of A465 is a substantial rectangular building platform, probably industrial in form and may be contemporary with a track which runs N/S towards the Afon Cynon. The layout of the masonry brick suggests a building with at least three rooms and an outer platform, possibly for loading.

245. D.S.W. landscape, Parc Hensol Farm (SO 9675 0528)
An extensive drystone walled system around the now derelict farmstead of Parc-Hensol Farm. Much of the walling, which is in reasonable state of preservation, extends to the A465, 80m to the north. Walling includes a small enclosure, attached to the farmstead and revetting of a near-by stream, a tributary of the Afon Cynon.

246. Farmstead, Parc Hensol (SO 9677 0526)
Between the Afon Cynon and a brook to the west is a small, partly demolished, farmstead in the lea of a small hillock, associated with dry-stone wall field boundaries probably of the early nineteenth century. It was probably a single-storey cottage divided into two bays with a western gable-end chimney. Attached to the northern elevation is a lean-to structure with further separate outbuildings to the east, currently represented by the remains of a flagstone floor. The building is constructed of uncoursed limestone bonded with lime mortar, but with some repairs in Portland cement and red-brick. To the west, is an area of gardens and a masonry revetment along the nearby stream .

247. Bridge remains, Afon Cynon (SO 9682 0529)
To the east of the Parc-Hensol farmstead (No.246) and along the bank of the Afon Cynon is a wrought-iron tension bar indicating the remains of a rope/wire footbridge. On the opposite side of the river is the remains of a slabbed platform relating to the crossing.

248. Track, Afon Cynon, Hirwaun (SO 9697 0529)
A small metalled track running alongside the Afon Cyon and following east around the lower contour of a small hill, adjacent to the A465. Possibly contemporary with Nos. 244 and 247. Width of track is approximately 2.5-3.0 metres.

249. Cynon farm, Hirwaun (SO 9640 0526)
Mid-Victorian cottage with at least three phases of construction close to the banks of the Afon Cynon. Built of stone rubble with brick detailing around the windows and doors, quoin stones and a central doorway. The roof has modern concrete roof tiles and there is a later western gable-end chimney, and lean-to. Now derelict, but under renovation.

250. Hirwaun-Aberdare Tramroad, Hirwaun (SO 9620 0530 to SO 9667 0513)
Built for the Hirwaun Ironworks to the canal at Aberdare in the 1790's, it is now represented by a minor road and a footpath. The line was still in operation during the mapping of the second O.S. in the 1870's, by which time it had been rebuilt and integrated with the main line railways serving Hirwaun Ironworks and its associated mines and collieries. Drystone masonry revetting and rut marks in the stone are visible along the course of the tramway. It was later re-built as a locomotive railway.
GGAT/PRN B48

251. Pig-Pens, Hirwaun (SO 9544 0535)
Uncoursed masonry pig-pens belonging to a farmstead between the river Nant-y-Bwlch and Tower road, probably dating from the mid-nineteenth. Associated with this farmstead is the remains of a demolished masonry building on the bank of the river which probably pre-dates the current bungalow as the farmhouse.

252. Bute Colliery Road (Tower Road) (SO 9534 0527 to SO 9506 0500)
Course of the dismantled Bute Colliery to Hirwaun Tramway intersects with the preferred route south of A465 and has now been replaced by the Tower Road. To the south at SO 9506 0501 the Bute colliery tramway and the Aberdare to Rhondda Railway appear to converge near an area of open-cast workings.
GGAT/PRN B 62

253. T.S.W. landscape, Hirwaun (SO 9525 0533)
Either side of the A465 are the remnants of a turfstone walled landscape which probably predates industrial activity in the area

254. Coal tips, Bryngelli Estate, Hirwaun (SO 9520 0534)
South of the A465, and close to the second roundabout west of Hirwaun, are extensive coal-tippings that date from the nineteenth/twentieth centuries. Standing around 25 metres high and running for 300 metres the tips originate from nearby collieries to the south. A number of tramroads are located close-by and may have served the southern extent of the tips.

255 Railway A. Aberdare & Rhondda Railway (SO 9578 0514 to SO 9506 0501)
The course of the Aberdare & Rhondda Railway running roughly west/east, and crossing the proposed line of the A465 near to the crossing over the Nant-y- Bwlch. It is marked on the OS of 1880 as the Aberdare & Rhondda 'main line'. From a bridge over the stream at SO 9531 0508 the line continues east, running to the south of the tennis courts to another bridge where a tramroad crossed the main line (SO 9560 0503).

255 B. Tramroad B - Branch of the Aberdare & Rhondda Tramroad (SO 9581 0512 to SO 9589 0476)
Shown on the OS map of 1880 as an abandoned branch of the Aberdare & Rhondda tramroad, continuing SSW, presumably to pits, which had vanished by the time of the OS in 1880. The tramroad is built upon an earth bank over 1.5m high which has been truncated by the later construction of Tramway C and crosses a stream above a culvert (No.256).

255 C. Tramroad C, Hirwaun (SO 9587 0510 to SO 9567 0471)
The course of a tramway running SSW, but not shown on the OS of 1880. The tramroad intersects with Tramroad B. causing the partial destruction of its earth bank, and indicating its later construction date.

256. Culvert, Aberdare-Rhondda Tramroad, Hirwaun (SO 9582 0506)
A small culvert below the course of tramroad B. (No.255), of drystone construction now partly collapsed on the eastern side. Built from sandstone blocks, the culvert is contemporary with the initial construction of the tramroad.

257. Culvert, Hirwaun to Aberdare Tramroad, Hirwaun (SO 9648 0519)
A small culvert below the line of the tramroad for the course of a brook built of drystone masonry. The culvert has been repaired using an iron girder and concrete.

258. Vale of Neath Mineral Railway (western section) (SO 9530 0617 to SO 9413 0641)
The Vale of Neath Railway was opened in 1851 as a broad gauge line, later re-built as a standard gauge Great Western branch, and survives as a single track mineral line. The western section of line circumvents Hirwaun to the north, eventually crossing the A465 in the east (No.258) under a contemporary skew bridge (No. 243). The Hirwaun Common Mineral Railway (No. 259) linked the western section of the Vale of Neath Railway to the Bute colliery.
GGAT/PRN D 29

259. Branch of the Hirwaun-Aberdare Tramroad (SO 9408 0591 to SO 9525 0556)
A branch of the Hirwaun-Aberdare Tramroad exists to the west of Hirwaun and follows the present route of the Rhigos Road (A 4059). Orientated roughly east/west, the route approaches Hirwaun from the south-west, and then heads north-east through the town towards the main Hirwaun-Aberdare Tramroad (250i.) and a series of (scheduled) viaducts (SO 9584 0572) to the north.

260. Walled enclosure, Pen-Twyn, Gilwern (SO 2457 1442)
An enclosure on the slope of a north facing hillside representing a walled garden area probably for a private orchard is situated close to an embankment, south of the A465, directly opposite the Navigation Inn, Gilwern.

261. Walled road, Govilon (SO 2620 1437 to SO 2710 1433)
North of the A465 from Hopyard Farm (No.25) to the Boat Farm (SO 2709 1435) is a country lane, intermittently walled on either side, which crosses the Cwm-Shenkin Brook over a single arched masonry bridge close to the worker's cottage (No.14).

262. Building foundations, Pant Glas (SO 2298 1343)
Approximately 15 metres north of leat keeper's cottage, and under the present A465 was a school of which there are no visible remains. This school was once part of a thriving local community along the banks of the Clydach. Photographic evidence indicates that a number of cottages were located along the northern banks of the Afon Clydach, facing the Clydach Ironworks. Both these cottages, the school and Haman's Cottages (a large worker's cottage terrace) were purpose-built for the Ironworks.

263. Southern section of Clydach Railroad, Pont Harri Issac (SO 2043 1233 to SO 2130 1212)
To the south of the A465 is a small section of the Clydach Tramroad, in existence by 1798, which ran south-east over the River Clydach (Rattenbury 1980). The branch line to the collieries at Gelli Felen left the main line at Pont Harri Issac (a now demolished bridge). Further east (270 metres), the Clydach Tramroad crosses the line of M.T. & A. The route now survives as a footpath on the south side of the A465.

264. Western section of Clydach Railroad, Brynmawr (SO 1949 1202 to SO 1920 1220)
To the north of the A465, the tramway follows the northern banks of the Afon Clydach to the roundabout, east of Brynmawr. The route survives as a footpath to the Brynmawr roundabout, before running parallel (south) to the Clydach Bridge (No.118). After this, the route veers to the south-west into Brynmawr. To the east, the tramway crosses over the bridge at Nantmelyn (c.1793) (No. 112).

265. Branch of Disgwylfa Tramroad, Clydach Dingle (SO 1923 1283 to SO 1933 1277)
To south of the 'squatter's settlement (No.120), and next to quarrying within Clydach Dingle is a shallow incline which is a well persevered section of the Disgwylfa Tramroad. The area had a high concentration of quarrying (to the north) and coal extraction (to the south of the Dingle). This branch would have eventually converged with the Llangattock Tramroad at Brynmawr. It is probable that this branch supplied limestone from a small quarry within the Dingle (SO 1923 1284).

266. Reservoir, Garn Lydan (SO 1766 1279)
A small pond, north of the Preferred Route at Garn Lydan which is the remnant of a slightly larger reservoir marked on the OS of 1880 described as belonging to Nantyglo Ironworks. This pond was linked the larger Baen y Cwm Reservoir (No. 267) to the north-east and two others further south near Beaufort Hill, which also belonged to the ironworks. All four were part of a system of water-supply to the ironworks at Nantyglo and possibly Beaufort.

267. Blaen y Cwm Reservoir, Garn Lydan (SO 175 129)
North of the preferred route at Garn Lydan is the Blaen y Cwm Reservoir. This is the post-1880 successor to the a much smaller reservoir on the same site which was part of a network of ponds (No. 266) and supplied the Nantyglo Ironworks near the head of the Ebbw Vale.

268. Carno Reservoir and filter-beds, Afon Ebbw (SO 164 170)
The reservoir at Carno was built after the completion of the 1880 OS map, and is constructed of masonry blocks. It is associated with a sequence of twentieth century circular filter beds below the level of the reservoir which incorporate concrete and masonry walls.

269. Merthyr, Tredegar & Abergavenny Railway, Llechryd (SO 1033 0920 to SO 1070 0962)
The course of the MT & A Railway originally ran along the present route of the A465, across the Afon Rhymni over a masonry and brick bridge (No.157) and a leat (No.160 and 165), south of Llechryd station house (No.169), below a now infilled concrete skew bridge (No.168) before veering south-west towards Bute Town Reservoir.

270. Brecon & Merthyr Railway, Taf Fechan (SO 0343 0853 to SO 0325 0816)
On the western bank of the Taf Fechan, either side of the A465 is the route of the Brecon & Merthyr Railway, opened in 1863. A Bridge (No. 211) crosses the A465 at SO 0324 0814). Approximately thirty metres north-east of the railway bridge is a small footbridge (No.209). Between both bridges, the embankment is heavily revetted.

271. Coed Meurig Farm (SO 0234 0742)
The homestead associated with the lofted cowshed (No.222) at Coed Meurig is shown on the Merthyr tithe map of 1850 and described in the schedule of 1846 as being a farm of 37 acres belonging to Lord Dynevor. It consists of a two-story cottage with an outshut to the rear. Constructed of a coursed masonry with front and rear porches, two gable-end chimneys, a Welsh slate roof and a small lean-to.

272. Vale of Neath Mineral Railway (eastern section), Hirwaun (SO 9700 0559 to SO 9760 0543)
The Vale of Neath mineral railway survives to the east of Hirwaun below contemporary masonry road bridge on the A465. The railway, which was built in c.1851 as a broad-gauge single track, has a bridge & revetments built of well-coursed rusticated limestone set askew to the railway.
GGAT/PRN D29

273. Tramway, Hirwaun (SO 9566 0520 to SO 9559 0491)
A local tramroad, surviving as a track, which transported ironstone from the Knobby Drift Ironstone pit (No.274) to the Hirwaun Ironworks during the mid 19th century.

274. Knobby Drift Ironstone Pit, Johnson Park, Hirwaun (SO 9559 0491)
This ironstone pit was served by a tramway which fell into disuse before it was surveyed for the O.S. in the 1870s (No. 273). The quarry supplied ironstone to the Hirwaun Ironworks during the mid 19th century.

275. Tramway branch-Hirwaun Common Railway (SO 9597 0500 to SO 9598 0470)
This tramway survives as a north/south track and is marked on the O.S.map of 1880. It was a branch line of the Hirwaun Common Railway and would have carried coal from collieries to the south.

276. The Hirwaun Common Mineral Railway (SO 9495 0618 to SO 9862 0481)
The Hirwaun Common Mineral Railway was marked as a tramroad on the tithe map of c.1840 and a conventional locomotive-operated railway on the O.S. map of c.1880. The line can be followed to the west of Hirwaun at SO 9495 0618 where it converges with the Vale of Neath Railway (No.258). To the east, the line of the railway follows along Longfield Court to SO 9612 0505 where it is crossed by the A465. The 1880 O.S. shows that the line continues further on to the south-east and a branch line diverges to south, currently a footpath (No.276). The main line eventually crosses the Hirwaun Road (A 4059) at SO 9664 0581.

277. Branch line of the Hirwaun Common Railway (SO 9617 0500 to SO 9634 0478)
At the point where the Hirwaun Common Mineral Railway crosses the A465, a branch line diverges to the south and currently survives as a footpath. This branch line is marked on the 1880 O.S. (but not on the tithe map).

Abbreviations
D.S.W= Drystone wall (landscape)
T.S.W.= Turf/stone wall (landscape)

Detail of the Leat Keeper's Cottage (No.99) and Leat System, Saleyard (No. 100).

Client WELSH OFFICE – HIGHWAYS DIRECTORATE

Job A465 ABERGAVENNY TO HIRWAUN DUALLING

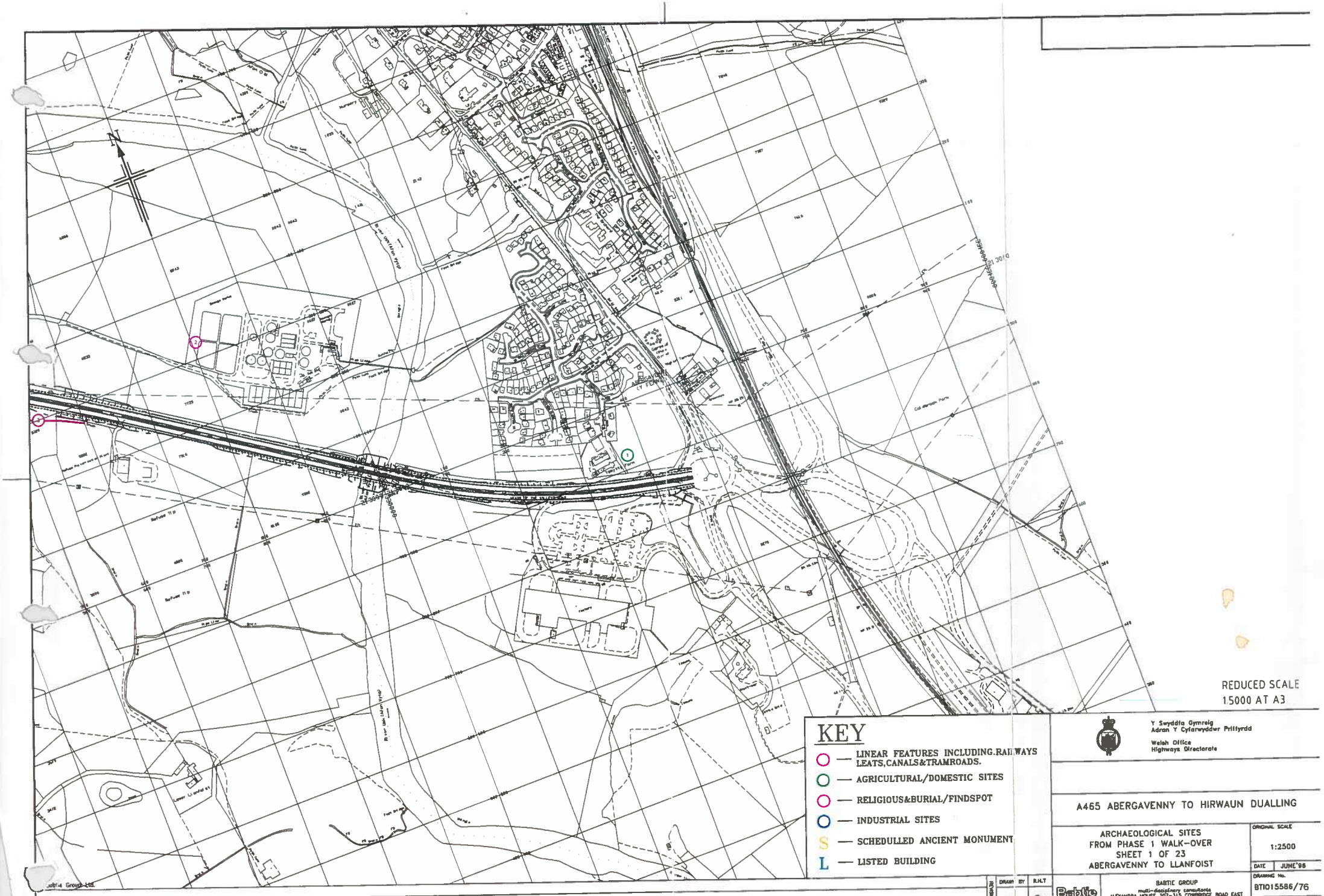
© Babtie Group Ltd.

multi-disciplinary consultants
ALEXANDRA HOUSE 307–315 COWBRIDGE ROAD EAST
CARDIFF CF5 1JD

DRAWN BY		JOB No.	BTI015586
		DWG No.	–
APPROVED		DATE	–

A3

A465 Abergavenny to Hirwaun Dualling:
Archaeological Sites From Phase 1 Walk-Over (23 Maps)



REDUCED SCALE
1:5000 AT A3

KEY

- O — LINEAR FEATURES INCLUDING RAILWAYS LEATS, CANALS & TRAMROADS.
- O — AGRICULTURAL/DOMESTIC SITES
- O — RELIGIOUS & BURIAL/FINDSPOT
- O — INDUSTRIAL SITES
- S — SCHEDULLED ANCIENT MONUMENT
- L — LISTED BUILDING

Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 1 OF 23
ABERGAVENNY TO LLANFOIST

ORIGINAL SCALE 1:2500

DATE JUNE '96

DRAWING No. BTI015586/76

REVISIONS

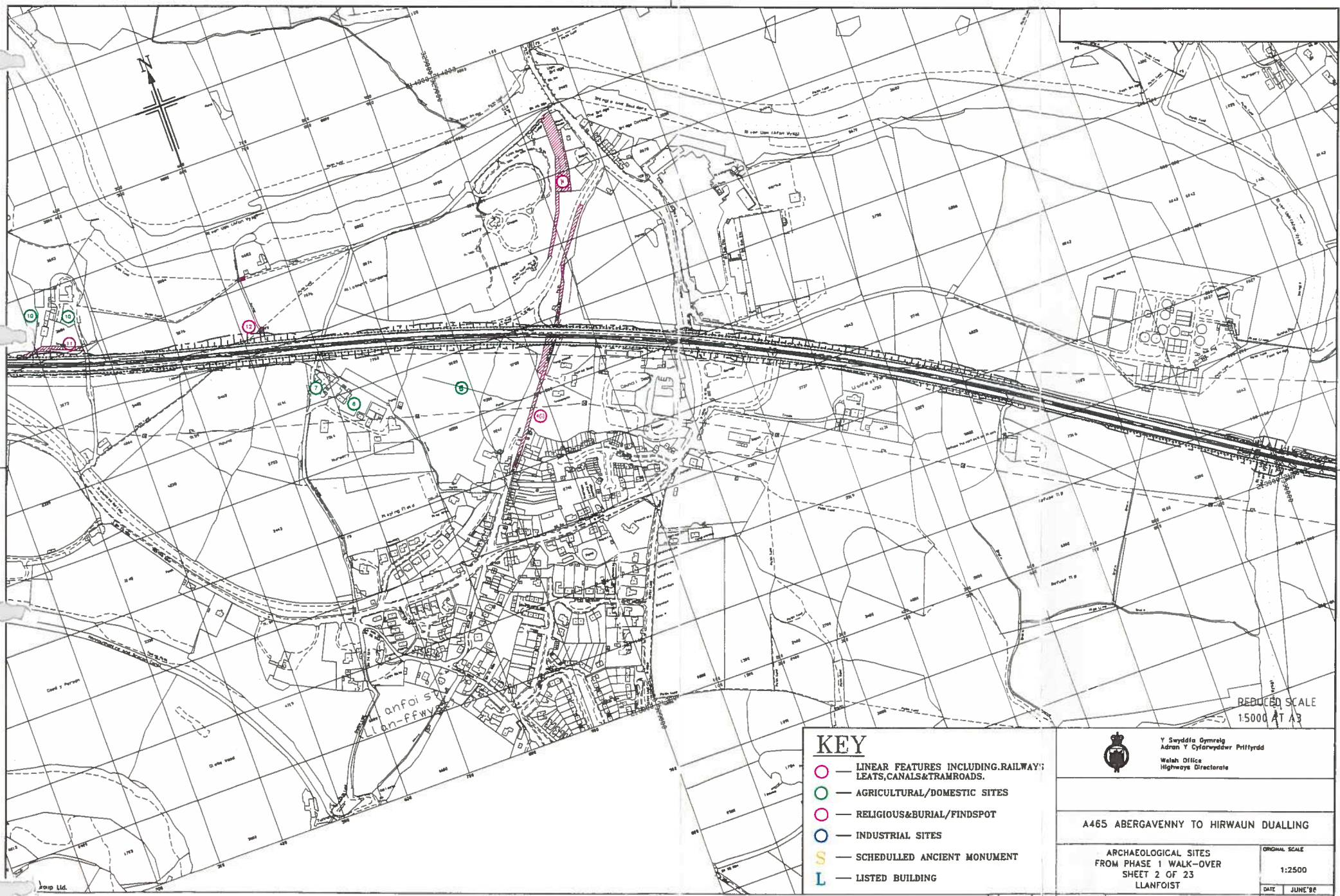
DRAWN BY R.H.T

APPROVED

Babtie

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST
CARDIFF, CF5 1JD

John G Group Ltd.



KEY

- LINEAR FEATURES INCLUDING.RAILWAYS LEATS,CANALS&TRAMROADS.
- AGRICULTURAL/DOMESTIC SITES
- RELIGIOUS&BURIAL/FINDSPOT
- INDUSTRIAL SITES
- S — SCHEDULLED ANCIENT MONUMENT
- L — LISTED BUILDING

Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 2 OF 23
LLANFOIST

ORIGINAL SCALE 1:2500

DATE JUNE'88

DRAWING No. ST10155586/77

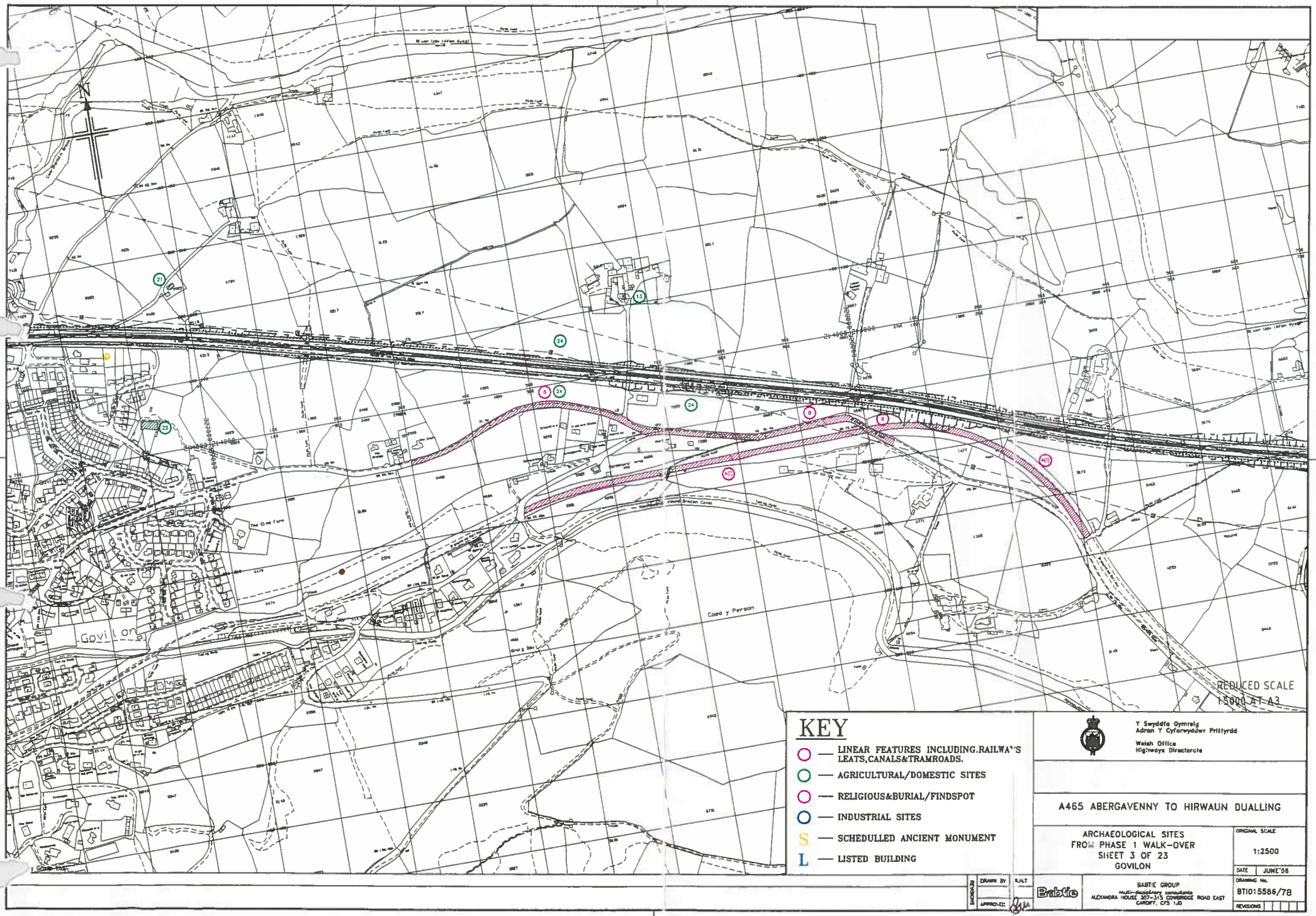
REVISIONS

DRAWN BY

APPROVED

Babtie GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 CORBERIDGE ROAD EAST
CARDIFF, CF3 1HD

A1



KEY

- — LINEAR FEATURES INCLUDING.RAILWA''S LEATS,CANALS&TRAMROADS.
- — AGRICULTURAL/DOMESTIC SITES
- — RELIGIOUS&BURIAL/FINDSPOT
- — INDUSTRIAL SITES
- S — SCHEDULLED ANCIENT MONUMENT
- L — LISTED BUILDING

Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 3 OF 23
GOVILON

ORIGINAL SCALE 1:2500

DATE JUNE'06

DRAWING No. BTI015586/78

REVISIONS

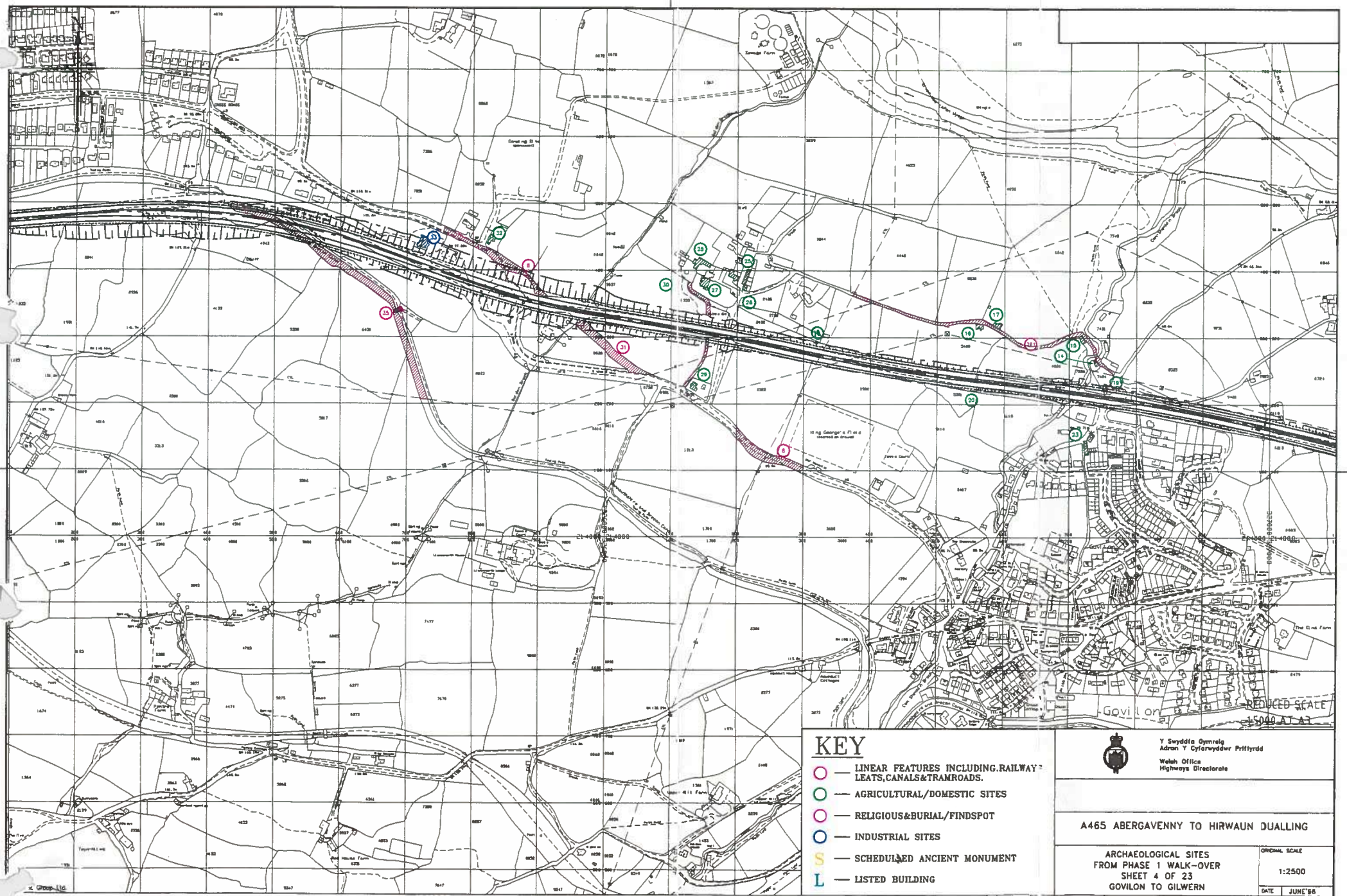
DRAWN BY RJLT

APPROVED

Babtie

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 COWBRIDGE ROAD EAST
CARDIFF CF5 1JD

A1



Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 4 OF 23
GOVILON TO GILWERN

ORIGINAL SCALE 1:2500

DATE JUNE'96

DRAWING No. BT1015586/79

REVISIONS

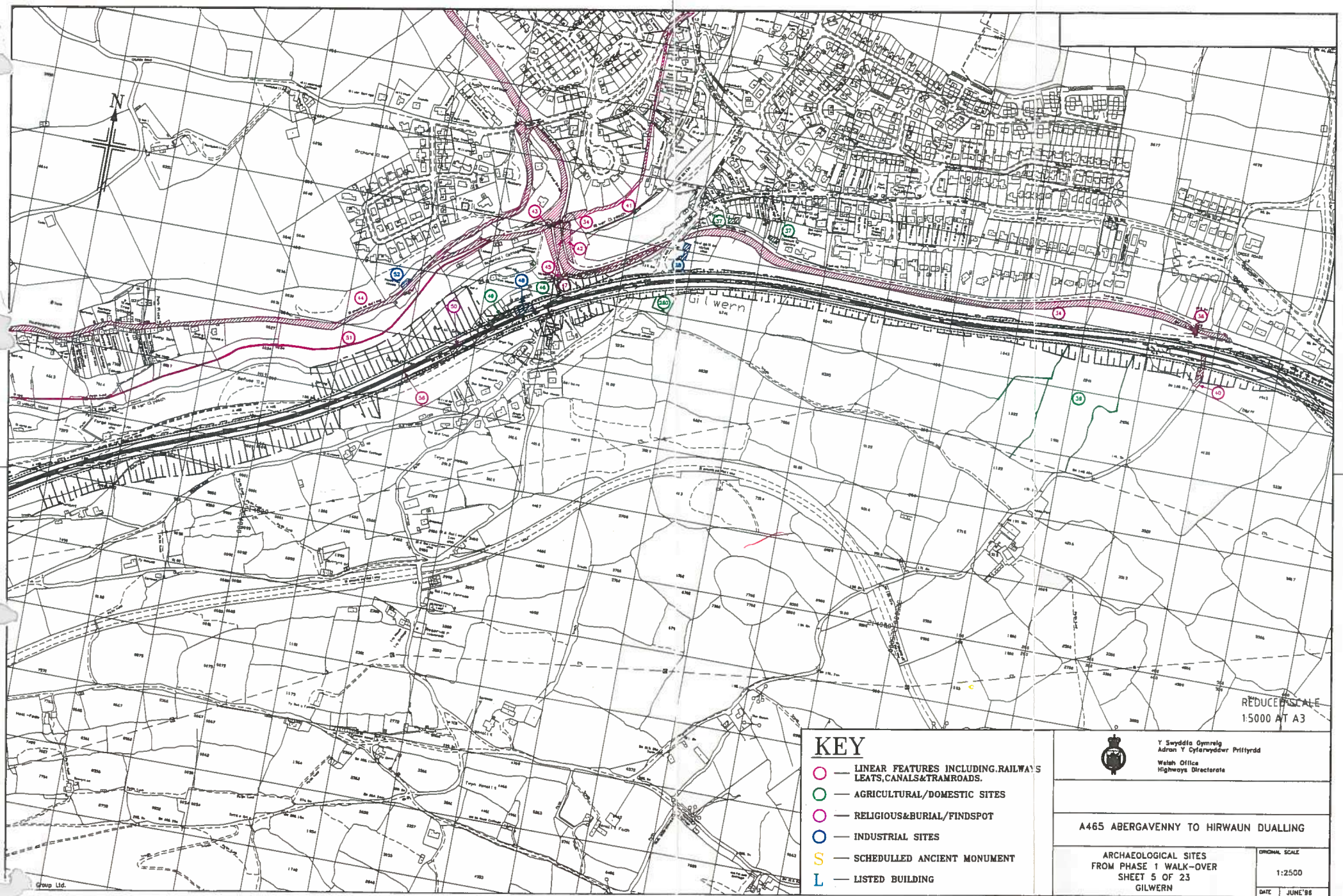
DRAWN BY

APPROVED

Babtie

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 CONEYBEACH ROAD EAST
CARDIFF, CF3 1JD

A1



KEY

- LINEAR FEATURES INCLUDING.RAILWAYS LEATS,CANALS&TRAMROADS.
- AGRICULTURAL/DOMESTIC SITES
- RELIGIOUS&BURIAL/FINDSPOT
- INDUSTRIAL SITES
- S — SCHEDULLED ANCIENT MONUMENT
- L — LISTED BUILDING

Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 5 OF 23
GILWERN

ORIGINAL SCALE 1:2500

DATE JUNE'96

DRAWING No. BT1015586/80

REVISIONS

DRAWN BY K.H.T

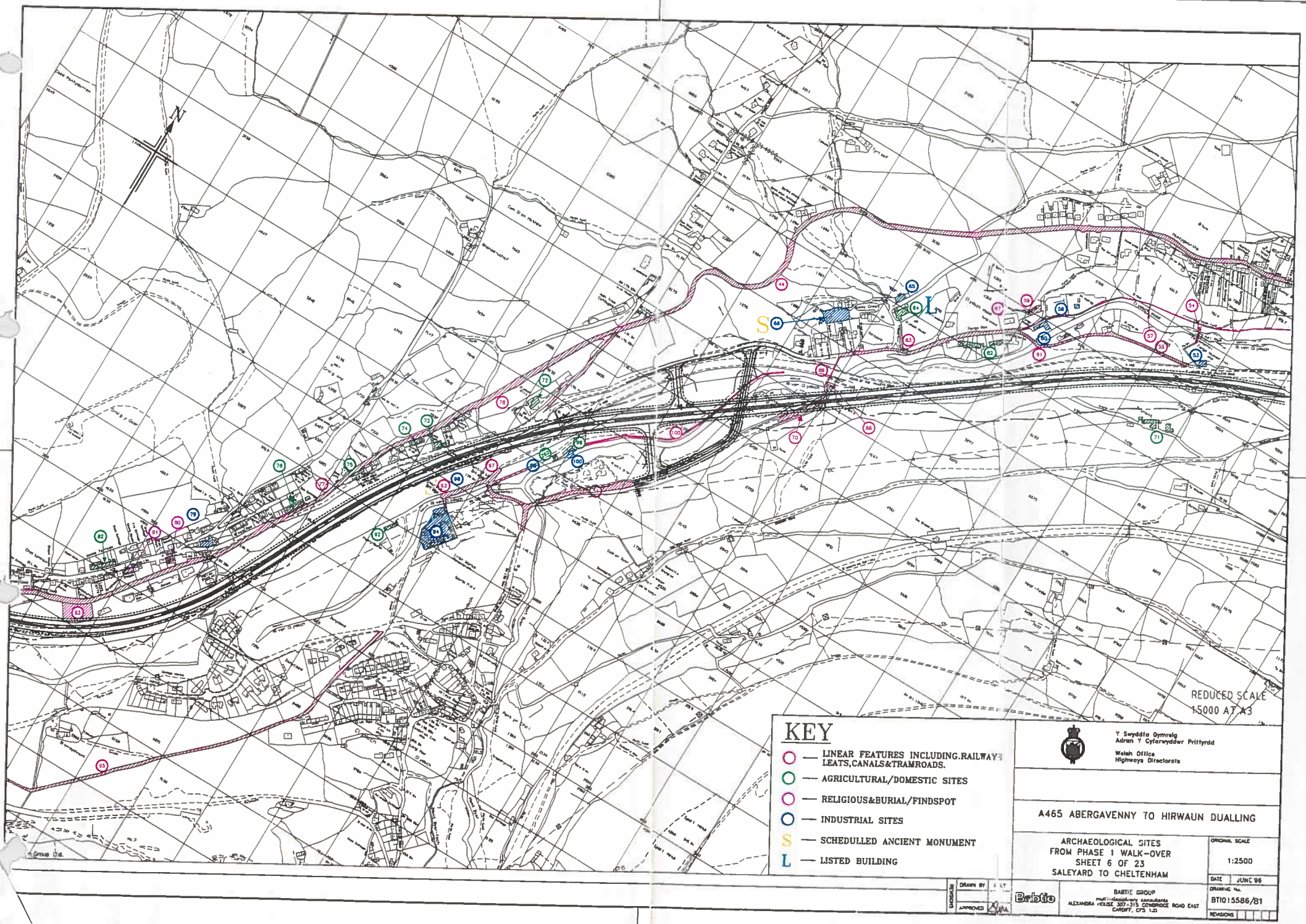
APPROVED

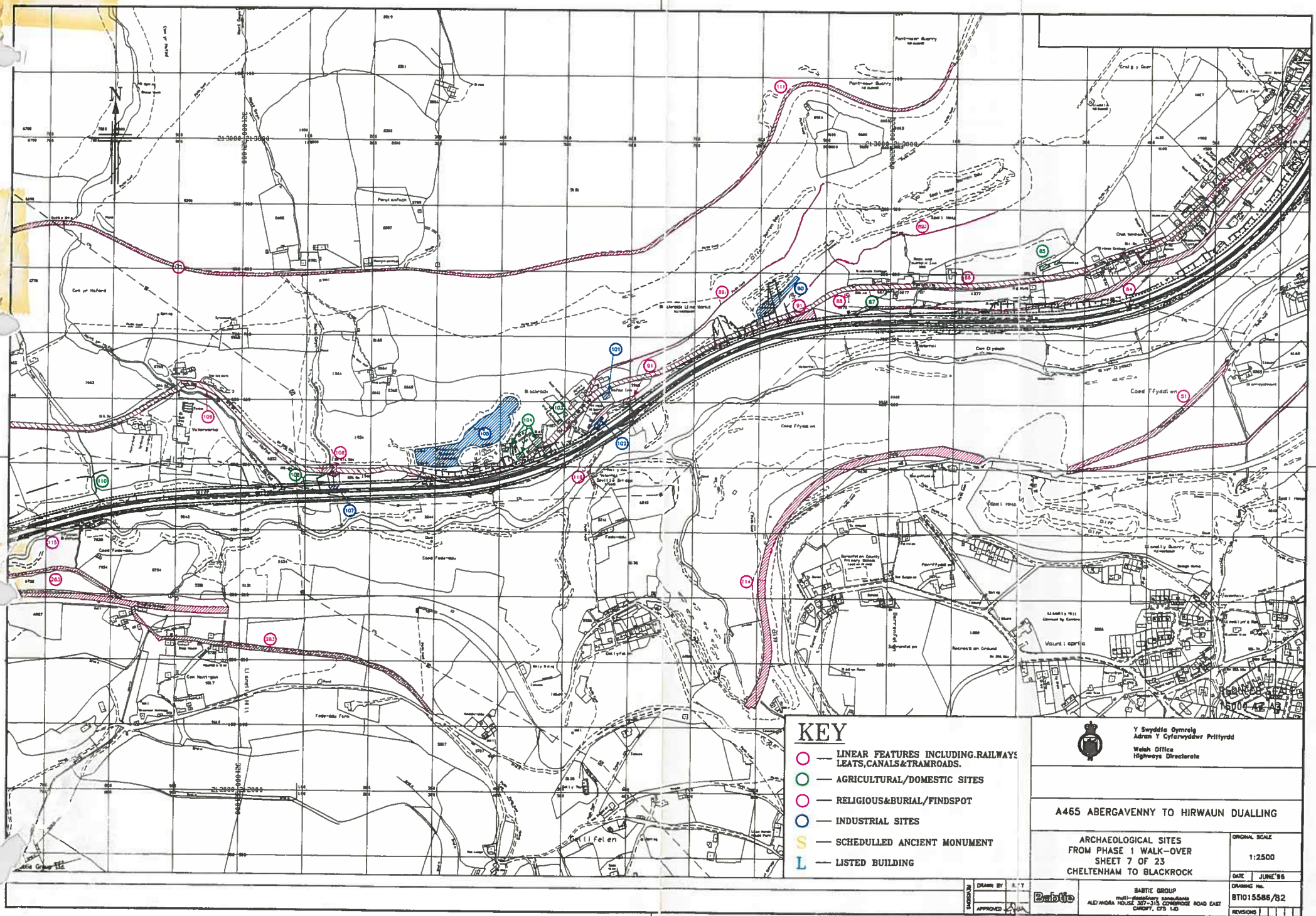
BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307 315 CONEYBRIDGE ROAD EAST
CAERDYDD CF3 1JD

Babtie

Group Ltd.

A1


N
S
L
REDUCED SCALE
1:5000 AT A3
KEY
— LINEAR FEATURES INCLUDING RAILWAYS LEATS, CANALS & TRAMROADS.
— AGRICULTURAL/DOMESTIC SITES
— RELIGIOUS & BURIAL/FINDSPOT
— INDUSTRIAL SITES
S — SCHEDULLED ANCIENT MONUMENT
L — LISTED BUILDING
Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd
Welsh Office
Highways Directorate
A465 ABERGAVENNY TO HIRWAUN DUALLING
ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 6 OF 23
SALEYARD TO CHELTENHAM
ORIGINAL SCALE
1:2500
DATE
JUNE 96
DRAWN BY
APPROVED
Babtie
BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 CONGRESS ROAD EAST
CARDIFF, CF5 1JD
DRAWING No.
BT/01/5586/81
REVISIONS
A1



Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Prifyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 7 OF 23
CHELTENHAM TO BLACKROCK

ORIGINAL SCALE 1:2500

DATE JUNE'96

DRAWING No. BT/0155586/82

REVISIONS

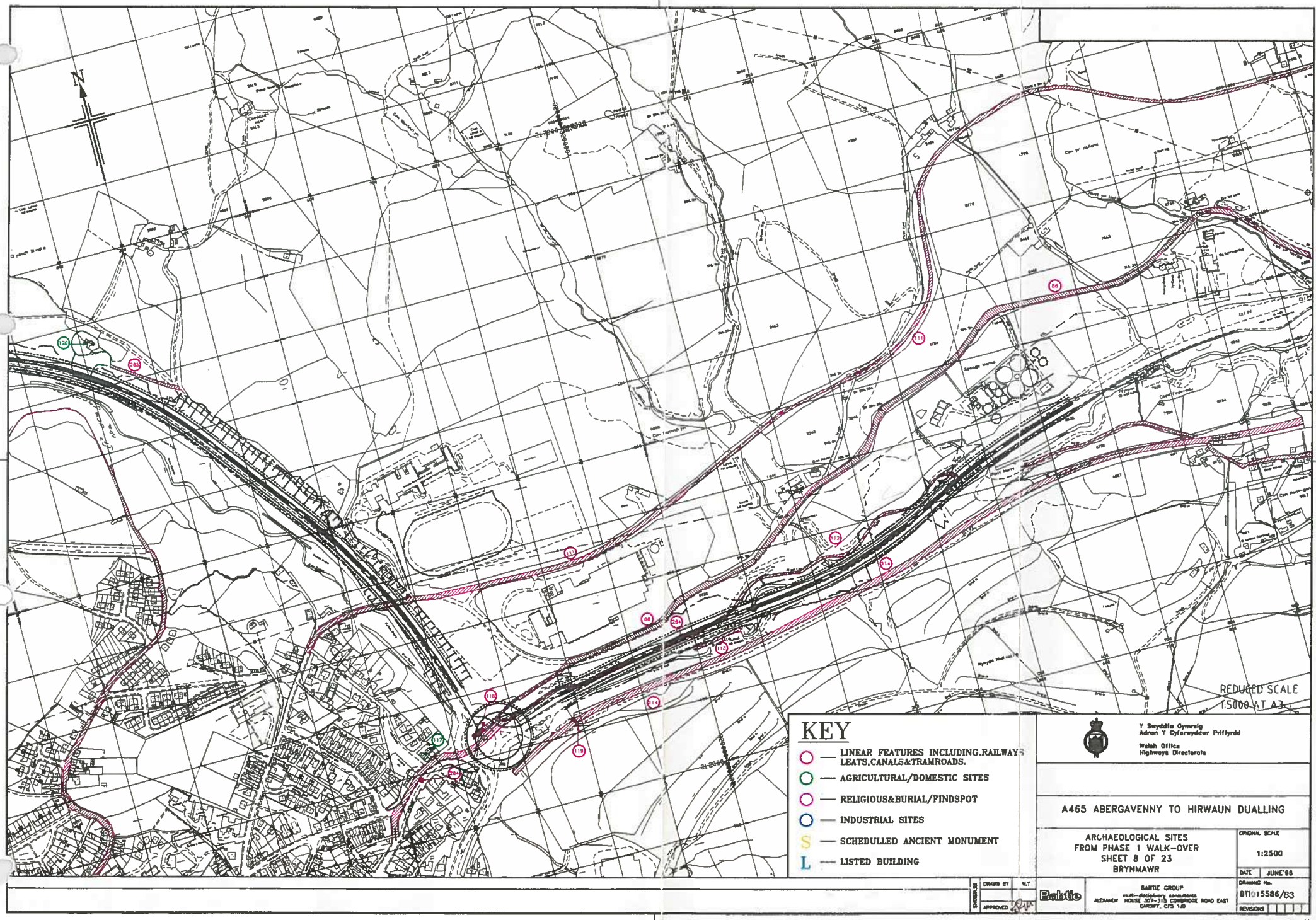
DRAWN BY

APPROVED

Babtie

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 327-315 CORNWIDGE ROAD EAST
CARDIFF, CF5 1JD

A1



Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 8 OF 23
BRYNMAWR

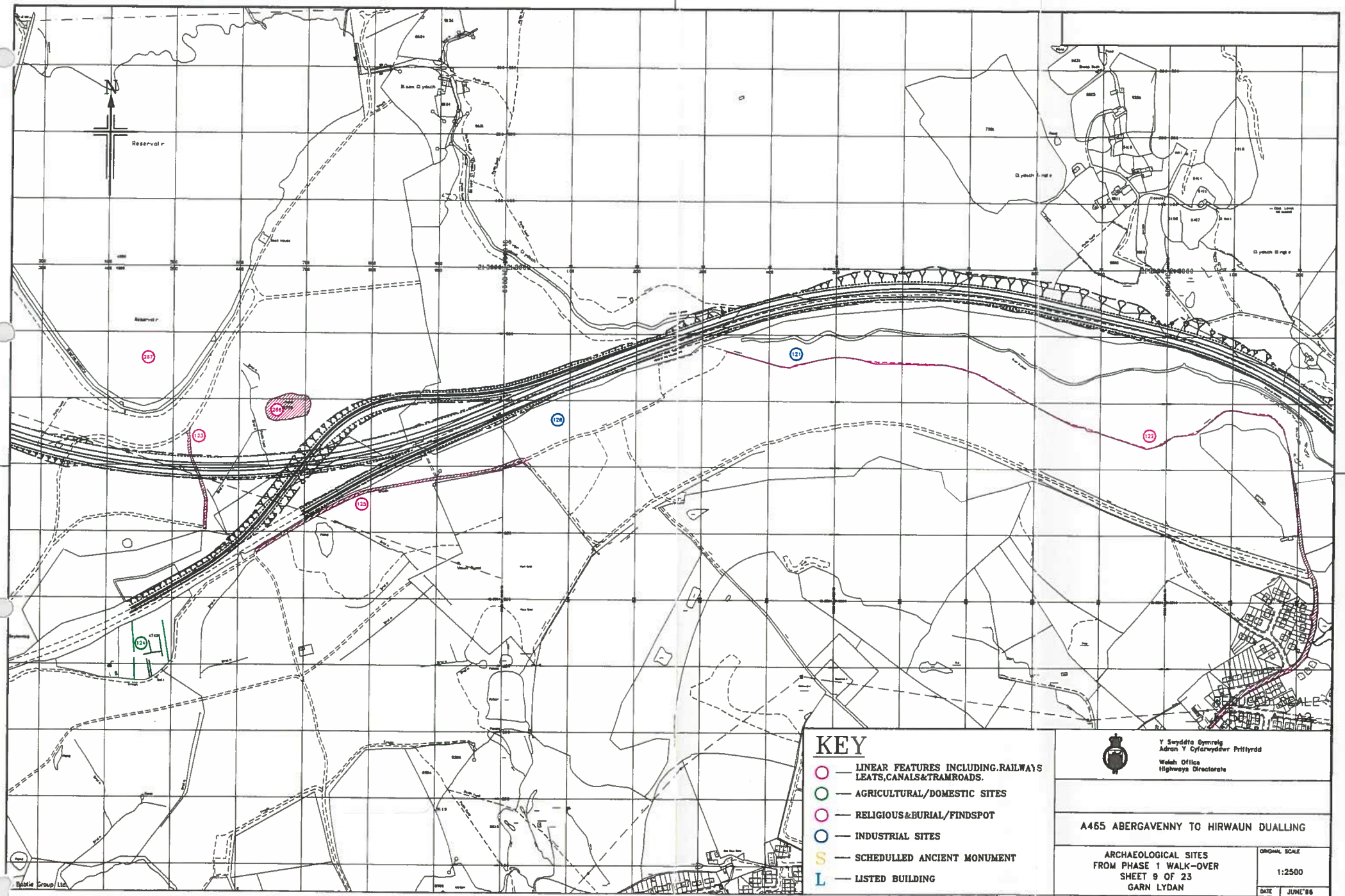
ORIGINAL SCALE: 1:2500
DATE: JUNE'96
DRAWING No.: BT/015586/B3
REVISIONS:

DRAWN BY: H.T
APPROVED:

Babtie

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 CONWRIDGE ROAD EAST
CARDIFF, CF5 1JD

A1



KEY

- LINEAR FEATURES INCLUDING.RAILWAYS LEATS,CANALS&TRAMROADS.
- AGRICULTURAL/DOMESTIC SITES
- RELIGIOUS&BURIAL/FINDSPOT
- INDUSTRIAL SITES
- S — SCHEDULLED ANCIENT MONUMENT
- L — LISTED BUILDING

Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 9 OF 23
GARN LYDAN

ORIGINAL SCALE 1:2500

DATE JUNE'88

DRAWING No. BTI015586/84

REVISIONS

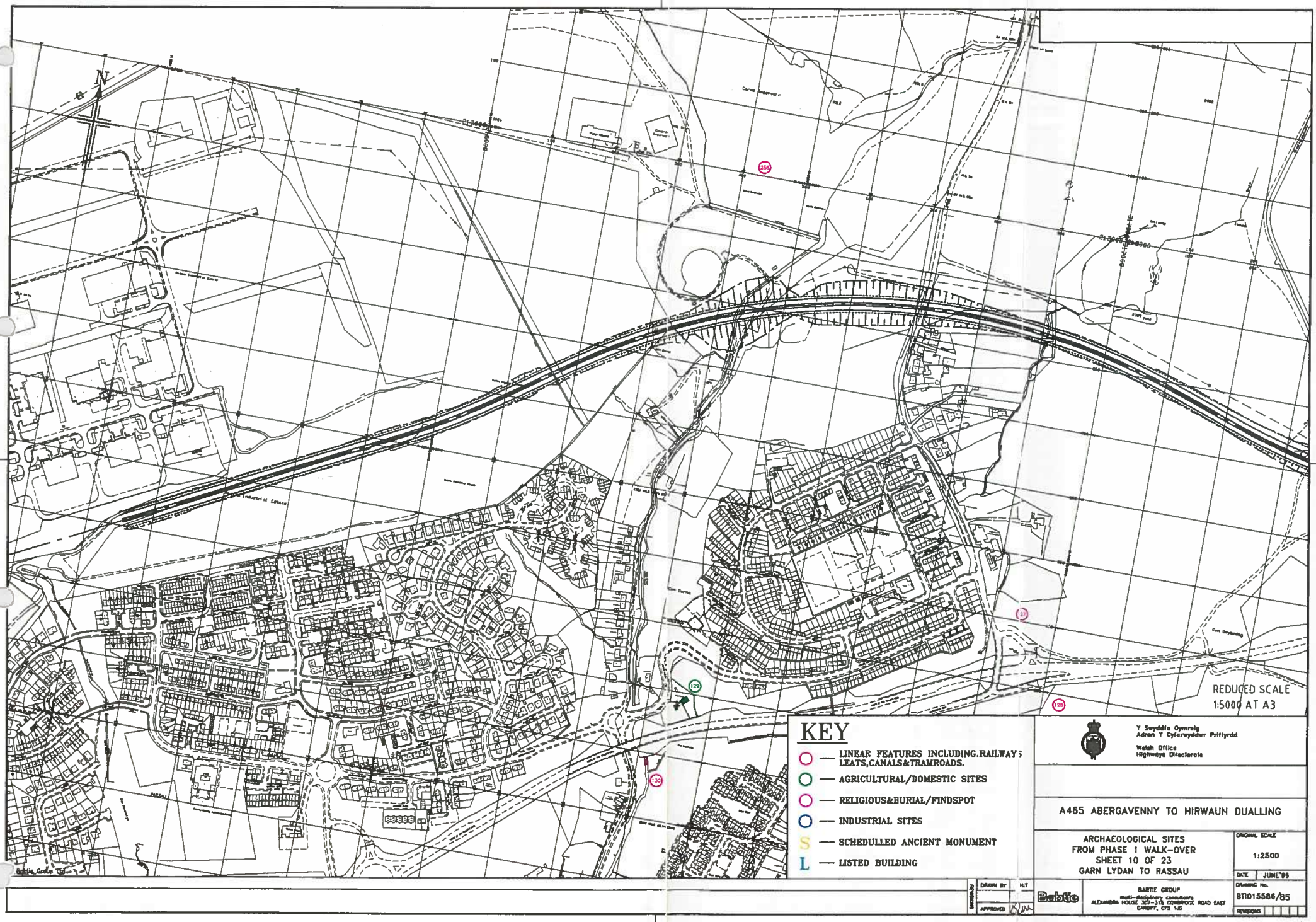
DRAWN BY R.H.T

APPROVED

Babtie

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 327-333 COWBRIDGE ROAD EAST
CARDIFF, CF5 1JD

A1



Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 10 OF 23
GARN LYDAN TO RASSAU

ORIGINAL SCALE 1:2500

DATE JUNE'98

DRAWING No. BTI015586/85

REVISIONS

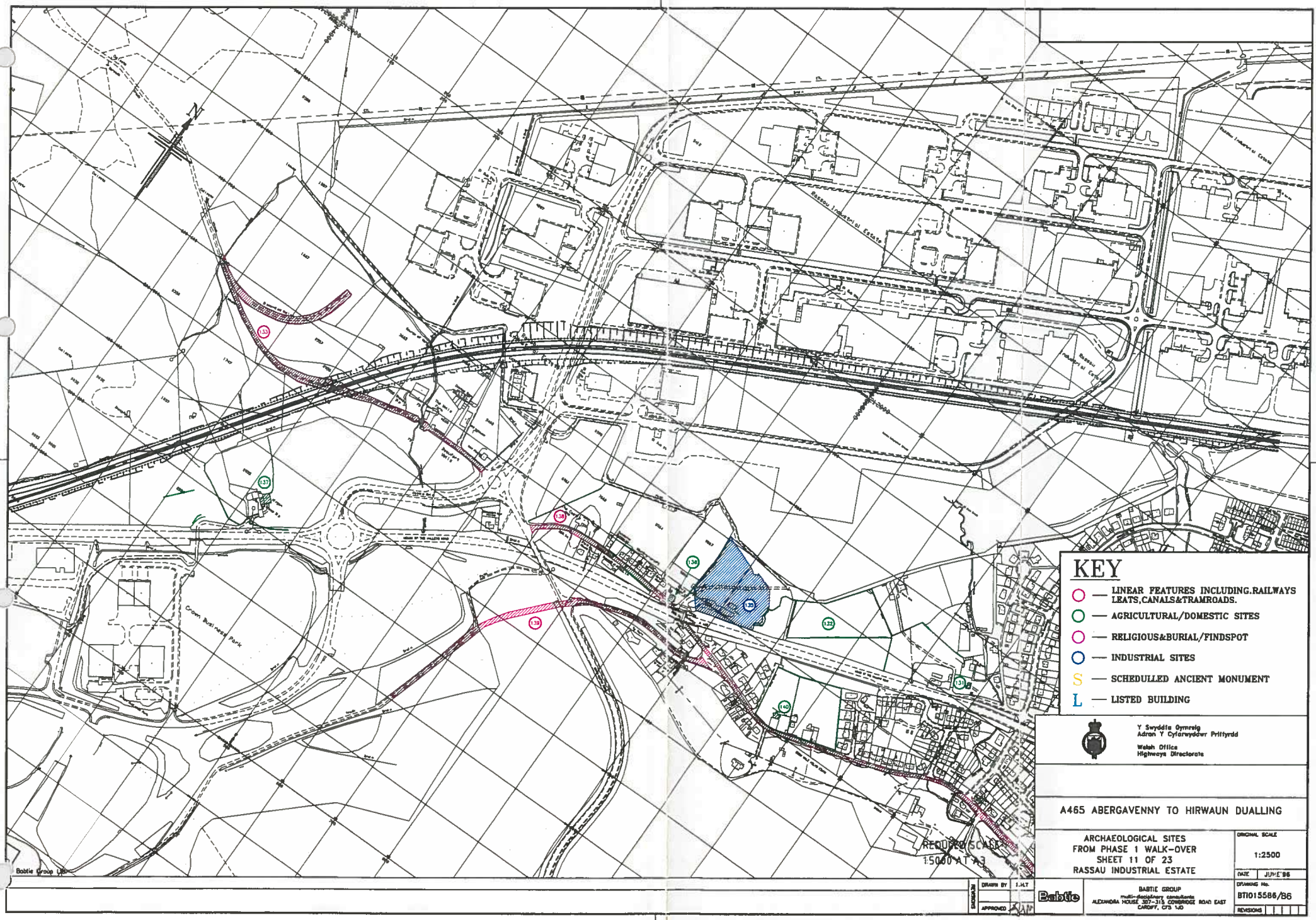
DRAWN BY NLT

APPROVED

Babtie

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 327-315 CONBROOK ROAD EAST
CARDIFF, CF5 1JD

A1



Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 11 OF 23
RASSAU INDUSTRIAL ESTATE

ORIGINAL SCALE 1:2500

DATE JUNE'96

DRAWN BY I.H.T

APPROVED A.M.P

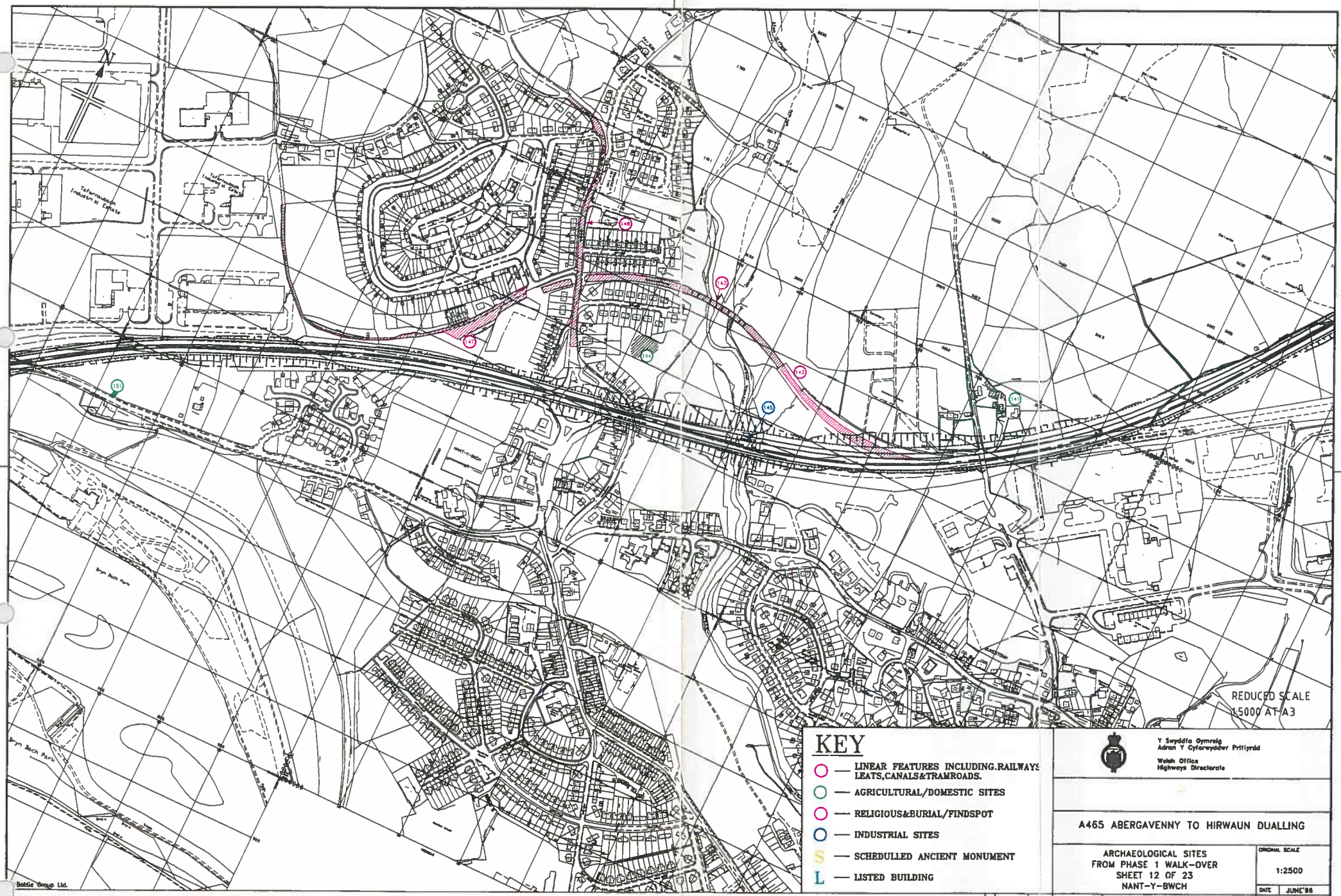
Babtie

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 CowBRIDGE ROAD EAST
CARDIFF, CF5 1JD

DRAWING No. BTI015586/86

REVISIONS

A1



REDUCED SCALE
1:5000 AT A3

KEY

- LINEAR FEATURES INCLUDING.RAILWAYS LEATS,CANALS&TRAMROADS.
- AGRICULTURAL/DOMESTIC SITES
- RELIGIOUS&BURIAL/FINDSPOT
- INDUSTRIAL SITES
- S — SCHEDULLED ANCIENT MONUMENT
- L — LISTED BUILDING

Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 12 OF 23
NANT-Y-BWCH

ORIGINAL SCALE 1:2500

DATE JUNE'96

DRAWN BY B. LT

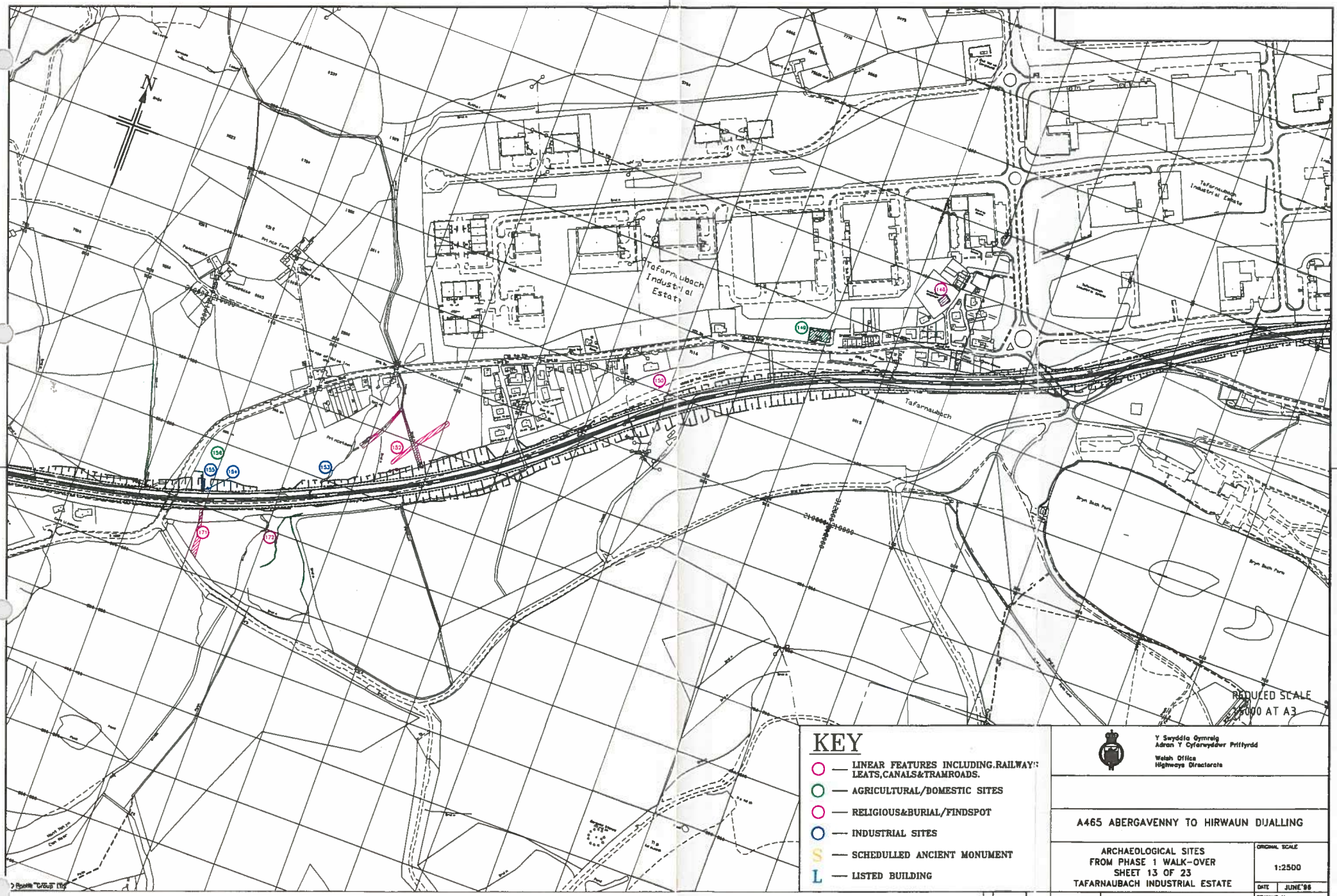
APPROVED

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE, 307-315 CONEYBRIDGE ROAD EAST
CARDIFF, CF3 1JD

DRAWING No. BTI015586/87

REVISIONS

A1



KEY

- — LINEAR FEATURES INCLUDING RAILWAYS, LEATS, CANALS & TRAMROADS.
- — AGRICULTURAL/DOMESTIC SITES
- — RELIGIOUS & BURIAL/FINDSPOT
- — INDUSTRIAL SITES
- S — SCHEDULLED ANCIENT MONUMENT
- L — LISTED BUILDING

Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 13 OF 23
TAFARNAUBACH INDUSTRIAL ESTATE

ORIGINAL SCALE 1:2500

DATE JUNE'88

DRAWING No. BTI015586/88

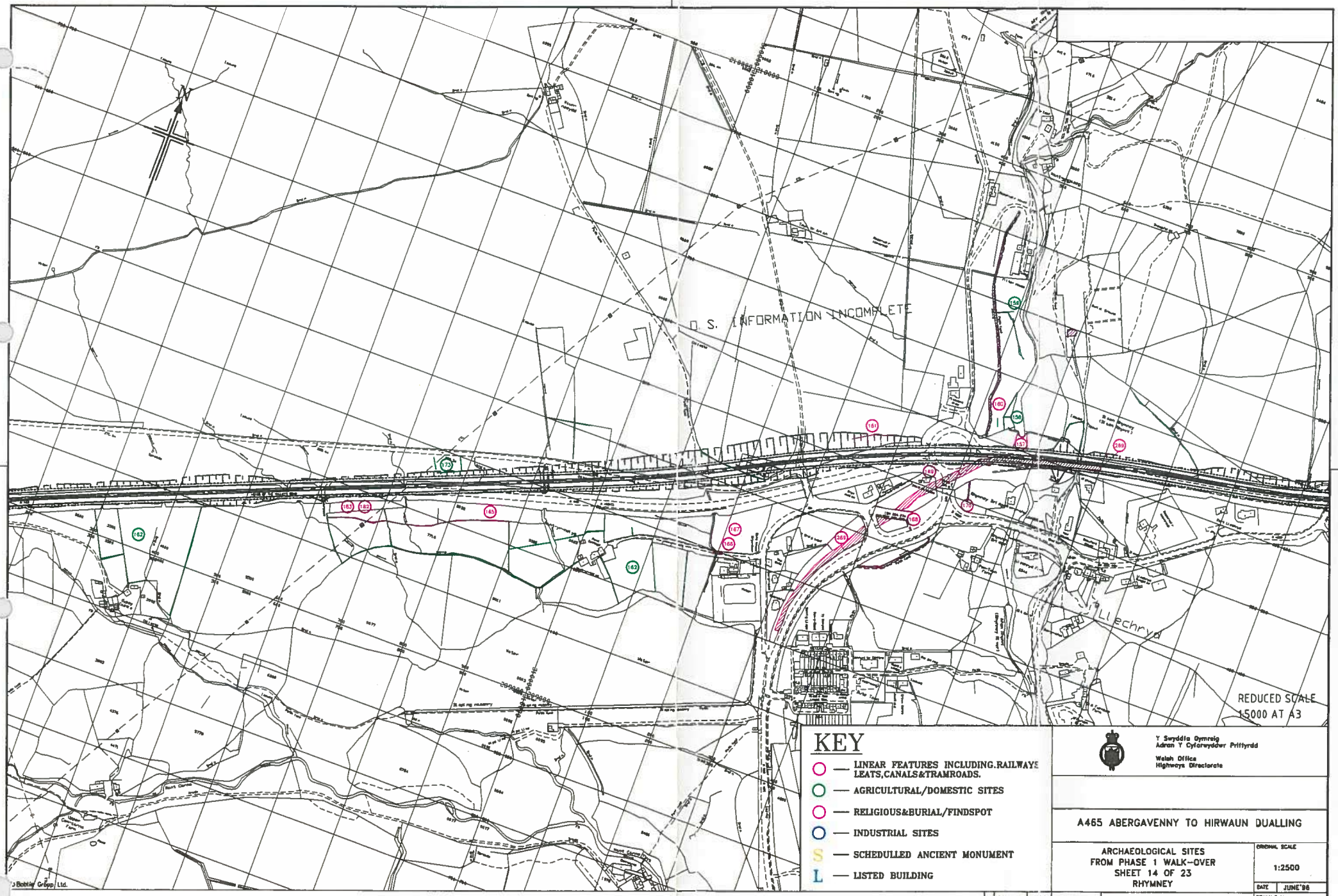
REVISIONS

DRAWN BY I.H.T

APPROVED

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE, 307-315 CONEYBEACH ROAD EAST
CARDIFF, CF3 1JD

A1



KEY

- LINEAR FEATURES INCLUDING RAILWAYS LEATS, CANALS & TRAMROADS.
- AGRICULTURAL/DOMESTIC SITES
- RELIGIOUS & BURIAL/FINDSPOT
- INDUSTRIAL SITES
- S — SCHEDULLED ANCIENT MONUMENT
- L — LISTED BUILDING

Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 14 OF 23
RHYMNEY

ORIGINAL SCALE 1:2500

DATE JUNE'98

DRAWN BY R.L.T

APPROVED

Babtie

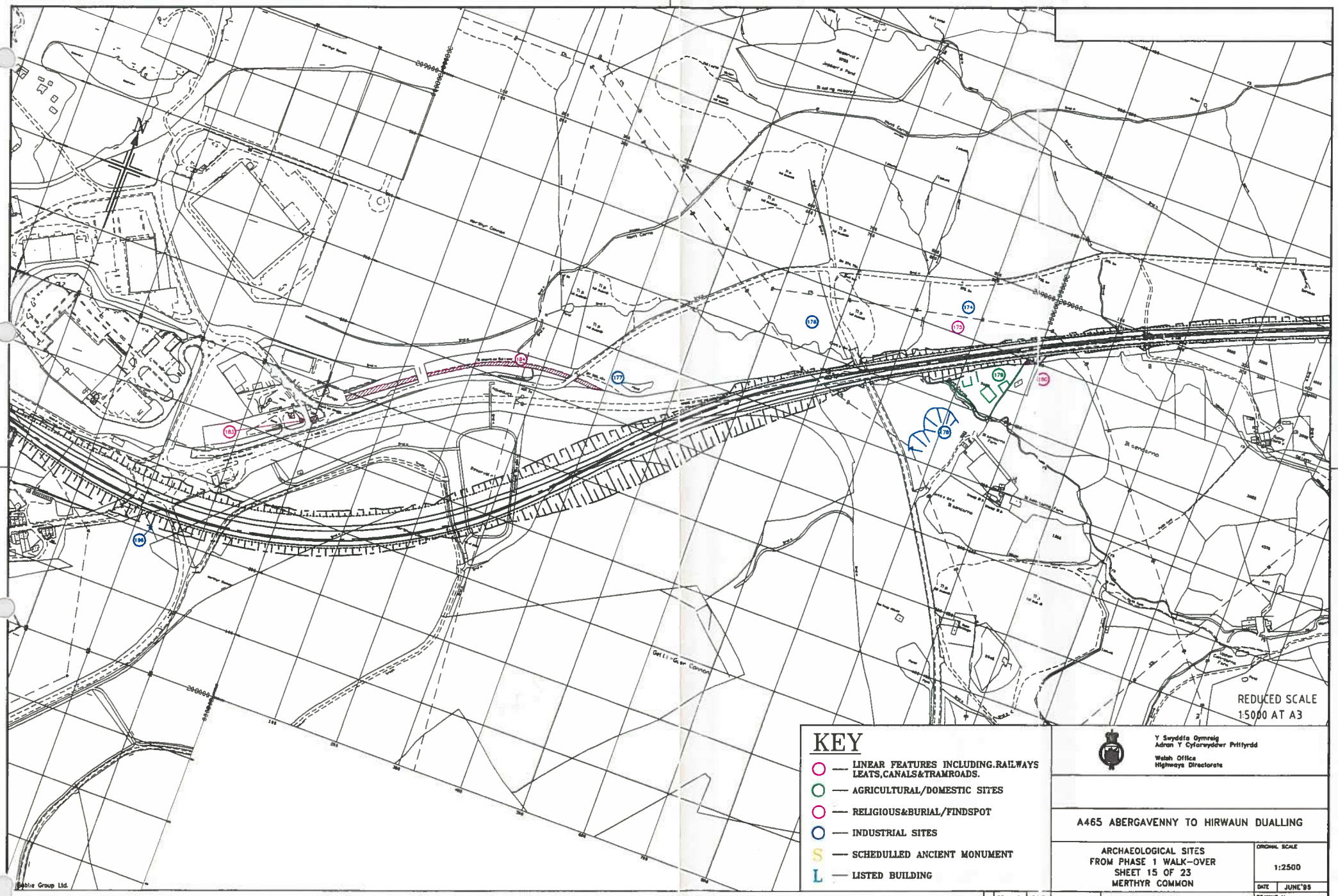
BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 327-313 CONWAY ROAD EAST
CARDIFF, CF5 1JD

DRAWING No. BTI015586/89

REVISIONS

A1

© Babtie Group Ltd.



Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 15 OF 23
MERTHYR COMMON

ORIGINAL SCALE 1:2500

DATE JUNE'95

DRAWING No. BTI015586/90

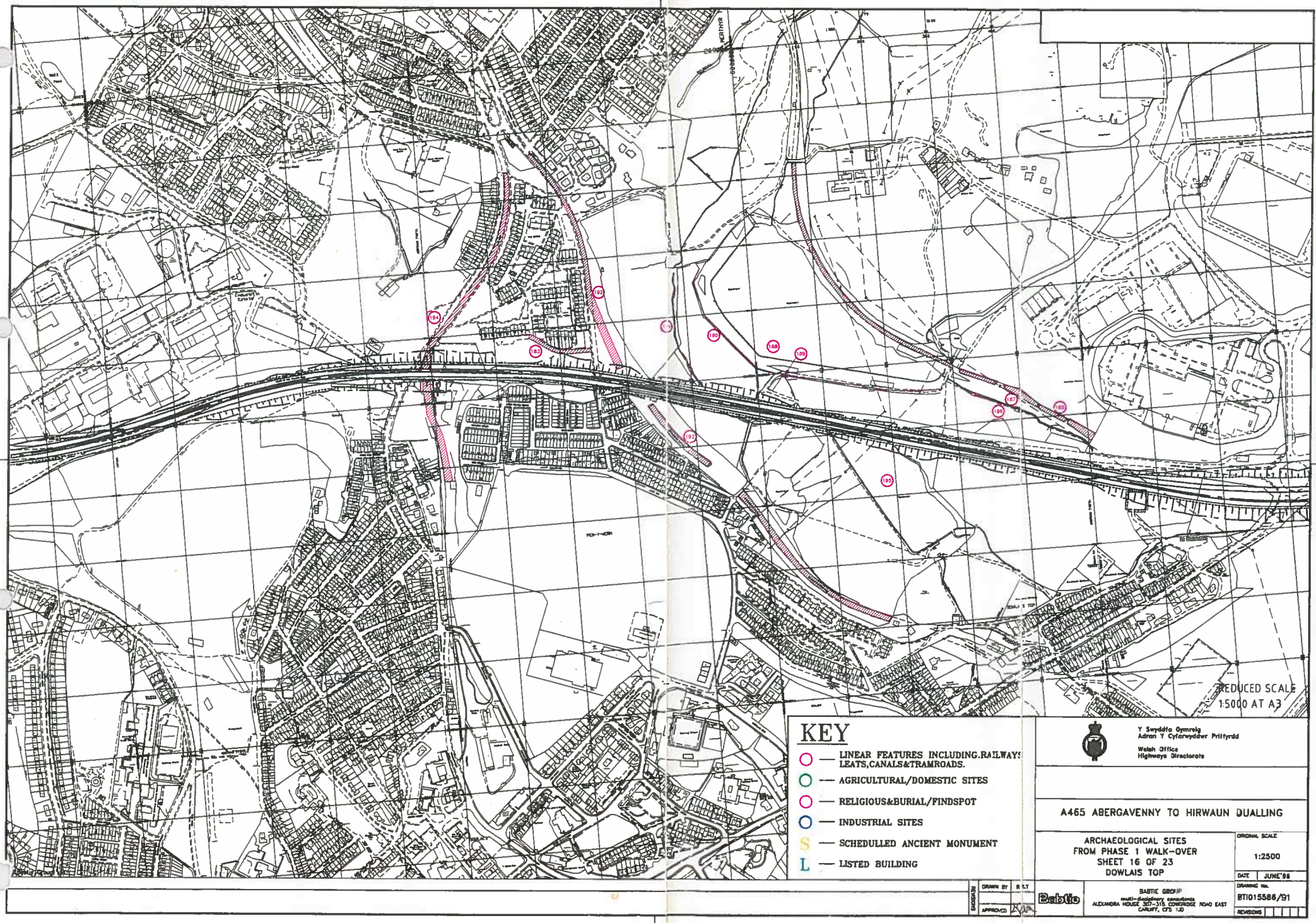
REVISIONS

DRAWN BY BJ T

APPROVED

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 CONEYBEGE ROAD EAST
CARDIFF, CF3 1JD

A1



Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 16 OF 23
DOWLAIS TOP

ORIGINAL SCALE 1:2500

DATE JUNE'98

DRAWING No. BTI015586/91

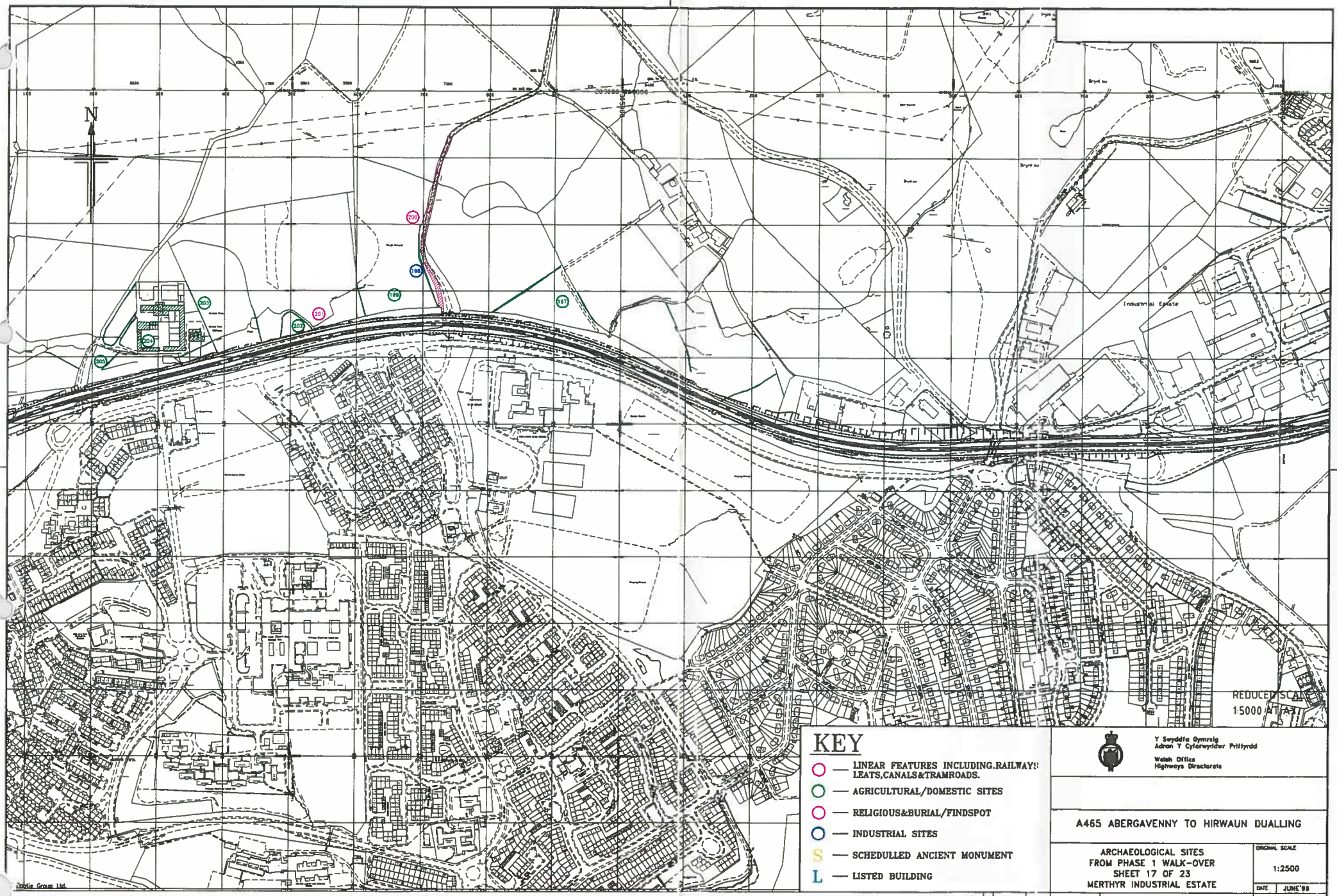
REVISIONS

DRAWN BY R.L.T

APPROVED

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 CONEYBEDGE ROAD EAST
CARDIFF, CF5 1JD

A1



KEY

- LINEAR FEATURES INCLUDING.RAILWAYS LEATS,CANALS&TRAMROADS.
- AGRICULTURAL/DOMESTIC SITES
- RELIGIOUS&BURIAL/FINDSPOT
- INDUSTRIAL SITES
- S — SCHEDULLED ANCIENT MONUMENT
- L — LISTED BUILDING

Babtie Group Ltd.

Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 17 OF 23
MERTHYR INDUSTRIAL ESTATE

ORIGINAL SCALE 1:2500

DATE JUNE'98

DRAWING No. BTI015586/92

REVISIONS

DESIGNED

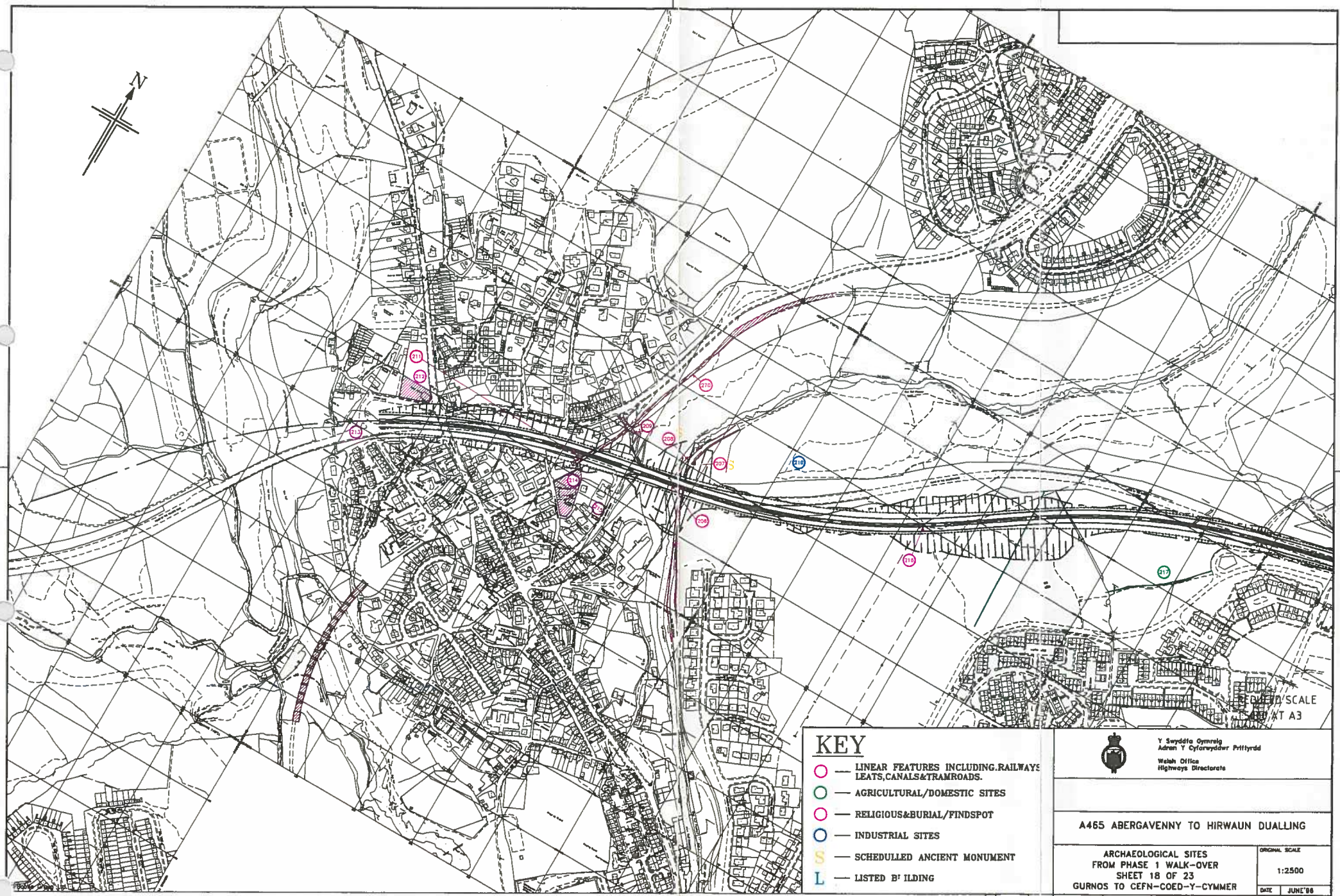
DRAWN BY R.H.T

APPROVED

Babtie

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 357-315 CONBRIDGE ROAD EAST
CARDIFF, CF5 1JD

A1



Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Prifiyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 18 OF 23
GURNOS TO CEFN-COED-Y-CYMMER

ORIGINAL SCALE 1:2500

DATE JUNE'96

DRAWING No. BT10155B6/93

REVISIONS

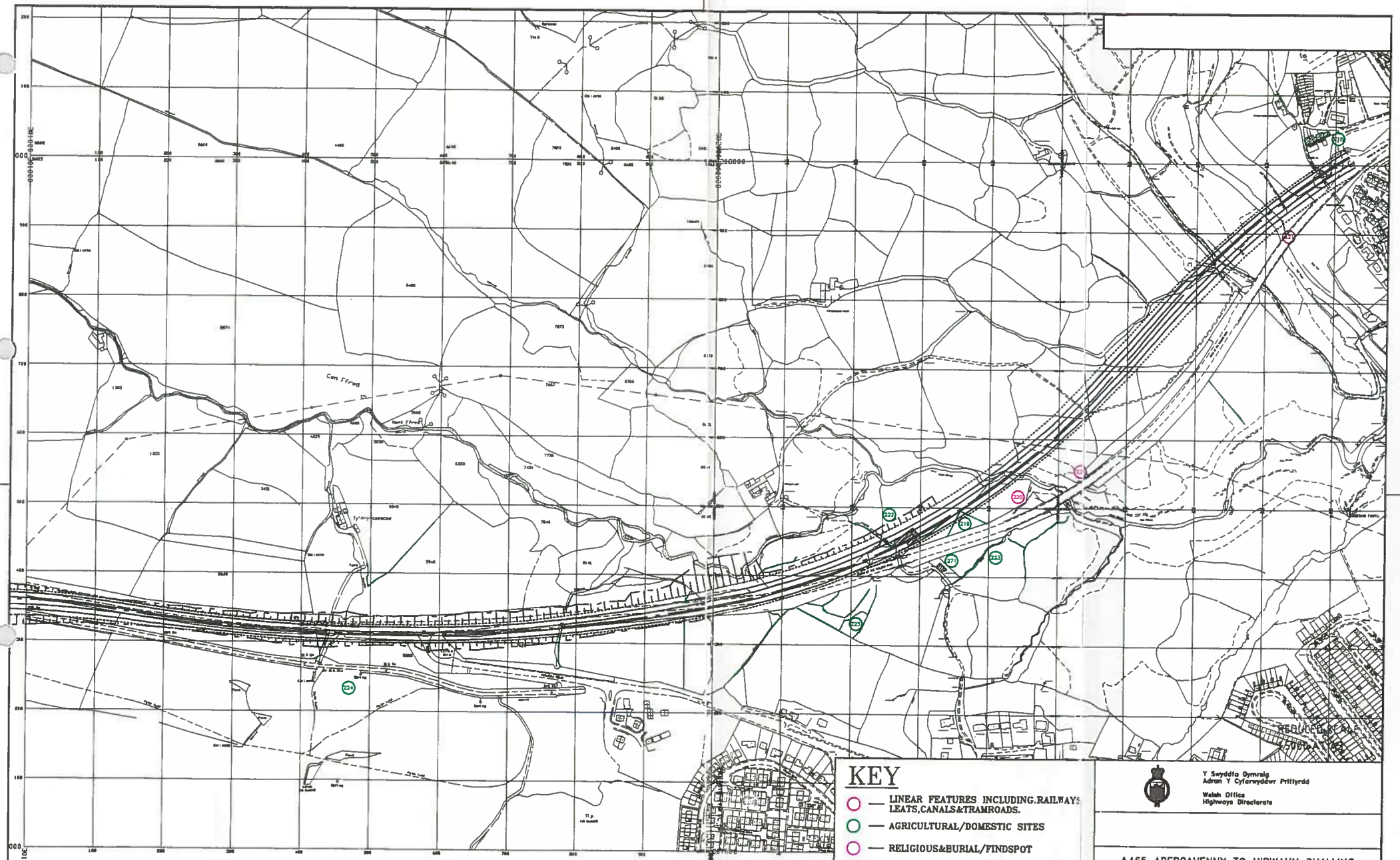
DRAWN BY LT

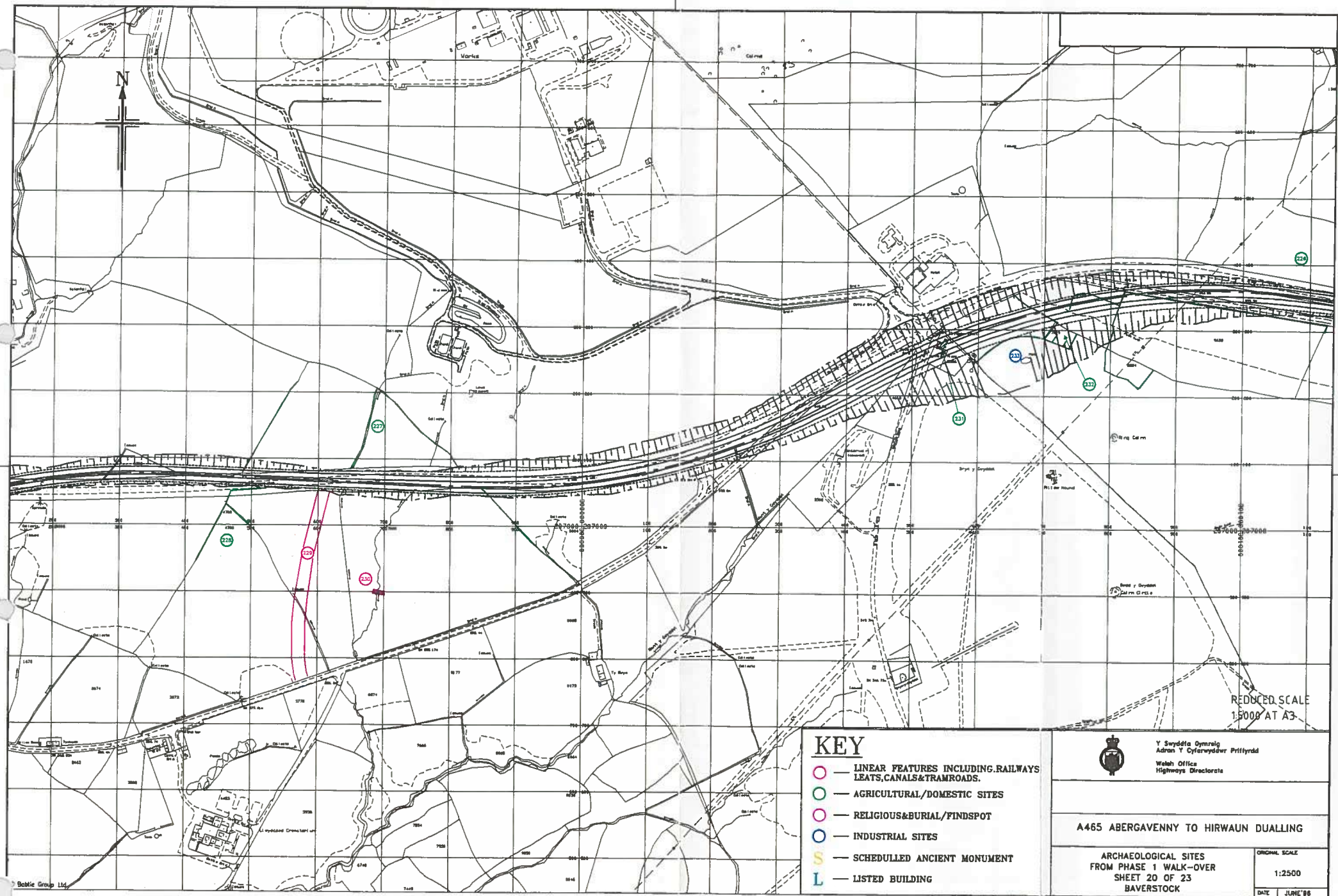
APPROVED

Babtie

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 CONBRIDGE ROAD EAST
CARDIFF, CF3 1JD

A1


Cam Ffrwd
Nant Ffrwd
Ty'n-y-Cwm-Isaf
Ty'n-y-Cwm-Uchaf
Tunnel
Tunnel
Tunnel



KEY

- LINEAR FEATURES INCLUDING.RAILWAYS LEATS,CANALS&TRAMROADS.
- AGRICULTURAL/DOMESTIC SITES
- RELIGIOUS&BURIAL/FINDSPOT
- INDUSTRIAL SITES
- S — SCHEDULLED ANCIENT MONUMENT
- L — LISTED BUILDING

Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 20 OF 23
BAVERSTOCK

ORIGINAL SCALE 1:2500

DATE JUNE'96

DRAWING No. BTI015586/95

REVISIONS

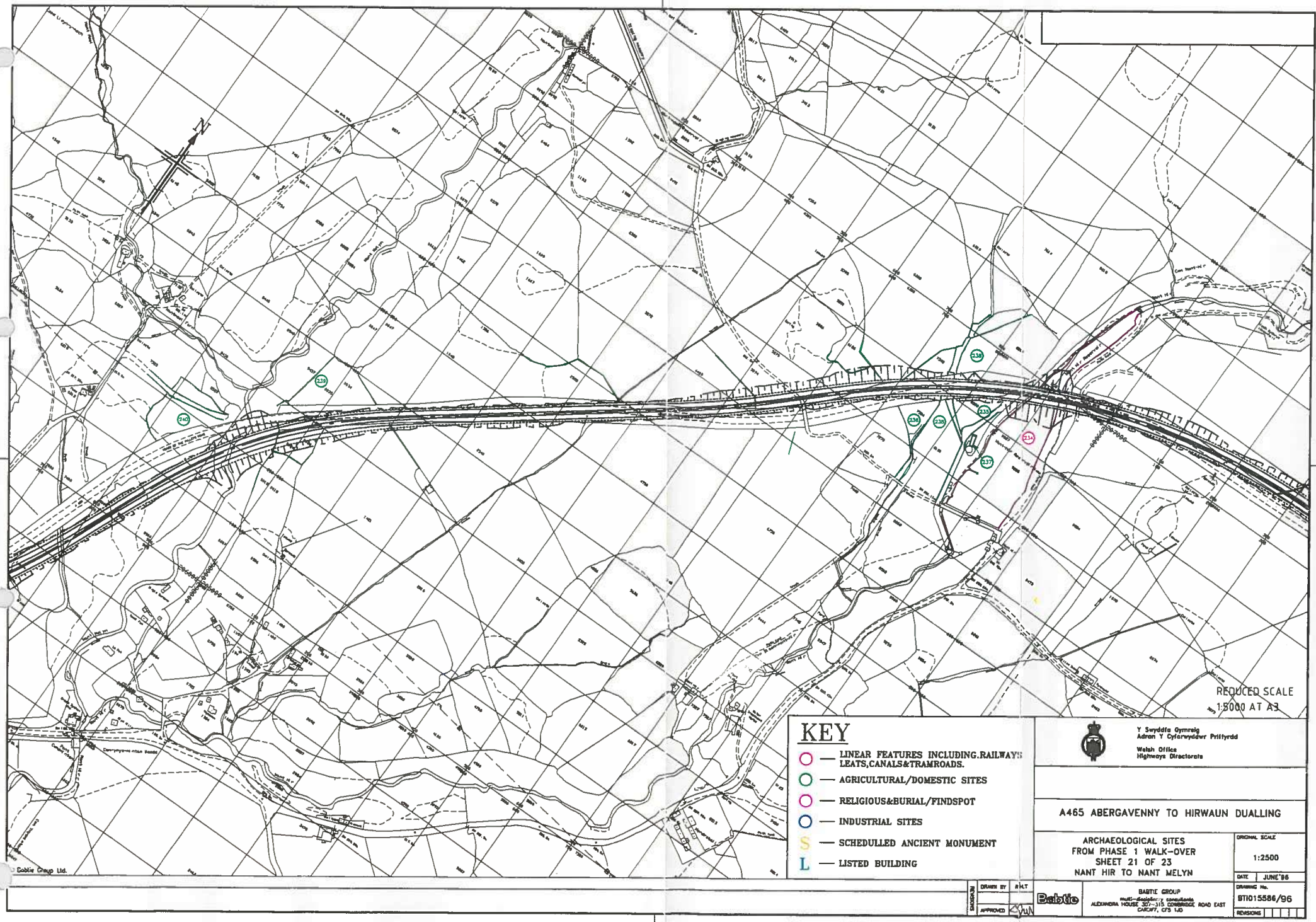
DRAWN BY R.J.T.

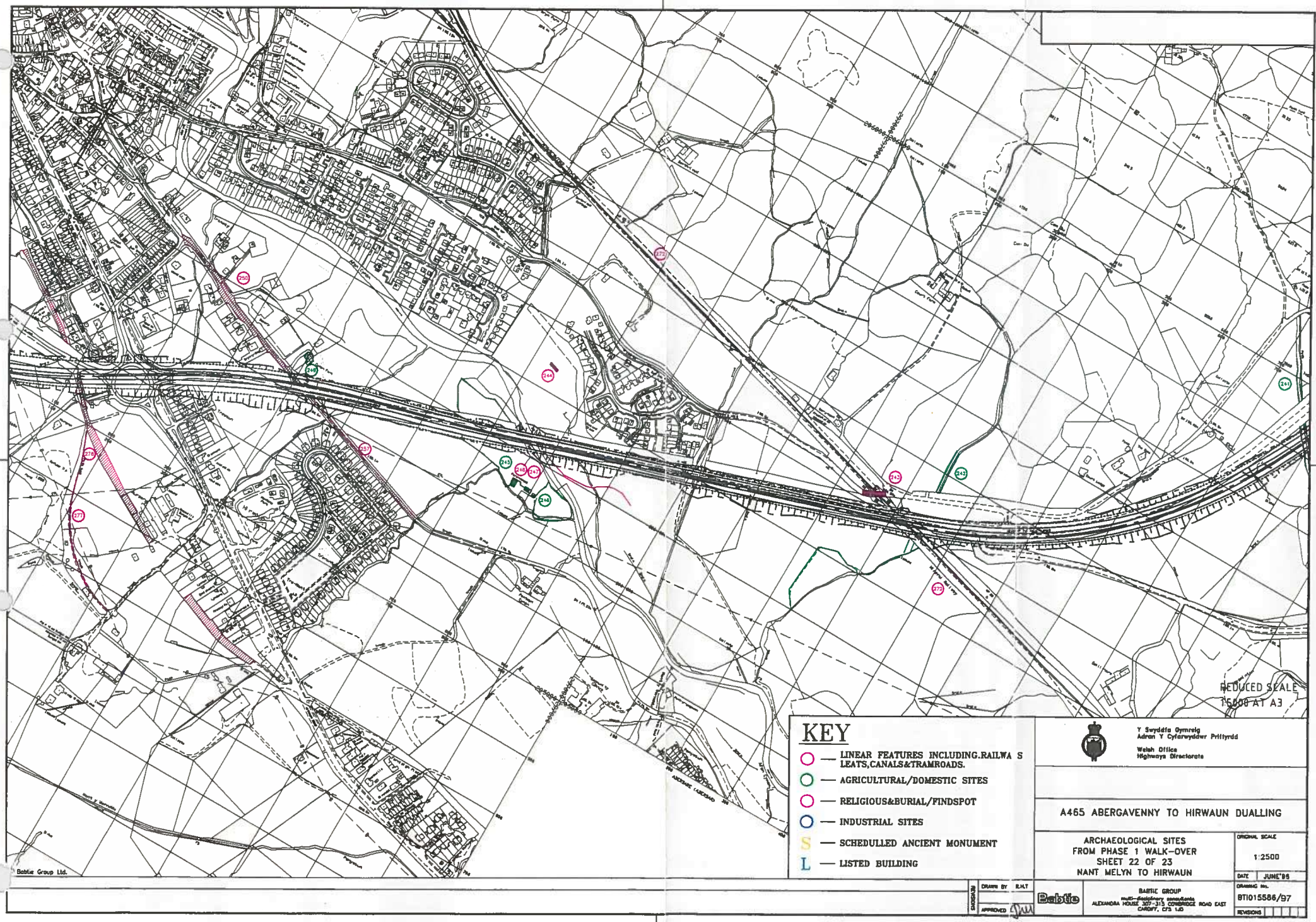
APPROVED

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 337-315 CONWRIDGE ROAD EAST
CARDIFF, CF3 1JD

© Babtie Group Ltd.

A1


KEY
LINEAR FEATURES INCLUDING.RAILWAYS LEATS,CANALS&TRAMROADS.
AGRICULTURAL/DOMESTIC SITES
RELIGIOUS&BURIAL/FINDSPOT
INDUSTRIAL SITES
S — SCHEDULLED ANCIENT MONUMENT
L — LISTED BUILDING
REDUCED SCALE
1:5000 AT A3
Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd
Welsh Office
Highways Directorate
A465 ABERGAVENNY TO HIRWAUN DUALLING
ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 21 OF 23
NANT HIR TO NANT MELYN
ORIGINAL SCALE
1:2500
DATE
JUNE'96
DRAWING No.
9TI015586/96
REVISIONS
DRAWN BY
APPROVED
Babtie
BABTIE GROUP
ALEXANDRA HOUSE 307-315 CONBRIDGE ROAD EAST
CARDIFF, CF3 1JD
Babtie Group Ltd.
A1



Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 22 OF 23
NANT MELYN TO HIRWAUN

ORIGINAL SCALE 1:2500

DATE JUNE'98

DRAWN BY R.M.T

APPROVED

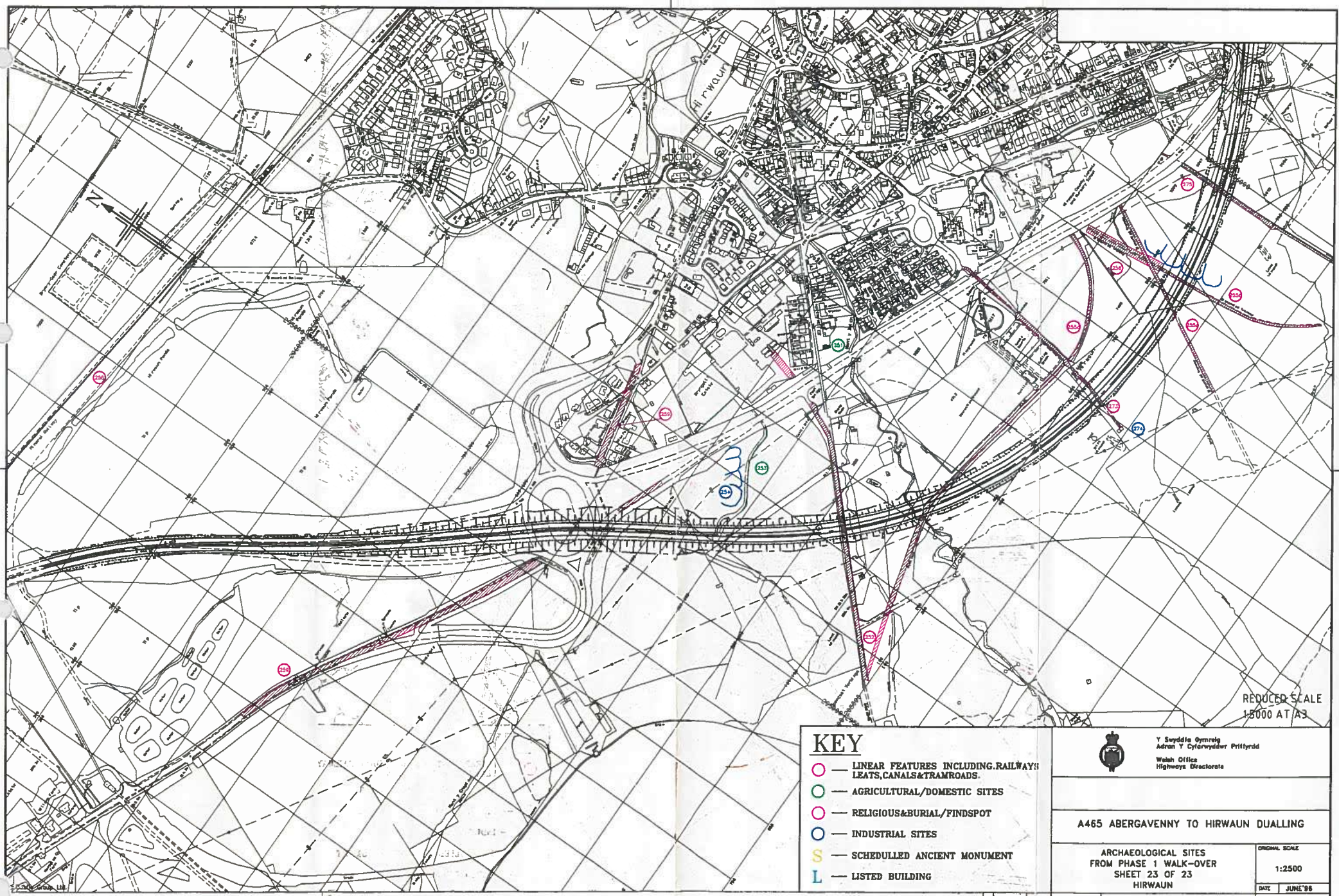
Babtie

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 CONWBRIDGE ROAD EAST
CARDIFF, CF5 1JS

DRAWING No. BTI015586/97

REVISIONS

A1



Y Swyddfa Gymreig
Adran Y Cyfarwyddwr Priffyrdd

Welsh Office
Highways Directorate

A465 ABERGAVENNY TO HIRWAUN DUALLING

ARCHAEOLOGICAL SITES
FROM PHASE 1 WALK-OVER
SHEET 23 OF 23
HIRWAUN

ORIGINAL SCALE 1:2500

DATE JUNE'98

DRAWN BY P.M.T

APPROVED

Babtie

BABTIE GROUP
multi-disciplinary consultants
ALEXANDRA HOUSE 307-315 CowBRIDGE ROAD EAST
CARDIFF, CF5 1JD

DRAWING No. BTI0155B6/98

REVISIONS

A1

Appendix 9E – Abergavenny to Hirwaun: Dowlais Top to Taf Fawr – Section 5: Archaeological Fieldwork Report (July 2004)

See following page.

Page left intentionally blank

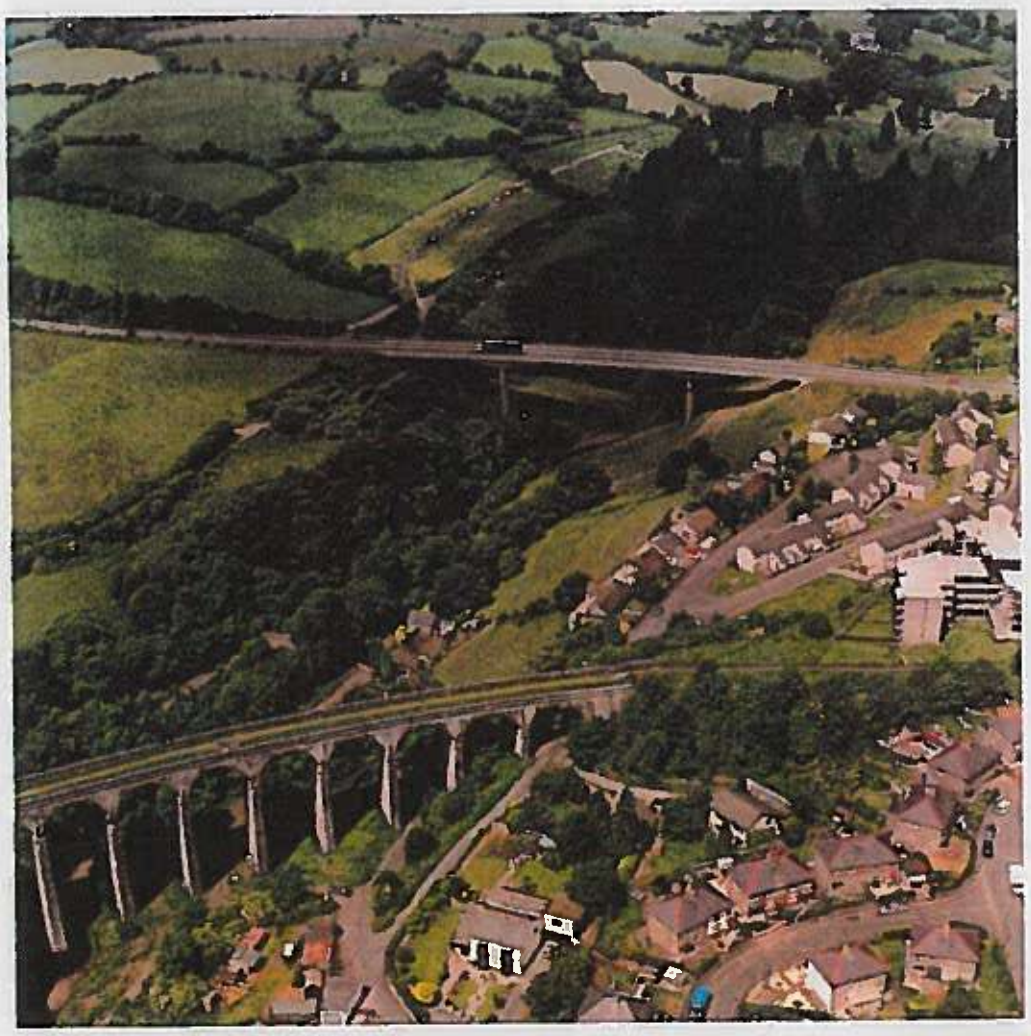
Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Babtie

Welsh Assembly Government

Abergavenny to Hirwaun: Dowlais Top to Taf Fawr

Section 5: Archaeological Fieldwork Report



7202215/ARCH/001

July 04

Babtie Group Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel 029 2035 3200 Fax 029 2035 3222

Report Title: Abergavenny to Hirwaun Dualling, Section 5: Archaeological Fieldwork Report	
Job No: 7202215/ARCH/001	Date: 14.07.04
Author(s): Jonathan Mullis	Checker: Pete Fasham .....

	Check points	Author	Checker
1.	Is this a draft (D), interim (I) or final (F) report?	F	
2.	Does this report fulfil its purpose? (Y or N)	Y	Y
3.	Are conclusions/recommendations clear and acceptable? (Y or N)	Y	Y
4.	Have drawings been approved? (Y or N)	Y	Y
5.	Have calculations been checked? (Y or N)	NA	–
6.	Have parameters been clearly recorded and correctly used? (Y or N)	NA	–
7.	Have assumed parameters been clearly recorded and are they reasonable? (Y or N)	NA	–
8.	Does the report appear to be factually correct? (Y or N)		Y
9.	Is the report to a satisfactory presentational standard? (Y or N)	Y	Y
10.	Has the report been correctly compiled? (Y or N) ■ Contents page correct and complete ■ Page and paragraph numbers correct ■ References complete ■ Appendices complete	Y Y Y Y Y	Y Y Y Y Y

SIGNATURES AND APPROVALS

Author: ..... Date 14.07.04

Checker: ..... Date. 14.07.04

Approved by Project Director: ..... Date 14.07.04

NOTES

1. This sheet to be filed with the report and submitted to the Project Director for approval.
2. The Checker shall be a staff member with sufficient experience in the subject to be able to review the documentation properly.
3. The Checker and Project Director may be the same person, however the Author and Checker may not.

Babtie Group Ltd
Churchill House,
Churchill Way,
CARDIFF,
CF10 2HH

Controlled Copy No. 1

Document No: 7202215/ARCH/001

Welsh Assembly Government

A465 Abergavenny to Hirwaun Dualling

Section 5: Archaeological Fieldwork

.....Project Director
Sharon Spackman

Issue History

Date	Revision	Status
18th May 2004		DRAFT
14th July 2004		FINAL

Copyright Babtie Group Limited. All Rights reserved.

No part of this report may be copied or reproduced by any means without prior written permission from Babtie Group Limited. If you have received this report in error, please destroy all copies in your possession or control and notify Babtie Group Limited.

This report has been prepared for the exclusive use of the commissioning party and unless otherwise agreed in writing by Babtie Group Limited, no other party may use, make use of or rely on the contents of the report. No liability is accepted by Babtie Group Limited for any use of this report, other than the purposes for which it was originally prepared and provided.

Opinions and information provided in the report are on the basis of the Babtie Group Limited using due skill, care and diligence in preparation of the same and no explicit warranty is provided as to their accuracy. It should be noted and it is expressly stated that no independent verification of any of the documents or information supplied to Babtie Group Limited has been made.

TABLE OF CONTENTS

1 Introduction 3
2 Background to the study 3
3 Background to the Stage 3 Evaluation Programme 4
4 Statutory and Non-Statutory Designations 4
5 Geographic and Topographic Overview of Section 2 4
6 General Background to Section 5 5
7 General Historical Background to the Iron Industry 6
8 Archaeological Background to Section 5 7
9 Section 3: Evaluations Methodology 12
10 Site No. 192: Brecon & Merthyr Railway, Dowlais Branch 12
11 Site No. 202: Drystone walled landscape and sheep fold, Gurnos 14
12 Site No. 216: Stone structure, Cefn-coed-y-cymmer 15

JACOBS BABTIE

Jacobs UK Ltd
School Green, Shinfield
Reading, Berkshire, UK
RG2 9HL
+44.(0)118.988.1555 Fax +44.(0)118.988.1666

Memorandum

Date 26 May 2006

To Sharon Spackman – Cardiff

From Pete Fasham

Subject A465 Abergavenny to Hirwaun
Section 6 & 7 Archaeological Fieldwork Report

cc

Ref B0025200

I enclose 4 copies of Jon's report for you to sign for and distribute.

I shall be on leave for 10 days, returning to the office on June 8th 2006.

P Fasham
Technical Director

Enc.

List of Figures

Figure 1 A465 Preferred route between Abergavenny and Hirwaun
Figure 2 Section 2 of the Preferred Route and sites
Figure 3 Section 2 of the Preferred Route and sites
Figure 4 Section 2 of the Preferred Route and sites
Figure 5 Tithe map of Merthyr Tydfil, dated 1850, showing Gurnos Farm
Figure 6 OS First Edition 6"map Brecknock Sheet XLV1 SW, 1891
Figure 7 OS First Edition 6"map Brecknock Sheet XLV1 SW, 1891
Figure 8 OS First Edition 6" map Brecknock Sheet XLV SE, 1890
Figure 9 Site 192 Location
Figure 10 Site 192 Section
Figure 11 Site 202 Location
Figure 12 Site 202 Section
Figure 13 Site 216 Location
Figure 14 Site 216 Section

1 Introduction

1.1 In 1995 the Secretary of State for Wales announced the Preferred Route for the proposed A465 dualling (Figure 1). Babtie Group was commissioned by the Transport Directorate of the National Assembly for Wales to carry out an archaeological assessment of the A465 in accordance with a brief prepared by Cadw: Welsh Historic Monuments (CO15L986 PP).

1.2 The archaeological assessment was divided into three stages in accordance with the guidelines set out in the Cultural Heritage section of the 'Design Manual for Roads and Bridges' (DMRB) (Vo.11, Highways Agency *et al*, 1992). The results of Stages 1 and 2 of the Cultural Heritage Assessment were published in 'A465 Abergavenny to Hirwaun Archaeological Survey: Phase 1 Report' (Babtie, 1996).

1.3 The length of road proposed for dualling extends for a distance of 41.5kms, between Abergavenny and Hirwaun; the road has been divided into 7 distinct sections. This report covers the archaeological sites within Section 5 of the road scheme which extends for 5.4kms from Dowlais Top to the A470 Junction.

2 Background to the study

2.1 The Stage 1 report was completed by Glamorgan-Gwent Archaeological Trust (GGAT,1994). These reports were based primarily on information contained in the Regional Sites and Monuments which is maintained by Glamorgan-Gwent Archaeological Trust (Curatorial Section).

2.2 This information was supplemented by a walkover survey carried out by Cadw (Cadw, 1995). Further to this Cadw prepared an archaeological brief requiring two further phases of work, which equated with Stages 2 and 3 of the Cultural Heritage assessment outlined in Vol.11 of the DMRB. These further stages were carried out by Babtie Group's archaeologists in accordance with this brief.

2.3 Stage 2 involved a re-interrogation of the Regional SMR to include any data added since the Stage 1 study. In addition a detailed desk-top study, further historic and cartographic background research and a walk-over survey with a photographic record was carried out.

2.4 During the Stage 2 assessment an archaeological value was assigned to each site based on the Secretary of State's non-statutory criteria for the Scheduling of Ancient Monuments, published in Planning and the Historic Environment: Archaeology Welsh Office Circular 60/96. Each site was then provisionally graded into five categories of site, as follows:

- Category A: Sites of National Importance;
- Category B: Sites of Regional or County Importance;
- Category C: Sites of District or Local Importance;
- Category D: Minor or Damaged Sites;
- Category E: Sites Requiring Further Investigation.

2.5 The results of Stage 2 were reported in the Cultural Heritage Assessment of Vol. 2.2 of the Environmental Statement, which identified a total of 282 archaeological sites between Abergavenny and Hirwaun (Welsh Office, 1997). The Stage 2 assessment identified a total of 33 sites in Section 5 (See Appendix 2).

2.6 The Stage 3 evaluation programme involved trial-trenching, geophysical survey, test-pitting and an assessment of the palaeoenvironmental potential. During Stage 3 a total of 41 Category E sites within the scheme were evaluated through trial-trenching of which 3 sites were within Section 5. This enabled the nature, importance and preservation of any surviving archaeological remains to be determined and the impact of the proposals on them.

3 Background to the Stage 3 Evaluation Programme

3.1 This report incorporates the Stage 2 background research and assessment with the results of the Stage 3 archaeological evaluation fieldwork programme. Most of the sites identified in Section 5 were of post-medieval date, largely consisting of industrial features such as tramroads, railways and coal and iron workings, chapels and farmsteads and drystone walled landscapes.

4 Statutory and Non-Statutory Designations

4.1 Within Section 5 there is one archaeological site which has statutory protection. This is:

- the Gurnos Tramroad (Site 207) and Leat (Site 208) form a Scheduled Monument (GM 487).

4.2 In addition there is one landscape which is recorded within the non-statutory Register of Landscapes of Outstanding Historic Interest:

- the Merthyr Landscape of Outstanding Historic Interest HLW (MG I) 2

5 Geographic and Topographic Overview of Section 2

5.1 Section 5 is situated within a narrow strip of coal-bearing land which forms the South Wales coalfield. The solid geology of the area consists of productive Coal Measures, Millstone Grit, Culm and Carboniferous Limestone with drift geology of mainly poor shaley soils.

5.2 In general the A465, between Dowlais and Brynmawr, follows an alignment that skirts the northern edge of a succession of historically important settlements at the heads of each valley it crosses. Section 5, from Dowlais Top and the A470 Junction near Cefn-coed-y-cymmer, is mainly located within open moorland. Only to the west of Dowlais and to the east of Brynmawr, was the A465 built through mainly enclosed land.

5.3 The principal settlement in Section 5 is Merthyr Tydfil, which occupies a natural basin at the head of the Taff valley. The high hills and ridges around the area reach 450m above ordnance datum, so development is largely constrained to the basin floor and smaller tributary valleys of the Taff. The Taff provides the only natural route out of the basin to the south east. The Taff Fawr forms the

boundary between Penderyn and Vaynor parishes and the Taff Fechan the boundary between Vaynor and Merthyr.

6 General Background to Section 5

6.1 The section of the A465 between Dowlais Top and Brynmawr is one of the most exposed of the entire road as much of it lies above the 300m contour and was, therefore, with possible exceptions during the Bronze Age, largely devoid of settlement prior to the post-medieval period.

6.2 During the 1960s the A465 road engineers faced considerable problems in building a trunk road to modern standards over difficult terrain. The A465, therefore, partly re-used the abandoned trackbed of the London and North Western Railway's (LNWR), which ran roughly parallel to the earlier Merthyr to Abergavenny turnpike road.

6.3 At Cefn-coed-y-cymmer, in Penderyn parish, the A465 road crossed the Taff Fawr, the Taff Fechan and the Nant Ffrwd on three major road viaducts that are generally regarded as outstanding engineering works of their type and period. The road viaducts, which were designed by the road engineers Rendel, Palmer & Tritton with Alex Gordon & Partners as consultant architects, employ twin parabolic arch ribs with the spans cantilevered from two piers.

6.4 The construction of the A465 in the 1960s severed a number of industrial era tramroads, originally built to bring raw materials, chiefly limestone, from quarries, like Castle Morlais, to the various ironworks. In addition the road crossed several leats which were built to bring water to power the furnaces and the forges. There are also some remains of ironstone pits and coal mines on both sides of the route of the A465 throughout Section 5.

6.5 Merthyr Tydfil is one of the few large settlements, located along the A465 road in Section 5. The mineral resources contained within its hinterland led to it becoming the largest iron-making town in the world between the early and mid-19th century. The town, and its associated landscape, was rapidly transformed from a village in the 1750s to the largest town in Wales by the early 1800s.

6.6 The greater portion of the metal from the ironworks in the Merthyr vicinity was converted into bar iron and other malleable iron. The production of manufactured goods made of iron centred on Sheffield and Birmingham and was little practised in Wales. However, besides iron working, there were other trades of some consequence In Merthyr, including the manufacture of woollen cloth and brewing. In addition the town was a significant economic, religious, literary and political centre in Wales.

6.7 Merthyr retains a relict industrial landscape whose character was formed when it was the most significant Welsh town of the Industrial Revolution. The landscape retains numerous elements from the late 18th and 19th centuries, such as the remains of large ironworks, remnants of the associated coal mining industry, leats for water power, an early iron bridge, early tramroads, tips, industrial terraced worker's housing and the Ironmasters' house at Cyfarthfa Castle.

7 General Historical Background to the Iron Industry

7.1 Section 5 comprises the parishes of Merthyr Tydfil, Penderyn and Vaynor. The parish of Merthyr Tydfil comprises the hamlets of Forest, Garth, Gellideg, Heolwermood, Taff and Cynon. Merthyr grew from a population of 7,700 in 1801 to a figure of 22,000 in 1831, to 34,978 in 1841 and 46,378 in 1851, making Merthyr by far the largest town in Wales.

7.2 The tithe map for Merthyr Tydfil (1850) (Figure 5) shows that, outside of the iron-producing areas, the landscape remained largely rural and enclosed. In addition, the 1891 Ordnance Survey (OS) map shows the area around Dowlais as a series of railway lines, tips, ironworkings and industrial housing.

7.3 The area's iron industry centred on Merthyr Tydfil, where the Dowlais Ironworks was opened in 1759 and became probably the first works to use coke for iron smelting in South Wales. It was followed by the foundation of other ironworks such as Plymouth in 1763, Cyfarthfa in 1765 (linked to the Hirwaun Ironworks) and Penydarren in 1784. Further subsidiary works were created in the early 19th century: at Ynysfach by Cyfarthfa; Ivor by Dowlais; Dyffryn by Plymouth; with further forges at Pentrebach. Surviving remains include the renowned blast furnace bank at the Cyfarthfa Ironworks, Dowlais Ironworks and the remains of the Ynysfach Ironworks.

7.4 In the first year of production the primitive Dowlais furnace produced over 500 tons of iron. The site was extended in 1763 and further furnaces, mills, forges and workers houses were built. It is characteristic of Welsh ironworks that they were integrated businesses since, due to the fortunate geological arrangement of the Coal Measures, the iron-ore and coal lay together with coarse pennant sandstone for building, Carboniferous limestone for use as flux in smelting, clay for bricks and water for power.

7.5 The South Wales ironworks operated on a vast scale and by 1801 the population had grown to nearly 8,000 people making Merthyr Tydfil the largest town in Wales. The Dowlais Ironworks, which had 5000 employees in the 1840s, was then the largest manufacturing enterprise in the world. By 1845 the Dowlais works had seventeen furnaces, and made 74,880 tons of iron. At the same time the Cyfarthfa works had eleven furnaces and made 45,760 tons of iron, employing founders, colliers, miners and labourers.

7.6 The iron industry built dynasties of ironmasters like the Guest family, who managed the Dowlais works, and the Crawshay family, who managed the Cyfarthfa Ironworks. William Crawshay II became one of Britain's first millionaires and built Cyfarthfa Castle with its landscaped gardens as part of his estate.

7.7 By the 1780s the ironmasters of Merthyr's iron industry had adopted Cort's puddling process, which vastly speeded up the rate of iron production and became known as the 'Welsh method'. By the 1820s, Merthyr was the source of 40 per cent of Britain's iron exports and remained the foremost ironmaking town until its decline in the 1850s when new manufacturing processes demanded purer iron ore. The population of Merthyr decreased in the 1870s until greater demand for coal led to further growth. The eventual the collapse in the demand for coal in the 1920s led to the economic failure of Merthyr.

7.8 The iron industry also invested in infrastructure in order to speed up the process of marketing their goods. Early transport systems included: · the Glamorganshire Canal from Merthyr to Cardiff, opened in 1794; the horse-drawn Penydarren tramroad built in 1802 to link Merthyr to Abercynon and significant as the route of the first steam-locomotive railway journey by Richard Trevithick's 1804; the Gurnos tramroad, built in 1793, carrying limestone from the Gurnos quarries to Cyfarthfa Ironworks; the Pontycafnau bridge, the first ever iron railway bridge to be built; and the Taff Vale Railway from Merthyr to Cardiff, which opened in 1840-1.

8 Archaeological Background to Section 5

8.1 Prehistoric

8.1.1 Within Section 5 there is only fragmentary evidence of prehistoric activity and the potential for prehistoric features is restricted by the later industrialisation of the area. There are no positively identified prehistoric features within the Section 5 road corridor, although Bronze Age cairns, round barrows and standing-stones are known to survive in the upland areas to the north the A465. Outside of Section 5, either side of the A465 near to the Baverstock Hotel, are a number of Bronze Age barrows and cairns, clustered into cemeteries. Outside the road corridor, to the north of Merthyr Tydfil, the early medieval site of Castle Morlais was built within an existing Iron Age hillfort on a limestone ridge above the Taff Gorge. The relative lack of prehistoric activity within the Section 5 of the road corridor possibly means that much of the area was only relatively sparsely occupied, possibly by semi-nomadic pastoralists practising transhumance, prior to the post-medieval period.

8.1.2 During construction of the A465, in the 1960s, a series of hut circles were uncovered at Grawen Cottages (Site No.218). The huts circles were not fully recorded, but were considered to date from the early medieval period. However, from the scanty details recorded, these could equally have been evidence of prehistoric settlement.

8.1.3 The walkover survey recorded a number of undated sites in Section 5, some of which were postulated to have a prehistoric origin. A large single stone with an acute smooth-bowled surface on one edge (Site No. 201) was identified in a field just east of Gurnos Farm. The stone appeared to be a simple hand quernstone, which could have been prehistoric in origin.

8.1.4 A small a dough-nut shaped cairn (Site No.175) was found on a south facing slope, north of the A465 on Merthyr Common. The cairn, which was c.3-4m in diameter and about 1m high, was built of medium-sized stone rubble. It is possible the site dated from the Bronze Age, although there is later material surrounding it, including brick and slag, which may suggest an industrial function as a ventilation shaft. Aerial photographs showed further similar features, outside the study area, throughout the common.

8.1.5 In addition two large slabs of limestone partially embedded into a west facing slope were identified on the south side of the road, east of Cefn-coed-y-cymmer, away from the areas of commercial quarrying. The slabs appeared to be supported from underneath by small upright stones. At the southern end, the slabs are submerged into disturbed earth and stone. This site was originally believed to be a chambered structure of an 'earth-fast' type, possibly dating from the Neolithic period.

8.1.6 The medieval castle of Castle Morlais, on a limestone ridge above the Taff Gorge, was built on the site of an Iron Age hillfort, suggesting that this site was an important strategic route prior to Roman occupation.

8.2 Roman (55 BC - AD 450)

8.2.1 There are no positively identified Roman period sites within the Section 5 road corridor, although a north/south aligned track, adjacent to the A465 at Gurnos Farm is labelled as `Roman Road' on the 1891 OS map. The possible Roman road runs towards Pont Sarn, where there is a crossing of the Taff Fechan.

8.2.2 The site may have formed part of Margary's Route 621, which was a road which connected the military sites. The exact line of this road is unknown but it did run to the nearby Penydarren Fort, connecting it to the forts at Gelligaer, Brecon, Caerleon (Isca), Caerphilly and Cardiff (Tamium).

8.2.3 Alternatively the track may merely have been yet another stretch of straight footpath which the OS surveyors interpreted as a 'Roman Road'. There is no conclusive proof supporting the hypothesis of a Roman origin for this track and the site is not recorded on the SMR.

8.2.4 The Iron Age hillfort, at Castle Morlais, was possibly abandoned during the Roman period after the beginnings of military incursions in the area. The nearby Roman auxiliary fort of Penydarren is know to have been built between the 1st and early 2nd centuries, and was occupied up to c.40 AD. It is possible its construction led to the end of occupation of the Castle Morlais hillfort. The Penydarren Fort was built on a strategic spur of ground overlooking the Morlais Valley, in what is now Penydarren Park (SO05030678).

8.2.5 Penydarren fort was originally built in timber but this was replaced in stone around the turn of the second century. The site included a bath-house, a mosaic pavement and cremation burials.

8.3 Medieval

8.3.1 It is likely that these uplands would have been exploited for agriculture in some form during the medieval period, possibly based on transhumance farming. Evidence for such farming and temporary settlement is likely to have been largely destroyed by post-medieval industrial workings and settlements. However, some evidence may survive in the form of dry-stone walled field patterns and sheep enclosures. It is possible that much of the drystone and turfstone walling along the entire route of the A465 could date from either the late medieval or early post-medieval periods.

8.3.2 The main medieval monument in this area is Castle Morlais, although this is located some distance to the north of the A465 road corridor. The castle was built within an Iron Age hillfort on a limestone ridge above the Taff Gorge. The surviving ruins represent the last vestiges of a well-fortified castle begun in AD 1287 by Gilbert de Clare, earl of Gloucester, on land claimed by Humphrey de Bohun, earl of Hereford. When warfare broke out between the earls in 1290, Edward I was forced to march down from north Wales to intervene in the dispute.

8.3.3 The castle comprised a triangular inner ward with sides about 45m long and an inner bailey 60m wide. The inner ward had a round keep 17m in diameter at the north corner, a D-shaped tower with a staircase at the southeast corner, and a similar tower projected from the south wall. Between these was the

gateway. The outer ward has no towers on the west side, but there is a D-shaped tower at the southeast corner.

8.3.4 In 1880, an early medieval coin hoard (No.215) dated to AD 1340, was discovered close to the present A465, during construction of St. John's Church in Cefn-coed-y-cymmer. In addition, close to Grawen Cottages (No.218), a series of hut circles were discovered during the 1960s construction of the A465. These were considered to be of early medieval date, but could have dated from the prehistoric era.

8.4 Post-medieval

8.4.1 A large part of the industrial landscape was lost when the A465 was built in the 1960s and other portions have disappeared as a result of modern opencast working and land reclamation. The industrial activity of this relatively isolated area depended on a well-developed communications infrastructure designed to transport raw materials and the finished products. During the early stages of ironworking in the South Wales valleys, raw materials and pig-iron were probably initially moved around the area using pack animals and localised tramroads. However, by the end of the 18th century industrial expansion led to the creation of a number of integrated communications links such turnpike roads, tramroads and later railways, to move products and materials between the limekilns, coalmines, the iron-works and the consumer markets.

8.4.2 One of the areas first communication links was the Merthyr to Cardiff turnpike road which was built as the result funds raised in 1767. Following on from this in 1812 a turnpike road was built from Merthyr to Abergavenny on much the same route as that now followed by the A465 and this remained the only main road between these towns until the opening of the A465. The road followed a circuitous route from Merthyr, passing close to the various ironworks which, by this date, had been established near the heads of each of the intermediate valleys, to the mountain top at Brynmawr and down the Clydach gorge to Gilwern. During the 19th century the road between Brynmawr and Merthyr served as a focus for a number of settlements.

8.4.3 One of the most successful transport systems was the Glamorgan Canal between Merthyr and Cardiff. After some preliminary failures the Glamorgan Canal Navigation Act obtained the Royal Assent in 1790. The first stretch of the canal, between Abercynon and Cardiff, was known as "The Navigation", or "The Basin", and was completed by 1794, but it took another 4 years to complete the 9 miles between Abercynon and Merthyr. The Glamorganshire Canal itself was a considerable engineering feat, having a total rise of 568 ft. in the 25¼ miles between the Cardiff Sea Lock; the head of the canal at Merthyr required 50 locks and cost of over £100,000.

8.4.4 The Glamorgan Canal Navigation Act, as with other measures sanctioning canals in South Wales and Monmouthshire, provided for the construction of Penydarren Tramroad and connecting tramroads from collieries and ironworks situated not more than 4 miles from the canal.

8.4.5 The 19th century landscape was covered by tramroads, which were laid from the ironworks in each valley running north to a series of collieries, ironstone pits and limestone quarries. In addition some tramroads were linked together to create a rudimentary west-east route, giving the ironworks concerned access to wider markets.

8.4.6 In 1799 a Bill was promoted in Parliament for a Cardiff & Merthyr Railway. This was originally a tramroad which was intended to run from Cardiff Sea Lock up the valley of the Taff to Navigation House at Abercynon. From there one arm was to have turned westward towards Aberdare, with the main line continuing for 9 miles along the bank of the Taff and then bearing further east to a terminus at Carno Mill, near Rhymney. A further branch was to have served the limestone quarries north of Merthyr, which figure as the objective of many later railway schemes.

8.4.7 The scheme for the Taff Vale railway to Cardiff faced powerful opposition from the Glamorgan Canal Company but despite this, the Taff Vale Railway Company's Act received the Royal Assent in 1836. It incorporated the first commercially significant public railway in Wales. The Taff Vale Railway was to run from Merthyr Tydfil to Cardiff, with a branch to communicate with the Tramroad leading to the Penydarren, Dowlais, and Plymouth Ironworks, and another branch to the collieries of Lancaiach. The first stretch of the railway was opened in 1840 and reached Merthyr by 1841.

8.4.8 The Heads of the Valleys Railway Company was first promoted in the late 1850s, following a route already adopted by earlier tramroads. Nevertheless, the building of a locomotive-operated railway was a formidable challenge and proved too much for the original company which was taken over by the London & North Western Railway (LNWR).

8.4.9 The first stretch of the LNWR's Merthyr, Tredegar & Abergavenny line was opened to Brynmawr in 1862. Further sections of LNWR line followed, built jointly with the Rhymney Railway and the Brecon & Merthyr, until a complete route to Merthyr was opened in 1879. The line was built principally to carry iron, and in later years coal, from the works along the heads of the valleys to the Midlands, and passenger traffic was probably always minimal. The railway route included some of the steepest gradients found anywhere on the main-line system in Britain and some of the tightest curves. The railway was a magnificent engineering achievement with several fine viaducts, tunnels and other features.

8.4.10 However, the LNWR line probably never paid its way, except perhaps for a few decades after it was first opened and, as the South Wales iron industry began its rapid late 19th-century decline, the revenue originally envisaged never materialised. After the Second World War it became a candidate for closure and was shut as a through route in 1958, although a few short lengths at either end remained in use for a little longer.

8.4.11 From Dowlais Top to the boundary with Gelligaer parish the A465 was built on the trackbed of the London & North Western Railway's Merthyr, Tredegar & Abergavenny Railway.

8.4.12 The Brecon & Merthyr Railway main line, which opened in 1869, ran from Dowlais Central to Pant, parallel for most of its length with the present road between the same places; the A465 is carried over both road and railway on the northern edge of Dowlais village. At Pant it joined the earlier B&M main line to Brecon via Pontsticill opened it 1863. To the northwest a tramway branched off the main line to serve Bryniau Quarry, of which no trace appears to have survived beneath a modern housing development and the Merthyr Industrial Estate.

8.4.13 The branch to the northeast was the London & North Western Railway's Dowlais Extension, opened in 1873, which linked the LNWR Merthyr, Tredegar

& Abergavenny section at Dowlais Top with the Brecon & Merthyr Dowlais Branch at Ivor Junction. This curved through 180^0 to return southeast to Dowlais Top where it is crossed by the A465.

8.4.14 The former Station House at Dowlais Top (Site No. 183) was built by the Brecon & Merthyr Railway (B&M), close to the junction with the LNWR's Dowlais Extension.

8.4.15 The Castle Morlais Quarries Tramroad (Site No. 200) was built in 1803 to bring lime and limestone from Morlais Quarries, which were far more extensive than Gurnos Quarry, down to the Dowlais Ironworks. The line, which was a plateway with mixed 2ft 9in and 4ft 2in gauge track, is marked on both the Tithe map and the 1891 OS. The trackbed branches off from the Gurnos housing estate, just south of the A465, and passes beneath the road where it continues north to the quarries. A small group of field limekilns were identified during the walk-over near the tramroad, probably for use in improving the adjacent pasture.

8.4.16 The Gurnos Limestone Quarry, which is a well-preserved late 18th-century quarry, was built to supply limestone and lime to Cyfarthfa Ironworks. The Merthyr Tithe map (1850) schedules the parcel in question as `Pasture and Quarry', while the 1891 OS map shows a network of tramways on the quarry floor connected to the main line described in the previous paragraph.

8.4.17 Gurnos Tramroad and Leat (Site no. 200) is a Scheduled as an Ancient Monument, built in 1792 to supply the Cyfarthfa Ironworks with limestone. A leat alongside the tramroad, and running parallel with the Taff Fechan, supplied water to the works.

8.4.18 At Cefn Coed y Cymmer, in Penderyn parish, the existing A465 crosses first the Taff Fawr and then the Taff Fechan on a series of three major road viaducts that are generally regarded as outstanding engineering works of their type and period. The viaducts on the A465 were erected in 1964 to carry the original road over the Taff Fawr, Taff Fechan and Nant Ffrwd. They were designed by the road engineers Rendel, Palmer & Tritton, with Alex Gordon & Partners as consultant architects. The viaducts over the Taff Fechan and Nant Ffrwd employ twin parabolic arch ribs to carry the roadway. The central bridge over the Taff Fawr has three spans cantilevered from two piers.

8.4.19 Gurnos Farm (Site No. 204) was occupied, but not owned, by William Crawshay when the Tithe award was prepared in 1846, and then extended to 209 acres. The buildings date from the late 19th century and the tithe map and the 1891 OS appear to mark exactly the same layout as the current OS. This consisted of three large blocks of buildings around an open quadrangle, approached from the south by a straight driveway which enters the farmyard in the centre of its south side. The farm was an early 19th-century 'model farm' built by an `improving' landlord or a substantial tenant and may originally have been erected by William Crawshay II as part of his development of the Cyfarthfa estate.

8.4.20 The Merthyr Tydfil tithe map (1850) (Figure 5) marks only the more southerly of the Reservoirs at Dowlais; the larger reservoir to the north of the A465 was added sometime prior to the preparation of the first edition of the OS map in 1872-85. The storage pond marked on the current OS map and labelled `Roadside Pond Reservoir' on the print supplied for this survey is marked on the OS of 1891 at more or less its present size. The present pond lies entirely in Merthyr but both the tithe map for this parish (1850) and that for Gelligaer (1842) marks another, much larger pond adjoining to the east, most of which

lay in Gelligaer. These ponds were evidently supplied from two larger ponds to the north of the A465 on Merthyr Common (Pitwellt Pond and Jepson's Pond), and a leat continues from the Roadside Pond (and from its larger neighbour to the east, according to Gelligaer tithe map) to run southeast to a fourth pond near Pant-y-waun Pit, which seems to have disappeared from the modern map. The map evidence for this group of ponds and associated leats suggest they were built to supply water to the ironstone pits at the northern end of Gelligaer Common, rather than an ironworks.

8.4.21 The worker's cottages near Grawen House (Site No. 218) are marked on the 1891 OS and probably date from the early to mid-19th-century. St John's Church (Site No. 218), which was designed by the Cardiff architect George Edward Robinson, dates from 1880. It was described by John Newman (Architecture in Wales) as `rather coarse and artless', but as an important Victorian church and churchyard, it has significant landscape value.

9 Section 3: Evaluations Methodology

9.1 Each evaluation followed a methodology including combinations of machine excavation and hand excavation and recording. Excavation of the topsoil and non-archaeological layers was carried out using a machine fitted with a ditching bucket under archaeological supervision. Detailed excavation of stratified deposits was carried out by hand. The archaeological contexts were recorded on pro forma sheets following the site specification and the methods set out in the Babtie site manual.

9.2 A feno station was established next to each site, which was tied-in to the National Grid reference and had a known height above ordnance datum, accurate to a lateral tolerance of +/-50mm on soft surfaces and a height tolerance of +/-10mm. The exact location of the individual trenches was measured from known points and plotted onto Ordnance Survey digital base maps. Levels were taken using an automatic dumpy level.

9.3 The archaeological research objectives for each site are outlined on a site-by-site basis in Appendix 1, but the overall objectives were to evaluate the potential survival and relative importance of sites related to the industrial period in Section 3.

10 Site No. 192: Brecon & Merthyr Railway, Dowlais Branch (SMR 03170m) (SO 0668 0887 to SO 0733 0844)

10.1 Description

10.1.1 The profusion of different railways and their junctions around Dowlais make this a complex area of industrial archaeology. The B&M Dowlais Extension (Site 192) represents a north/south orientated branch line of the Brecon & Merthyr (B&M) main line. The branch line linked Dowlais Central Station to the B&M main line and the B&M & LNWR Joint Railway, at a junction to the north of Castle Morlais Quarries.

10.1.2 A large section of embankment (Site 185) belonging to the Brecon & Merthyr Railway main line (Site 184) survives west of the Dowlais Top roundabout, close to the easterly section of the Upper Reservoir leat system (No.186). The route of the B&M main line railway (Site 184) at SO 0729 0849 veers north alongside the northern bank of the Upper Reservoir towards Brecon.

10.1.3 Dowlais Top station house (Site 183), which was constructed to serve the B&M main line railway (Site 184) and the London and North Western Railway (Dowlais Extension) is built of rusticated coursed masonry and probably dates from circa 1873. The station house retains its typical of Victorian railway architectural style, although the platform area to the west of the station house has now been landscaped.

10.2 Cartographic Evidence

10.2.1 The Tithe map of 1859 does not show this railway as it was not built until later in the 19th century. The OS 1891 map shows that much of the branch line section of the Brecon and Merthyr Railway (Site 192(has been supplanted by the existing housing estates north and south of the A465.

10.3 Documentary Research

10.3.1 The Brecon & Merthyr Railway (Site 184) main line was opened in 1869 and ran from Dowlais Top Station to Pant. At Dowlais Top Station the line forms a junction with the London and North Western Railway (Dowlais Extension) which was built in 1873. The LNWR Dowlais Extension formed the link between the LNWR Merthyr, Tredegar & Abergavenny section and the B&M Dowlais Branch at Ivor Junction. From Dowlais Top to Pant the main line runs parallel for most of the way with the present road between these places. At Pant it was joined by the earlier B&M branch line to Brecon via Pontsticill opened in 1863.

10.3.2 The B&M Dowlais Extension (Site 192), which was opened in circa 1873, is a branch line of the Brecon & Merthyr (B&M) main line. The branch line linked Dowlais Central Station to the B&M main line and the B&M & LNWR Joint Railway, at a junction to the north of Castle Morlais Quarries.

10.4 Evaluation Results

10.4.1 A trench 4m x 1m was excavated to a depth of 1.2m across the probable line of the B&M branch line. The site of the evaluation trench was excavated in an area of open green space, north of the A465.

10.4.2 The first layer (001) consisted of a loose blue grey fill with shale and blue grey clay material and building rubble. The, which had been truncated by cuts [002] & [003], possibly for the extraction of material for the road embankment. Cut [002] was u-shaped and 1.15m deep by 3.5m EW, with sides sloping at about 1:1.

10.4.3 Cut [003] was also u-shaped and about 0.8m deep x 0.55m EW with sloping sides of 1:1. It was considered to be a cut for the removal of the material for construction of adjacent road.

10.4.4 Layer (004) loose mottled brown dark grey mixed sandy soil and clay containing general modern rubbish and was cut through by [002] & [003].

10.5 Conclusions

10.5.1 The site had obviously been levelled and reclaimed at some point as the first layer removed contained a lot of building rubble. It was considered that the cuts into these layers probably represented the removal of the material for construction of 1963 road embankment.

10.5.2 No evidence of the Brecon and Merthyr Railway was found during this evaluation. It was concluded that any evidence for the Brecon and Merthyr Railway at this point had been removed by the construction of the A465 in the 1960s and additional disturbance had been caused by the excavation of material for construction of the road itself, haul roads and specifically the adjacent embankment.

11 Site No. 202: Drystone walled landscape and sheep fold, Gurnos (SMR 03197m)SO 0450 0865

11.1 Description

11.1.1 Approximately 110m to the east of Gurnos Farm is a semi-circular drystone walled enclosure which appears to have been truncated to the south by the construction of the A465. Inside the semi-circular feature there is evidence of stone clearance, whilst externally the surrounding fields are littered with limestone outcrops and evidence of possible quarrying. Following the external circumference of the walling is a stream linked to other watercourses to the north.

11.1.2 The antiquity of the field system was further suggested by the proximity of a possible Roman road (Site 205) and a possible quern stone (Site 201).

11.2 Cartographic Evidence

11.2.1 The area of the wall is shown on the Tithe of 1850 and the OS of 1891 maps (Figures 5 & 7) as forming part of an unusually-shaped field which originally extended to the north and south of the present A465. The southern area of the field has largely been truncated by the A465. The surrounding area consisted largely of woodland.

11.3 Documentary Research

11.3.1 The track way (Site 205) to the west of the field system, may have formed part of a Roman road (Margary's Route 621), which connected the military sites at Cardiff, Caerphilly, Gelligaer, Penydarren and Brecon.

11.3.2 The field in question was almost certainly formed part of the 206 acres owned by the adjacent Gurnos Farm (Ste 204), which was a model farm, built in 1846. The farm is unusual in being a planned rectangular courtyard farm. The farm would have improved much of the surrounding farm land for pasture, as the adjacent field lime kilns (Site 198) testify.

11.3.3 The farm may have been erected by William Crawshay II as part of his development of the Cyfartha estate, which included a large amount of ornamental planting between Gurnos and his seat at Cyfartha Castle.

11.4 Evaluation Results

11.4.1 Two trenches 1m x 1m were excavated either side of a small section of the field wall in order to determine the possible date for the walls and methods of construction.

11.4.2 Below the topsoil (001) was a moderate to firm mid-brown grey mottled layer (002) of silty loam with some iron-pan, with occasional angular stones approximately 0.2m-0.3m thick. Below this was moderate to firm reddy brown sandy clay layer (003) of re-deposited natural clay, probably dating from the

construction of the wall. This layer seemed to have been formed in a cut, but no clear edge for the cut was visible during excavation; this probably represented the back-filled material of the construction trench for the wall.

11.4.3 The wall itself (004) was of dry-stone construction and stood, on average, 0.5m above ground level. The wall was built of roughly squared limestone blocks of between 0.5m x 0.15m and 0.15m x 0.15m in size, largely uncoursed, with no foundations.

11.4.4 The lower section of the wall extended approximately 0.30m below the present ground surface, close to the interface between recent shallow dark humic soils and light orange clays.

11.5 Conclusion

11.5.1 No foundations for the wall were revealed since the wall was built off the existing clay, suggesting that this wall was constructed purely for agricultural use. The unusual sub-circular shape may be explained by the need for a corralling area for cattle or use as a sheep-fold. No dating evidence for this wall was found, and it remains possible that these drystone walls have a medieval or earlier origin.

12 Site No. 216: Stone structure, Cefn-coed-y-cymmer (SO03730803)

12.1 Description

12.1.1 The site is situated south of the present A465 at the bottom of a south-west facing scree-slope and consists of two large, self-supporting limestone slabs. Initial assessment concluded that these stones may have formed a man-made structure, possibly of prehistoric origin.

12.2 Cartographic Evidence

12.2.1 The site is located close to an area annotated on the OS 1880 map as the 'Gurnos Quarry' and served by a series of minor tramways linked to the Gurnos Tramway (Site 208). The adjacent area is shown as an area of rough, unenclosed scrub and heathland.

12.3 Evaluation Results

12.3.1 Below the topsoil (001) of black peaty soil with small quartz pebbles was a layer (002) of light brown sandy silt with high organic content and large angular quartz and limestone conglomerate. No archaeological features or finds were made within this layer (002) and it was interpreted as the natural subsoil.

12.4 Conclusion

12.4.1 The Stage 3 evaluation revealed no dating evidence or features suggesting that prehistoric activity caused the unusual appearance of the stones. The lack of archaeological evidence around the stones suggested that these blocks were, in fact, natural limestone outcrops. Alternatively, they may be explained as resulting from extensive quarrying activity within the adjacent Gurnos Quarry, although this does not explain why such prominent slabs were left un-worked.

APPENDIX 1

Appendix 1: Sites evaluated in Section 5

Site No.	Name of Site	Evaluation Method	Period	Type
192	Branch line of Brecon & Merthyr Railway SO 0678 0856	*Method of excavation: Hand excavation followed by machine trenching.*	Post-medieval 1896	The north/south cutting for the Brecon & Merthyr railway line.
202	Drystone walled landscape and sheep pen, Gurnos	*Method of excavation: hand excavation.*	Post-medieval	An extensive drystone walled landscape including a sheepfold.
216	Stone structure, Cefn-coed-y-cymmer	*Method of excavation: Hand clearance and excavation where necessary.*	Post-medieval	Stone structure, initially considered to be of prehistoric provenance. Evaluation however, suggested it forms part of a quarry area.

APPENDIX 2

Sites in Section 5 - Dowlais Top to A470 Junction

Site no.	Site name	Grid ref.	Form	Type	Period	Date	Description
188	Upper Reservoir, Dowlais	SO 0720 0850	Structure	Reservoir	Post-Medieval		Upper Reservoir, which is related to Lower Reservoir, is larger of the two and has leat systems feeding into and out of it.
189	Pumping station, Upper Reservoir, Dowlais	SO 0705 0851	Building	Industrial building	Post-Medieval	post-1850	A brick-built pumping station related to Upper Reservoir.
190	Inspection road, Upper Reservoir, Dowlais	SO 0728 0846 to SO 0692 0868	Linear Feature	Road	Post-Medieval		A inspection road for the Upper Reservoir.
191	Western leat system, Upper Reservoir, Dowlais	SO 0688 0867 to SO 0692 0849	Linear Feature	Leat	Post-Medieval		A north/south orientated leat with extensive brick and masonry lining.
192	Branch line of Brecon & Merthyr Railway, Dowlais	SO 0668 0887 to SO 0733 0844	Linear Feature	Railway	Post-Medieval	1869	The north/south cutting for the Brecon & Merthyr railway line.
193	Branch line of Brecon & Merthyr Railway, Dowlais	SO 0675 0856 to SO 0666 0859	Linear Feature	Railway	Post-Medieval	1869	An east/west line between the Brecon & Merthyr railway and a branch line of the Brecon & Merthyr railway.
194	Brecon & Merthyr Railway (to Pontsticill), Dowlais	SO 0664 0884 to SO 0651 0840	Linear Feature	Railway	Post-Medieval	1863	The Brecon & Merthyr railway main line.
197	D.S.W. landscape, Gurnos	SO 0485 0870	Field System	Drystone walled field boundaries	Post-Medieval		A drystone walled landscape.
198	Lime Kilns, Castle Morlais Tramroad, Gurnos	SO 0471 0872	Structure	Lime kilns	Post-Medieval		Three circular limekilns constructed of drystone walling adjacent to the Castle Morlais tramroad related to Gurnos Farm.
199	Coppice and D.S.W. landscape, Gurnos	SO 0470 0870	Landscape Feature & Field System	Woodland and drystone walled field boundaries	Post-Medieval		An area of coppiced land.
200	Castle Morlais Quarries Tramroad, Gurnos	SO 0473 0892 to SO 0473	Linear Feature	Mineral extraction	Post-Medieval	1803	The course of the Castle Morlais tramroad used to

Site no.	Site name	Grid ref.	Form	Type	Period	Date	Description
		0867					transport limestone to the Dowlais Ironworks.
201	Possible quern stone, Gurnos	SO 0455 0866	Findspot	Prehistoric quern stone	Neolithic		A possible quern-stone of prehistoric date.
202	D.S.W. landscape and sheep fold, Gurnos	SO 0450 0865	Field System	Drystone walled field boundaries and sheep fold	Post-Medieval		Between Gurnos Farm and the Castle Morlais Tramroad on the northern side of the A465 is an extensive drysone walled landscape including a sheepfold.
203	Gurnos Farm workers cottages, Gurnos Farm	SO 0435 0863	Buildings	Domestic dwellings	Post-Medieval		Three farm worker's cottages similar in style to Gurnos Farm
204	Gurnos 'model' Farm, Gurnos	SO 0430 0864	Buildings	Farmhouse and outbuildings	Post-Medieval	pre-1880	A model farm laid-out around a courtyard related to improvement of worker's cottages and agricultural land.
205i)	D.S.W. landscape, Gurnos Farm	SO 0423 0860	Field System	Drystone walled filed boundaries.	Post-Medieval		A drystone walled landscape enclosing an area of coppice.
205ii)	Roman Road, Gurnos Farm	SO 0422 0860	Road	Farm road.	Romanl		A possible Roman Road from Brecon.
206	Viaduct, Taf Fechan, Cefn-coed-y-cymmer	SO 0335 0815	Structure	Road bridge	Post-Medieval	1963	One of the A465 road bridges designed by engineers Rendel, Palmer & Tritton with twin parabolic arch ribs.
207	Gurnos Leat system, Cefn-coed-y-cymmer	SO 0342 0829 to SO 0373 0767	Linear Feature	Leat	Post-Medieval	1792	A leat below the A465, built of brick and masonry it runs parallel to the Taf Fechan to Cyfartha Ironworks.
208	Gurnos Tramroad, Cefn-coed-y-cymmer	SO 0341 0830 to SO 0372 0767	Linear Feature	Tramroad	Post-Medieval		Gurnos tramroad below the present A465 built to supply Cyfartha Ironworks.
209	Footbridge over Brecon & Merthyr Railway, Cefn	SO 0327 0821	Structure	Footbridge	Post-Medieval		An iron-girder accommodation bridge over the course of the Brecon & Merthyr railway.
210	Gurnos Limestone Quarry, Gurnos	SO 0355 0828	Site	Mineral extraction	Post-Medieval		A quarry to supply Cyfartha Ironworks with limestone with tramwaysr.

Site no.	Site name	Grid ref.	Form	Type	Period	Date	Description
211	Railway bridge, Brecon & Merthyr line, Cefn	SO 0324 0814	Structure	Railway bridge	Post-Medieval	1863 rebuilt 1964?	A bridge to carry the Brecon & Merthyr railway across a cutting for the A465.
212	Capel Tabor and cemetery, Cefn-coed-y-cymmer	SO 0297 0808	Building and Earthworks	Chapel and cemetery	Post-Medieval	c.1850	Capel Tabor rebuilt in a Neo-classical style in 1904 with associated cemetery.
213	Medieval hut circles, Cefn-coed-y-cymmer	SO 0297 0804	Site	Medieval hut circles	Medieval		The site of a series of hut-circles, discovered during construction of the A465????
214	St. John's Church, Cefn-coed-y-cymmer	SO 0329 0806	Building	Church	Post-Medieval	1880	A 'Gothic' church designed by George Edward Robinson in 1880.
215	Medieval coin hoard, Cefn-coed-y-cymmer	SO 0328 0805	Findspot	Coin hoard	Medieval	*terminus post quem* 1325	The findspot of a hoard of Medieval coins.
216	Stone structure, Cefn-coed-y-cymmer	SO 0372 0430	Structure	Mineral extraction	Post-Medieval		Stone structure, initially considered to be of prehistoric provenance. Evaluation however, suggests that the large slabs form part of a scree slope/quarry area.
217	D.S.W. landscape, Gurnos	SO 0408 0840	Field System	Drystone walled field boundaries	Post-Medieval		A substantial drystone wall c.150m long.
218	Grawen Cottages, Cefn-coed-y-cymmer	SO 0285 0814	Buildings	Domestic dwellings	Post-Medieval		A two-storey terrace of worker's cottages
220	Buttressing under the Nant Ffrwd Viaduct	SO 0248 0752	Structure	Road bridge section	Post-Medieval	1963	The remains of earlier masonry abutments within the Nant Ffrwd concrete viaduct.
221	Viaducts (A465), Cefn-coed-y-cymmer	SO 0335 0815 (A); SO 0282 0789 (B); SO 0250 0750	Structure	Road bridges	Post-Medieval	1963	Two 1960's concrete viaducts designed by Rendel, Palmer & Tritton using twin parabolic arch ribs.
270	Brecon & Merthyr Railway, Taf Fechan	SO 0343 0853 to SO 0325 0816	Linear Feature	Railway	Post-Medieval	1863	On the western bank of the Taf Fechan, is the route of the Brecon & Merthyr Railway.

Bibliography

Primary Cartographic Evidence

Wales 1:2500 Drawing Numbers CDFOO31/000/H/P/350-373
(Digitised OS Data - 24 sheets)

National Library of Wales & Glamorgan County Archive (Cardiff)

Badminton Maps (National Library of Wales, Volume 13, c.1765.
Quarter Sessions deposited plans of the public works in the Gwent Record Office.
Ordnance Survey, 6" inch Brecknockshire, sheet XLV.SE, First edition 1890
Ordnance Survey, 6" inch Brecknockshire, sheet XLV1 SW, First edition 1891
Ordnance Survey, 6" inch Brecknockshire, sheet L.NE, First edition 1891
Tithe Map and Apportionment, Merthyr Tydfil Parish 1850
Tithe Map and Apportionment, Gelligaer Parish 1842
Merthyr Mawr Plan P/99/1
Merthyr Tydfil Plan P/4
Merthyr Tydfil Parish Plan & Award D/DG, Plans /15
Gelligaer Parish Plan P/2/131 & 132
Llanderyn Parish Plan P/54/4 & 5
Map of northern Merthyr Tydfil 1836 by John Woods D/D XSY and
D/DX 392/3 (further copy)
Dowlais Collection Vols. 1 & 2 Glamorgan Record Office,

Unpublished Reports

Babtie (1996), A465 Abergavenny to Hirwaun Dualling: Phase 1 Archaeological Report
Babtie (1997), A465 Abergavenny to Hirwaun Dualling: Environmental Statement; Cultural Heritage
Glamorgan-Gwent Archaeological Trust (1994), Archaeological Desk-Based Assessment: A465 Abergavenny to Hirwaun Dualling, (Project A185, Report No. 94/039)
Highways Agency *et al* (1994), The Design Manual for Roads and Bridges Vol. 11 Section 3 Part 2
Institute of Field Archaeologists (2000) Draft Standards and Guidance: Artefact and Environmental Study, Collection, Research and Conservation
Welsh Office *et al* (1992), *Design Manual for Roads and Bridges* (DMRB), Vol. 11, Section 3, Part, Chapter 6. Cultural Heritage. 6.1 - 13.3. HMSO
Van Laun, J. 1997, Supplement to Historical Research for sites affected by A465 Abergavenny to Hirwaun Dualling
Van Laun, J. 1997, Historical Research for sites affected by A465 Abergavenny to Hirwaun Dualling
Riden, P. 1996 Report on Documentary Evidence relating to features of Archaeological Interest Located on the Route of the A465 Abergavenny to Hirwaun Dualling
Riden, P. 1996 Supplementary Report on Documentary Evidence relating to features of Archaeological Interest Located on the Route of the A465 Abergavenny to Hirwaun Dualling
Wakelin, Dr. P. (1995), *A list of archaeological sites within the A465 corridor,* CO15L986 PP. (Cadw Internal Brief)

Secondary Sources

Barrie, D.S.M. 1994, *A Regional History of the Railways of Great Britain.* Volume (12) South Wales Bradney, J.A. (1993) *A History of Monmouthshire 1.* The Hundred of Abergavenny
Bradney, J.A. 1993 *A History of Monmouthshire 5.* The Hundred of Newport
Burton, A. 1983 *The National Trust Guide to our Industrial Past*
Children, G. & Nash, G.H. 1996 *The Prehistoric Sites of Monmouthshire.* Vol.4.
Combs, A.S. Coombs and Hinch, L.W. (1970), *'The Heads of the Valleys Road', Proceedings of the Institution of Civil Engineers*, 44 (1969), 89-118: and 'Discussion', Ibid., 46, 233-47
Cox, Archdeacon . 1801. *An Historical Tour of Monmouthshire*
Hague, Douglas, B. *A Guide to the Industrial Archaeology of mid-Wales*
Hayman, R. 1989. *Working Iron in Merthyr*
Hilling, J.B. 1973. *Cardiff and the Valleys*
Hughes, S. R. 1990. *The Archaeology of Early Railway System: Brecon Forest Tramroads*
Jones, W. R. 1996, *Dictionary of Industrial Archaeology*
John, A.H. 1995. *The Industrial Development of South Wales 1750-1850*
Lloyd, J. 1906, *The Early History of the Old South-Wales Ironworks, 1760-1840.*
Lowe, J. 1993, *Welsh Country Workers Housing 1775-1875*, National Museum of Wales.
Margary, I.D. 1973, *Roman roads in Britain*
North, *F.J. Mining for Metals in Wales* quoting C P Bevan 'On the Geology of the Beaufort and Ebbw Vale District' *Geologist* . Vol I
Owen, J. A. 1977, *The History of the Dowlais Ironworks 1759-1970 (Newport)*
Rees, M. D. 1969 Mines, *Mills and Furnaces: An Introduction to Industrial Archaeology in Wales* (London)
Rees, M. D. 1975, *The Industrial Archaeology of Wales*
Riden, P. and Owen, J.G. 1995, *British Blast Furnace Statistics 1790-1980.* Cardiff.
Schubert, H.R., 1957 *History of the British Iron and Steel Industry from c.450 B.C. to A.D. 1775.*
Tasker, W.W. 1986, *The Merthyr, Tredegar & Abergavenny Railway and branches.*
Thompson, M.W. (Ed.) 1983, *The Journeys of Sir Richard Colt Hoare through Wales and England 1793-1810.*
Schubert, H.R. 1957, *History of the British Iron and Steel Industry from 450 BC to AD 1775*
Williams, G. *Merthyr Politics: Making if a Working Class Tradition*

Geological References

Soil Survey of England and Wales (1983), sheets 4 and 5. Soil Association
Ordnance Survey, Drift Geology, 2nd edition, sheet 231, Merthyr Tydfil 1967
Ordnance Survey, Drift Geology, 3rd edition, sheet 232, Abergavenny 1972
Ordnance Survey, Drift Geology, 1922 edition, sheet XLVII, 1922.

A Glossary of Archaeological Terms

Ashlar: decorative masonry formed from stone blocks which fit accurately together so that only fine mortar joints are required between them. The blocks are finely worked and the external faces are finished to form a uniform, flat surface.

Adit: a tunnel into a coal level, used either as an entrance to the mine or as a means of drainage.

Barrow: includes several types of earth covered funerary mounds with cremated or inhumed remains, primarily dating from the Neolithic (long barrows) and Early Bronze Age (round barrows) periods.

Cairn: a stone mound covering a cremation or inhumation found mainly in the Bronze Age periods.

Cropmark: a mark visible on aerial photographs caused by differential growth and colouration of field of crops over the archaeological features.

Crows-foot tips: a series of early spoil heaps formed from by tipping from a barrow or cart forming a distinctive star-shaped pattern.

Find-spot: the site of a random or isolated or stray find which may indicate further archaeological material is present nearby.

Holloway: an early farm or parish road consisting of an unmetalled surface surrounded by high banked hedges formed through the erosion away over time of the track.

Leat: an artificial watercourse made to channel water from source to an area for industrial usage.

Lithic scatter: a series of flint artefacts found on the surface and usually exposed by erosion or ploughing. Dating from the Palaeolithic to Early Bronze Age periods.

Motte and bailey castle: a defensive structure erected during the early stages of the Norman invasion consisting of a large artificial mound, or motte, surmounted by a wooden, and later a stone, keep (tower). The whole structure was surrounded by a large wooden bailey, often later replaced by a stone curtain wall.

Palaeoenviromental: the scientific technique of determining ancient landscapes and environment and climate characteristics from looking at macro fossils, pollen and faunal remains, often from within wetland sites

Relict palaeosols: an ancient soil surface which has survived, often by being completely buried (e.g. under barrows).

Rusticated masonry: stone that has been worked on the external face to produce a different effects from cyclopean (or rock-faced) to vermiculated (a worm-track effect).

Ridge & Furrow: the pattern formed by strip farming of land based on the medieval system of 'open' field agriculture. Medieval ridge and furrow tends to be form the soil into a larger series of troughs and banks than those found in post-medieval ridge and furrow.

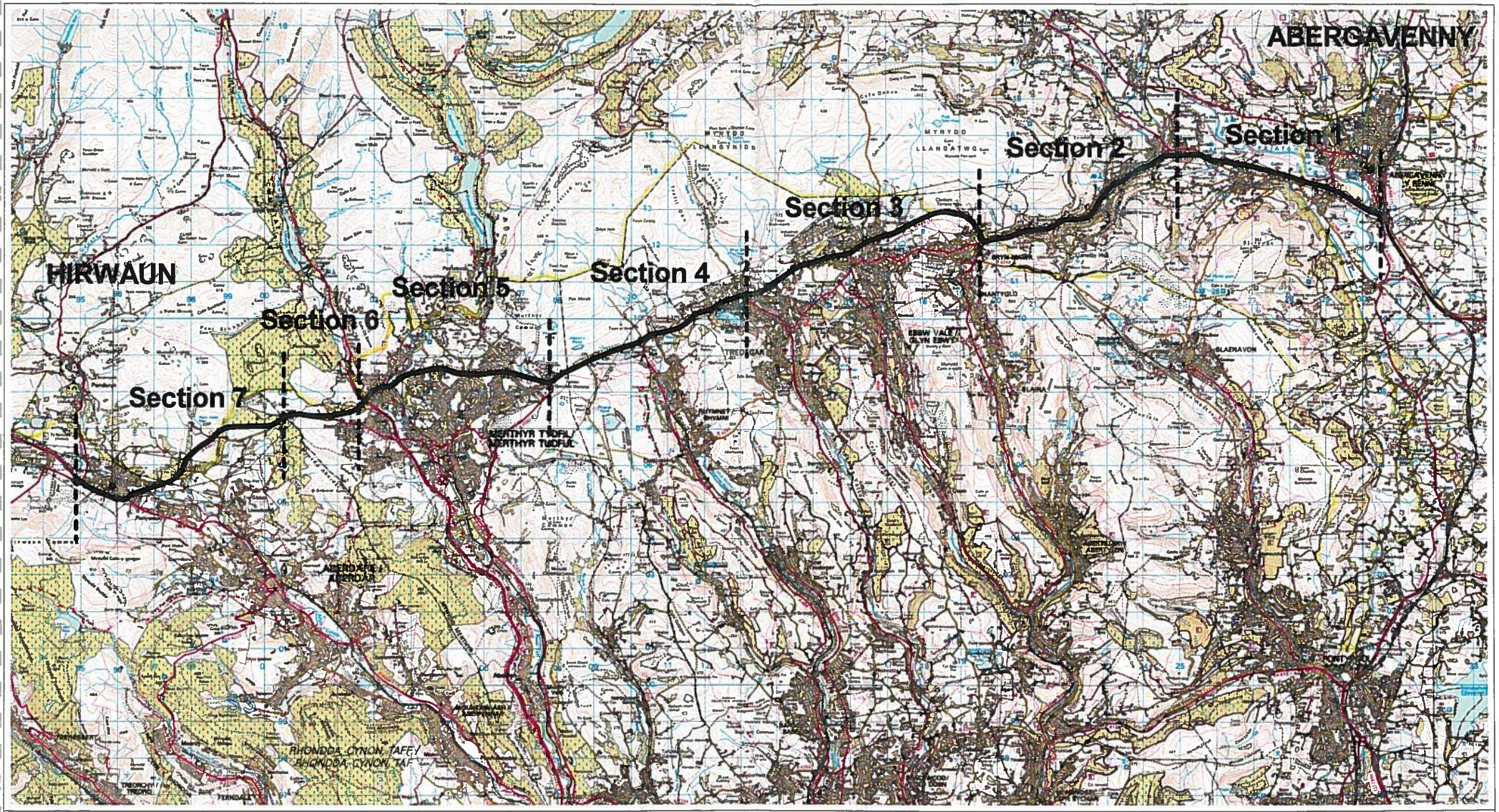
Stratified deposits: the layers of natural/soils and man-made deposits which build-up over a long time-span on an archaeological site. The stratigraphy can be examined to determine the sequence and time-span of the site.

Tramroad: a rail or plateway carrying goods carts/trams and usually drawn by ponies.

Turfstone walling: boundary walls formed from an internal drystone core covered by a layer of earth and turves for added stability.

Quoins: the stones found at the corner of an external wall which support the greater stresses found there; usually of higher quality than ordinary stonework.

Voussoirs: the wedged-shaped blocks of stone which form the curve of an arch.



Drawing Number

FIGURE 1

Notes

Reproduced from (or based upon) the Ordnance Survey mapping with the permission of the Controller of Her Majesty's Stationary Office Crown Copyright.
License No. A1548936.

Do not scale this drawing

Legend

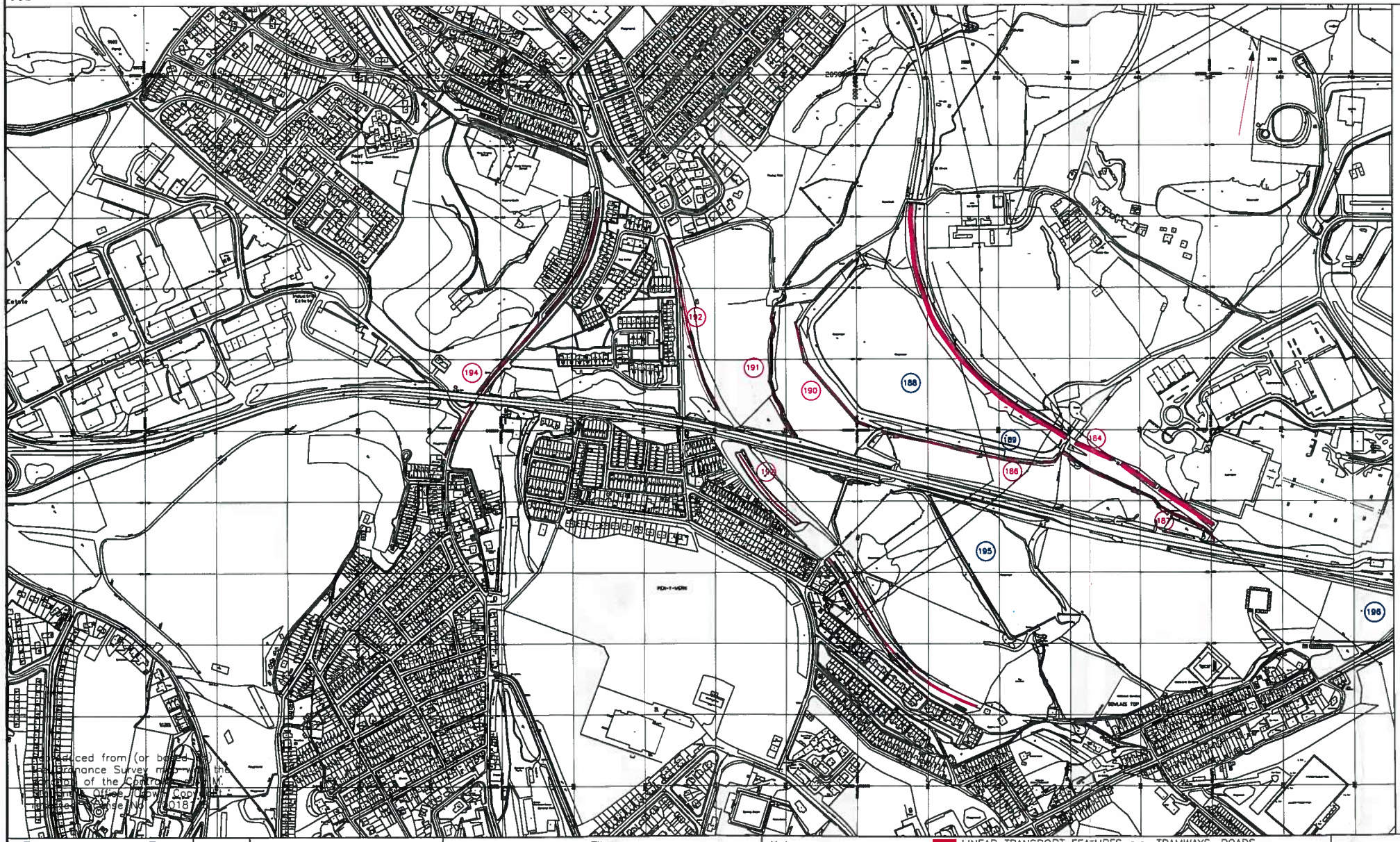
Rev		Date	Checked

Babtie

Client	Transport Directorate
Project	A465 Abergavenny to Hirwaun Dualling
Title	Scheme Proposals
Drawing No.	Figure 1
Scale	1:100,000 Date 01.04.03
	Drawn IK Checked JM Approved

Copyright reserved
Babtie Group Ltd
Churchill House, Churchill Way, Cardiff CF10 4HH

Client	WELSH ASSEMBLY GOVERNMENT: TRANSPORT DIRECTORATE
Job	A465 ABERGAVENNY TO HIRWAUN DUALLING



Reproduced from (or based on) the Ordnance Survey mapping with the permission of the Controller of H.M. Stationery Office © Crown Copyright 2018. All rights reserved. Licence number 100037272

Rev:

Babtie
Copyright reserved
Babtie Group Ltd
Churchill House, Churchill Way,
Cardiff, CF10 2HH

Dwg No.	FIGURE No. 2
Scale	1:5000
Date	MAY 04'
Drawn	JM
Approved	PF

Title

SECTION 5: CULTURAL HERITAGE

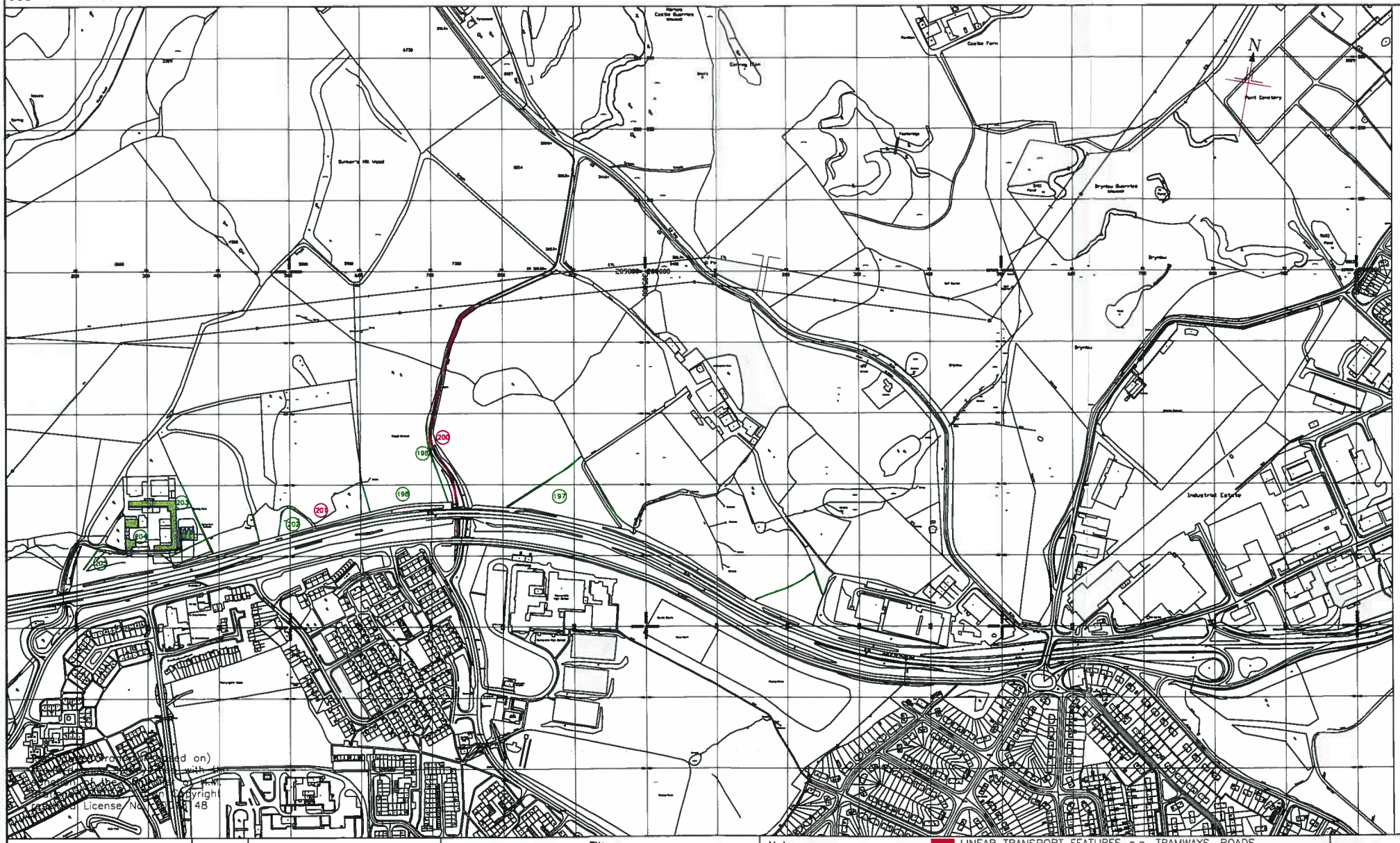
Notes

SECTION 5: DOWLAIS TOP TO A470 JUNCTION

- LINEAR TRANSPORT FEATURES e.g. TRAMWAYS, ROADS
- DOMESTIC/AGRICULTURAL SITES
- INDUSTRIAL ERA SITES
- RELIGIOUS SITES
- LISTED BUILDINGS
- SCHEDULED ANCIENT MONUMENTS

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Client	WELSH ASSEMBLY GOVERNMENT: TRANSPORT DIRECTORATE
Job	A465 ABERGAVENNY TO HIRWAUN DUALLING



(Reproduced on)
with the
permission of the
Controller of H.M.
Stationery Office ©Crown Copyright
and/or database right.
Ordnance Survey License No. [illegible] 48

Rev:

Babtie

Copyright reserved

Babtie Group Ltd
Churchill House, Churchill Way,
Cardiff, CF10 2HH

Dwg No.	FIGURE No. 3
Scale	1:5000
Date	MARCH 04'
Drawn	JM
Approved	PF

Title

SECTION 5: CULTURAL HERITAGE

Notes

SECTION 5: DOWLAIS TOP TO A470 JUNCTION

- LINEAR TRANSPORT FEATURES e.g. TRAMWAYS, ROADS
- DOMESTIC/AGRICULTURAL SITES
- INDUSTRIAL ERA SITES
- RELIGIOUS SITES
- LISTED BUILDINGS
- SCHEDULED ANCIENT MONUMENTS

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Client WELSH ASSEMBLY GOVERNMENT: TRANSPORT DIRECTORATE

Job A465 ABERGAVENNY TO HIRWAUN DUALLING

Reproduced from (or based on) the Ordnance Survey map with the sanction of the Controller of Her Majesty's Stationery Office, Crown Copyright reserved License No. [illegible]

Rev:

Babtie

Copyright reserved

Babtie Group Ltd
Churchill House, Churchill Way,
Cardiff, CF10 2HH

Dwg No.	FIGURE No. 4
Scale	1:5000
Date	MARCH 04'
Drawn	JM
Approved	PF

Title

SECTION 5: CULTURAL HERITAGE

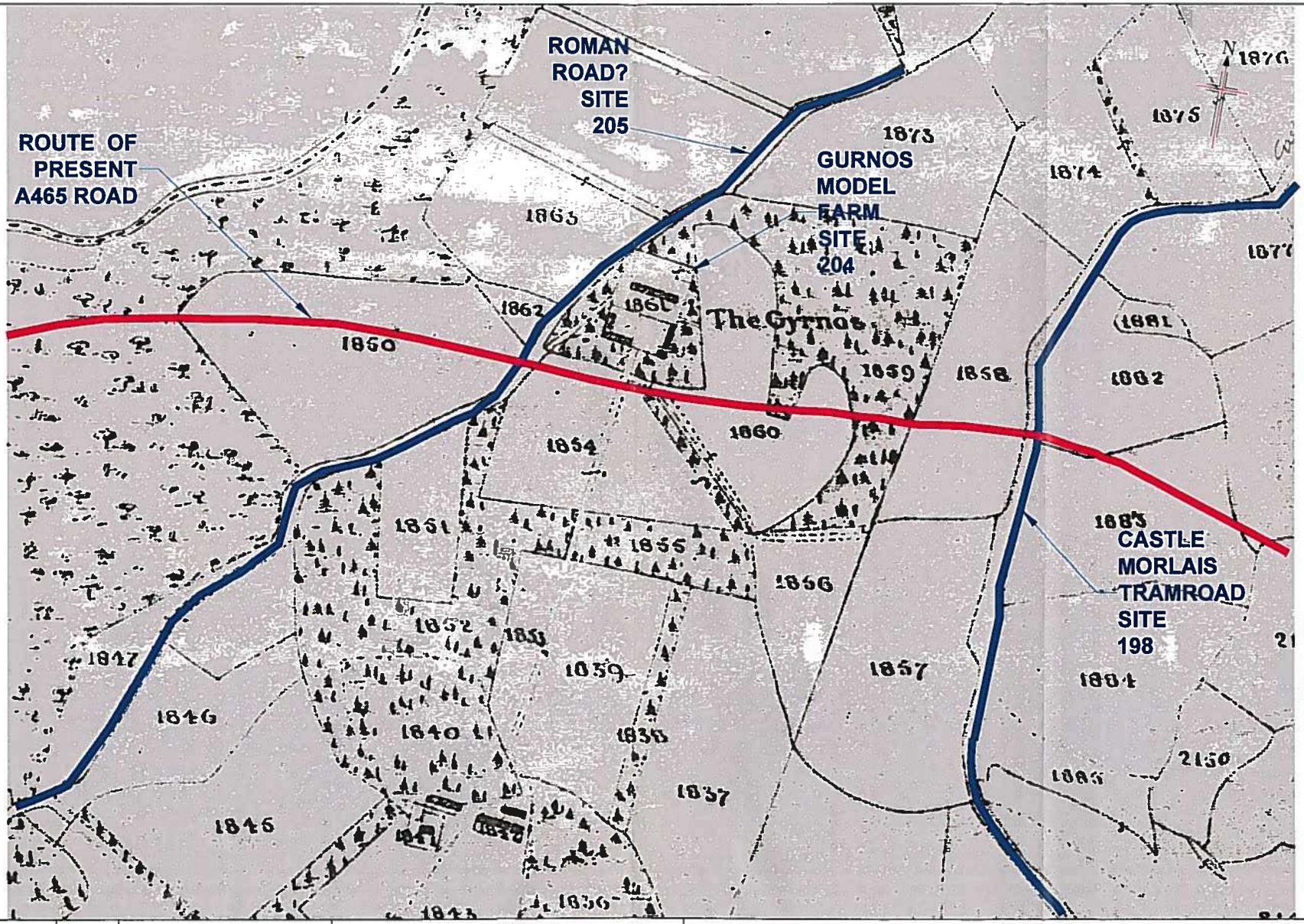
Notes

SECTION 5: DOWLAIS TOP TO A470 JUNCTION

- LINEAR TRANSPORT FEATURES e.g. TRAMWAYS, ROADS
- DOMESTIC/AGRICULTURAL SITES
- INDUSTRIAL ERA SITES
- RELIGIOUS SITES
- LISTED BUILDINGS
- SCHEDULED ANCIENT MONUMENTS

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Client	WELSH ASSEMBLY GOVERNMENT: TRANSPORT DIRECTORATE
Job	A465 ABERGAVENNY TO HIRWAUN DUALLING



Babtie

Copyright reserved
Babtie Group Ltd
Churchill House, Churchill Way,
Cardiff, CF10 2HH

Dwg No.	FIGURE No. 5
Scale	NTS
Date	MARCH 04'
Drawn	JM
Approved	PF

Title

1850 TITHE MAP: GURNOS FARM

Notes

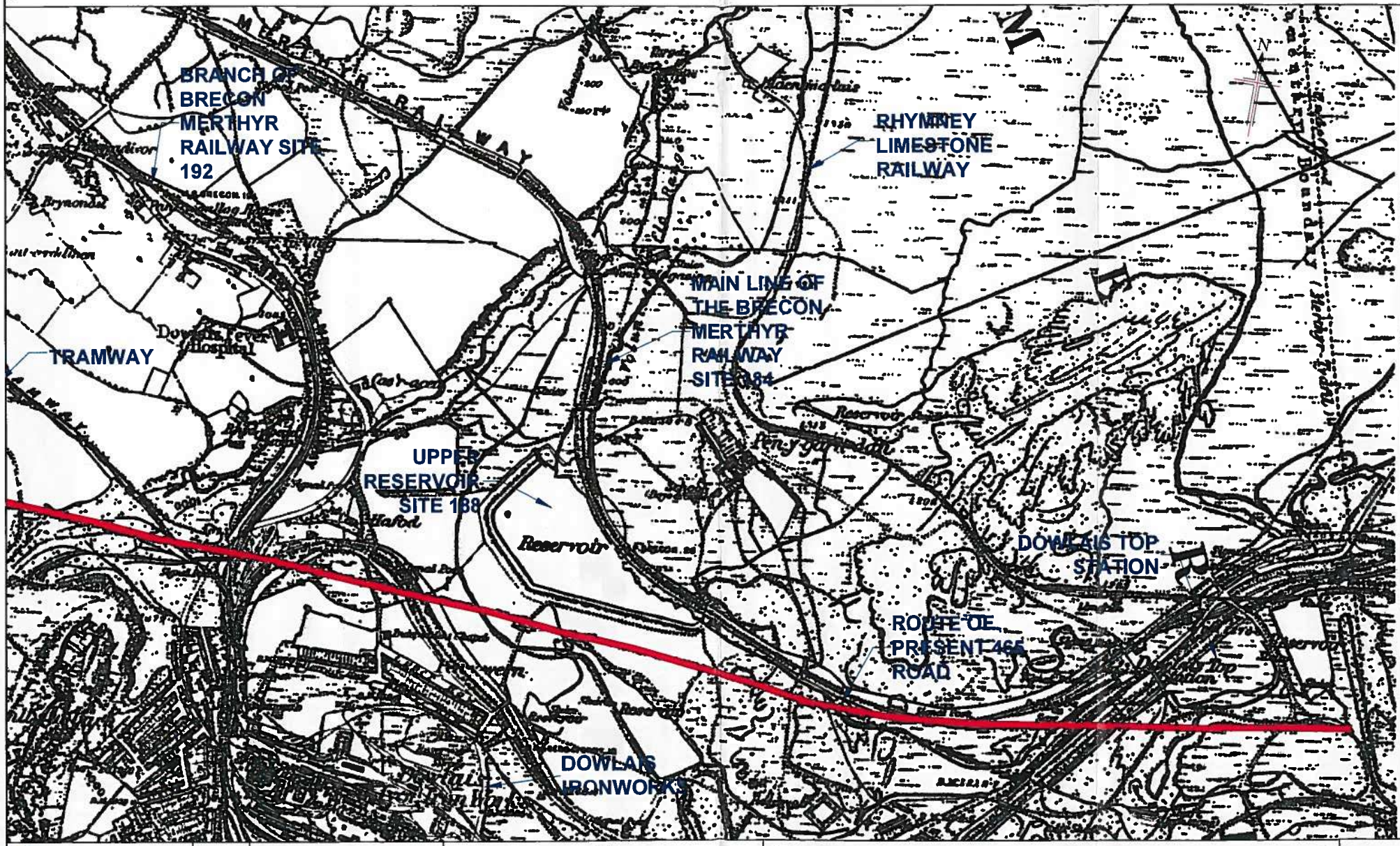
SECTION 5: DOWLAIS TOP TO A470 JUNCTION

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Rev:

File Path:

Client	WELSH ASSEMBLY GOVERNMENT: TRANSPORT DIRECTORATE
Job	A465 ABERGAVENNY TO HIRWAUN DUALLING



Rev:

Copyright reserved
Babtie Group Ltd
Churchill House, Churchill Way,
Cardiff, CF10 2HH

Dwg No.	FIGURE No. 6
Scale	NTS
Date	MARCH 04'
Drawn	JM
Approved	PF

Title

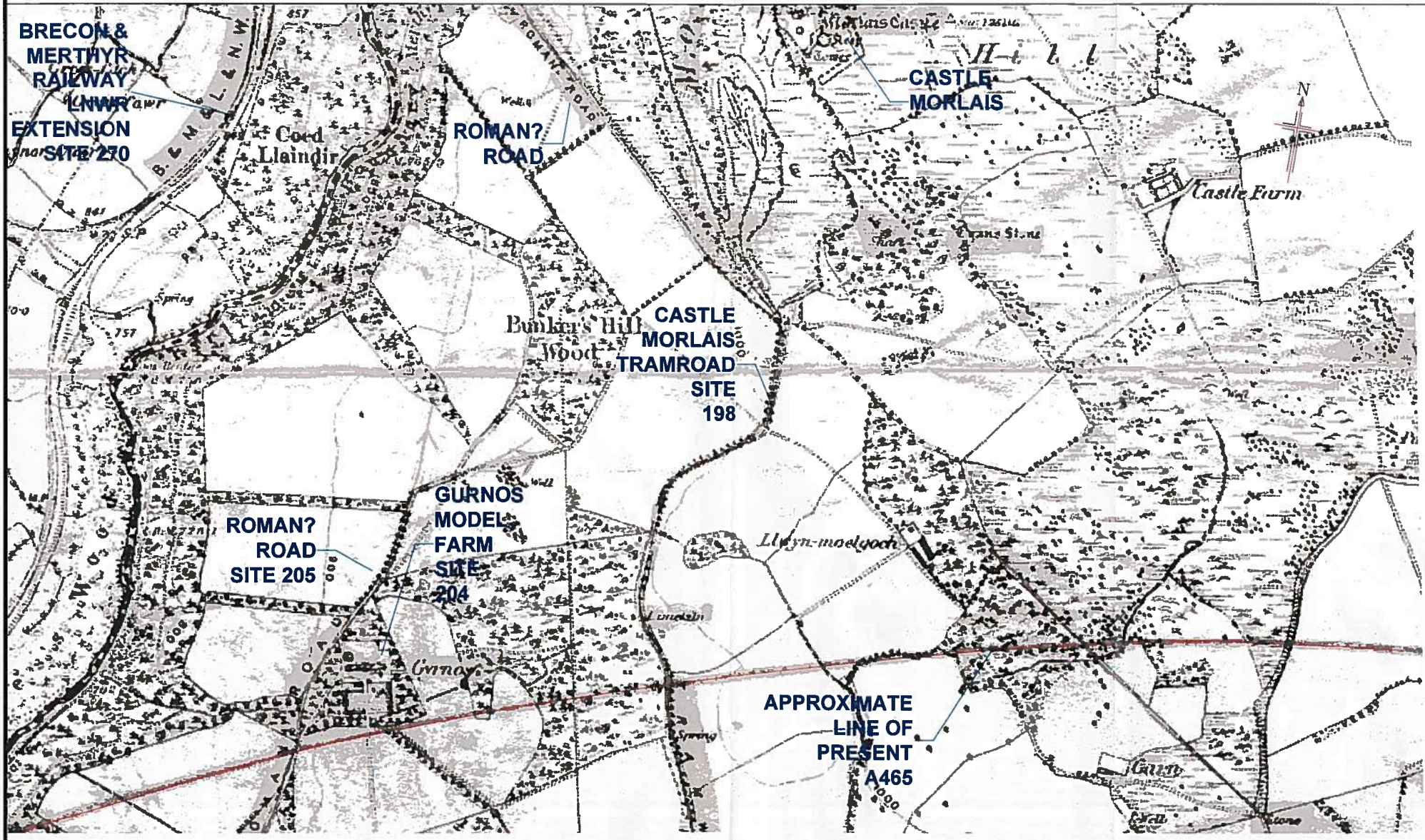
1880 ORDNANCE SURVEY MAP
SIX INCHES TO ONE MILE

Notes

SECTION 5: DOWLAIS TOP
TO
A470 JUNCTION

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Client	WELSH ASSEMBLY GOVERNMENT: TRANSPORT DIRECTORATE
Job	A465 ABERGAVENNY TO HIRWAUN DUALLING



Rev:

Babtie

Copyright reserved
Babtie Group Ltd
Churchill House, Churchill Way,
Cardiff, CF10 2HH

Dwg No.	FIGURE No. 7
Scale	NTS
Date	MARCH 04'
Drawn	JM
Approved	PF

Title

1880 ORDNANCE SURVEY MAP
SIX INCHES TO ONE MILE

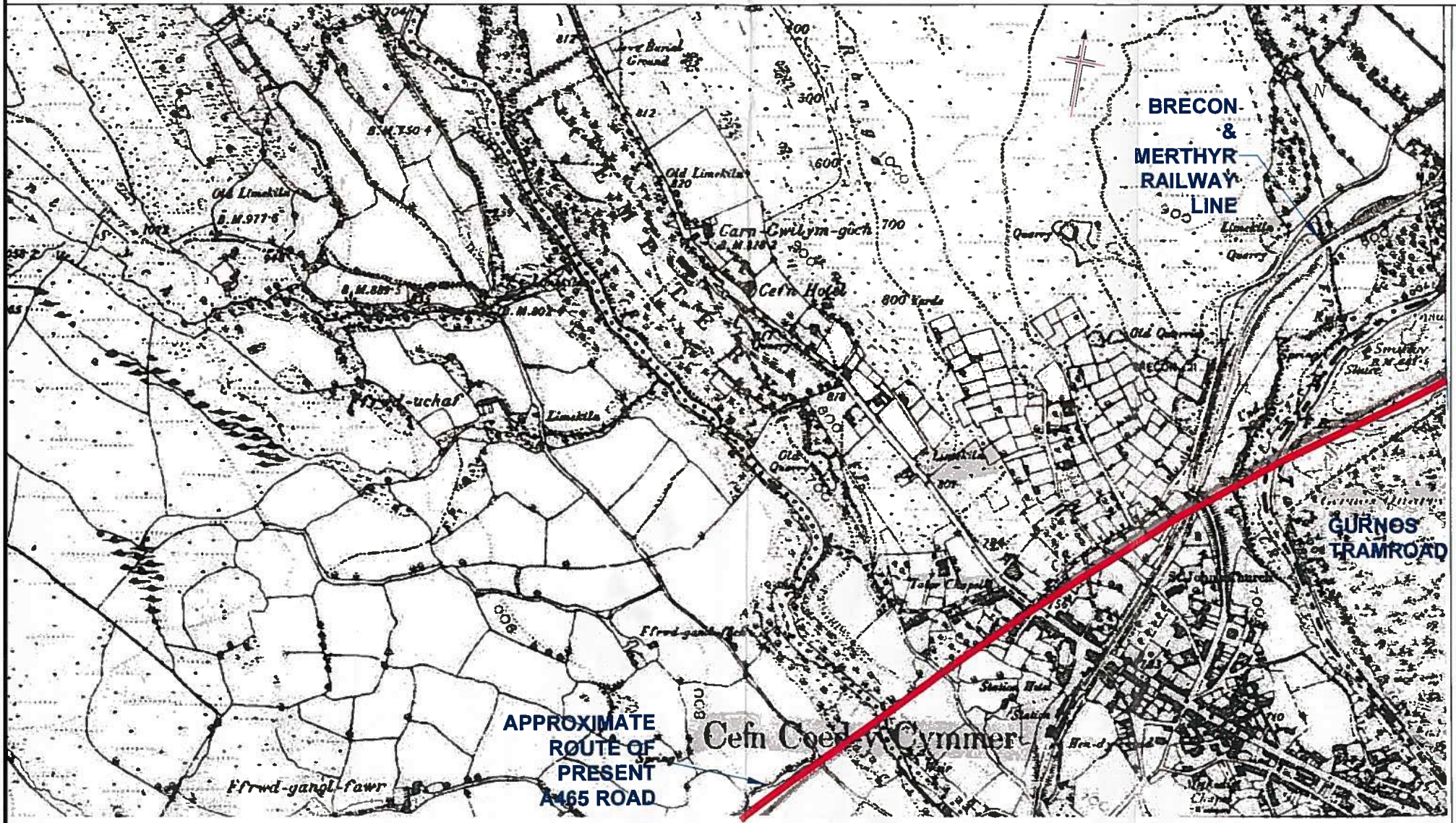
Notes

SECTION 5: DOWLAIS TOP
TO
A470 JUNCTION

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

File Path:

Client	WELSH ASSEMBLY GOVERNMENT: TRANSPORT DIRECTORATE
Job	A465 ABERGAVENNY TO HIRWAUN DUALLING



Rev:

Babtie

Copyright reserved
Babtie Group Ltd
Churchill House, Churchill Way,
Cardiff, CF10 2HH

Dwg No.	FIGURE No. 8
Scale	NTS
Date	MARCH 04'
Drawn	JM
Approved	PF

Title

1880 ORDNANCE SURVEY MAP
SIX INCHES TO ONE MILE

Notes

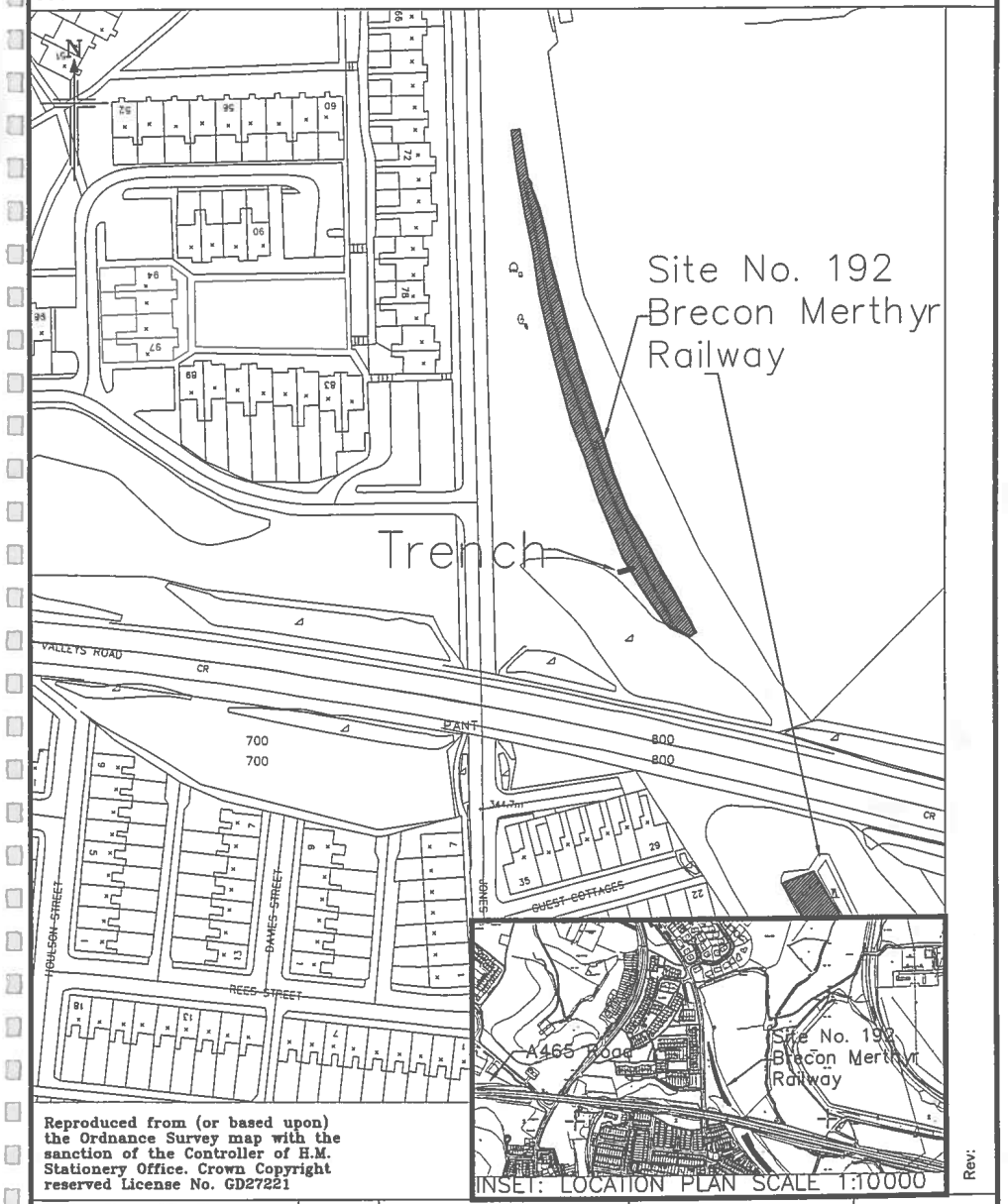
SECTION 5: DOWLAIS TOP
TO
A470 JUNCTION

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

File Path:

Client WELSH ASSEMBLY GOVERNMENT: TRANSPORT DIRECTORATE

Job A465 ABERGAVENNY TO HIRWAUN DUALLING ARCHAEOLOGICAL EVALUATIONS



Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserved License No. GD27221

Rev:

Babtie

Copyright reserved

Babtie Group Ltd
Churchill House, Churchill Way,
Cardiff, CF10 2HH

Dwg No.	FIGURE No. 9
Scale	1:1250
Date	MARCH '04
Drawn	JM
Approved	PF

Title

SITE NO. 192
BRACNH LINE OF
BRECON & MERTHYR RAILWAY

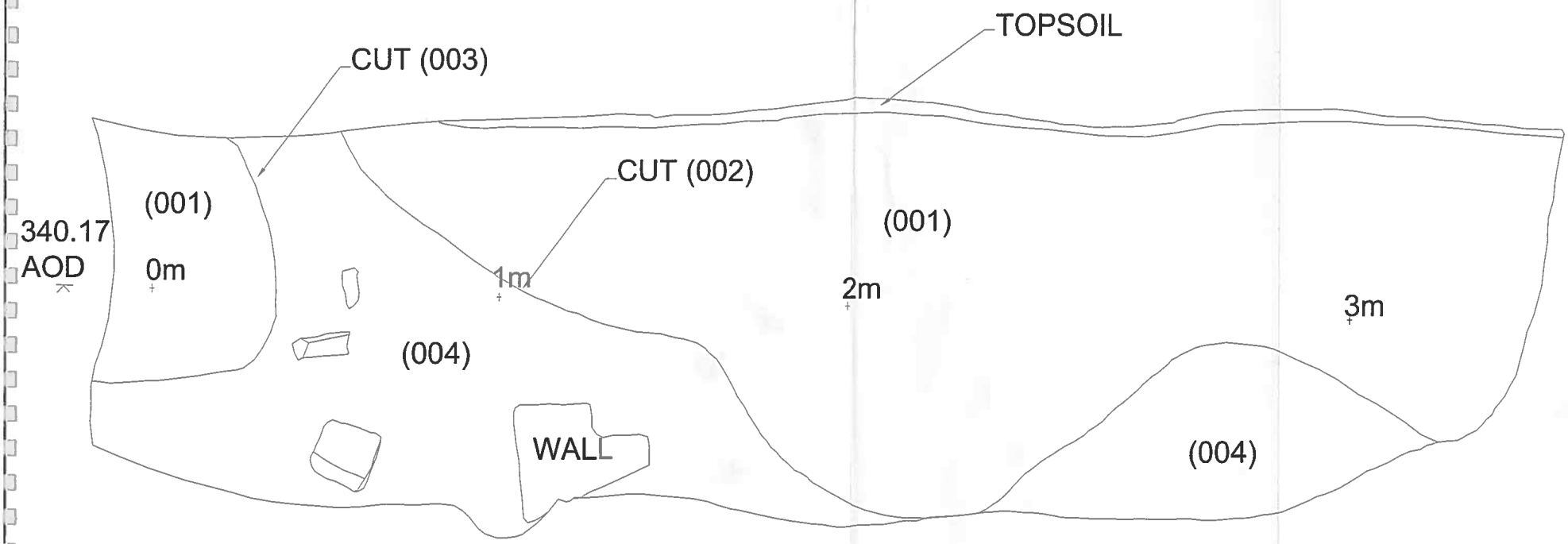
Llywodraeth Cynulliad Cymru
Welsh Assembly Government

File Path:

Client WELSH ASSEMBLY GOVERNMENT: TRANSPORT DIRECTORATE

Job A465 ABERGAVENNY TO HIRWAUN DUALLING

SITE No. 192: BRECON & MERTHYR RAILWAY
SOUTH FACING SECTION



Copyright reserved
Babtie Group Ltd
Churchill House, Churchill Way,
Cardiff, CF10 2HH

Dwg No.	FIGURE No. 10
Scale	1:10
Date	MARCH '04
Drawn	JM
Approved	PF

Title

SOUTH FACNG SECTION
BRANCH LINE OF THE
BRECON & MERTHYR RAILWAY

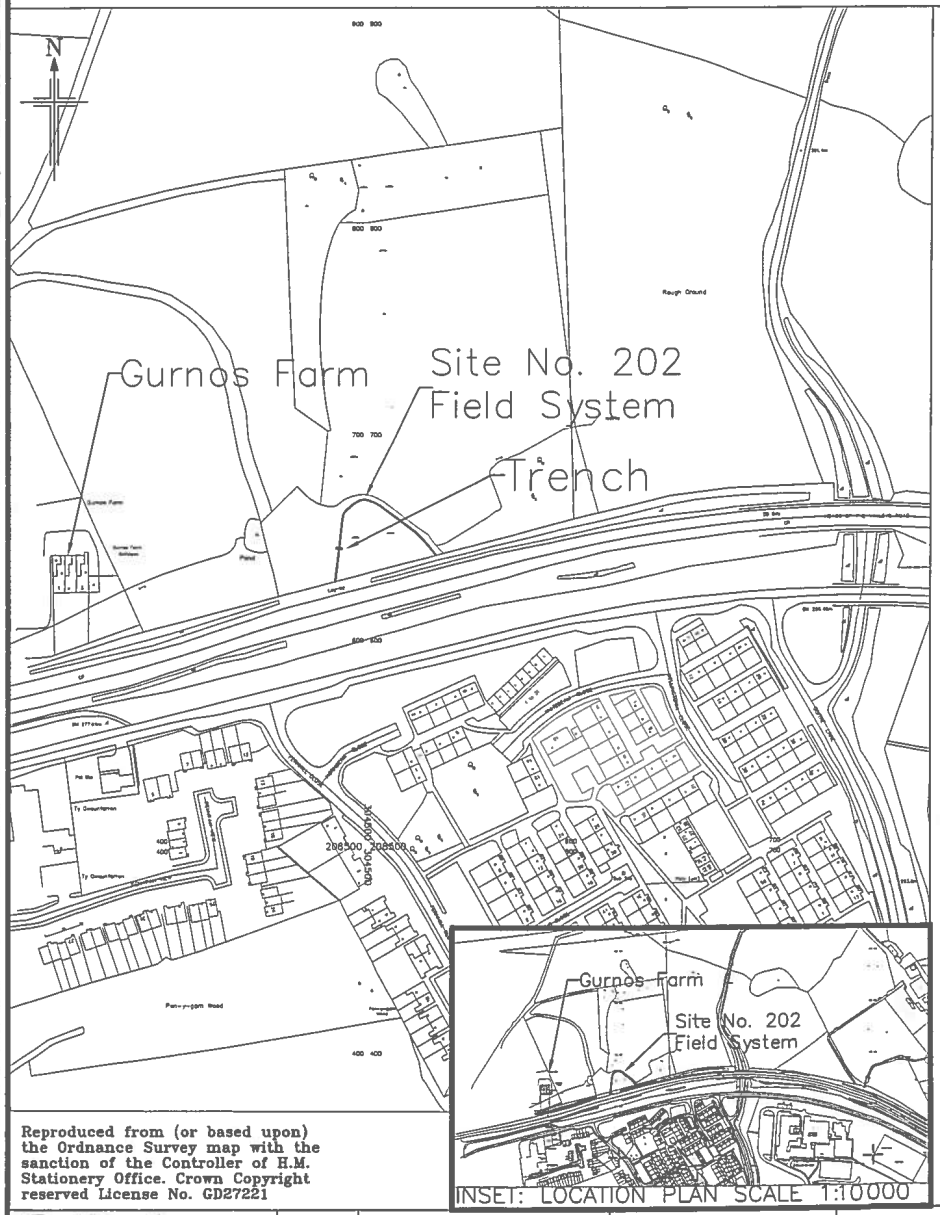
Notes

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Rev:

Client WELSH ASSEMBLY GOVERNMENT: TRANSPORT DIRECTORATE

Job A465 ABERGAVENNY TO HIRWAUN DUALLING ARCHAEOLOGICAL EVALUATIONS



Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserved License No. GD27221

Rev:

Babtie

Copyright reserved

Babtie Group Ltd
Churchill House, Churchill Way,
Cardiff, CF10 2HH

Dwg No.	FIGURE No. 11
Scale	1:1250
Date	APRIL '04
Drawn	JM
Approved	PF

Title

SITE NO. 202
FIELD SYSTEM
DRYSTONE WALLING

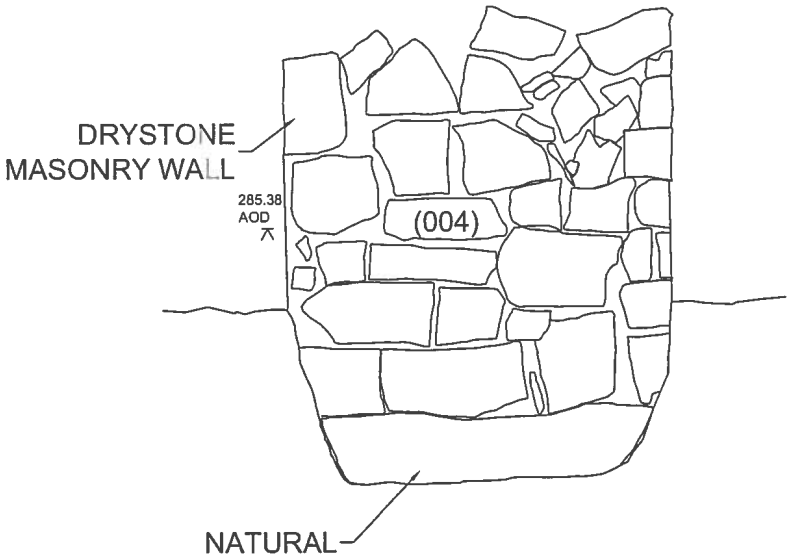
Llywodraeth Cynulliad Cymru
Welsh Assembly Government

File Path:

A4

Client	WELSH ASSEMBLY GOVERNMENT: TRANSPORT DIRECTORATE
Job	A465 ABERGAVENNY TO HIRWAUN DUALLING ARCHAEOLOGICAL EVALUATIONS

SITE No. 202: FIELD SYSTEM
SOUTH EAST FACING SECTION



Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserved License No. GD27221

Rev:

Babtie
Copyright reserved
Babtie Group Ltd
Churchill House, Churchill Way,
Cardiff, CF10 2HH

Dwg No.	FIGURE No. 12
Scale	1:10
Date	MARCH 04'
Drawn	JM
Approved	PF

Title: SOUTH EAST FACING SECTION SITE 202 FIELD SYSTEM

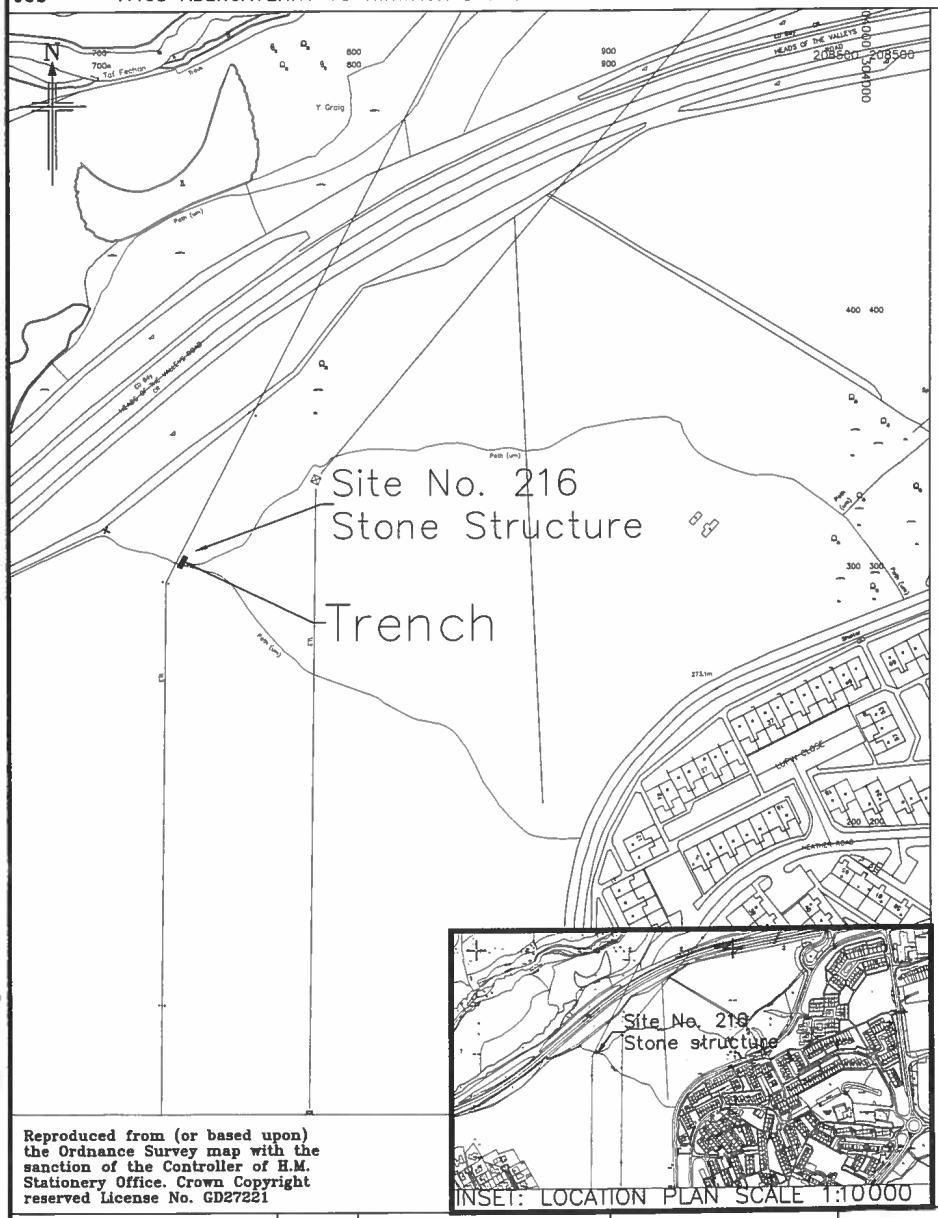
Llywodraeth Cynulliad Cymru
Welsh Assembly Government

File Path:

A4

Client WELSH ASSEMBLY GOVERNMENT: TRANSPORT DIRECTORATE

Job A465 ABERGAVENNY TO HIRWAUN DUALLING ARCHAEOLOGICAL EVALUATIONS



Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserved License No. GD27221

Rev:

Babtie

Copyright reserved

Babtie Group Ltd
Churchill House, Churchill Way,
Cardiff, CF10 2HH

Dwg No.	FIGURE No. 13
Scale	1:1250
Date	MARCH '04
Drawn	JM
Approved	PF

Title

SITE NO. 216
LOCATION PLAN
EARTH FAST STONES

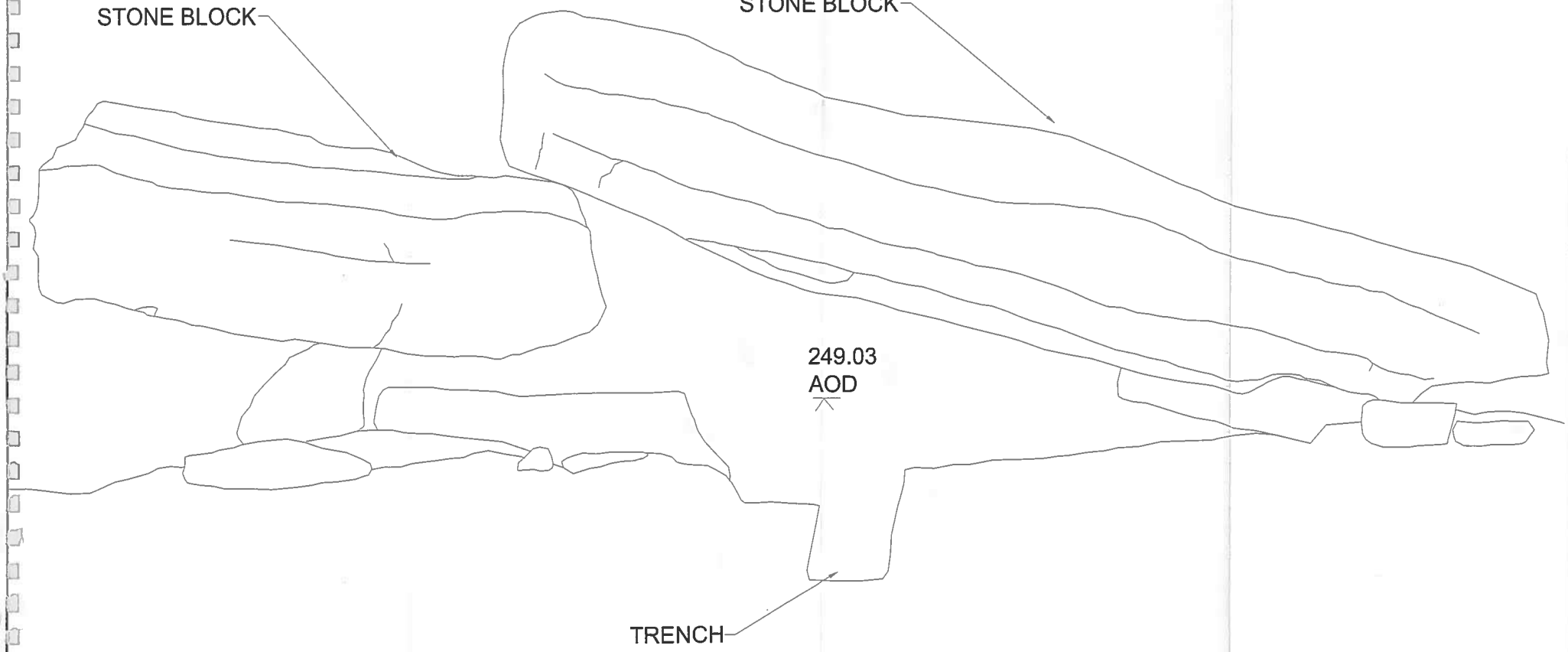
Llywodraeth Cymulliad Cymru
Welsh Assembly Government

File Path:

Client WELSH ASSEMBLY GOVERNMENT: TRANSPORT DIRECTORATE

Job A465 ABERGAVENNY TO HIRWAUN DUALLING

SITE No. 216: STONE STRUCTURE
WEST FACING SECTION



Rev:

Babtie
Copyright reserved
Babtie Group Ltd
Churchill House, Churchill Way,
Cardiff, CF10 2HH

Dwg No.	FIGURE No. 14
Scale	1:20
Date	MARCH '04
Drawn	JM
Approved	PF

Title

SITE No. 216
STONE STRUCTURE
WEST FACING SECTION

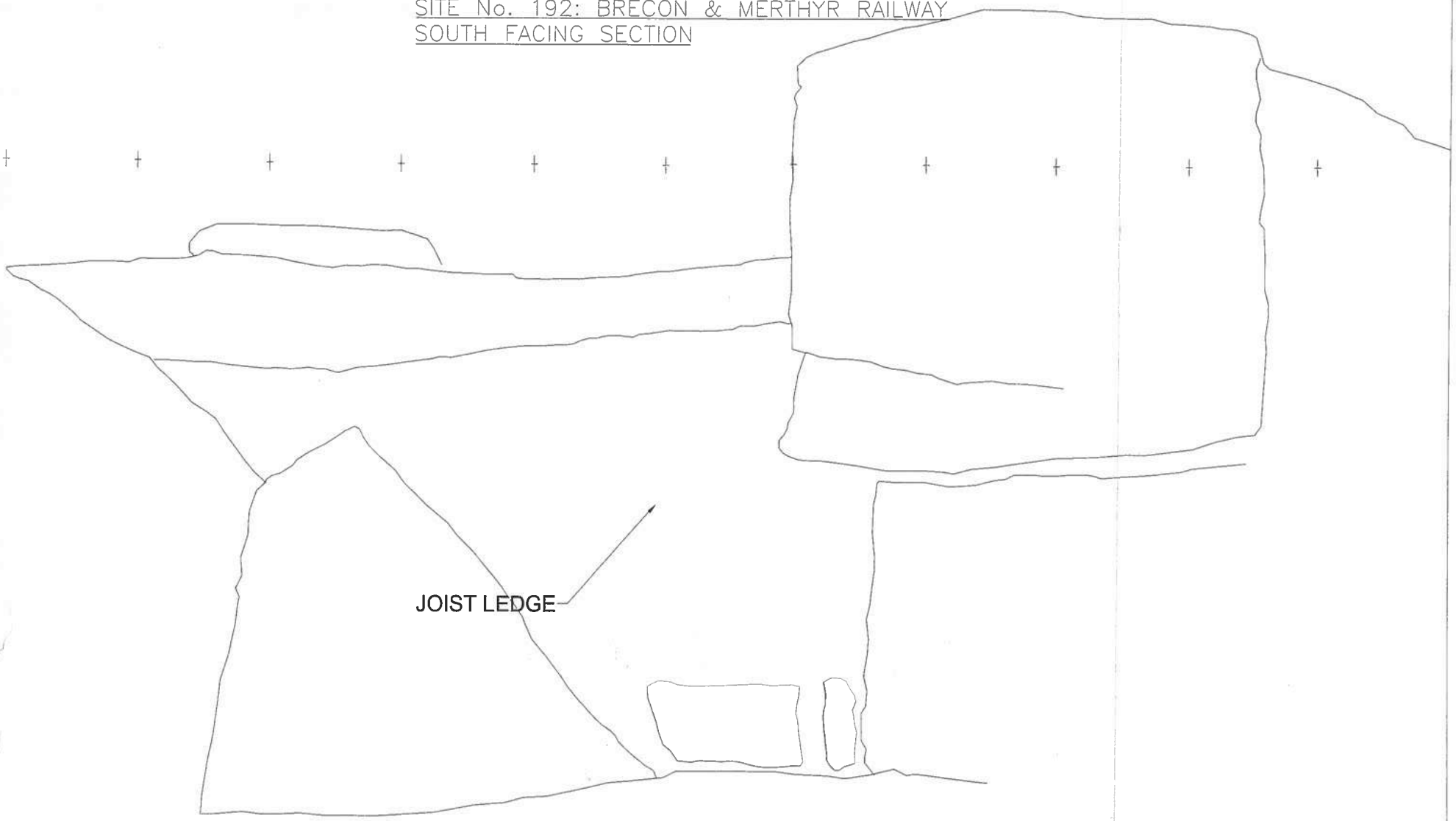
Notes

Llywodraeth Cymuliad Cymru
Welsh Assembly Government

Client WELSH ASSEMBLY GOVERNMENT: TRANSPORT DIRECTORATE

Job A465 ABERGAVENNY TO HIRWAUN DUALLING

SITE No. 192: BRECON & MERTHYR RAILWAY
SOUTH FACING SECTION



Rev:

Copyright reserved
Babtie Group Ltd
Churchill House, Churchill Way,
Cardiff, CF10 2HH

Dwg No.	FIGURE No. 15
Scale	1:10
Date	MARCH '04
Drawn	JM
Approved	PF

Title

SOUTH FACNG SECTION
BRANCH LINE OF THE
BRECON & MERTHYR RAILWAY

Notes

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Appendix 9E – Abergavenny to Hirwaun: Taf Fawr to Hirwaun – Sections 6 and 7: Archaeological Fieldwork Report (May 2006)

See following page.

Page left intentionally blank

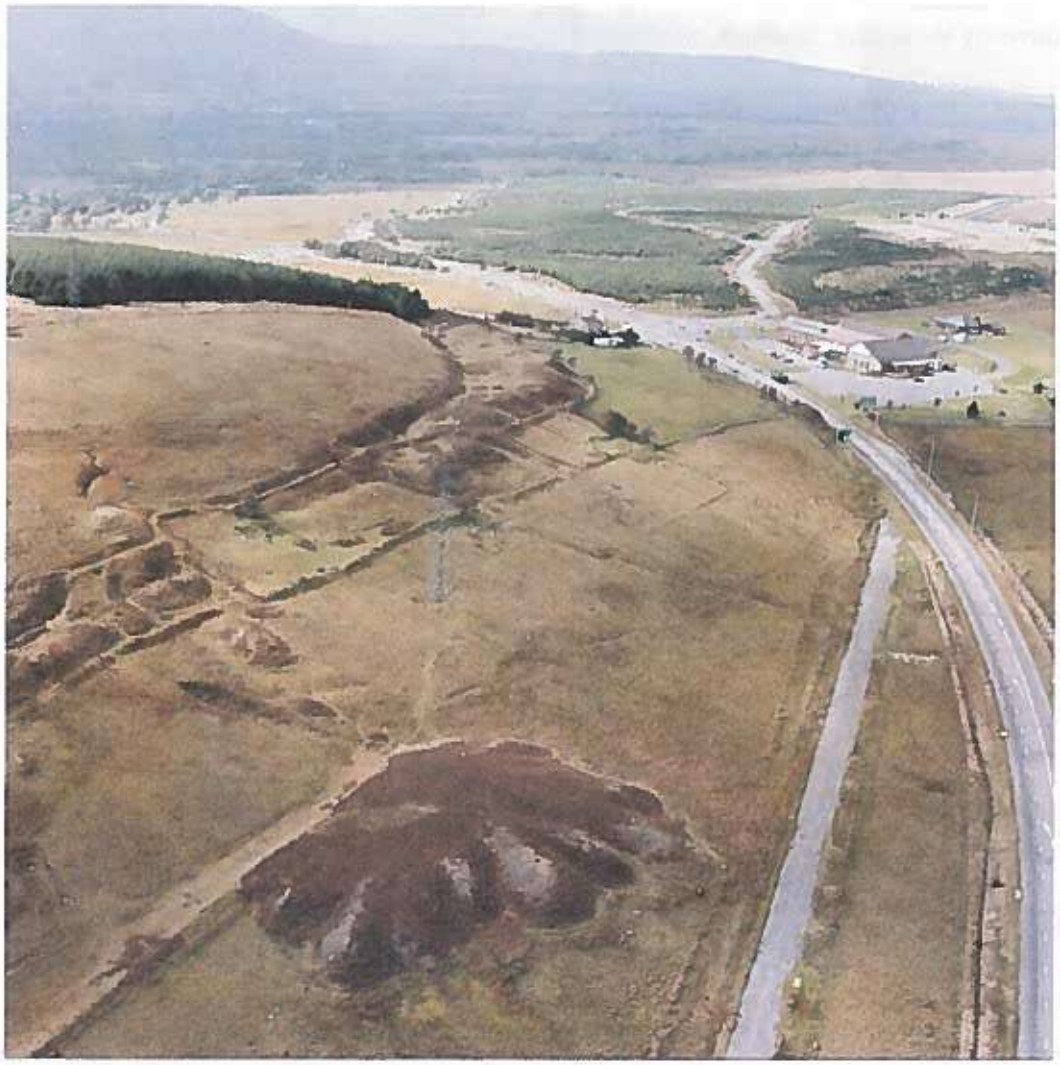
Llywodraeth Cynulliad Cymru
Welsh Assembly Government

JACOBS BABTIE

Welsh Assembly Government

Abergavenny to Hirwaun: Taf Fawr to Hirwaun

Sections 6 and 7: Archaeological Fieldwork Report



7202216 and 7/ARCH/001

May 06

Jacobs Babtie Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel 029 2035 3200 Fax 029 2035 3222

Jacobs Babtie

Churchill House,
Churchill Way,
CARDIFF,
CF10 2HH

Controlled Copy No. 1

Document No: 7202216-7/ARCH/001

Welsh Assembly Government

A465 Abergavenny to Hirwaun Dualling

Sections 6 and 7: Archaeological Fieldwork

.....Project Director
Sharon Spackman

Issue History

Date	Revision	Status
12/6/06		Final

Copyright Jacobs UK Limited. All Rights reserved.

No part of this report may be copied or reproduced by any means without prior written permission from Jacobs UK Limited. If you have received this report in error, please destroy all copies in your possession or control and notify Jacobs UK Limited.

This report has been prepared for the exclusive use of the commissioning party and unless otherwise agreed in writing by Jacobs UK Limited, no other party may use, make use of or rely on the contents of the report. No liability is accepted by Jacobs UK Limited for any use of this report, other than the purposes for which it was originally prepared and provided.

Opinions and information provided in the report are on the basis of the Jacobs UK Limited using due skill, care and diligence in preparation of the same and no explicit warranty is provided as to their accuracy. It should be noted and it is expressly stated that no independent verification of any of the documents or information supplied to Jacobs UK Limited has been made.

Jacobs UK Ltd
Churchill House,
Churchill Way, Cardiff, UK
CF10 2HH
+44. (0)29.20353200 Fax +44. (0)29.20353222

Mrs. Susan Hughes
Heritage Management Officer,
Sites and Monuments Record Officer
Glamorgan-Gwent Archaeological Trust Ltd.
Heathfield House
Heathfield
Swansea
SA1 6EL

Dear Susan,

A465 Dualling Abergavenny to Hirwaun
Sections 6 & 7 Archaeological Evaluation Report

We have pleasure in enclosing a copy of the Archaeological Evaluation Report for Sections 6 and 7 of the above scheme for inclusion in the Regional Sites and Monuments Record.

If you require any further information please contact me on 029- 2035 3200.

Yours sincerely,

Jon Mullis
Principal Archaeologist

Email: jonathan.mullis@jacobs.com

TABLE OF CONTENTS

1 Introduction....4
2 Background to the study....5
3 Background to the Stage 3 Evaluation Programme....6
4 Geological and Geographic Overview of Sections 6 and 7....7
5 Historical Background to the Coal and Iron Industries....8
6 Archaeological Background to Sections 6 and 7....10
7 Sections 6 and 7: Evaluation Methodology....14
8 Site No. 229: Track at Lech Sycrhydd(SO 9960 0704 to SO 9958 0680)....15
9 Site No. 232: Baverstock Settlement and Mineral Workings (SO 0073 0730)..15
10 Site No. 252 Bute Colliery Tramway (SO 9534 0527 to SO 9506 0500)....24
11 Site No. 255 Aberdare & Rhondda Railway and Tramroads (SO 9587 0510 to SO 9567 0417)....24
12 Site No. 273 Aberdare & Rhondda Railway Tramroad: (SO 9566 0520 to SO 9559 0491)....26
13 Site No. 275: Tramway branch of the Hirwaun Common Railway (SO 9597 0500 to SO 9598 0470)....27
14 Site No. 276: The Hirwaun Common Mineral Railway (SO 9495 0618 to SO 9862 0481)....28

Figure No.	List of Figures
Figure 1	A465 Dualling between Abergavenny and Hirwaun
Figure 2	Sections 6 & 7: Nant Ffrwd
Figure 3	Sections 6 & 7: Baverstock Hotel
Figure 4	Sections 6 & 7: Nant Hir
Figure 5	Sections 6 & 7: Nant Moel
Figure 6	Sections 6 & 7: Afan Cynnon
Figure 7	Sections 6 & 7: Hirwaun
Figure 8	Site 229 Trench Location Lech Sychrhyd
Figure 9	Site 229 South facing section
Figure 10	Site 232 Baverstock settlement and mineral workings Topographic Survey
Figure 11	Site 232 Baverstock settlement and mineral workings Trench Locations 1 to 6
Figure 12	Site 232 Plan Trench 1
Figure 13	Site 232 Plan of northern end of Trench 2
Figure 14	Site 232 Plan of southern end of Trench 2
Figure 15	Site 232 Plan of northern end of Trench 3
Figure 16	Site 232 Trench 3 south-east facing section
Figure 17	Site 232 Trench 4 north facing section
Figure 18	Site 232 Plan of Trench 5
Figure 19	Site 232 Trench 5 East facing section
Figure 20	Site 232 Plan of Trench 6
Figure 21	Site 232 Trench 6 North facing section
Figure 22	Site 252 Trench Location Bute Colliery tramway
Figure 23	Site 252 South west facing section Bute Colliery tramway
Figure 24	Site 255 Trench Location Aberdare & Rhondda Main line
Figure 25	Site 255a and b East facing section
Figure 26	Site 273 Trench location Branch Tamroad Knobby Drift
Figure 27	Site 273 South facing section
Figure 28	Site 275 Trench location Tramway Hirwaun Common Railway
Figure 29	Site 275 North facing section Hirwaun Common Railway
Figure 30	Site 276 Trench location Hirwaun Common Railway
Figure 31	Site 276 East facing section Hirwaun Common Railway
Figure 32	OS map Brecknockshire 1891 (6 inches to 1 mile) Sheet 50.NE
Figure 33	OS map Brecknockshire 1891(6 inches to 1 mile) Sheet 50.NE
Figure 34	OS map Brecknockshire 1891 (6 inches to 1 mile) Sheet 50.NE
Figure 35	OS map Brecknockshire 1892 (6 inches to 1 mile) Sheet 50.NW
Figure 36	Bute Estate survey of the village of Hirwaun in 1818
Figure 37	Aberdare Tithe Map 1840: Hirwaun Ironworks:

Plate No.	List of Plates
Plate 1	Site 232 Aerial photograph of settlement and mineral workings
Plate 2	Site 232 Baverstock settlement, general view
Plate 3	Site 232 Junction of Trench 1 and Trench 2.
Plate 4	Site 232 Trench 1 Looking east.
Plate 5	Site 232 Trench 1 Looking west.
Plate 6	Site 232 Trench 1 Looking south.
Plate 7	Site 232 Trench 1 Looking south.
Plate 8	Site 232 Trench 2 Southern end of trench looking north
Plate 9	Site 232 Trench 3 Southern end looking north
Plate 10	Site 232 Trench 4 Section looking east
Plate 11	Site 232 Trench 4 North facing section
Plate 12	Site 232 Trench 5 Looking south
Plate 13	Site 232 Trench 5 Looking north
Plate 14	Site 232 Trench 5 East facing section with stone cairn at centre (left)
Plate 15	Site 232 Trench 6 South facing section
Plate 16	Site 232 Trench 6 Looking south
Plate 17	Site 232 Trench 6 Looking east

Plate 18 Site 275 South facing section
Plate 19 Site 275 General view of Tower Road
Plate 20 Site 255c Trench abandoned due to water-logging
Plate 21 Site 252 South facing section

1 Introduction

1.1 In 1995 the Secretary of State for Wales announced the Preferred Route for the proposed A465 dualling between Abergavenny and Hirwaun (Figure 1). Jacobs Babtie was commissioned by Transport Wales of the Welsh Assembly Government to carry out an assessment of the Cultural Heritage of the A465 in accordance with a brief prepared by Cadw: Welsh Historic Monuments (CO15L986 PP).

1.2 Following the guidelines set out in the Cultural Heritage section of the 'Design Manual for Roads and Bridges' (DMRB) the archaeological assessment was divided into three stages (Vo.11, Highways Agency *et al*, 1992). The results of Stages 1 and 2 of the Cultural Heritage Assessment were published in 'A465 Abergavenny to Hirwaun Archaeological Survey: Phase 1 Report' (Babtie, 1996).

1.3 The A465 road proposed for dualling extends for a distance of 41.5kms, between Abergavenny and Hirwaun; the road has been divided into 7 distinct sections. This report covers the archaeological sites within Section 6 and 7 of the road scheme. Section 6 extends for approximately 2.5kms between A470 Junction and the Baverstock Hotel Junction and Section 7 extends for approximately 5kms between the Baverstock Hotel and Hirwaun. The desk-top study and walkover survey identified a total of six sites in Section 6 and 38 sites in Section 7.

2 Background to the study

2.1 The Stage 1 assessment for the A465 dualling was a desk-based report based primarily on information contained in the Regional Sites and Monuments which is maintained by Glamorgan-Gwent Archaeological Trust (Curatorial Section) (GGAT, 1994).

2.2 The GGAT report was supplemented by a survey carried out by Cadw (Cadw, 1995). Further to this report, Cadw prepared an archaeological brief, which specified the further archaeological work required for the A465. This consisted of two further phases of work, which equated with Stages 2 and 3 of the Cultural Heritage assessment as outlined in Vol.11 of the DMRB. These further stages were carried out by Jacobs Babtie archaeologists in accordance with this brief.

2.3 Stage 2 involved the re-interrogation of the Regional SMR to include any data added since the Stage 1 study. In addition a detailed desk-top study, further historic and cartographic background research and a walk-over survey with a photographic record was carried out together with some topographic survey.

2.4 During the Stage 2 assessment an archaeological value was assigned to each site based on the Secretary of State's non-statutory criteria for the Scheduling of Ancient Monuments, published in Planning and the Historic Environment: Archaeology Welsh Office Circular 60/96. Each site was then provisionally graded into five categories of site, as follows:

- Category A: Sites of National Importance;
- Category B: Sites of Regional or County Importance;
- Category C: Sites of District or Local Importance;
- Category D: Minor or Damaged Sites;
- Category E: Sites Requiring Further Investigation.

2.5 The results of Stage 2 were reported in the Cultural Heritage Assessment of Vol. 2.2 of the Environmental Statement, which identified a total of 282 archaeological sites, historic buildings and landscapes between Abergavenny and Hirwaun (Welsh Office, 1997). The Stage 2 assessment identified a total of 6 sites in Section 6 and 38 sites within Section 7 (See Appendix 2).

2.6 The Stage 3 evaluation programme involved trial-trenching, geophysical survey, test-pitting and an assessment for palaeoenvironmental potential. During Stage 3 a total of 41 Category E sites within the scheme were evaluated through trial-trenching of which one site was within Section 6 and seven sites were within Section 7. The evaluations enabled the nature, importance and preservation of any surviving archaeological remains to be determined and the impact of the proposals on them.

3 Background to the Stage 3 Evaluation Programme

3.1 This report incorporates the Stage 2 background research and assessment with the results of the Stage 3 archaeological evaluation fieldwork programme. Most of the sites identified in Section 6 and 7 were of post-medieval date, and primarily consisted of industrial features such as tramroads, railways and coal and iron workings, chapels and farmsteads and drystone walled landscapes.

3.2 Within Sections 6 and 7 route corridor there are no archaeological, historic buildings or landscapes sites which have statutory protection. However, the Section 6 does border the Merthyr Landscape of Outstanding Historic Interest HLW (MG I) which is recorded within the non-statutory Register of Landscapes of Outstanding Historic Interest.

3.3 The Pillow mound at Bryn-y-Gwyddel, outside the route corridor, known locally as the 'Giant's Grave', (located at grid reference: SO007070) is protected as a Scheduled Monument (SAM: GM517). This site is thought to have been a medieval pillow mound, possibly used for windmill or as a rabbit warren. It is more likely that this is a Post-Medieval rabbit warren used to provide meat for the occupants of the industrial settlement close to the Dynevor Arms (now the site of the Baverstock Hotel).

4 Geological and Geographic Overview of Sections 6 and 7

4.1 Section 6 of the A465 runs the short distance from the A470 Junction near Cefn-coed-y-cymmer to the site of the former post-medieval settlement near the Baverstock Hotel, and is mainly located within open moorland. At the start of Section 6, at Cefn-coed-y-cymmer in Penderyn parish, the A465 crosses the Taff Fawr and then the Taff Fechan and Nant Ffrwd. The Taff Fawr forms the boundary between the parishes of Penderyn and Vaynor and the Taff Fechan is the boundary between Vaynor and Merthyr parish.

4.2 Section 7 of the A465 road scheme begins in the parish of Penderyn at the Baverstock Hotel, originally the site of the Dynevor Arms Inn. From the Baverstock Hotel, the A465 runs westward mainly through enclosed land before entering the parish of Aberdare at a bridge over the Nant Hir and then crossing the Nant Melyn and the Hirwaun Common Railway (Site 276) at the edge of village of Hirwaun. On the outskirts of Hirwaun the A465 runs generally southwest across the river Cynon to its western terminus at the roundabout to the southwest of Hirwaun.

4.3 Geologically, Sections 6 and 7 of the A465 are situated within a narrow strip of coal-bearing land, which forms part of the South Wales coalfield. The solid geology of the area consists of the productive upper and middle Coal Measures including millstone grit, culm and Carboniferous limestone. The drift geology consists of mainly poor acidic, gley soils in a peat-forming moorland environment.

4.4 In the South Wales coalfield the seam of coal is bituminous in the eastern districts and becomes 'steam coal' in the central area and ultimately strong anthracite in the west. The best source of 'steam coal' in south Wales was the Aberdare 'Four Foot Coal' which was exported to commercial markets world-wide in the late 19th and early 20th century.

4.5 The 'steam coal' is an intermediate grade of coal somewhere in composition between bituminous and anthracite coal. The coal is dull black and ignites slowly to give off little smoke or flame, but with intense heat, and was mainly used for the production of steam. As the coal does not fuse or cake together it was also often called ' free burning'.

4.6 Although there are no detailed geological records for the area between Sections 6 and 7, there are records for the 'Rosser Ironstone' and the 'Four Foot Coal' at Dowlais (Hull, E. & Whitaker, W. 1861). The Lower Four-Foot coal, or 'Old Coal', was located about 210m south of the Rosser Ironstone (SO 0086 0693) and was stratigraphically above it. The 'Four Foot Coal', which appears to have been the 'Bottom Coal', was recorded as 4.35m in thickness and made up of eight seams.

4.7 The 'Bottom Rosser Vein' which was a layer of ironstone around 100mm thick was located around 35m below the 'Lower Four-Foot Coal'. The Rosser Ironstone, which outcrops to the east of Section 6, around Merthyr, is an ore with a 32.18% metallic content.

5 Historical Background to the Coal and Iron Industries

5.1 The initial impetus for the growth of industry in south Wales was its plentiful iron ore deposits. However, by the early 1870s, local iron ore production had virtually ceased altogether in South Wales as the introduction of the Bessemer steel system meant that the indigenous ore, which was rich in phosphorous and sulphur, was no longer suitable for the new process. Increasingly iron ore was being sourced from northern Spain instead.

5.2 From the 1850s onwards, coal began to supplant iron as the foundation of south Wales industry as the deep seams of the Cynon and Rhondda valleys were exploited. South Wales 'steam coal' was soon to become the main world industrial energy supply with annual exports reaching two million tonnes by 1862.

5.3 Mineral extraction in south Wales prior to the latter half of the 18th century was mainly exploited in the form of small levels and patch workings which focused on the obvious mineral outcrops of coal and iron-ore that had often been exposed by natural scouring in watercourses. These early workings rarely survive until the present day.

5.4 From the 18th century until the early 19th century the spoil was often removed from the workings without the aid of machinery, by the method known as 'scouring'. Scouring relied on the release of a stored reservoir of water onto the seam to remove the lighter waste material and expose the iron-ore or coal deposits.

5.5 By the late 18th century outcrop mining had usually grown into family businesses, where a section of the seam was sub-leased from a company. A temporary or semi-permanent miners' settlement often grew-up adjacent to these workings. These settlements were often established under squatter's rights as temporary 'tai-un-nos' communities on the borders of the open mountain and the enclosed agricultural land. Such settlements usually consisted of a number of single or semi-detached dwellings within their own 'close', which was used to grow vegetables.

5.6 During the mid 19th century the coal and ironstone workings increasingly came under the direct control of the main iron-producing companies, such as the Dowlais Iron Company, who had leased the mineral rights for these areas.

5.7 During a surge in coal mining activity during the last quarter of the 19th century the older, open quarrying or patch working methods continued, but with the expansion of level and shaft working.

5.8 In south Wales the method generally used for extracting coal was 'the single and double-stall systems', although the 'heading-and-stall' or 'post-and-stall' method was also common.

5.9 Using the 'pillar-and-stall' method the seam is cut up into square or oblong pillars, varying in size according to the thickness of the seam. The main levels or roadways are driven from the pit towards the boundary, connected to each other by further narrow roadways, slits or cross cuts for ventilation. The coal

was then removed as the stall roads are driven out at right angles forming pillars. In the early history of mining, these blocks or pillars were left unworked to prevent subsidence, but in later workings a wedge of coal from the bottom of the seam along the length of his stall was removed and short timber props inserted to prevent the roof from collapse. The props were eventually then removed to collapse the coal and free it up for removal. The coal was loaded into trams and pushed out on iron rails until it could be hauled out on horse-drawn trams to the stockyards. Extensive 'finger' or 'fan-tips' of waste material were also frequently associated with these shaft workings.

5.10 With the introduction of coal cutting machinery during the late 19th century the 'long-wall system' was adopted in which the whole of the seam was removed in one long 'face' or 'wall'. Initially a shaft could be sunk to depths of up to 780 metres and roadways were then dug outwards into the most profitable coal deposits. Using this method a series of 'faces' of considerable width, from 60m to 1000m, were opened out and worked. Winding houses at ground level were necessary to lower and raise the men and coal.

5.11 The main advantage of 'long-wall' system over the 'pillar-and-stall' system was that there was that a higher percentage of the coal was extracted. In addition there was better ventilation a safer working environment and more men were able to work in a given length of the face.

6 Archaeological Background to Sections 6 and 7

6.1 Introduction

6.1.1 As Sections 6 and 7 are relatively isolated areas, industrial activity depended on a well-developed infrastructure to transport the raw materials and the manufactured goods. The final example of the development of this infrastructure in the area was the construction of the A465 'Heads of the Valleys' road itself in the mid-1960s.

6.1.2 The construction of the road caused the engineers considerable problems in building the road to modern standards over difficult terrain. From Hirwaun in Section 7, to the west of the scheme, the A465 crosses the parishes of Aberdare and Penderyn and followed the route of the early 19th-century turnpike road past the historic site of the Dynevor Arms, now the site of the present-day Baverstock Hotel.

6.1.3 At the Baverstock Hotel the A465 enters Section 6 in the parish of Merthyr and here the route diverges from the older turnpike road and follows a new route to the northwest. At this point the A465 crosses to Cefn-coed-y-cymmer on concrete road viaducts across three valleys: the Taff Fechan, the Nant Ffrwd and Taff Fawr. These road viaducts were built in 1964 to a design by the road engineers Rendel, Palmer and Tritton, with Alex Gordon and Partners as consultant architects. The viaduct across the Taff Fechan and Nant Ffrwd has twin parabolic arched ribs, whereas the central viaduct over the Taff Fawr has three spans cantilevered from two piers. These road viaducts are outstanding works of engineering which are important cultural heritage features in their own right.

6.2 Prehistoric

6.2.1 There are no prehistoric features within the Sections 6 and 7 close to the road corridor, although Bronze Age cairns, round barrows and standing-stones are known to survive in the upland areas around it. The relative lack of prehistoric activity within this section of the road corridor probably indicates that much of the area was only relatively sparsely occupied. It is possible that the area was occupied throughout the Bronze Age and Iron Age by semi-nomadic pastoralists practising but it is believed to have been largely devoid of permanent settlement prior to the post-medieval period. Indeed, where there is some fragmentary evidence for prehistoric activity within these areas, surviving prehistoric features may have been removed by later industrialisation of the area.

6.2.2 At the junction of Sections 6 and 7, either side of the A465 around the Baverstock Hotel, there are a number of Bronze Age barrows and cairns clustered into cemeteries. These sites include the Bronze Age Bedd-y-Gwyddel ring cairn on the hillside above the Baverstock Hotel (Reference: 300977; SO00810691) which forms part of religious and funerary cairn field site (Reference: 00447m).

6.2.3 Outside the road corridor, to the north of Merthyr Tydfil, is the early medieval site of Castle Morlais (SAM Gm 28), which also has evidence of prehistoric activity. The later medieval castle was built within an existing Iron Age hillfort on a limestone ridge above the Taff gorge. The Iron Age hillfort, which is of the univallate type, comprising a sub-rectangular enclosure, overlooked the river

valleys of both the Taff Fechan and Taff Fawr, thereby controlling the traditional north-south and east-west communication routes.

6.3 Roman (55 BC - AD 450)

6.3.1 Indigenous settlement in the uplands of south Wales during the Romano-British period was probably sparse and principally based around hillforts such as that at Castle Morlais. There are no positively identified Roman era sites within the road corridor of Sections 6 or 7, although there is evidence for Roman military activity from the nearby fort at Penydarren. This fort was established in c. 75 AD and abandoned during the 2nd century AD and had an attached civilian extramural settlement, or *vicus*.

6.3.2 Historical and archaeological sources also record a Roman road from Gelligaer to Brecon which would have crossed the route of the A465 at some point to the east of Section 6, although the exact location is unknown.

6.4 Medieval

6.4.1 The pillow mound at Bryn-y-Gwyddel, (located at grid reference: SO007070) which is protected as a Scheduled Monument (SAM: GM517), has been postulated as having a Medieval date; possibly used as a rabbit warren or windmill. However, it is more likely that this site was a post-Medieval rabbit warren used to provide meat for the occupants of the industrial settlement close to the site of the Dynevor Arms.

6.4.2 The main later medieval monument in this area is Castle Morlais, although this is located some distance to the north of the A465 road corridor on a limestone ridge above the Taff Gorge. The surviving ruins represent the last vestiges of a well-fortified castle begun in AD 1287 by Gilbert de Clare, earl of Gloucester, on land claimed by Humphrey de Bohun, earl of Hereford. When warfare broke out between the earls in 1290, Edward I was forced to march down from north Wales to intervene in the dispute.

6.4.3 The castle comprised a triangular inner ward with sides about 45m long and an inner bailey 60m wide. The inner ward had a round keep 17m in diameter at the north corner, a D-shaped tower with a staircase at the southeast corner, and a similar tower projecting from the south wall. Between the towers was the gateway. The outer ward has no towers on the west side, but there is a D-shaped tower at the southeast corner.

6.4.4 During the medieval period it is likely that much of the region's uplands would have been exploited for summer pasture in some form, possibly based on transhumance farming. It has long been postulated that the Welsh uplands served as summer pastures for lowland communities, a relationship still mostly described in terms of the summer settlement (hafod) and home farm (hendre) system. Over the centuries some traditional 'hafodydd' became permanent farmsteads, while new settlements, the cottages of shepherds (lluestau), peat cutters, metal miners and landless labourers, also appeared in the uplands. However, surviving evidence for this temporary farming and settlement is likely to have been largely destroyed by post-medieval industrial development and distinguishing medieval sites from those of a later date is often problematic.

6.4.5 Although it has not been possible to accurately date the majority of field enclosures in the area, they are likely to have been partly established by the end of the medieval era and the beginning of the post-medieval period. These irregular, enclosed field boundaries mark the extent of late medieval and early

post-medieval encroachment on to, and enclosure of, the common and hillsides. These boundaries are mainly of dry stone walled construction, though hedgebanks (cloddiau) are also evident.

6.5 Post-medieval

6.5.1 A large part of the post-medieval industrial landscape in Sections 6 and 7 has been lost to later development, opencast workings and land reclamation schemes. The land in the area is a mixture of unenclosed upland or common land in Section 6 with more enclosed land along the valley bottom in Section 7. The distinction between field patterns in the upland and lowland areas seems to have developed with the change-over from cattle to sheep farming in Wales which is associated with the establishment of the large landed estates during the 15th-17th centuries.

6.5.2 Historically, Monmouthshire and Glamorganshire had several notable estates belonging to the Marquess of Bute, Lord Dynevor and the Dunraven Estate. The Merthyr tithe map of 1850 and the schedule of 1846 shows that the farm of Coed Meurig (SO 0226 0745) had 37 acres of land which belonged to Lord Dynevor. The associated homestead at Coed Meurig farm is situated to the south of the existing A465 and is shown in its present position on both the tithe map and the 1880 Ordnance Survey map (Figure 32).

6.5.3 Merthyr Tydfil, located east of Section 6, is one of the few large settlements along the A465 road. The mineral resources contained within its hinterland led to Merthyr becoming the largest iron-making town in the world between the early and mid-19th century. The town was rapidly transformed from a small village in the 1750s to the largest town in Wales by the early 1800s and became the most significant Welsh town of the Industrial Revolution.

6.5.4 The growth of Merthyr followed the establishment of the main four ironworks in the area, the Dowlais Ironworks established in 1759; the Plymouth Ironworks established in 1763; the Cyfarthfa Ironworks established in 1765; and the Penydarren Ironworks established in 1784.

6.5.5 Water became an important resource for the iron industry and the population as a whole. At the point at which the A465 crosses from Penderyn parish into Aberdare the Nant Hir was dammed in the mid-19th century to create the Nant Hir Reservoir. The reservoir supplied water for the Aberdare Water Works Company (Figure 33).

6.5.6 Although substantial amounts of iron ore were extracted from the south Wales coalfields and converted into bar iron and other malleable iron, most of the production of finished manufactured took place in Sheffield and Birmingham. However, besides iron-working, other important trades grew up in the vicinity of Merthyr, including the export of coal and limestone as well as the manufacture of woollen cloth and brewing. In addition Merthyr became a significant economic, religious, literary and political centre in south Wales.

6.5.7 At the western end of Section 7 of the A465 is the village of Hirwaun which developed to cater for workers at the Hirwaun Ironworks (Figures 36 & 37). The Hirwaun ironworks was established on the north bank of the river Cynon in 1757 by Thomas Mayberry and John Wilkins who leased land for mining and the establishment of the ironworks. This Hirwaun Ironworks appears to have been the first coke-fired blast furnace in south Wales.

6.5.8 The earliest settlement at Hirwaun was probably immediately adjacent to the ironworks, but by the time the area was surveyed for the second Marquess of

Bute, in 1818, an area to the south of the river, at the northernmost extremity of the Glamorgan parish of Aberdare, had been laid out for new streets and houses and was in the process of being developed(Figure 36).

6.5.9 In about 1820, Hirwaun Ironworks was rebuilt and enlarged by William Crawshay, but appears never to have been particularly successful. The furnaces were blown-out in 1859 and, although there was some sporadic later activity on the site, the works effectively closed about this date. Although coalmining and quarrying survived the closure of the ironworks there was, therefore, little further settlement growth at Hirwaun.

6.5.10 The industrial activity of the area depended on a well-developed infrastructure system. During the early stages of ironworking in the south Wales valleys, raw materials and pig-iron were probably initially moved around the area using pack animals and localised tramroads. However, by the end of the 18th century industrial expansion led to the creation of a number of integrated communications links such turnpike roads, tramroads and later railways, to move products and materials between the limekilns, coalmines, the iron-works and the consumer markets.

6.5.11 The most significant landowner in the region, the Marquess of Bute, controlled extensive tracts of mineral-rich land the income from which eventually made the family amongst the richest in the world. As a result the Marquess of Bute's influence had a significant impact on the development of the region's iron and coal industries since the Bute estate along with the area's iron-masters provided the investment for many infrastructure and other capital projects.

6.5.12 The 2nd Marquess of Bute financed and promoted the construction of the Glamorganshire Canal in 1794 from Cardiff to Abercynon; this part later became known as "The Navigation" or "The Basin". By 1798 the nine miles between Abercynon and Merthyr had also been completed.

6.5.13 The Glamorgan Canal Navigation Act also provided for the construction of the Penydarren tramroad and the connecting tramroads from collieries and ironworks situated less than four miles from the canal. Many of these localised tramways were built under this Act, such the horse-drawn Penydarren tramroad which was built from Merthyr to Abercynon in 1802. This tramroad was later used by Richard Trevithick's first steam-locomotive railway journey in 1804. In addition the Gurnos tramroad, built in 1793, was built to carry limestone from the Gurnos quarries to the Cyfarthfa Ironworks for use as flux in iron smelting.

6.5.14 In 1811 when the Aberdare Canal was constructed from the Glamorganshire Canal Navigation at Abercynon to Aberdare. The Aberdare Canal led to the construction of a number of further branch-lines and tramways to transport the finished iron from the ironworks to the canal at Aberdare and on to Cardiff docks.

6.5.15 However, by the 1820s the lack of proper dock facilities at Cardiff led the 2nd Marquess of Bute, to promote the construction of the West Bute Dock, which was opened in October 1839. This was followed by the West Bute Dock at Cardiff, opened in 1839, and the East Bute Dock opened in 1859. Cardiff further opened the Roath Dock in 1887 and the Queen Alexandra Dock in 1907.

6.5.16 The later construction of the Taff Vale railway to Cardiff faced opposition from the Glamorgan Canal Company but received the Royal Assent in 1836. It incorporated the first commercially significant public railway in Wales. The Taff

Vale Railway was to run from Cardiff to Merthyr Tydfil with a branch to communicate with the tramroad leading to the Penydarren, Dowlais, and Plymouth Ironworks, and another branch to the collieries of Lancaiach. The first stretch of the railway was opened in 1840 and reached Merthyr by 1841.

6.5.17 The Taff Vale Railway Hirwaun Junction Line was incorporated in 1867 as the Rhondda Valley and Junction Railway, and was opened in 1878 for mineral traffic only from the Blaenrhondda Branch junction to Blaenrhondda Colliery, with a spur to Blaencwm Colliery. Neither the original extension to Hirwaun, nor a later one, authorised in 1872, from Hirwaun to join the Aberdare Railway at Mill Street, Aberdare, was ever made. In 1889 the Taff Valley Railway absorbed the independent company.

6.5.18 The line of the A465 crosses several mid-19th-century tramways at Hirwaun. Most of these tramways were associated with the Aberdare and Rhondda Railway, which was laid out in the mid-19th century and ran from the top of the Rhondda Valleys to a junction with the broad-gauge Vale of Neath Railway near Hirwaun Ponds. The associated tramroads are the main features of industrial transport interest along the A465 route at Hirwaun. The tramroads connected the Hirwaun Ironworks with the collieries, ironstone mines and quarries from which it drew its raw materials or provided the means of dispatching finished iron to the canal at Aberdare.

6.5.19 At Hirwaun the other main rail feature was the Vale of Neath Railway (SN 9730 9550) which crossed the early road from Hirwaun to Merthyr Tydfil and was opened in 1851 as a broad-gauge line. The line was later rebuilt as a standard-gauge Great Western branch railway, which survives as a single-track mineral line (Riden, 1996).

6.5.20 After the coming of locomotive-operated railways to the area, during the period of rapid railway expansion between 1850 and 1870, a new generation of connecting tramways were built to feed the Vale of Neath Railway main line (Riden, 1996).

7 Sections 6 and 7: Evaluation Methodology

7.1 The methodology for evaluation of each site consisted of excavation of the topsoil and non-archaeological layers carried out using a machine fitted with a ditching bucket under archaeological supervision followed by detailed hand excavation of any stratified deposits. Where archaeological features were recorded on *pro forma* context sheets, and were drawn and photographed following the site specification and the methods set out in the Jacobs Babtie archaeological site manual.

7.2 In order to tie the site into the National Grid Reference system and to provide a height above Ordnance Datum, a base feno station was established next to each site to a lateral accuracy tolerance of +/-50mm on soft surfaces and a height tolerance of +/-10mm. The exact location of the individual trenches was measured from known points and plotted onto Ordnance Survey digital base maps. Levels were taken using an automatic dumpy level.

7.3 The archaeological research objectives for each site are outlined on a site-by-site basis in Appendix 1, but the overall objectives were to evaluate the potential survival and relative importance of each site.

8 Site No. 229: Track at Lech Sycrhydd(SO 9960 0704 to SO 9958 0680)

8.1 Description

8.2 This site represented the course of a buried track of unknown date at Lech Sycrhydd, located to the south of the A465 (Figure 4). The track is visible above ground-level as a slightly raised platform running north/south, although forestry planting to the north of the A465 has destroyed any possible evidence of the site in this area.

8.3 A trench was located across the track (Figure 8) which showed that around 0.08m of topsoil had accumulated over a layer (002) of well-compacted black glassy slag material which was 0.1m in depth (Figure 9). Below (002) was a layer (003) of well-compacted orangey-brown glass slag and clay between 0.07m and 0.01m thick. At approximately 0.3m below the surface was further black slag layer (004) which was similar in make-up to layer (002).

8.4 At approximately 0.55m below the present ground surface, the original topsoil layer (005) of the field level was encountered (Figure 9). This consisted of a black humic soil layer. The natural sub-soil (006) directly below (005) was a moderately compacted grey/orange boulder clay.

8.5 Conclusions

8.6 The layers observed in this trench did indeed represent a distinctive trackway which had been re-surfaced a number of times. However, the use of the highly vitrified slag materials suggested that the track had been constructed relatively recently, probably to consolidate and existing farm track.

9 Site No. 232: Baverstock Settlement and Mineral Workings (SO 0073 0730)

9.1 Description

9.2 The Baverstock settlement and mineral workings site is located on the open moorland of Mynydd Aberdare (Figure 3). The site consists of the remains of a number of a 'closes' and house platform associated with a series of tips, turfstone boundaries, tramroads and the remains of some possible scouring ponds or reservoirs (Figure 10). These earthworks can be clearly seen at ground level today from aerial photographs of the site (Plate 1).

9.3 Cartographic Evidence

9.4 The 1813 Ordnance Survey (OS) draft map of two inches to the mile shows that the area around Site 232, with its settlement and associated mineral workings, formed a single field running the length of the area. The 1813 draft OS map also shows that there were a number of iron ore levels worked from a tramroad which ran to Clwydy fagwyr where it was joined by two tramway branches annotated as 'Coal and Mine Works'. The line ran steeply on to Gelli-deg and from here to the old road to the furnaces. This alignment of the tramroad can also be seen on the later OS map of 1891 (Figure 32).

9.5 By the time the Merthyr Parish tithe map was surveyed in 1850 the Dynevor Arms Inn had been built at the site presently occupied by the Baverstock Hotel (Figure 3). The tithe map shows there are two cottages with 'closes' formed of banks near to the Dynevor Arms Inn. Although the tithe map of 1850 does not show the existing coal and ironstone workings this may reflect the limitations of the survey rather than the absence of workings at this date as the tithe maps were more concerned with productive agricultural land than mineral workings. The apportionment for the 1850 tithe map indicates that the two parcels of land which were later used as patch-workings and tips as shown on the later 1891 OS map were owned in 1850 by William Crawshay. William Crawshay was an important member of the family of who ran a number of ironworks in the area. The nearest Crawshay family ironworks was Cyfarthfa Ironworks, which was where the minerals from this area were probably used.

9.6 By the time the OS map of six inches to the mile was published in 1891 (Brecknockshire Sheet 50. NE) patches and tips to the south of the Merthyr to Aberdare road are annotated as a number of ironstone levels (Figure 32). The patches and tips shown on the 1891 OS continue to the south of the A465 east of the farmstead of Ty'n y Coed Cae (Figure 32). The 1891 OS indicates that there was one ironstone level still active at the Site 232 at this time which was located to the south of the A465 (Figure 32).

9.7 Further to the south, the whole area of open moorland of Mynydd Aberdare was littered by ironstone and coal workings with associated tramways (Figure 33). The 1891 Ordnance Survey map shows a series of coal and ironstone levels located some distance to the south of the Dynevor Arms and connected to it by a track; these patches are annotated as 'Fothergills Patches' and 'Bryn Defaid Patch' (Figure 33). The presence of an engine house at the latter patch-working indicates there was probably also deep mining requiring water pumps or winding gear at this time.

9.8 The field pattern of the enclosed area at the time of the 1891 OS map largely follows the line of the county boundary (Figure 32). It is likely that the Cynon and Taff valleys which form the county boundary and boundary between the parishes Penderyn, Vaynor and Merthyr parish may also have formed a division in mineral rights. The mineral rights to the western area probably belonged to Aberdare Ironworks and the rights to the eastern area to Cyfarthfa Ironworks (van Laun, 1997). The other three Merthyr Tydfil ironworks had mineral rights to lands located to the east of the Taff.

9.9 The two small cottages also appear on the later OS map of 1891 located close to the Dynevor Arms Inn (Figure 32). These cottages are located within defined field boundaries which would have formed their 'close' or garden area and relate to raised earthworks still visible on the ground today.

9.10 The only tramway shown linking the ironstone level at Site 232 on the OS of 1891 is located to the east of the cottages and runs towards Merthyr Tydfil (Figure 32). The shape of the workings and tips shown on the 1891 OS map (Figure 32) differ from those picked-up by the modern topographic survey (Figure 20). This indicates that the workings were further worked and enlarged after the publication of the OS map in 1891.

9.11 Documentary evidence

9.12 Historically many mineral workings made use of a technique called scouring which was described thus:

"After working several years on the 'pick and shovel' process, clearing the edge of the outcrops where convenient and practicable, the gradient of the strata was such that a considerable quantity of topping was to be cleared, and the minerals getting deeper into the earth, the miner was required to exercise his ingenuity and develop all his skill and energy. His next process was to drive small holes into the strata a certain distance, then to work the small pillars that separated the numerous holes, and suspending operations until the overlying strata would of their own weight fall in mass. In the meantime a small pond or reservoir was constructed and filled with water. The pond was situated in such a position that when its bank was broken the water rushed into the fallen mass, separating the mine and rubbish." (Extract from Evan Powell on the Local History of Blaenau Gwent).

9.13 A possible example of a scouring pond is still visible on the hillside above the cottages platforms, although no water now collects in it (Figure 20). Alternatively the large crater formed in the hillside may have been used to collect drinking water for the cottages below or have formed from the remains of mineral workings.

9.14 The 'pillow mound' (Scheduled Monument GM517) on the hillside above the cottages has been suggested as the site of a medieval rabbit warren or windmill site (Figure 3). However, there is no cartographic or documentary evidence to support the idea of a medieval or post-medieval windmill in this area. Windmills were never common in any part of south Wales and a mill in such an isolated spot, in a parish with relatively little land suitable for cereal production and ample water-power for water-mills, seems improbable (Riden, 1996). It is more likely the earthworks formed a post-medieval rabbit warren created by the occupiers of the cottages around the Dynevor Arms. Rabbits were often kept in industrial settlements to supplement meagre food supplies.

9.15 Evidence for Mineral Extraction

9.16 The workings in the vicinity of Site 232 were known as 'patches' and were formed from miners digging into the hillside to extract the easily accessible coal and iron ore which outcropped near to the surface. Each patch would be identified by the individual worker's name; for instance 'Fothergills Patches' (Figure 33).

9.17 In several places around the area the distinctive collapse of 'pillar-and-stall' workings is visible on the ground (SO 0101 0720) (van Laun, 1997). These workings would have been within the Rosser Ironstone (van Laun, 1997) and it is probable that the patches were exploiting outcrops of this ironstone as well as the Lower Four-Foot coal.

9.18 Ironstone working

9.18.1 From field walking it appears part of the workings in the area (SO 0089 0718) have been carried out by using the 'plank-and-barrow' method (SO 0108 0719) leading to 'crowsfoot' tips (van Laun, 1997). This method involved removing the overburden to expose the rock below. The face of the outcrop was then

worked down as far as practicable until the next section of overburden was reached. The spoil was barrowed across the newly formed gorge and deposited one step further on. In this way the 'face' advanced in a long strip with the waste moving a step at a time, always being roughly the same distance behind the 'face' (van Laun, 1997). This method left a characteristic waste tip roughly where quarrying began, sometimes radiating slightly outwards where gaps had been filled, with a final gorge where working stopped. The advantage of this method was that trams could be loaded with ore or coal directly from the 'face'.

9.18.2 In particular the area worked from SO 0045 0700 to SO 0073 0723 is characteristic of this method where a gully can be followed along the outcrop and waste dumped to the north with evidence of a cutting through the waste for a tramroad Figure 32). The tramroad would have been built at the final stage when waste disposal became a problem, possibly after the post-1829 enclosure of the area (SO 0063 0728). The mineral workings post-1829 and prior to 1867-72 can generally be attributed to the Aberdare Ironworks as all the western workings were abandoned after this date. The extent of the waste suggests this area was a major source for native iron ores.

9.19 Coal Workings

9.19.1 The general practice for mineral working in this area was to work the outcrop from the north, but because the coalfield dips seven degrees to the south, this created drainage problems (van Laun, 1997). However the topography of the land made it possible to drive levels up into the ore and coal. In order to work the seams downwards adits were also driven at a lower level still, with drainage taking place into established valley systems (van Laun, 1997). This would have allowed approximately 600m of southerly working before drainage would again have become a problem.

9.19.2 The coal levels were driven under the ironstone outcrop to meet the Lower Four-Foot below. Although some distance from the underground seams, the angle of the level driven upwards would have provided a good gradient for drainage and tramage (van Luan, 1997). By the 1870s, and probably well before, levels were being driven westwards into the outcrop between 100m to 170m lower down in the Taff valley giving more direct access to coal and ironstone. These levels were, therefore, generally all abandoned along with all the western workings by 1867-72.

9.20 From the cartographic and field-walking evidence it initially appears unusual that the coal levels, and the accompanying spoil tips, lie below the ironstone workings (van Laun, 1997). Using this method to reach the coal it would have been necessary to first pass through the iron. However, this method of working was necessary to obtain drainage and easy haulage and had the advantage that ironstone could also be won from the same levels.

9.21 Evaluation Results

Trench 1

9.21.1 The six evaluation trenches concentrated on what was assumed, from the historic mapping, to be a platform for a cottage closest to the original Dynevor Arms Inn (Figure 10). This house platform was enclosed by a series of embanked boundaries which probably formed the 'close' associated with each

house (Figure 11). The banks surrounding the house platform were between 0.5m and 0.8m high and covered by turf.

9.21.2 Trench 1 was opened up on an east-west orientation across the length of the 'close' and house platform earthworks and extended to 27m in length by 1.5m wide (Figure 11). The excavation revealed that across the area of the house platform there was a thin covering of humic material and demolition materials, such as stone and lime mortar (001) (Figure 12). Below this layer (002) was an active demolition layer with a high proportion of lime mortar with limestone and millstone grit, indicating the 'robbing' of stone for re-use. Stratigraphically earlier than this were two layers (003 and 004). The first layer (003) indicated a phase of building collapse, with only a few mortar fleks, and the second layer (004) represented a phase of stone removal with frequent lime mortar fragments, which were interpreted as the representing the removal of mortar from the stones prior to transportation and re-use.

9.21.3 The removal of these layers revealed the remains of a masonry wall with lime mortar. The wall was roughly orientated east/west and was recorded by dividing it into three main separate parts (005, 006, 007). The main length of wall (007) was located at the west end of the trench and was 7.05m long and 0.61m wide. This wall had a return wall at the west end, which was noticeably thicker, being 1.1m wide, with a further narrower return at its eastern end.

9.21.4 The eastern return end of wall (007) was separated from another short length of wall (006) which was 4.13m long by 0.57m wide. The wall (006) had evidence of a white lime render on its northern face, suggesting an exterior wall. This wall (006) was in turn separated from a stub wall (005) which was 1.02m long, but the width of which was hidden in the section and was not fully excavated.

9.21.5 The walls (005, 006 and 007) were formed from angular limestone and millstone grit rubble with main stones being on average 0.6m x 0.3m x 0.4m with smaller infill stones. The walls were similar in style and method of construction although separated by breaks in construction and doorways.

9.21.6 The thicker western end of wall (007) appeared to be a gable-end and was interpreted as being of increased size to accommodate a chimney. Wall (007) was, therefore, interpreted as encompassing the cottage's main living area. The eastern return wall (007) probably also defined an original gable-end of the cottage with the second wall (006) representing a later phase of construction forming and extension. This extension appeared to be separated from wall (007) by a doorway which would have provided a 'baffle-entry' into the main house. A further separate doorway into the extension was provided by a gap between the wall (006) and the stub wall (005). This extension was interpreted as being a utility of store room because it had a separate entrance to the main cottage.

9.21.7 Overall the cottage extended to a length of over 13m east-west. The rear wall was interpreted as the masonry structure revealed in Trench 2, making the cottage approximately 6.2m wide north-south.

9.21.8 Within the cottage living-area defined by wall (007) was a stone floor (008) which was 0.08m thick and built of flags on average 0.4m x 0.2m in size. There were also bricks set into the floor forming gullies or drains. Dispersed throughout the trench were large amounts of 19th century pottery including Staffordshire dark earthenware, china pottery and glazed biscuit wares. Within the utility area defined by wall (006) was a further flagstone floor (009).

9.21.9 Outside the west gable of wall (007) was a roughly north-south orientated limestone cobbles area over which were re-used slate and limestone roof tiles. The stones appeared to form a gully or drain 1.25m in length and 0.3m wide which was built sometime after the main house.

Trench 2

9.21.10 Trench 2 abutted Trench 1 to the south on a north-south orientation. Trench 2 was 26 long by 1.5m wide and crossed an east/west earthwork (Figure 13) which was presumed to be the rear wall of the cottage revealed in Trench 1 as well as a larger field boundary at its southern most end (Figure 14).

9.21.11 The excavation of the trench at the northern end through the bank at the rear of the cottage revealed a series of demolition and masonry collapse layers (006, 010 and 012) which had formed a bank (Figure 13). Removal of these layers revealed remains of a wall (011) standing to a height of approximately 0.4m which had well-defined north and south faces. The wall, built from limestone and millstone grit masonry with a lime mortar bonding, was 0.6m thick. The wall was largely similar to the wall (007) revealed in Trench 1 and was interpreted as the rear wall of the cottage revealed in Trench 1.

9.21.12 The excavation of the southern end of Trench 2 through the field boundary revealed a bank 0.8m wide constructed of a layer (014) of a mixture of re-deposited natural and field clearance stones (Figure 14) and covered by layers of clay.

Trench 3

9.21.13 Trench 3, 44m by 1.5m wide, was excavated to the north of Trench 1 on a north-south orientation across two earthwork boundaries (Figure 10). A section was excavated across the northernmost field boundary as this appeared to be the most substantial and complete of the two (Figure 15).

9.21.14 The stratigraphy of the section showed that there had originally been a low bank 0.6m high at this point made up of four main layers (009, 010, 011 and 012) (Figure 16). On the southern (uphill) side of the earthwork a ditch had been cut [006] which was 0.95m by 0.25m deep. The ditch had provided the layers of material for the make-up of the bank and to provide drainage.

9.21.15 The uppermost layer (009) of the bank was 0.15m thick consisting of a silty-clay with occasional large limestone and millstone grit stone blocks which appeared to have been a repair of the field boundary on the downhill side. Layer (011) below layer (009) was 0.31m thick consisting of a silty clay with frequent organic peaty elements. Layer (012) below (011) was a clay layer with some occasional medium to large limestone and millstone grit stones and was 0.27m thick; it appeared to be a re-deposited layer of subsoil used in the make-up of the field boundary. Layer (010) formed a layer of turf and topsoil laid over the ground surface (003) during construction of the boundary, it consisted of a silty organic clay material with small shale inclusions and was 0.16m thick.

9.21.16 The ditch [006] had later been filled by two layers (005 & 014) of silty clay material which represented silting-up of the ditch over time, 0.25m and 0.32m deep respectively.

9.21.17 In a later phase after the silting up of ditch [006] and the erosion and partial collapse of the bank, there had been a re-cut [013] to the north (downhill) side of the bank which had then been used to add a layer (008) of

material to the top of the bank. This final layer (008) was of mid-brown silty clay which was 0.55m thick and included large millstone grit and limestone blocks. This layer represented a repair to the bank on the southern side including material from further field clearance. This layer (008) had also eroded and the whole bank had been covered by a layer of topsoil (001) up to 0.05m thick.

Trench 4

9.21.18 Trench 4 was 3.5m long by 1.45m wide and was hand-dug across a across the easternmost bank surrounding the cottage 'close' which was north-south orientated (Figure 10). The section through the bank revealed a straightforward sequence of four layers that made-up the bank (001, 002, 003 and 004) (Figure 17). Layer (004) formed the natural sub-soil which was a yellowy-brown silty-clay with occasional lens of light-grey clay. Stratigraphically above this was a layer (003) of silty-clay material with fine gravel, 0.4m thick. This was overlain by a layer (002) 200mm thick of similar silty-clay material overlain by the topsoil (001), which was 100mm thick.

Trench 5

9.21.19 Trench 5 was 5m long by 0.8m wide and was excavated on a north-south orientation across a separate east-west linear boundary to the west of the cottage (Figure 10). This boundary was not directly related to main the cottage 'close' but represented an outer field boundary.

9.21.20 The trench was hand-dug to a depth of 1m with a 'sondage' cut through the western end and on the northern side (Figure 18). A sondage was dug on the western side to determine the relationships between the wall and the build-up layers and the sondage on the northern side was dug to determine the depth of the natural soils.

9.21.21 The field boundary had a central drystone wall (017) at its core which was 0.49m wide. The wall consisted of limestone blocks with average dimensions of 0.4m x 0.3m x 0.25m which were presumably field clearance stones.

9.21.22 A series of layers had built-up against the wall (Figure 19). The original ground surface upon which the wall (017) was built was layer (010). The deposits on the northern side (downhill) (005 to 009) seem to have built up over a long period of time through natural processes of the soil with leaching through the wall. The deposits on the southern side were less numerous and may well have been truncated through re-cutting of the bank, although no cut was visible in the section.

Trench 6

9.21.23 Trench 6 was 3.5m long by 1.5m wide and was hand-dug across an extensive north-south orientated field boundary which was over 120m long (Figure 10). This field boundary was not directly related to main the cottage 'close' but represented an outer field boundary possibly belonging to a further cottage platform site located to the north of the area (Figure 10).

9.21.24 The area was cleared to the height of the boundary wall stones (013) and a slot dug 0.4m wide dug through the stones to the natural (011) to record the structure in section (Figure 20).

9.21.25 The core wall was made-up of three layers (005, 006 and 009) (Figure 31). The stratigraphically earliest layer (009) was 0.3m thick and made-up of ironstone, limestone and quartz stones. Overlying this was layer (006) formed from large stones similar to layer (009). The final layer, layer (005) acted as a capping or bonding layer and contained few stones and was largely formed from clayey silt, 0.22m deep.

9.21.26 The material, apart from the field clearance stones at the core of the boundary, appear to have come from the ditch cut [012] along the eastern side, although it is possible there was a further ditch cut along the west side. The ditch cut [012] silted-up over time and was filled by (008) and later layers (007 and 003) and finally by (004) which also covered the whole bank.

9.22 Evaluations conclusions

9.22.1 Trenches 1 and 2 were located within a banked enclosure approximately 30m x 25m which incorporated the remains of a cottage. Within trench 1 were the external walls of a small dwelling with walling on average 0.5m thick. The cottage appears to have been a two-cell baffle-entry house made of local limestone and millstone grit with a stone and, possibly later, a slate roof with flagstone floors. The house appears to have had overall dimensions of 13m by 6.2m with a living area approximately 7m by 6.2m.

9.22.2 The prevalence of 19th century pottery associated with the cottage and its relative isolation means that it is unlikely to be any older than the 19th century. In this remote moorland area it is likely that this was a squatter settlement which was populated by miners and colliers. It is probable that the cottage was built by people who were working the nearby patches and mine workings exploiting the Rosser Ironstone outcrops and the Lower Four-Foot coal (Riden, 1996).

9.23 There is evidence that quarrying and mining was a seasonal job pursued by people who occupied dwellings with many similarities to the 'hafod' and 'hendre' dwellings common throughout upland Wales. However, the carefully organised field patterns with stone rubble walls and house platforms suggest at least a semi-permanent settlement at this site. The rectangular field patterns with houses situated in the middle are characteristic of the type of dwellings found following the growth in population in the early 1800s. This phasing is confirmed by the careful dumping of post-1829 ironstone waste short of the settlement.

9.23.1 Trenches 3, 4, 5 and 6 were located in order to provide sections of the raised turf and stone boundaries which surround the settlement. The construction methods for each boundary were similar consisting of a drystone walling covered over by an earthen bank principally using material taken from a ditch. Over the years the banks were eroded and then re-built. After their disuse, the earthen banks were colonised by mosses, sedges and grasses.

9.24 General Conclusions

9.25 The site covers an area of approximately 37 hectares and could be seen to rival Blaenavon as a rare survival of a relatively complete industrial landscape (van Laun, 1997). Although only preliminary fieldwork has been undertaken this area appears to contain near complete survivals of iron and coal workings from well before the 1870s, but not including deep mining. There survive a number of levels, pillar-and-stall workings and plank-and-barrow workings

combined with tramroads and surviving waste tips and the house platforms and boundaries of a squatter settlement which make this an important survival from the industrial era.

10 Site No. 252 Bute Colliery Tramway (SO 9534 0527 to SO 9506 0500)

10.1 Description

10.2 This site was presumed to be the route of the dismantled Bute Colliery to Hirwaun Tramway which had been replaced by the Tower Road in Hirwaun. The route, which intersects the existing A465 and to the south at SO 9506 0501, converges near an area of open-cast workings with the Aberdare to Rhondda Railway (Figure 7).

10.3 Evaluation Results

10.4 One evaluation trench was excavated in the area where the proposed road would impact the Bute Colliery Railway (Figures 22 and 23). Below the present road surface (001) was a compacted layer of industrial waste (002) including coal and slag material 400mm thick, which could have been the foundation material for the tramroad. Below this was a further layer (003) of well compacted sandy-gravel with large cobbles which either natural or re-deposited natural.

10.5 Conclusion

10.6 Although there was evidence of a metalled surface along the road there was no specific evidence relating to an earlier tramway surface at this site.

11 Site No. 255 Aberdare & Rhondda Railway and Tramroads (SO 9587 0510 to SO 9567 0417)

11.1 Description

11.2 The historic OS map shows that there were a number of mid-19th-century tramway lines at Hirwaun (Figure 24). Most of these were associated with the Aberdare and Rhondda Railway line, which ran south, from a junction with the Vale of Neath Railway branch of the Great Western Railway near Hirwaun Ponds, to the top of the Rhondda Valleys, marked on the OS of 1892 (Figure 35).

11.3 Whilst the Vale of Neath line ran north of Hirwaun, the Aberdare and Rhondda Railway ran to the south of Hirwaun running roughly west-east until it joined a series of lesser tramroads running to various ironstone mines such as Knobby Drift (Figure 35).

11.3.1 The three associated tramroads ran roughly from the ironworks, through Hirwaun village to an ironstone pit called Knobby Drift (Figure 22). It appears that this drift mine was certainly in use by 1892, although it lacked a tramway connection at this date, and it is possible that the level relied solely on road wagons to carry the iron away. Alternatively, it seems more likely that it was originally rail-connected and it is possible that the line was abandoned when the blast Hirwaun Ironworks furnaces closed down in 1859.

11.4 Route 255a: This is the course of the Aberdare & Rhondda 'main line' shown on the OS of 1892, near Knobby Drift running from a bridge over the stream at

SO 9531 0508 (Figure 35). The line continued east, running to the south of the present tennis courts to another bridge where the tramroad crossed the main line (SO 9560 0503) (Figure 12).

11.5 Route 255b: Shown on the OS map of 1892 (Figure 35) as an abandoned branch of the Aberdare & Rhondda tramroad, running SSW, presumably to pits, which had vanished by the time of the OS in 1892. The tramroad can be seen to have been built upon an earth bank over 1.5m high which has been truncated by the later construction of Tramway C. The tramway crossed the Nant y Bwlch stream on a culvert (Figure 12).

11.5.1 Route 255c: The course of a tramway running SSW, but not shown on the OS of 1892. The tramroad intersected Tramroad B causing the partial destruction of its earth embankment, and indicating that tramroad C has a later construction date (Figure 24).

11.6 Evaluation Results

11.6.1 Route 255a: A trench excavated across the Aberdare and Rhondda Railway main line showed that below an upper hoggin layer (001) of gravel and coal dust particles was a limestone layer (002), 0.2m deep which may have formed the track surface layer (Figure 25). Below this was a layer of hardcore (003), formed from shale, industrial waste materials and clay, which was 0.2m deep. A further foundation layer for the track bed (0004) consisted of large fragments of slate and shale on average 0.2m x 0.15m x 0.1m to a depth of 0.25m. Below this were natural layers of sandy-clay (005 and 006).

11.6.2 Route 255b: This was a poorly maintained track with many ruts within the upper layer (001), which consisted of a surface of orange/grey ironstone and leached shale (Figure 13). Below this were a number of layers of (002, 003, 004, and 005) which appear to have been attempts to repair the trackway with various materials from friable shales and ironstone to coal. At a maximum depth of 0.5m a layer (006) was uncovered which appeared to be the remains of the early tramway track bed. The layer was made up of frequent rounded stones of limestone and conglomerate stone with a clay matrix to a depth of 0.22m. Below this the natural (007) was a mottled orangey clay.

11.6.3 Route 255c: A trench was excavated across Tramroad C. However, due to heavy water-logging and past disturbance of the layers, no sub-surface remains recorded and the trench was abandoned at a depth of 1.2m.

11.7 Conclusions

11.7.1 The excavations revealed in section the remains of the railway and tramway track-bed layers respectively within Routes 255a and 255b. As one would expect the method of construction between the railway and tramway appeared vary. The track-bed of Route 255a used layers of rounded cobbles whereas the track in Route 255b was formed from mixtures of gravel and limestone.

11.7.2 The Aberdare and Rhondda railway and its tramways do not appear to be of any special interest and the lines do not appear to have had any engineering features of importance. The main surviving feature of note is the associated site of the ironstone pit at Knobby Drift. Although it is possible that excavation of the tramways may reveal some early rail artefacts, most material was probably removed when the lines were abandoned.

12 Site No. 273 Aberdare & Rhondda Railway Tramroad: (SO 9566 0520 to SO 9559 0491)

12.1 Description

12.2 This is the presumed site of a local tramroad, surviving as a trackway, which is believed to have been used to transport ironstone from the Knobby Drift Ironstone pit (No.274) to the Hirwaun Ironworks during the mid 19th century (Figure 7). This line is shown on the OS map of 1892 (Brecknockshire Sheet 50. NW), as a further off-shoot of the Aberdare and Rhondda railway (Figure 35).

12.3 Evaluation Results

12.4 A trench excavated across the course of the tramway line (Figure 26). The upper surface layer of the tramway incorporated frequent 19th and 20th pottery including bone china and earthen ware.

12.5 Below the upper layer were a series of truncated layers (002, 003, 004 and 005) which appear to represent attempts to infill the rutted surface of the track after the tramroad had fallen into disuse using brick, stone and slag (Figure 27).

12.6 Below these repair layers was a thin layer (006) (0.05m thick) constructed of a mixture of clay with small shale and ironstone fragments which may have been laid to receive the track bed directly. The main foundation for the track-bed, however, consisted of a layer (007) of medium to large shale and ironstone fragments at least 0.5m deep above an orangey clay natural.

12.7 Conclusions

12.7.1 A trench was excavated across the route of the tramway to assess the presence of possible track/sleeper level and to record in section the construction methods used for track bedding. The construction method used for the track bedding consisted of large shale and ironstone fragments and was similar to those identified at Site 255b, which was a related tramway.

13 Site No. 275: Tramway branch of the Hirwaun Common Railway (SO 9597 0500 to SO 9598 0470)

13.1 Description

13.2 This tramway is marked on the OS map of 1892 and survives as a north/south track (Figure 35). The tramway was a branch line of the Hirwaun Common Railway and would have carried coal from collieries to the south to the Hirwaun Ironworks.

13.3 The present route of the branch-line is marked on the ground by a modern concrete road running towards the uplands, south-east of Hirwaun (Figure 7). The route presently delineates the eastern boundary of land owned by the Bute Town Colliery Company.

13.4 Evaluation Results

13.5 A small trench 2m by 1m wide was excavated to the west side of the road in order not to disturb the metalled surface of the road (Figures 28 and 29). Layers 002, 003 and 005 represented a single layer of loose, clay-silt material with frequent coal inclusions which had been truncated by a cut (004). The cut, which may have represented a tramside drainage ditch, was filled by a well-compacted clay-silt.

13.6 Below these layers was a thick layer (006), approximately 0.6m deep, of loose grey shale with frequent coal inclusions. This seemed to represent a dumped layer of loose re-deposited natural shales, alongside the tramroad. Below this was a layer (007) approximately 0.17m thick of iron-rich material with large boulders. At a depth of 1.1m a peat layer (009) was encountered which was interpreted as the original surface layer prior to industrialisation.

13.7 Conclusions

13.8 There was no evidence of the original track bedding evident in section, possibly because, due to modern access along the route, the trench was not excavated directly on the track-bed route. Instead there was a series of shales dumped which were probably related to trackside activity. However, below this, at approximately 1.4m below the present ground surface was an organic rich sediment which probably indicates the original ground surface prior to industrial activity.

14 Site No. 276: The Hirwaun Common Mineral Railway (SO 9495 0618 to SO 9862 0481)

14.1 Description

14.2 The Hirwaun Common Mineral Railway was marked as a tramroad on the Aberdare tithe map of c.1840 and later as a conventional locomotive-operated railway on the OS map of 1892 (Figure 35). The route of the line can be followed to the west of Hirwaun at SO 9495 0618 where it converges with the Vale of Neath Railway (Site No.258) (Figure 7).

14.3 To the east, the line of the railway runs along Longfield Court to SO 9612 0505 where it is crossed by the A465 (Figure 7). The 1892 OS shows that the line continues further on to the south-east and a branch line diverges to south, currently a footpath.

14.4 Evaluation Results

14.4.1 The excavation of the trench across the track route (Figure 30) revealed two upper layers (001) consisting of loose, mid-grey silty-clay material with small to large angular pieces of shale 0.3m thick. Underneath this was a layer (002) of loose dark brown silty loam with a high proportion of coal dust, approximately 0.45m thick (Figure 19). Below these were (003, 004 and 005) which were two similar layers of orangey clay, shale and ironstone and industrial residues of gritty ash.

14.4.2 Located within layer (005) were the remains of an flat arched stone wall which had probably been built as a culvert beneath the railway (Figure 31). The wall was lime mortared and was formed from a number of individual voussoir stones. Only the top half of the wall was revealed, so it was not possible to determine its exact extent.

14.5 Conclusion

14.5.1 A series of hogging layers suggest that this was indeed the location of the Hirwaun Common Mineral railway track bed. The mortared wall below the track-bed was assumed to be culvert associated with the railway. The culvert would have been used to divert a small brook or drainage ditch below the railway to prevent erosion of the track-bed.

APPENDIX 1

Appendix 1: Sites evaluated in Sections 6 and 7

Site No.	Name of Site	Grid ref:	Evaluation Method	Period	Type
232	Settlement and field system, Baverstock	SO 0073 0730	*Method of excavation: Hand excavation followed by machine trenching.*	Post-Medieval	A complex of turfstone walled field boundaries representing gardens, enclosures and drainage systems. rubble concentrations indicate the sites of demolished cottages.
252	Bute Colliery Road (Tower Road), Hirwaun	SO 9534 0527 to SO 9506 0500	*Method of excavation: Hand clearance and excavation where necessary.*	Post-medieval	The course of the dismantled Bute Colliery to Hirwaun Tramway running along Tower Road..
255A	Railway A, Aberdare & Rhondda Railway	SO 9578 0514 to SO 9506 0501		Post-Medieval	The course of the Aberdare & Rhondda main line railway.
255B	Tramroad B, Branch of Aberdare & Rhondda	SO 9581 0512 to SO 9589 0476	Post-Medieval	abandoned by 1880	A tramroad from nearby pits to the Aberdare & Rhondda railway built on an earthen embankment.
255C	Tramroad C, Hirwaun	SO 9587 0510 to SO 9567 0471	Post-Medieval	post-1880	The course of a tramway intersects and truncates Tramroad B.
273	Tramroad, Hirwaun	SO 9566 0520 to SO 9559 0491	Post-Medieval		A local tramroad, surviving as a track, which transported ironstone from the Knobby Drift Ironstone pit to the Hirwaun Ironworks.
275	Tramway branch-Hirwaun Common Railway	SO 9597 0500 to SO 9598 0470	Post-Medieval	pre-1880	A tramway survives as a north/south track and is marked on the O.S. map of 1880 and was a branch line of the Hirwaun Common Railway.
276	The Hirwaun Common Railway, Hirwaun	SO 9495 0618 to SO 9662 0481	Post-Medieval	pre-1840	The Hirwaun Common Mineral Railway was marked as a tramroad on the tithe map of c.1840 and a conventional locomotive-operated railway on the O.S. map of c.1880.

APPENDIX 2

Sites in Section 6- Cefn-coed-y-cymmer Baverstock Hotel

Site no.	Site name	Grid ref.	Form	Type	Period	Date	Description
224	Coal tippings (S. of old A465), Baverstock	SO 0260 0720 to SO 0100 0720	Earthworks	Mineral workings	Post-Medieval		A sequence of coal tips related either to the Cyfartha or Llwydcoed Ironworks.
225	D.S.W. landscape and sheep fold, Coed Meurig	SO 0220 0735	Field System	Drystone walled field boundaries and sheep fold	Post-Medieval		A drystone walled complex incorporating a sheep fold, related to Coed Meurig Farm.
226	Stone rubble-demolished cottage, Baverstock	SO 0110 0740	Site	Demolished building	Post-Medieval		An area of masonry rubble indicating the site of a demolished cottage.
231	Fairfield House (Giants Head Inn), Baverstock	SO 0055 0728	Building	Public house	Post-Medieval		A modernised cottage once used as the 'Giant's Head Inn.'
232	Settlement and field system, Baverstock	SO 0073 0730	Earthworks & Field Systems	Settlement and enclosures	Medieval Post-Medieval ?		A complex of turfstone walled field boundaries representing gardens, enclosures and drainage systems. rubble concentrations indicate the sites of demolished cottages.
233	Coal workings and tips, Baverstock	SO 0069 0727	Earthworks	Mineral workings	Post-Medieval		The remains of early open-cast iron workings, possibly aided by water extraction located on the hill behind the Baverstock settlement.

Sites in Section 7- Baverstock Hotel to Hirwaun

Site no.	Site name	Grid ref.	Form	Type	Period	Date	Description
227	D.S.W. landscape, Baverstock	SO 9970 0717	Field System	Drystone walled field boundaries	Post-Medieval		A drystone walled field-system.
228	D.S.W. & T.S.W. , Lech Sychrhyd	SO 9947 0700	Field Systems	Drystone and turf-stone walled boundaries	Post-Medieval		The remnants of a drystone and turfstone walled field-system now bisected by the A465.
229	Track, Lech Sychrhyd	SO 9960 0704 to	Linear Feature	Farm track	Post-Medieval		A north/south track, visible as a slightly

		SO 9958 0680					raised platform.
230	Dam and possible sluice system, Lech Sychrhyd	SO 9969 0690	Earthworks	Water courses	Post-Medieval		A possible small-scale damming system incorporating banks and sluice along a stream.
234	Nant Hir Reservoir	SO 9890 0690	Structure	Reservoir	Post-Medieval		The Nant Hir Reservoir built by the Aberdare Water Works Co.
235	Holloway, Nant Hir	SO 9885 0690	Linear Feature	Farm track	Post-Medieval		A small holloway parallel to the Nant Hir Reservoir.
236	D.S.W. landscape, Nant Hir	SO 9875 0684	Field System	Drystone walled field boundaries	Post-Medieval		An extensive drystone walled landscape either side of the A465.
237	Field barn and stable, Nant Hir	SO 9885 0686	Buildings	Field barn	Post-Medieval		Masonry farm buildings adjacent to the Nant Hir Reservoir.
238	Holloway/sheep fold, Nant Hir	SO 9883 0687 to SO 9875 0698	Linear Feature	Farm track and sheep fold	Post-Medieval		An deep holloway running north/south across the A465 incorporating mature taxa and a coralling area.
239	D.S.W. landscape, Nant Melyn	SO 9798 0625	Field System	Drystone walled field boundaries	Post-Medieval		An extensive drystone walled landscape.
240	Holloway, Nant Melyn	SO 9770 0622 to SO 9789 0623	Linear Feature	Farm track	Post-Medieval		An east/west aligned holloway connecting to a farm track leading to Nant moel Farm.
241	Holloway, Llyncoch	SO 9768 0608 to SO 9785 0585	Linear Feature	Farm track	Post-Medieval		A north/south holloway lined with substantial rubble walls.
242	Holloway, Court Farm	SO 9734 0564 to SO 9735 0547	Linear Feature	Farm track	Post-Medieval	pre-1851	Remnants of the holloway/track running either side of the A465 and appears to have once served Court Farm. Truncated by the Vale of Neath Mineral railway.
243	Skew bridge over Vale of Neath Railway	SO 9727 0552	Structure	Road bridge	Post-Medieval	c.1851	A skew bridge built to carry the road over the Vale of Neath Mineral railway (later the GWR).
244	Rectangular platform, Hirwaun	SO 9674 0544	Site	Demolished industrial building	Post-Medieval		A rectangular building platform.
245	D.S.W. landscape, Parc-Hensol Farm	SO 9675 0528	Field System	Drystone walled field	Post-Medieval		An extensive drystone walled field

				boundaries			system around the derelict farmstead of Parc Hensol.
246	Farmstead, Parc-Hensol	SO 9677 0526	Buildings	Derelict farmhouse and outbuildings	Post-Medieval		A partly demolished farmstead on land along the banks of the Afon Cynon.
247	Bridge remains, Afon Cynon	SO 9682 0529	Structure	Footbridge	Post-Medieval		The remains of a wrought iron bridge across the Afon Cynon.
248	Track, Afon Cynon, Hirwaun	SO 9697 0529	Linear Feature	Track	Post-Medieval		A small metalled track running alongside the Afon Cynon.
249	Cynon farmhouse, Hirwaun	SO 9640 0526	Buildings	Farmhouse and outbuildings	Post-Medieval		A masonry cottage with modern alterations.
250	Hirwaun-Aberdare Tramroad, Hirwaun	SO 9590 0548 to SO 9667 0513	Linear Feature	Tramroad	Post-Medieval	c.1790-c.1870	The Hirwaun-Aberdare tramroad built for the Hirwaun Ironworks to the canal at Aberdare.
251	Pig-pens, Hirwaun	SO 9544 0535	Building	Pig-pens	Post-Medieval		Uncoursed masonry pig-pens.
252	Bute Colliery Road (Tower Road), Hirwaun	SO 9534 0527 to SO 9506 0500	Linear Feature	Tramroad	Post-Medieval		The course of the dismantled Bute Colliery to Hirwaun Tramway running along Tower Road..
253	T.S.W. landscape, Hirwaun	SO 9525 0533	Field System	Turf-stone wall boundaries	Post-Medieval		A turfstone walled landscape.
254	Coal tips, Bryngelli Estate, Hirwaun	SO 9520 0534	Earthworks	Mineral workings	Post-Medieval		Extensive coal tippings.
255A	Railway A, Aberdare & Rhondda Railway	SO 9578 0514 to SO 9506 0501	Linear Feature	Tramroad	Post-Medieval		The course of the Aberdare & Rhondda main line railway.
255B	Tramroad B, Branch of Aberdare & Rhondda	SO 9581 0512 to SO 9589 0476	Linear Feature	Tramroad	Post-Medieval	abandoned by 1880	A tramroad from nearby pits to the Aberdare & Rhondda railway built on an earthen embankment.
255C	Tramroad C, Hirwaun	SO 9587 0510 to SO 9567 0471	Linear Feature	Tramroad	Post-Medieval	post-1880	The course of a tramway intersects and truncates Tramroad B.
256	Culvert, Aberdare-Rhondda Tramroad, Hirwaun	SO 9582 0506	Structure	Culvert	Post-Medieval		A small culvert constructed of drystone walling beneath the course of the Aberdare-

							Rhondda Tramroad.
257	Culvert, Hirwaun to Aberdare Tramroad, Hirwaun	SO 9648 0519	Structure	Culvert	Post-Medieval		A culvert below the line of the Hirwaun-Aberdare Tramroad repaired with modern repairs.
258	Vale of Neath Mineral Railway (western section)	SO 9530 0617 to SO 9413 0641	Linear Feature	Railway	Post-Medieval	1851	The broad gauge Vale of Neath Mineral Railway, it was later re-built as a the standard gauge Great Western Railway.
259	Branch of the Hirwaun-Aberdare Tramroad	SO 9408 0591 to SO 9525 0556	Linear Feature	Tramroad	Post-Medieval		A branch of the Hirwaun-Aberdare Tramroad following the present-day Rhigos road (A 4059).
272	Neath Mineral Railway (eastern section), Hirwaun	SO 9700 0559 to SO 9760 0543	Linear Feature	Railway	Post-Medieval	c.1851	The Vale of Neath mineral railway survives to the east of Hirwaun below contemporary masonry road bridge on the A465.
273	Tramroad, Hirwaun	SO 9566 0520 to SO 9559 0491	Linear Feature	Tramroad	Post-Medieval		A local tramroad, surviving as a track, which transported ironstone from the Knobby Drift Ironstone pit to the Hirwaun Ironworks.
274	Knobby Drift Ironstone Pit, Johnson Park, Hirwaun	SO 9559 0491	Site	Mineral extraction	Post-Medieval	pre-1870	This ironstone pit was served by a tramway which fell into disuse before it was surveyed for the O.S. in the 1870s (No. 273).
275	Tramway branch-Hirwaun Common Railway	SO 9597 0500 to SO 9598 0470	Linear Feature	Tramroad	Post-Medieval	pre-1880	A tramway survives as a north/south track and is marked on the O.S. map of 1880 and was a branch line of the Hirwaun Common Railway.
276	The Hirwaun Common Railway, Hirwaun	SO 9495 0618 to SO 9662 0481	Linear Feature	Tramroad	Post-Medieval	pre-1840	The Hirwaun Common Mineral Railway was marked as a tramroad on the tithe map of c.1840 and a conventional locomotive-operated railway on the O.S. map of c.1880.

277	Branch-line of Hirwaun Common Railway, Hirwaun	SO 9617 0500 to SO 9634 0478	Linear Feature	Tramroad	Post-Medieval	pre-1880	At the point where the Hirwaun Common Mineral Railway crosses the A465, a branch line diverges to the south and currently survives as a footpath. This branch line is marked on the 1880 O.S.

Bibliography

Primary Cartographic Evidence

Wales 1:2500 Drawing Numbers CDFOO31/000/H/P/350-373
(Digitised OS Data - 24 sheets)

National Library of Wales & Glamorgan County Archive (Cardiff)

Badminton Maps (National Library of Wales, Volume 13, c.1765.
Quarter Sessions deposited plans of the public works in the Gwent Record Office.
Ordnance Survey, 6" inch Brecknockshire, sheet 50.NE, First edition 1891
Ordnance Survey, 6" inch Brecknockshire, sheet 50. NW, First edition 1892
Bute Estate survey of the village of Hirwaun in 1818
Tithe Map and Apportionment, Aberdare Tithe Map 1840

Unpublished Reports

- Babtie (1996), A465 Abergavenny to Hirwaun Dualling: Phase 1 Archaeological Report
- Babtie (1997), A465 Abergavenny to Hirwaun Dualling: Environmental Statement; Cultural Heritage
- Glamorgan-Gwent Archaeological Trust (1994), Archaeological Desk-Based Assessment: A465 Abergavenny to Hirwaun Dualling, (Project A185, Report No. 94/039)

Highways Agency *et al* (1994), The Design Manual for Roads and Bridges Vol. 11 Section 3 Part 2
Institute of Field Archaeologists (2000) Draft Standards and Guidance: Artefact and Environmental Study, Collection, Research and Conservation
Welsh Office *et al* (1992), *Design Manual for Roads and Bridges* (DMRB), Vol. 11, Section 3, Part, Chapter 6. Cultural Heritage. 6.1 - 13.3. HMSO
Van Laun, J. 1997, Supplement to Historical Research for sites affected by A465 Abergavenny to Hirwaun Dualling
Van Laun, J. 1997, Historical Research for sites affected by A465 Abergavenny to Hirwaun Dualling
Riden, P. 1996 Report on Documentary Evidence relating to features of Archaeological Interest Located on the Route of the A465 Abergavenny to Hirwaun Dualling
Riden, P. 1996 Supplementary Report on Documentary Evidence relating to features of Archaeological Interest Located on the Route of the A465 Abergavenny to Hirwaun Dualling
Wakelin, Dr. P. (1995), *A list of archaeological sites within the A465 corridor,* CO15L986 PP. (Cadw Internal Brief)

Secondary Sources

Barrie, D.S.M. 1994, *A Regional History of the Railways of Great Britain.* Volume (12) South Wales Bradney, J.A. (1993) *A History of Monmouthshire 1.* The Hundred of Abergavenny
Bradney, J.A. 1993 *A History of Monmouthshire 5.* The Hundred of Newport
Burton, A. 1983 *The National Trust Guide to our Industrial Past*
Children, G. & Nash, G.H. 1996 *The Prehistoric Sites of Monmouthshire.* Vol.4.
Combs, A.S. Coombs and Hinch, L.W. (1970), '*The Heads of the Valleys Road', Proceedings of the Institution of Civil Engineers*, 44 (1969), 89-118: and 'Discussion', Ibid., 46, 233-47
Cox, Archdeacon . 1801. *An Historical Tour of Monmouthshire*
Hague, Douglas, B. *A Guide to the Industrial Archaeology of mid-Wales*
Hayman, R. 1989. *Working Iron in Merthyr*
Hilling, J.B. 1973. *Cardiff and the Valleys*
Hughes, S. R. 1990. *The Archaeology of Early Railway System: Brecon Forest Tramroads*
Hull, E and Whittaker, W. 1861. Part III: Iron Ores of South Wales. Memoirs of the Geological Survey of Great Britain .
Jones, W. R. 1996, *Dictionary of Industrial Archaeology*

John, A.H. 1995. *The Industrial Development of South Wales 1750-1850*
Lloyd, J. 1906, *The Early History of the Old South-Wales Ironworks, 1760-1840.*
Lowe, J. 1993, *Welsh Country Workers Housing 1775-1875*, National Museum of Wales.
Margary, I.D. 1973, *Roman roads in Britain*
North, *F.J. Mining for Metals in Wales* quoting C P Bevan 'On the Geology of the Beaufort and Ebbw Vale District' *Geologist* . Vol I
Owen, J. A. 1977, *The History of the Dowlais Ironworks 1759-1970 (Newport)*
Rees, M. D. 1969 Mines, *Mills and Furnaces: An Introduction to Industrial Archaeology in Wales* (London)
Rees, M. D. 1975, *The Industrial Archaeology of Wales*
Riden, P. and Owen, J.G. 1995, *British Blast Furnace Statistics 1790-1980.* Cardiff.
Schubert, H.R., 1957 *History of the British Iron and Steel Industry from c.450 B.C. to A.D. 1775.*
Tasker, W.W. 1986, *The Merthyr, Tredegar & Abergavenny Railway and branches.*
Thompson, M.W. (Ed.) 1983, *The Journeys of Sir Richard Colt Hoare through Wales and England 1793-1810.*
Schubert, H.R. 1957, *History of the British Iron and Steel Industry from 450 BC to AD 1775*
Williams, G. *Merthyr Politics: Making if a Working Class Tradition*

Geological References

Soil Survey of England and Wales (1983), sheets 4 and 5. Soil Association
Ordnance Survey, Drift Geology, 2nd edition, sheet 231, Merthyr Tydfil 1967
Ordnance Survey, Drift Geology, 3rd edition, sheet 232, Abergavenny 1972
Ordnance Survey, Drift Geology, 1922 edition, sheet XLVII, 1922.

A Glossary of Archaeological Terms

Ashlar: decorative masonry formed from stone blocks which fit accurately together so that only fine mortar joints are required between them. The blocks are finely worked and the external faces are finished to form a uniform, flat surface.

Adit: a tunnel into a coal level, used either as an entrance to the mine or as a means of drainage.

Barrow: includes several types of earth covered funerary mounds with cremated or inhumed remains, primarily dating from the Neolithic (long barrows) and Early Bronze Age (round barrows) periods.

Cairn: a stone mound covering a cremation or inhumation found mainly in the Bronze Age periods.

Cropmark: a mark visible on aerial photographs caused by differential growth and colouration of field of crops over the archaeological features.

Crows-foot tips: a series of early spoil heaps formed from by tipping from a barrow or cart forming a distinctive star-shaped pattern.

Find-spot: the site of a random or isolated or stray find which may indicate further archaeological material is present nearby.

Holloway: an early farm or parish road consisting of an unmetalled surface surrounded by high banked hedges formed through the erosion away over time of the track.

Leat: an artificial watercourse made to channel water from source to an area for industrial usage.

Lithic scatter: a series of flint artefacts found on the surface and usually exposed by erosion or ploughing. Dating from the Palaeolithic to Early Bronze Age periods.

Motte and bailey castle: a defensive structure erected during the early stages of the Norman invasion consisting of a large artificial mound, or motte, surmounted by a wooden, and later a stone, keep (tower). The whole structure was surrounded by a large wooden bailey, often later replaced by a stone curtain wall.

Palaeoenviromental: the scientific technique of determining ancient landscapes and environment and climate characteristics from looking at macro fossils, pollen and faunal remains, often from within wetland sites

Relict palaeosols: an ancient soil surface which has survived, often by being completely buried (e.g. under barrows).

Rusticated masonry: stone that has been worked on the external face to produce a different effects from cyclopean (or rock-faced) to vermiculated (a worm-track effect).

Ridge & Furrow: the pattern formed by strip farming of land based on the medieval system of 'open' field agriculture. Medieval ridge and furrow tends to be form the soil into a larger series of troughs and banks than those found in post-medieval ridge and furrow.

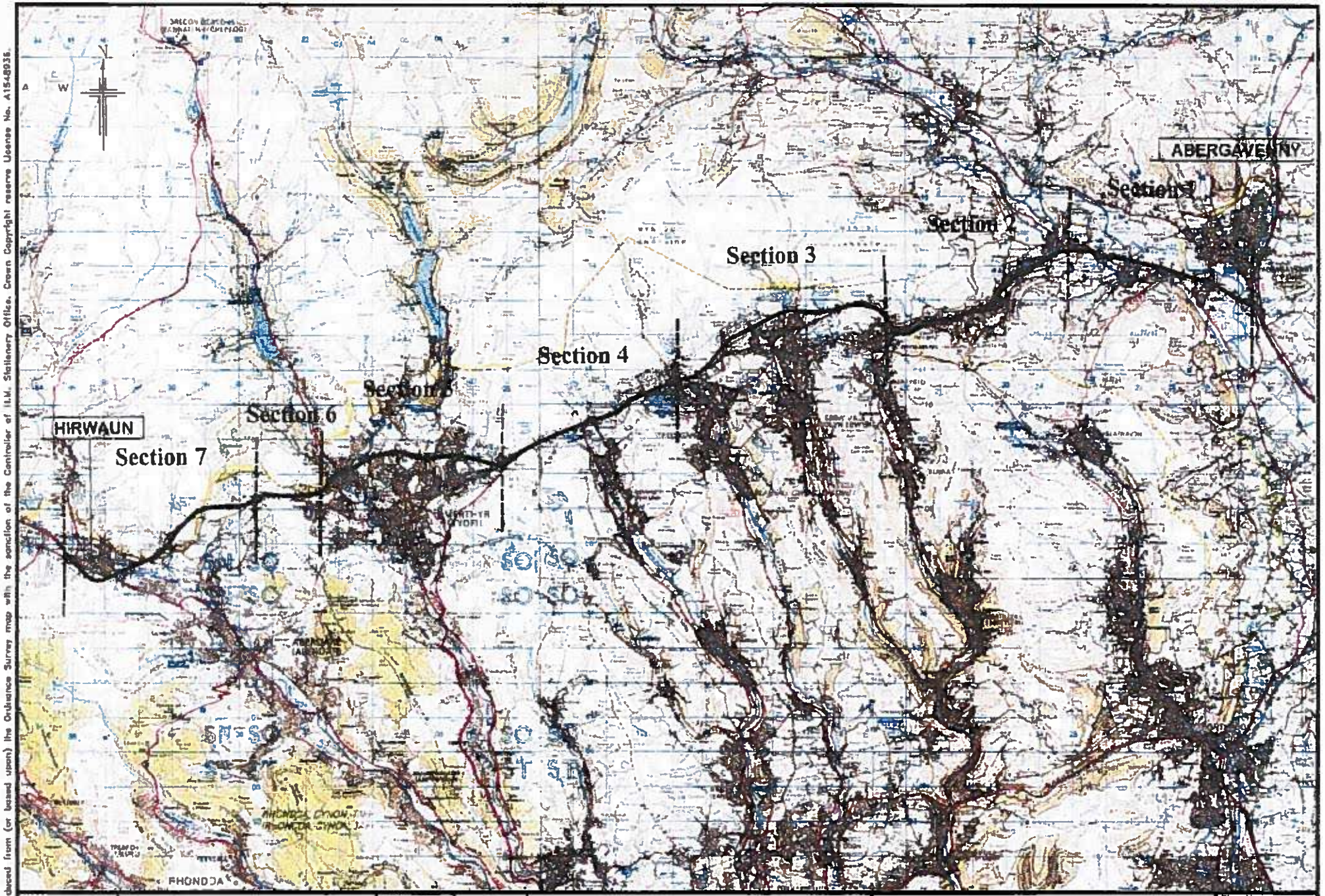
Stratified deposits: the layers of natural/soils and man-made deposits which build-up over a long time-span on an archaeological site. The stratigraphy can be examined to determine the sequence and time-span of the site.

Tramroad: a rail or plateway carrying goods carts/trams and usually drawn by ponies.

Turfstone walling: boundary walls formed from an internal drystone core covered by a layer of earth and turves for added stability.

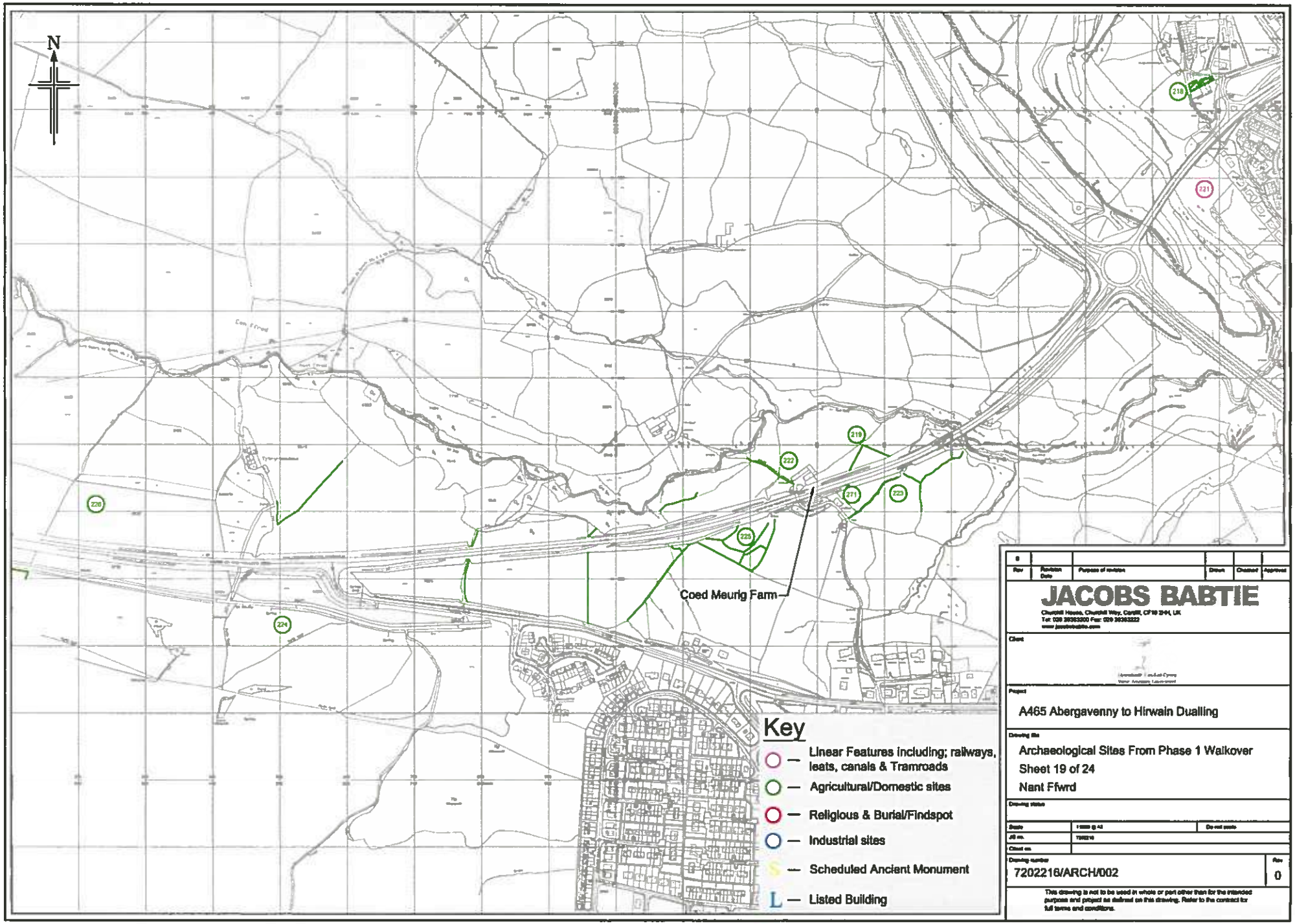
Quoins: the stones found at the corner of an external wall which support the greater stresses found there; usually of higher quality than ordinary stonework.

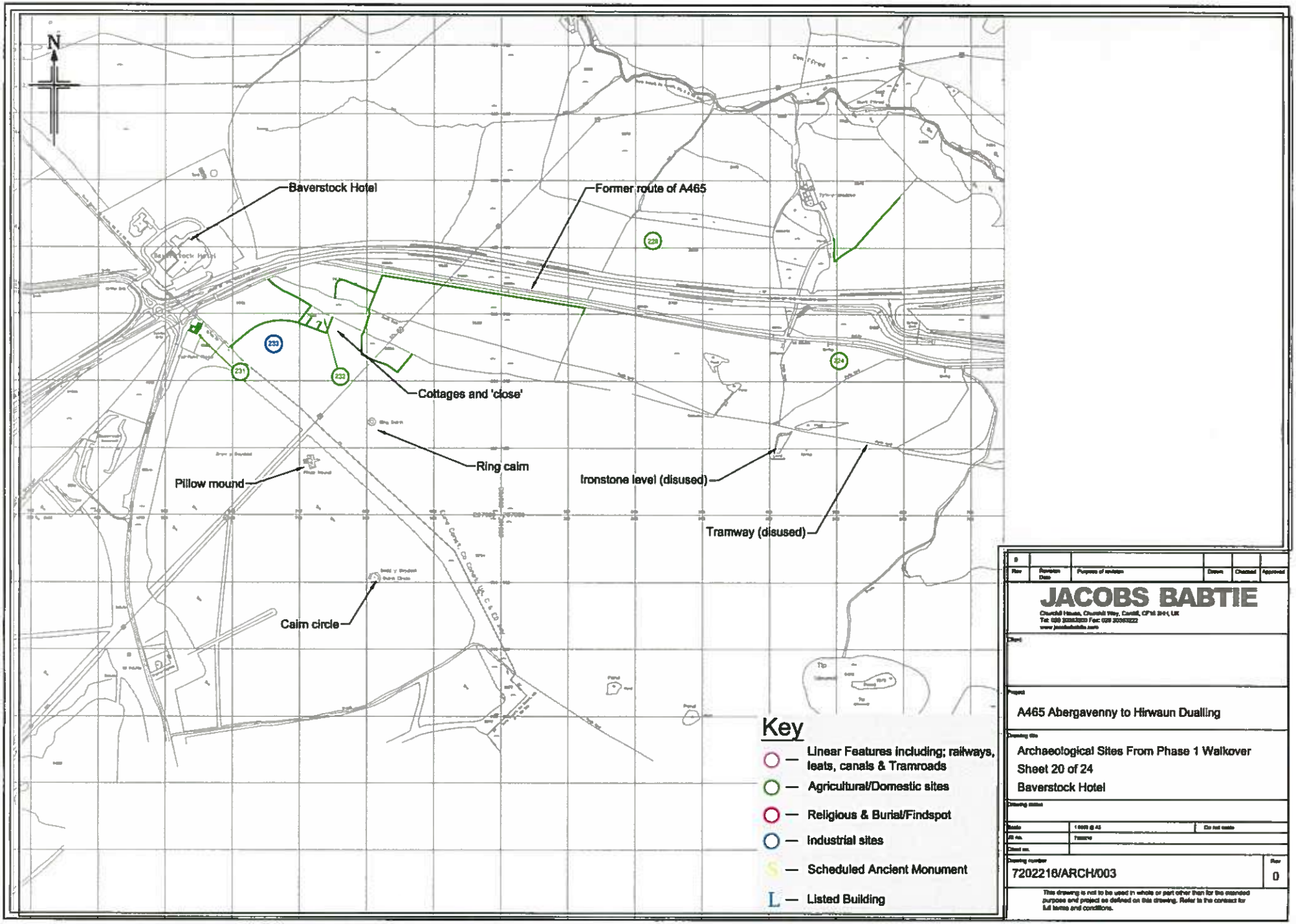
Voussoirs: the wedged-shaped blocks of stone which form the curve of an arch.



Reproduced from (or based upon) the Ordnance Survey map with the sanction of the Controller of H.M. Stationery Office. Crown Copyright reserve License No. A1548935.

Babtie	Churchill House, Churchill Way, Cardiff CF10 2HH, Tel 029 2035 3200, Fax 029 2035 3222	DRAWN BY: C.R	Client: NATIONAL ASSEMBLY FOR WALES
		APPROVED BY:	Project: A465 ABERGAVENNY TO HIRWAUN–DUALLING
		SCALE: 1:100,000	SCHEME PROPOSALS
		DATE: MARCH 2003	Fig. No. Figure 1 Rev.


N
218
221
219
222
271
223
220
225
224
Coed Meurig Farm
Key
Linear Features including; railways, leats, canals & Tramroads
Agricultural/Domestic sites
Religious & Burial/Findspot
Industrial sites
Scheduled Ancient Monument
Listed Building
JACOBS BABTIE
A465 Abergavenny to Hirwain Dualling
Archaeological Sites From Phase 1 Walkover
Sheet 19 of 24
Nant Ffwrd
7202216/ARCH/002
0



Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0					

JACOBS BABTIE

Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20263000 Fax: 029 20263222
www.jacobsbabtie.com

Client

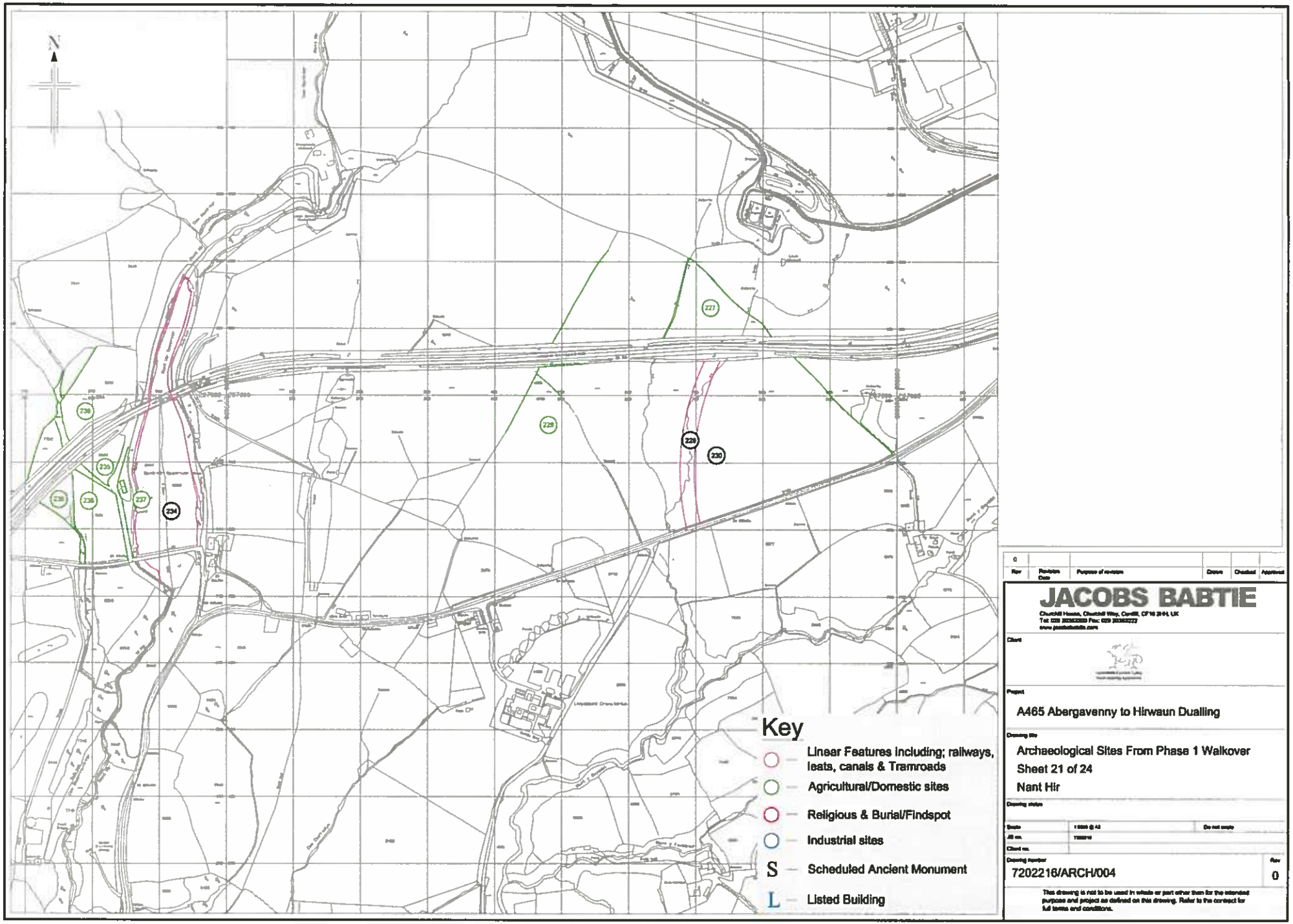
Project: A465 Abergavenny to Hirwaun Dualling

Drawing title: Archaeological Sites From Phase 1 Walkover
Sheet 20 of 24
Baverstock Hotel

Scale	1:5000 @ A3	Do not scale
Job no.	7202216	
Sheet no.		

Drawing number: 7202216/ARCH/003 Rev: 0

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0					

JACOBS BABTIE

Client

Project
A465 Abergavenny to Hirwaun Dualling

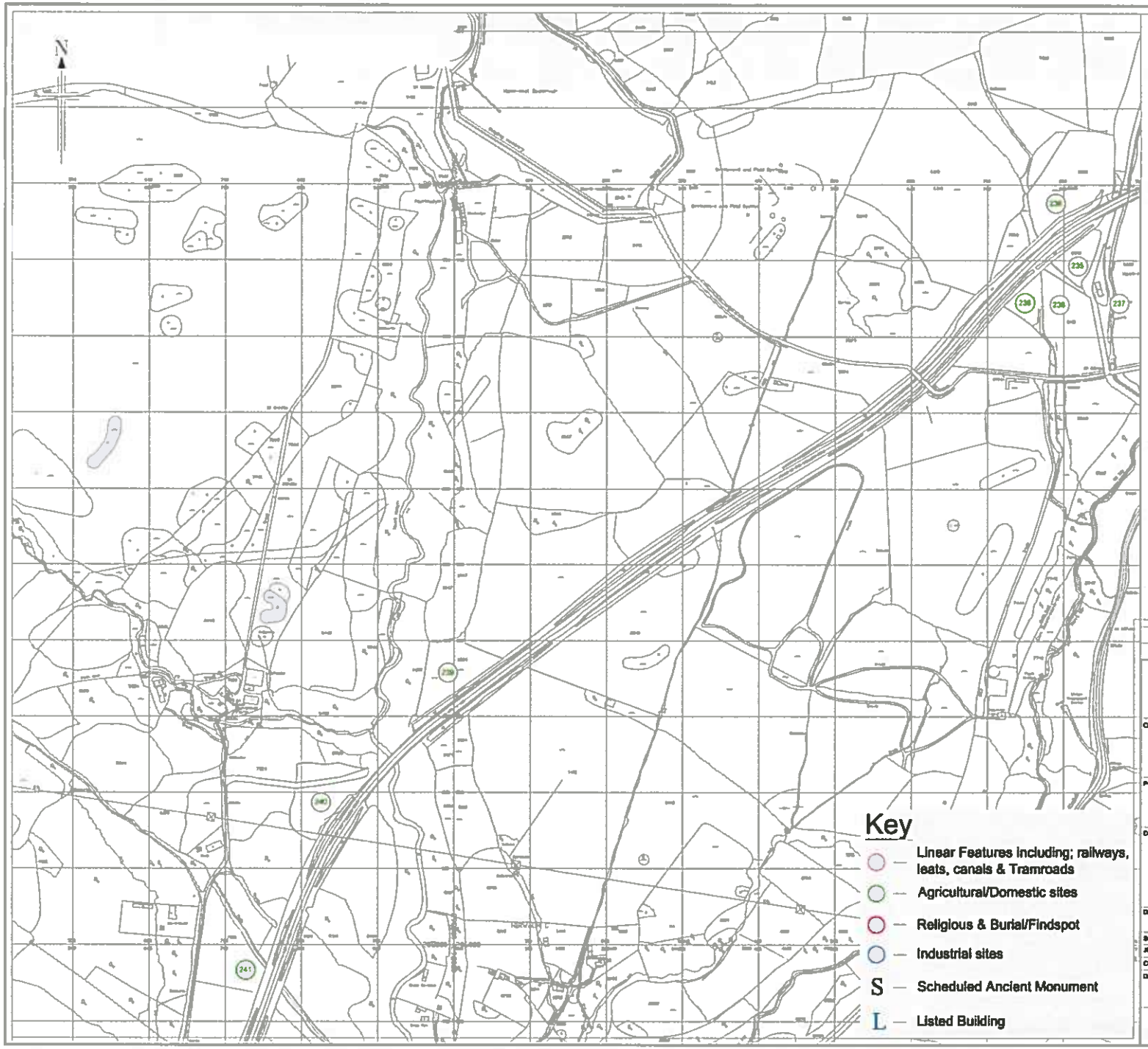
Drawing title
Archaeological Sites From Phase 1 Walkover
Sheet 21 of 24
Nant Hir

Drawing status

Scale	1:5000 @ A3	Do not scale
JN no.	7202216	
Client no.		

Drawing number: 7202216/ARCH/004
Rev: 0

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0					

JACOBS BABTIE

Client

Project: A465 Abergavenny to Hirwaun Dualling

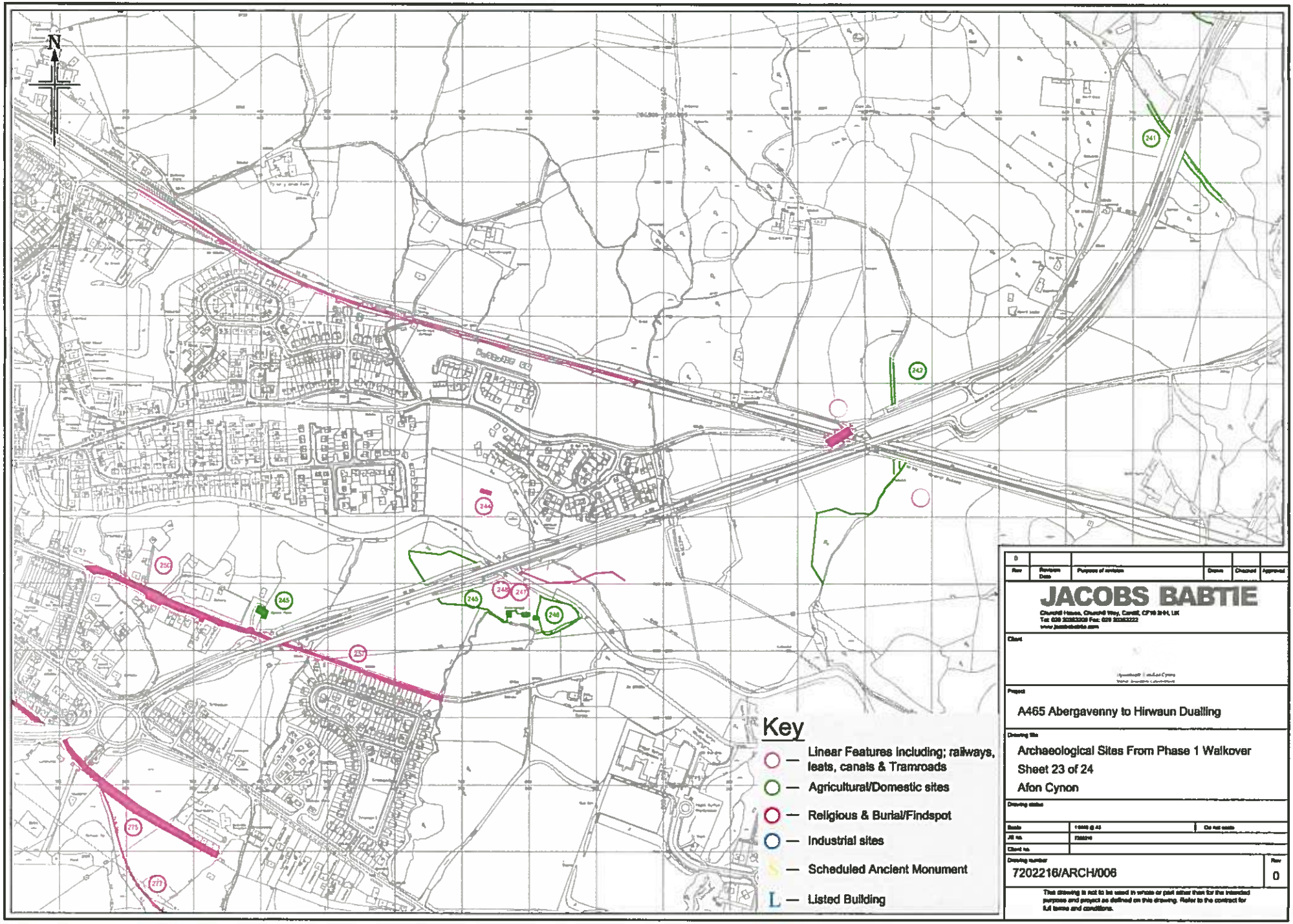
Drawing title: Archaeological Sites From Phase 1 Walkover
Sheet 22 of 24
Nant Moel

Drawing status

Scale	1:5000 @ A3	Do not scale
JB no.	7202216	
Client no.		

Drawing number: 7202216/ARCH/005 — Rev: 0

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0					

JACOBS BABTIE

Client

Project: A465 Abergavenny to Hirwaun Dualling

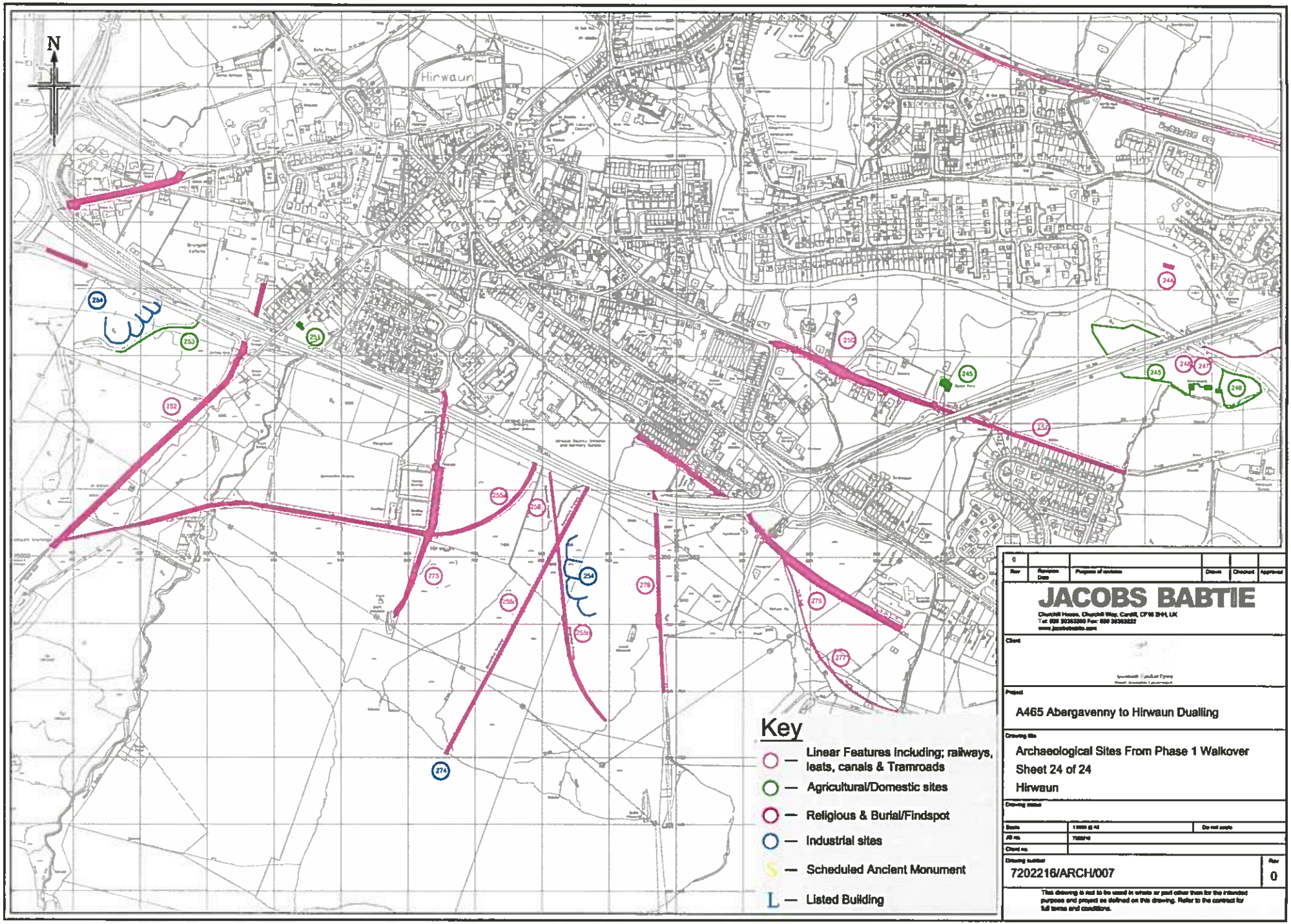
Drawing title: Archaeological Sites From Phase 1 Walkover
Sheet 23 of 24
Afon Cynon

Drawing status

Scale	1:5000 @ A3
Job no.	7202216
Client no.	

Drawing number: 7202216/ARCH/006 — Rev: 0

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0					

JACOBS BABTIE

Client

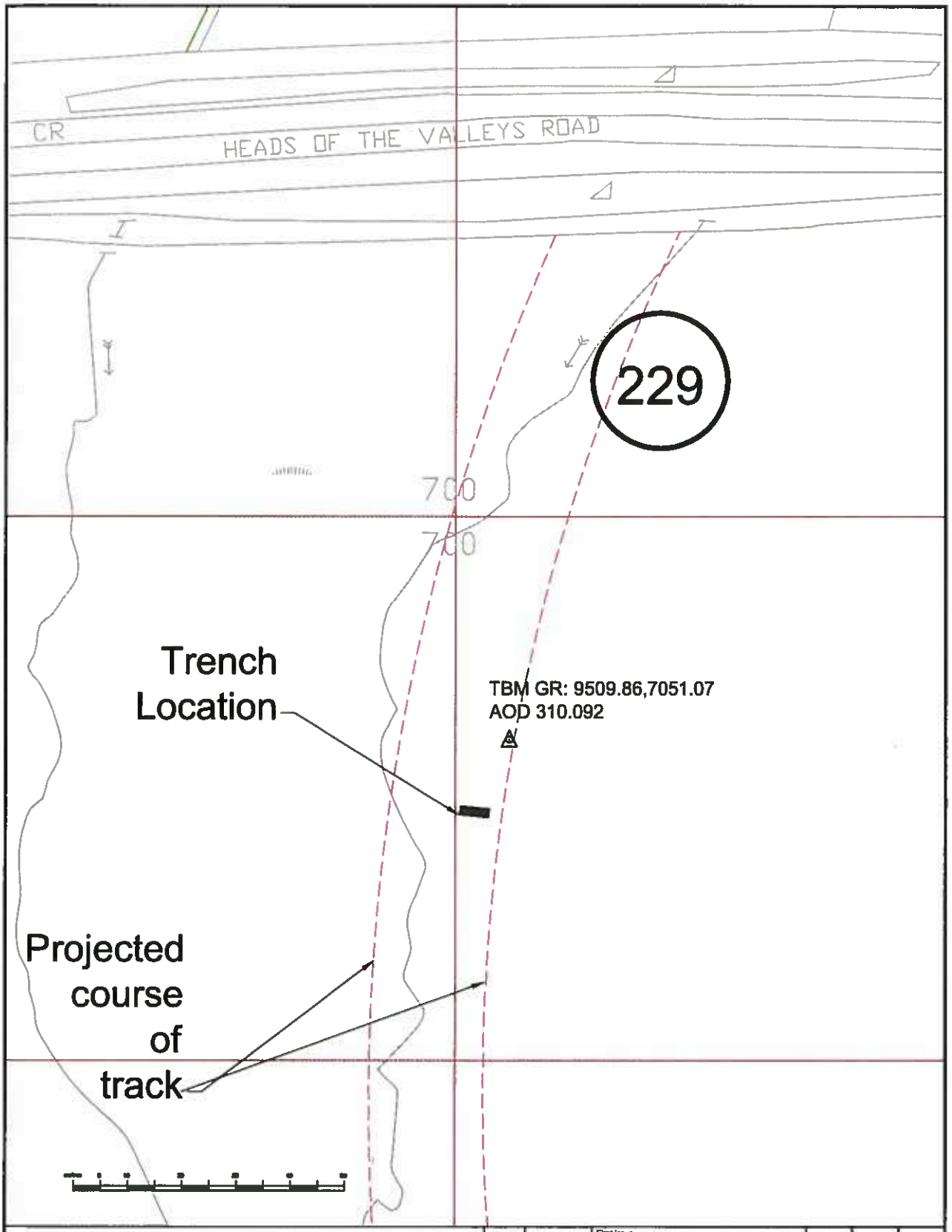
Project: A465 Abergavenny to Hirwaun Dualling

Drawing title: Archaeological Sites From Phase 1 Walkover
Sheet 24 of 24
Hirwaun

Scale	1:5000 @ A3	Do not scale
JG no.	7202216	
Client no.		

Drawing number: 7202216/ARCH/007 Rev: 0

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



This drawing is not to be used in whole or part other than for the intended purposes and project as defined on this drawing. Refer to the contract for full terms and conditions.

Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.03.06	First issue	AB		

JACOBS BABTIE
Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20333200 Fax: 029 20333222
www.jacobsbabtie.com

Client

Project
A465 Abergavenny to Hirwaun Dualling

Drawing title
Site 229
Track Lech Sychrhyd
Trench Location

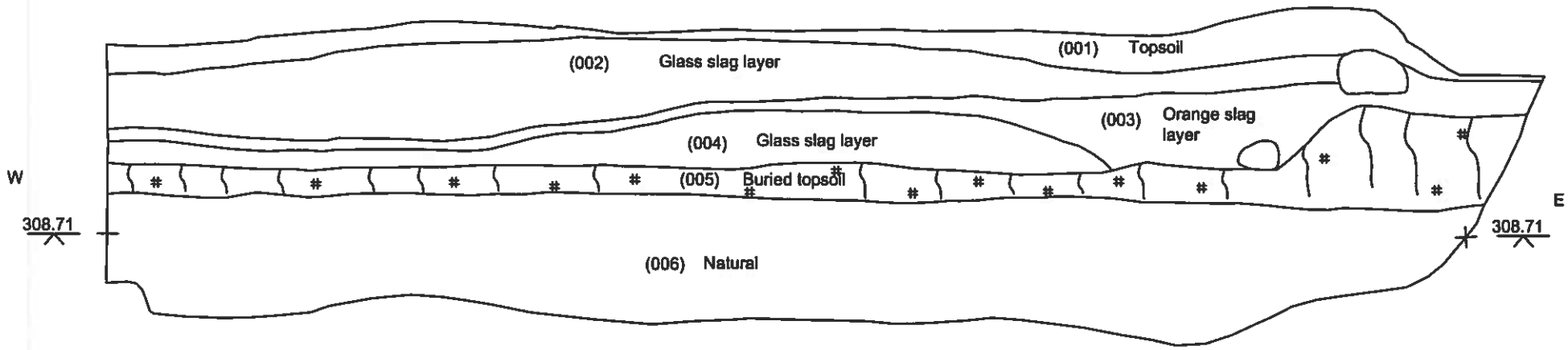
Drawing status
FINAL

Scale:	1:100@ A4	Do Not Scale
JB no.	JB0025200	
Client no.	n/a	

Drawing number
JB0025200/A/08

Rev
0

K:\Dan\Archaeology\A465 Abergavenny to Hirwaun\Drawings\Drawings Evaluations\Section 7\7.nwd Figure 7-13.dwg



Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.03.06	First issue	AB		

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

JACOBS BABTIE
Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20353200 Fax: 029 20353222
www.jacobsbabtie.com

Client

Project
A465 Abergavenny to Hirwaun Dualling

Drawing title
Site 229
South facing section
Track Lech Sychrhyd

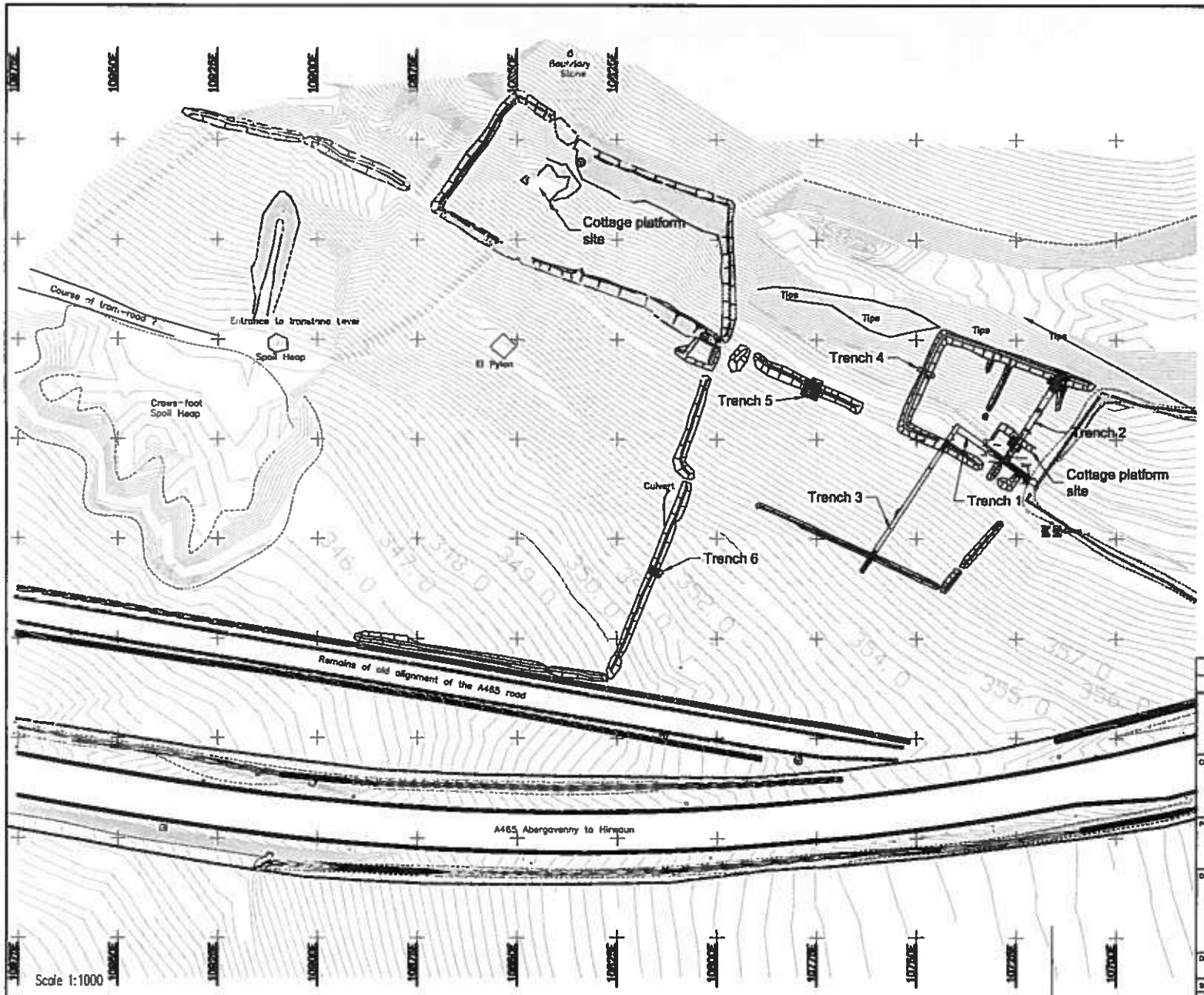
Drawing status
FINAL

Scale	1:20 @ A4	Do not scale
JB no.	JB0025200	
Client no.	n/a	

Drawing number
JB0025200/A/09

Rev
0

N:\Ben Archaeology\A465 Abergavenny to Hirwaun\Drawings\Drawings Production\Section Drawings\Final Figures\Figure 4.9.dwg



N

Note:

OS Grid reference shown
Contours showing height in metres AOD

Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	09.03.09	First issue	AB		

JACOBS BABTIE

Client

Project
A465 Abergavenny to Hirwaun Dualling

Drawing title
Site 232 Baverstock
Topographic Survey
Settlement and mineral workings

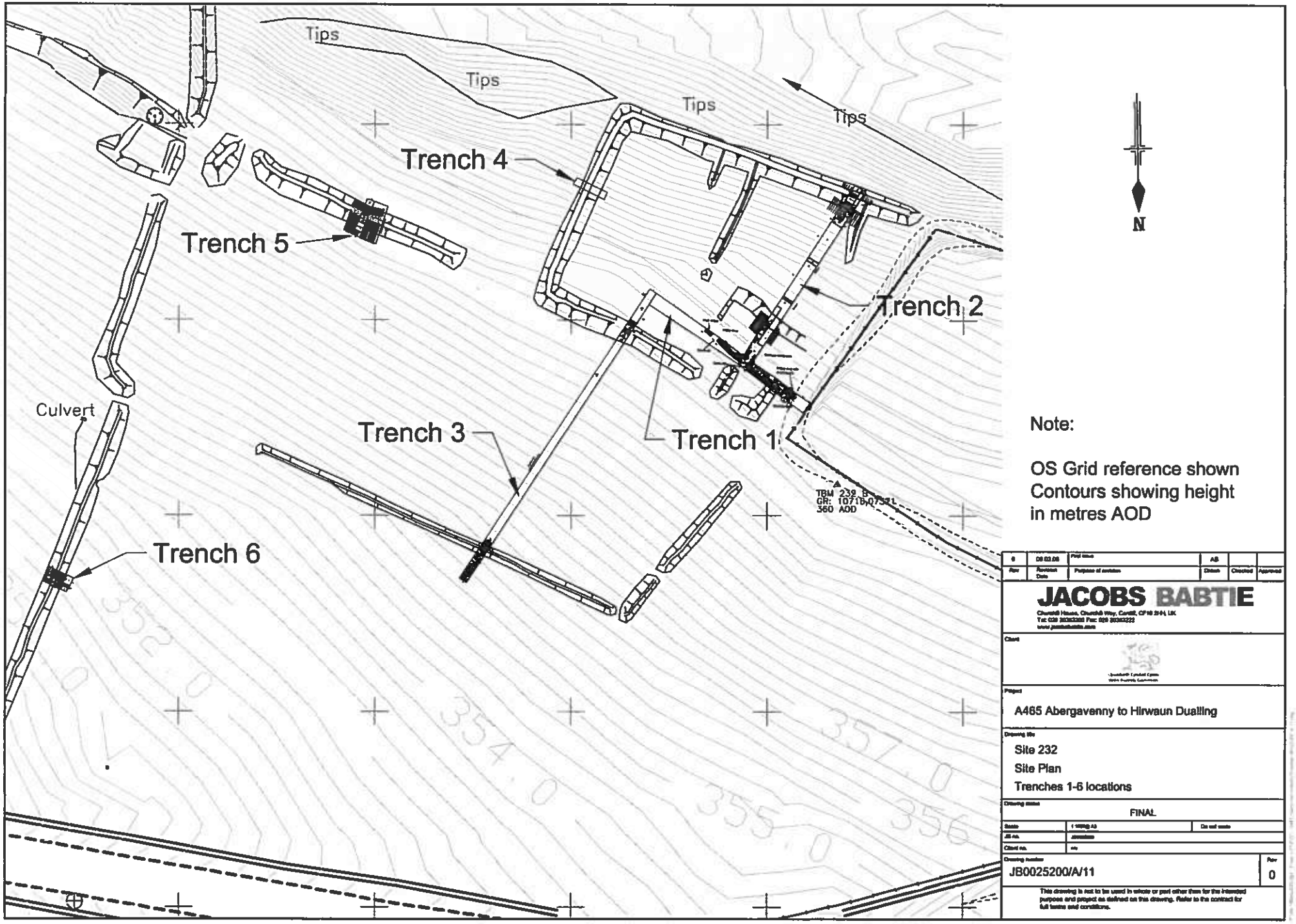
Drawing status
FINAL

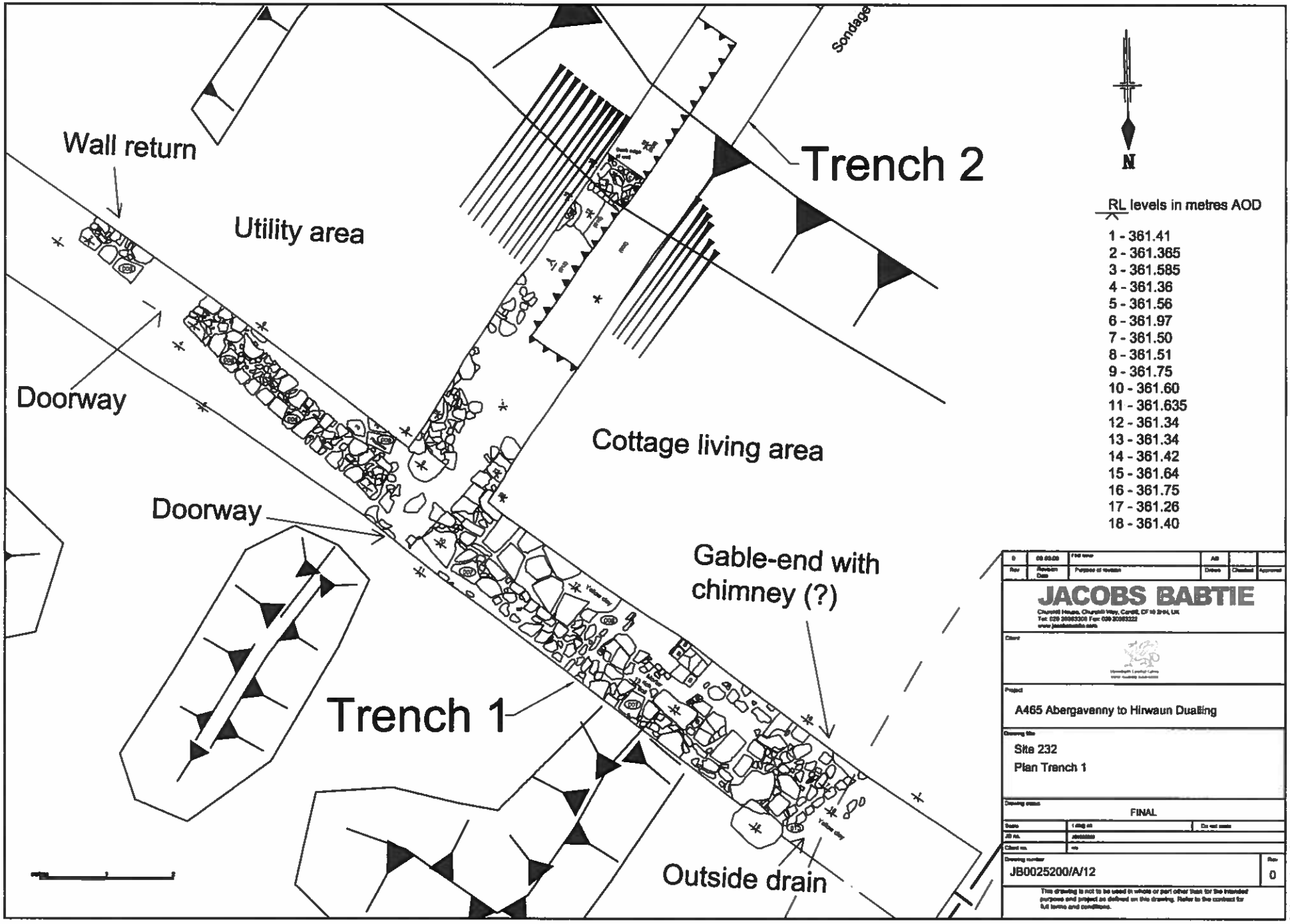
Scale | Do not scale

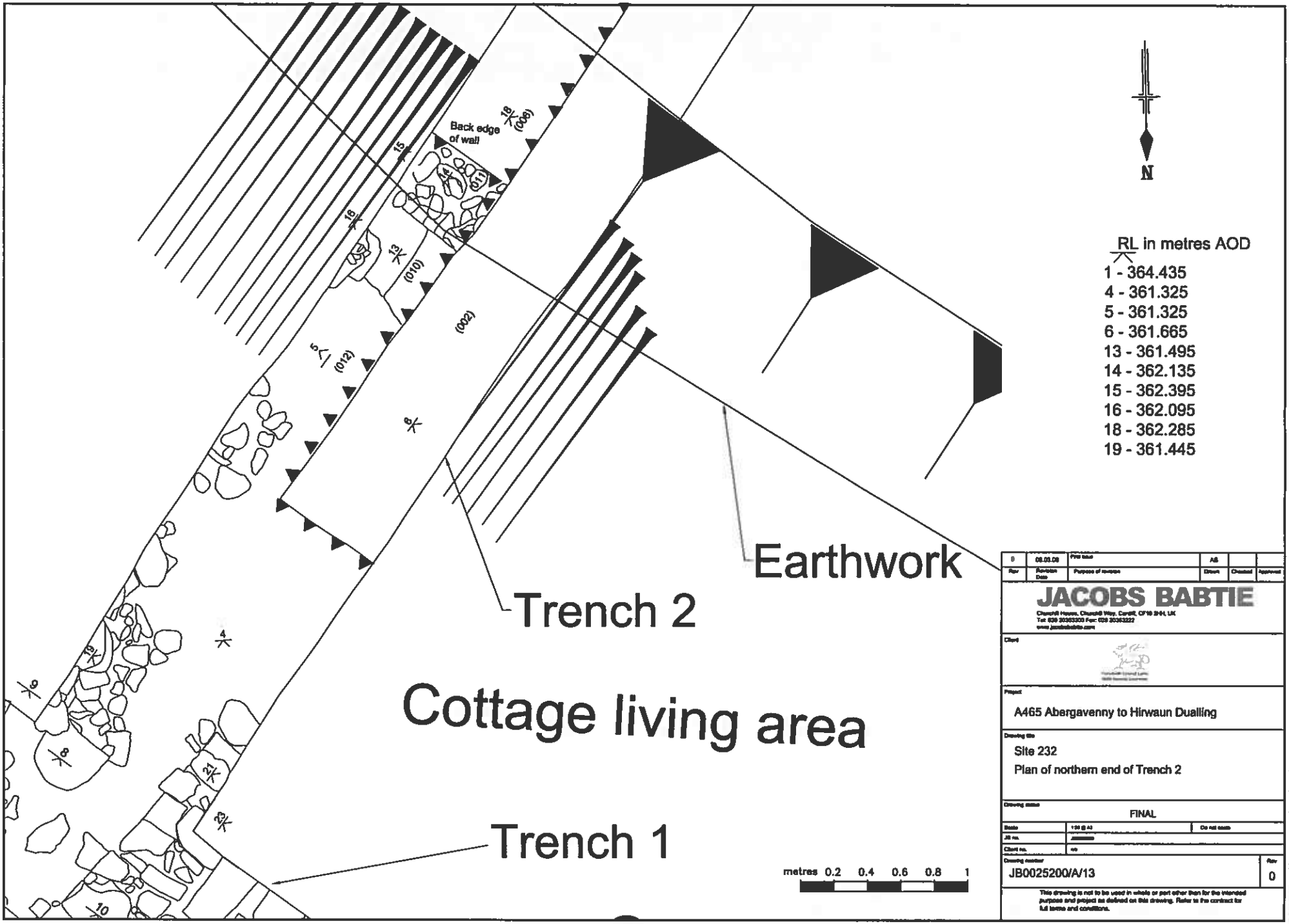
Drawing number
JB0025200/A/10

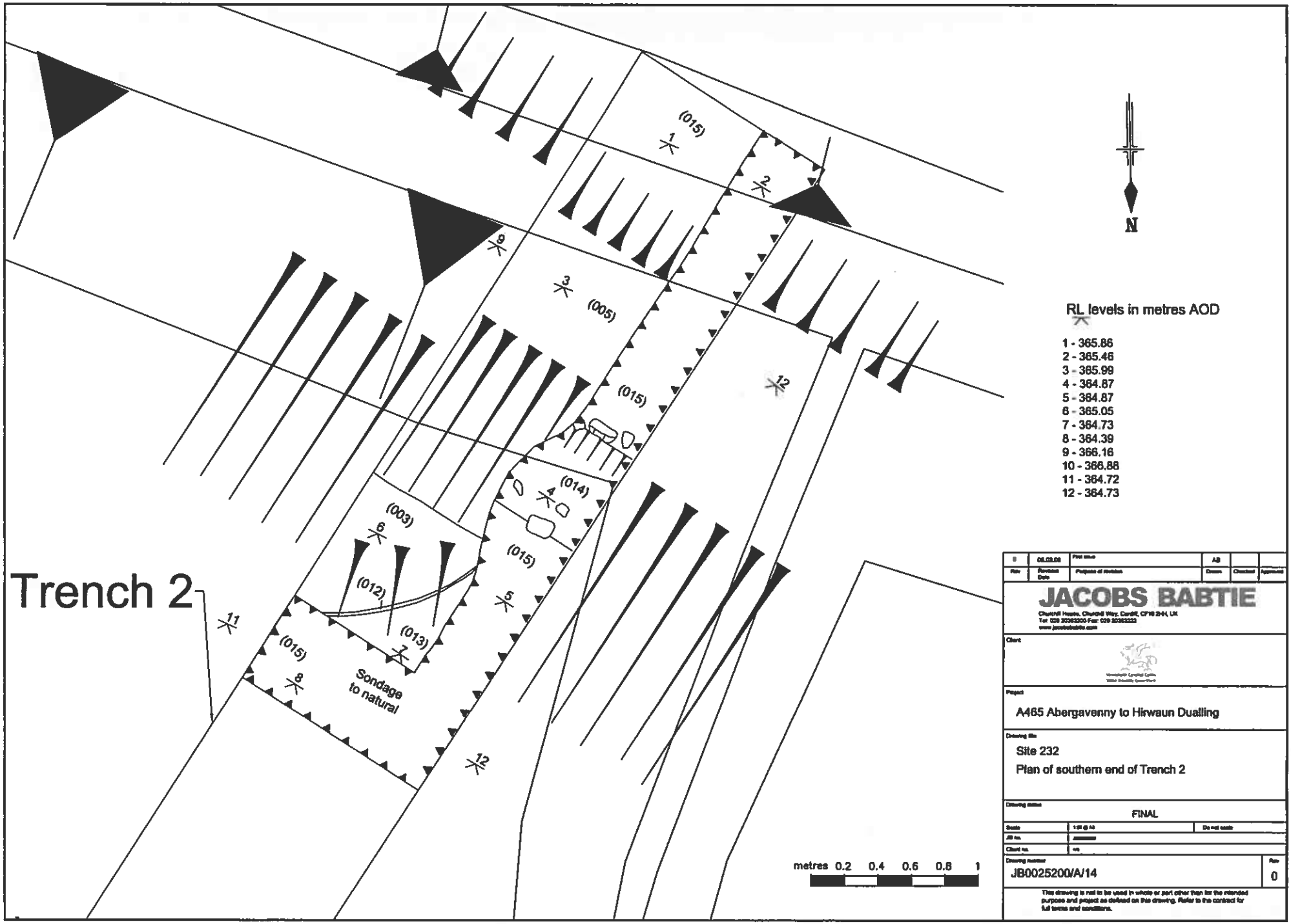
Rev
0

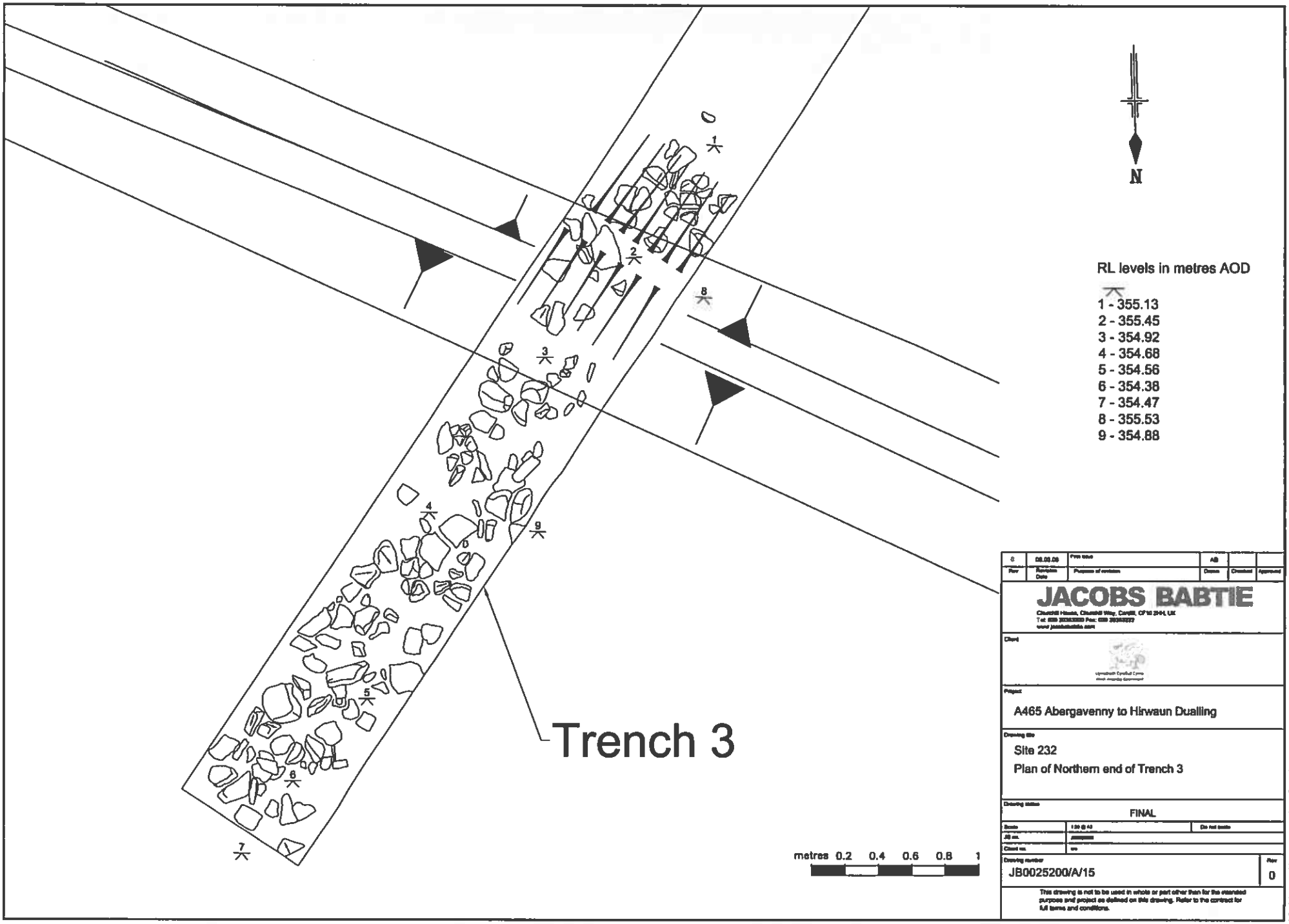
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.


Tips
Tips
Tips
Tips
Trench 4
Trench 5
Trench 2
Trench 3
Trench 1
Trench 6
Culvert
TBM 239.8
GR: 10718,07581
360 AOD
N
Note:
OS Grid reference shown
Contours showing height
in metres AOD
JACOBS BABTIE
A465 Abergavenny to Hirwaun Dualling
Site 232
Site Plan
Trenches 1-6 locations
FINAL
JB0025200/A/11
0


Wall return
Utility area
Trench 2
Sondage
Doorway
Cottage living area
Doorway
Gable-end with chimney (?)
Trench 1
Outside drain
N
RL levels in metres AOD
1 - 361.41
2 - 361.365
3 - 361.585
4 - 361.36
5 - 361.56
6 - 361.97
7 - 361.50
8 - 361.51
9 - 361.75
10 - 361.60
11 - 361.635
12 - 361.34
13 - 361.34
14 - 361.42
15 - 361.64
16 - 361.75
17 - 361.26
18 - 361.40
JACOBS BABTIE
A465 Abergavenny to Hirwaun Dualling
Site 232
Plan Trench 1
FINAL
JB0025200/A/12
0


Back edge of wall
Earthwork
Trench 2
Cottage living area
Trench 1
N
RL in metres AOD
1 - 364.435
4 - 361.325
5 - 361.325
6 - 361.665
13 - 361.495
14 - 362.135
15 - 362.395
16 - 362.095
18 - 362.285
19 - 361.445
metres 0.2 0.4 0.6 0.8 1
JACOBS BABTIE
A465 Abergavenny to Hirwaun Dualling
Site 232
Plan of northern end of Trench 2
FINAL
JB0025200/A/13
0


Trench 2
(015)
(005)
(014)
(003)
(012)
(013)
Sondage to natural
N
RL levels in metres AOD
1 - 365.86
2 - 365.46
3 - 365.99
4 - 364.87
5 - 364.87
6 - 365.05
7 - 364.73
8 - 364.39
9 - 366.16
10 - 366.88
11 - 364.72
12 - 364.73
metres 0.2 0.4 0.6 0.8 1
JACOBS BABTIE
A465 Abergavenny to Hirwaun Dualling
Site 232
Plan of southern end of Trench 2
FINAL
JB0025200/A/14
0



Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.09.09	First issue	AB		

JACOBS BABTIE

Client

Project: A465 Abergavenny to Hirwaun Dualling

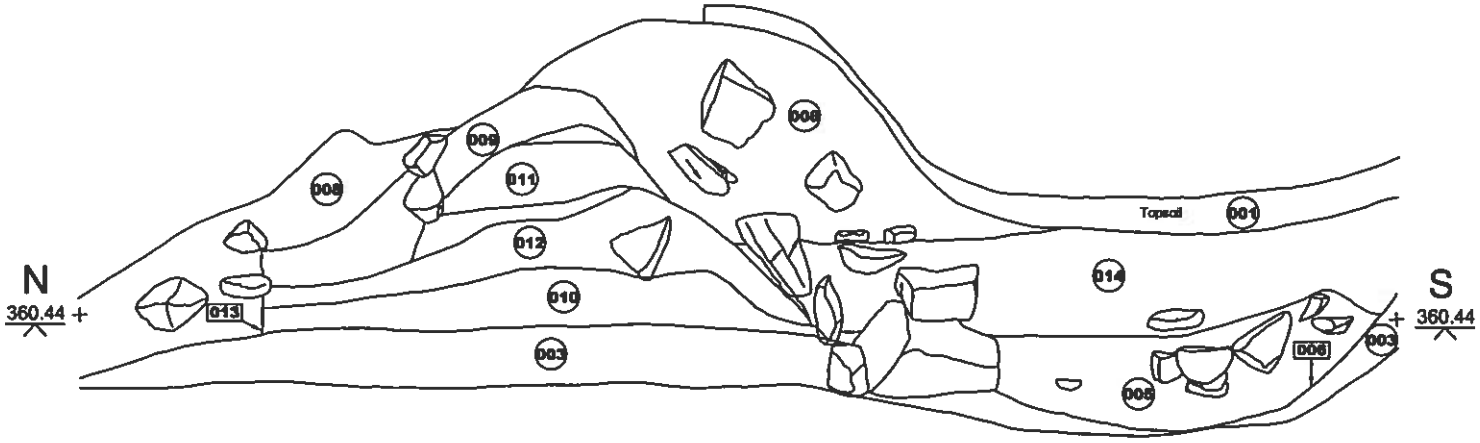
Drawing title: Site 232
Plan of Northern end of Trench 3

Drawing status: FINAL

Scale	1:20 @ A3	Do not scale
Client no.	n/a	

Drawing number: JB0025200/A/15 — Rev: 0

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



metres 1

Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.03.06	First issue	AB		

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

JACOBS BABTIE
Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20353200 Fax: 029 20353222
www.jacobsbabtie.com

Client

Project
A465 Abergavenny to Hirwaun Dualling

Drawing title
Site 232
Trench 3 Section
South-east facing section

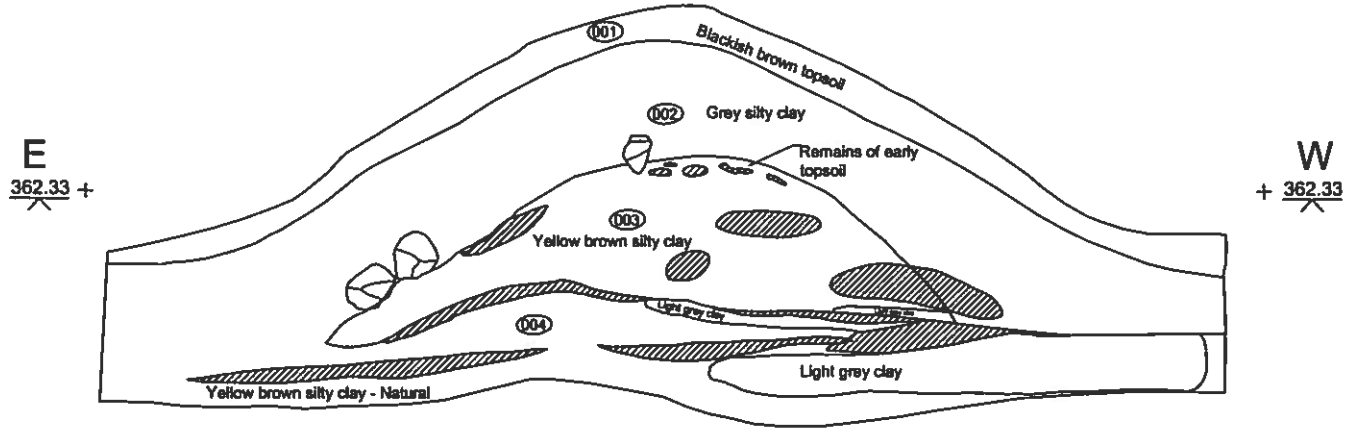
Drawing status: FINAL

Scale	1:20 @ A4	Do not scale
JB no.	JB0025200	
Client no.	n/a	

Drawing number: JB0025200/A/16

Rev: 0

N:\Bar\Archaeology\A465 Abergavenny to Hirwaun\Drawings\Drawings Evaluations\Section 7\Final Figures\Figure 16 232.dwg



metres 1

Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.03.06	First issue	AB		

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

JACOBS BABTIE
Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20353200 Fax: 029 20353222
www.jacobsbabtie.com

Client

Project
A465 Abergavenny to Hirwaun Dualling

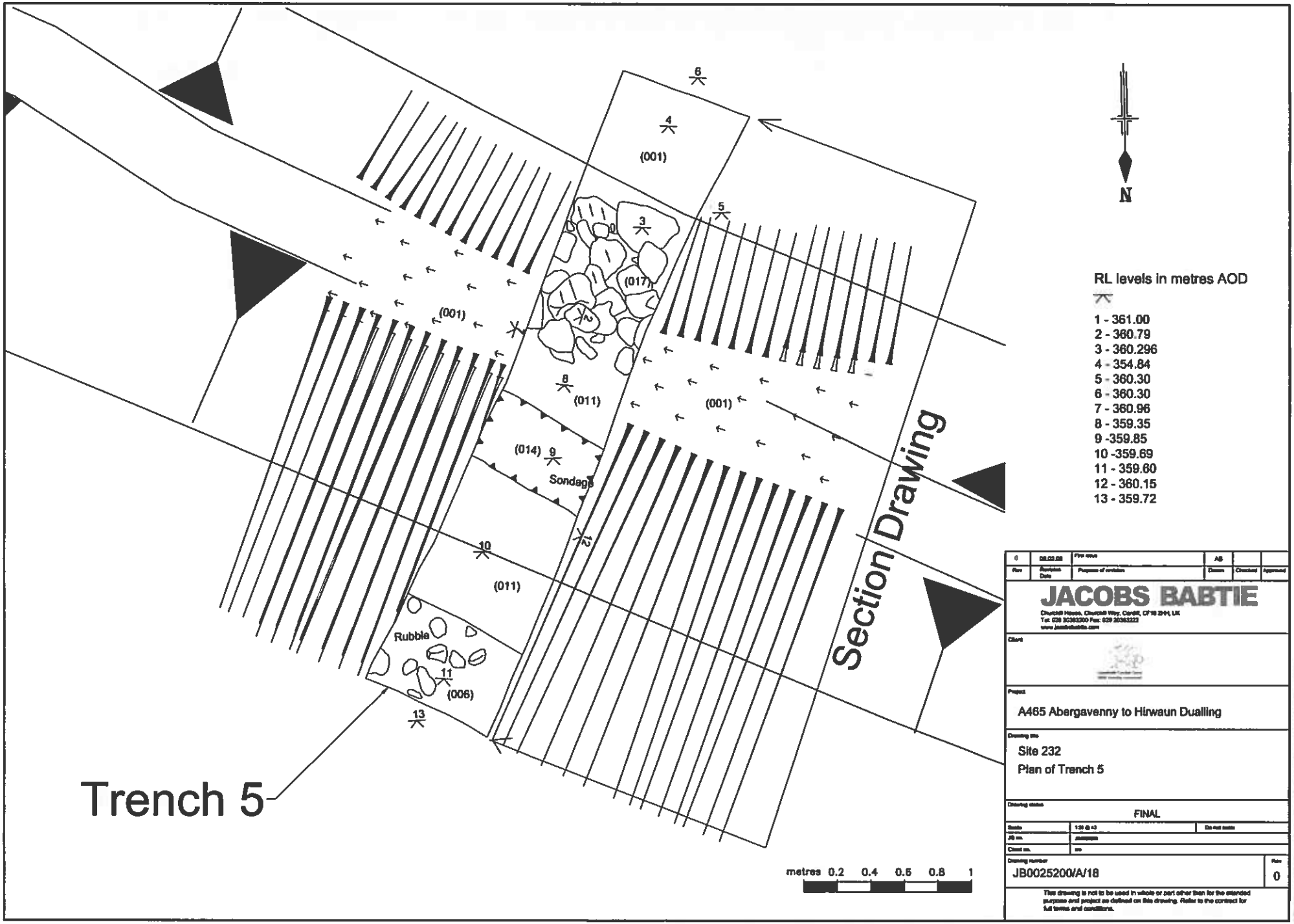
Drawing title
Site 232
Trench 4
North facing section

Drawing status: FINAL

Scale	1:20 @ A4	Do not scale
JB no.	JB0025200	
Client no.	n/a	

Drawing number: JB0025200/A/17
Rev: 0

N:\Sec\Archaeology\A465 Abergavenny to Hirwaun\Drawings\Excavation\Section 7\Final Figures\Figure 16 / 20.dwg



RL levels in metres AOD

1 - 361.00
2 - 360.79
3 - 360.296
4 - 354.84
5 - 360.30
6 - 360.30
7 - 360.96
8 - 359.35
9 -359.85
10 -359.69
11 - 359.60
12 - 360.15
13 - 359.72

Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.05.08	First issue	AB		

JACOBS BABTIE

Client

Project: A465 Abergavenny to Hirwaun Dualling

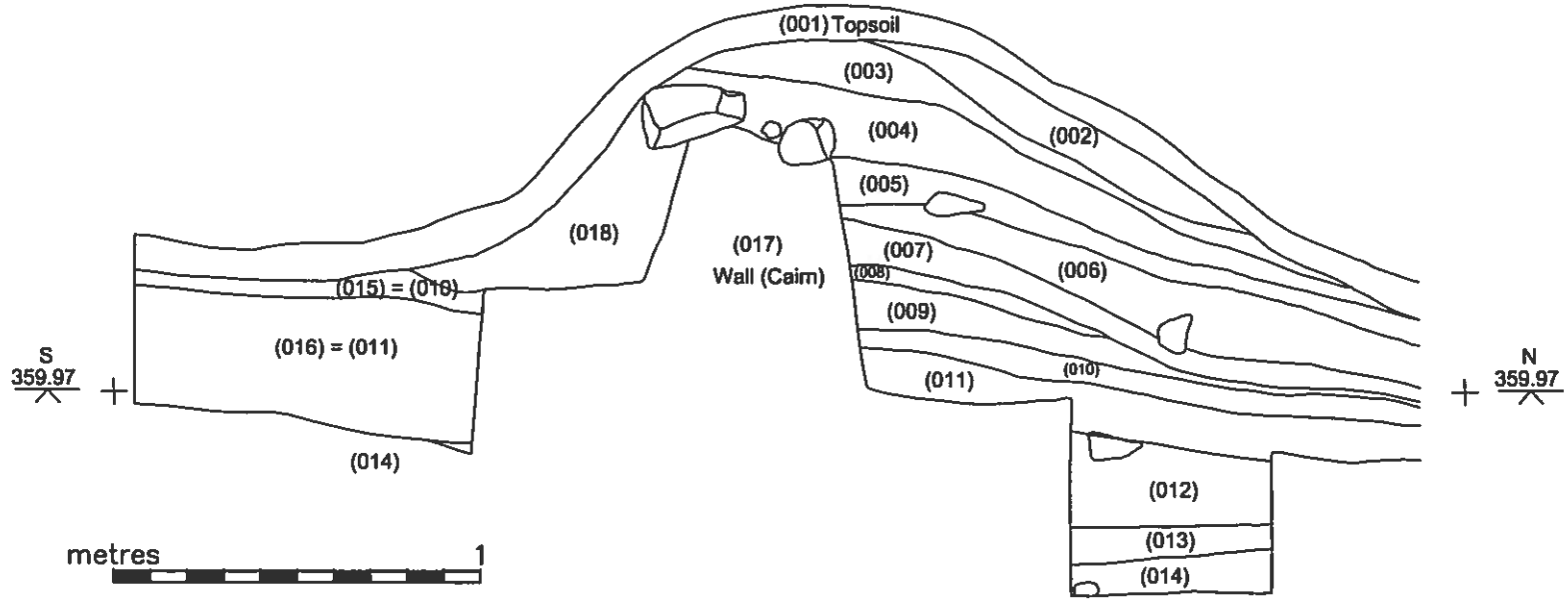
Drawing title: Site 232 Plan of Trench 5

Drawing status: FINAL

Scale	1:20 @ A3	Do not scale
Job no.	JB0025200	
Client no.	n/a	

Drawing number: JB0025200/A/18 Rev: 0

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.03.06	First issue	AB		

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

JACOBS BABTIE
Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20353200 Fax: 029 20353222
www.jacobsbabtie.com

Client

Project
A465 Abergavenny to Hirwaun Dualling

Drawing title
Site 232
Trench 5
East facing section

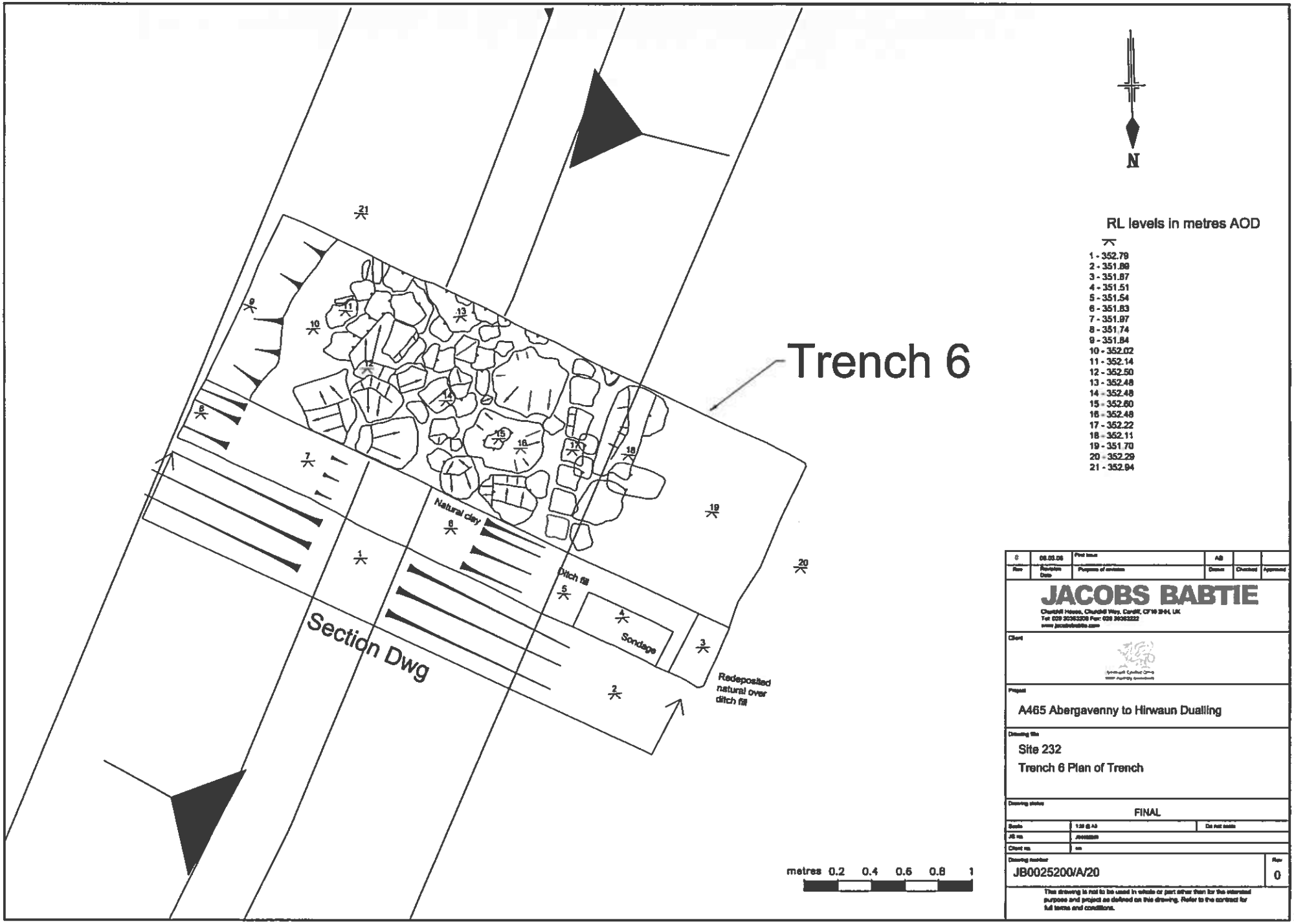
Drawing status
FINAL

Scale	1:20 @ A4	Do not scale
JB no.	JB0025200	
Client no.	n/a	

Drawing number
JB0025200/A/19

Rev
0

N:\Dwf\Archaeology\A465 Abergavenny to Hirwaun\Drawings\Drawings (Illustrator Sections)\Final Figures\Figure 16-23.dwg



Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	06.03.06	First issue	AB		

JACOBS BABTIE

Client

Project: A465 Abergavenny to Hirwaun Dualling

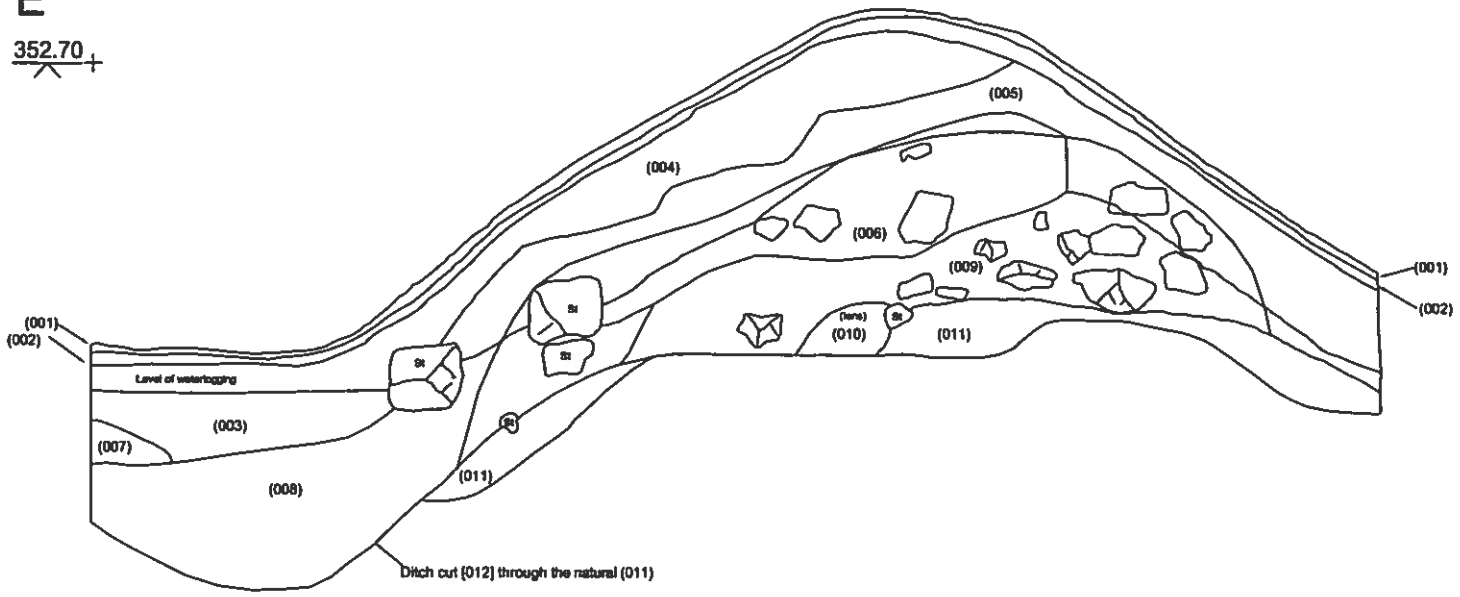
Drawing title: Site 232
Trench 6 Plan of Trench

Drawing status: FINAL

Scale	1:20 @ A3	Do not scale
JB no.	JB0025200	
Client no.	n/a	

Drawing number: JB0025200/A/20 Rev: 0

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



metres 1

Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.03.06	First issue	AB		

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

JACOBS BABTIE
Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20333200 Fax: 029 20333222
www.jacobsbabtie.com

Client

Project
A465 Abergavenny to Hirwaun Dualling

Drawing title
Site 232
Trench 6 South facing section

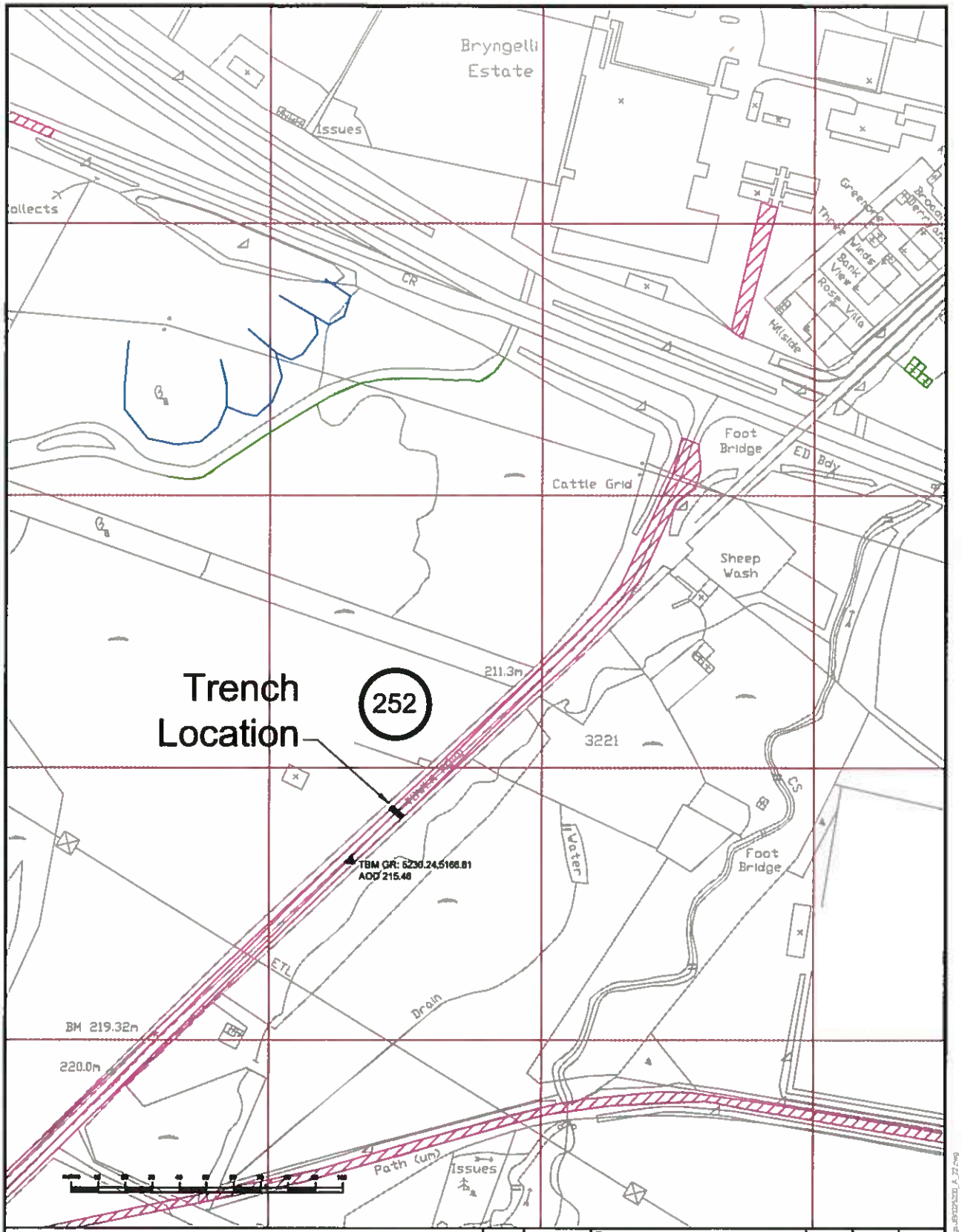
Drawing status
FINAL

Scale	1:20 @ A4	Do not scale
JB no.	JB0025200	
Client no.	n/a	

Drawing number
JB0025200/A/21

Rev
0

N:\Den\Archaeology\A465 Abergavenny to Hirwaun\Drawings\Drawings E Jacobs\Jacobs Section 7 Final Figures\Figure 16-21.dwg



This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.03.06	First issue	AB		

JACOBS BABTIE
Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20353200 Fax: 029 20353222
www.jacobsbabtie.com

Client

Project
A465 Abergavenny to Hirwaun Dualling

Drawing title
Site 252
Trench location
Bute Colliery tramway

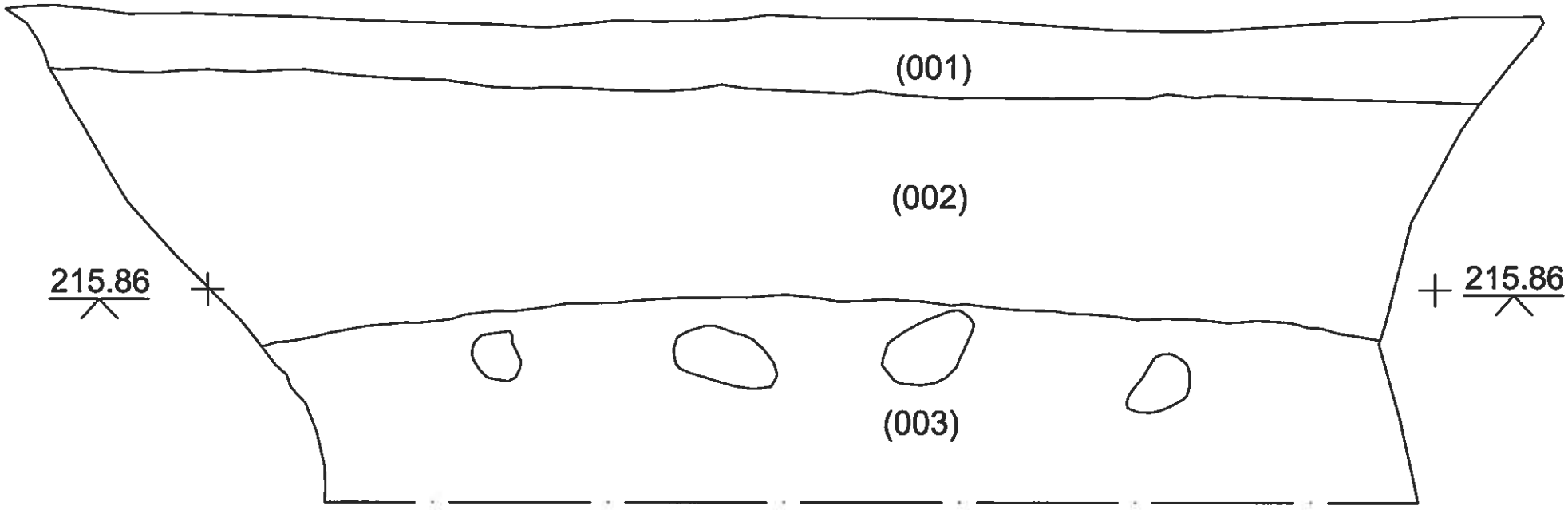
Drawing status
FINAL

Scale:	1:200@ A4	Do Not Scale
JB no.	JB0025200	
Client no.	n/a	

Drawing number
JB0025200/A/22

Rev
0

P:\GIS\Projects\JB0025200 A465 Abergavenny-Hirwaun Dualling\Drawings\JB0025200_A_22.mxd Project:JB0025200 A465 Abergavenny-Hirwaun Dualling Drawing:JB0025200/A/22 Rev:0



Water level in trench

metres 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1

Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.03.06	First issue	AB		

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

JACOBS BABTIE
Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20353200 Fax: 029 20353222
www.jacobsbabtie.com

Client

Project
A465 Abergavenny to Hirwaun Dualling

Drawing title
Site 252
South west facing section
Bute Colliery Railway

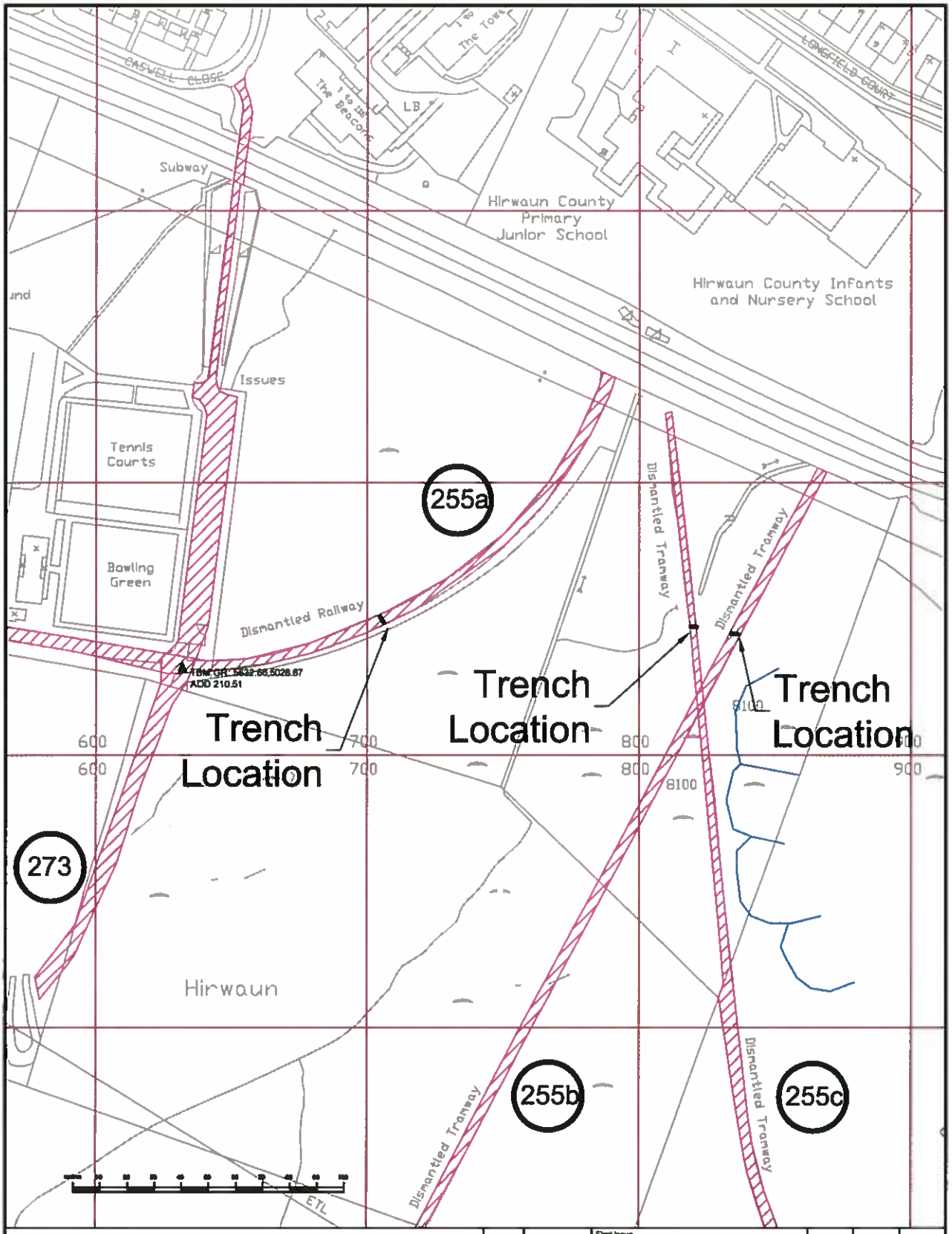
Drawing status
FINAL

Scale	1:10 @ A4	Do not scale
JB no.	JB0025200	
Client no.	n/a	

Drawing number
JB0025200/A/23

Rev
0

N:\Sen Arch\Mastergy (A465 Abergavenny to Hirwaun)\Drawings\Drawings Excavations (Section 7 Area)\Figures (Figure 7.15.dwg)



This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.03.06	First issue	AB		

JACOBS BABTIE
Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20353200 Fax: 029 20353222
www.jacobsbabtie.com

Client

Project
A465 Abergavenny to Hirwaun Dualling

Drawing title
Sites 255a, 255b and 255c
Trench location
Aberdare & Rhondda Main line and tramroads

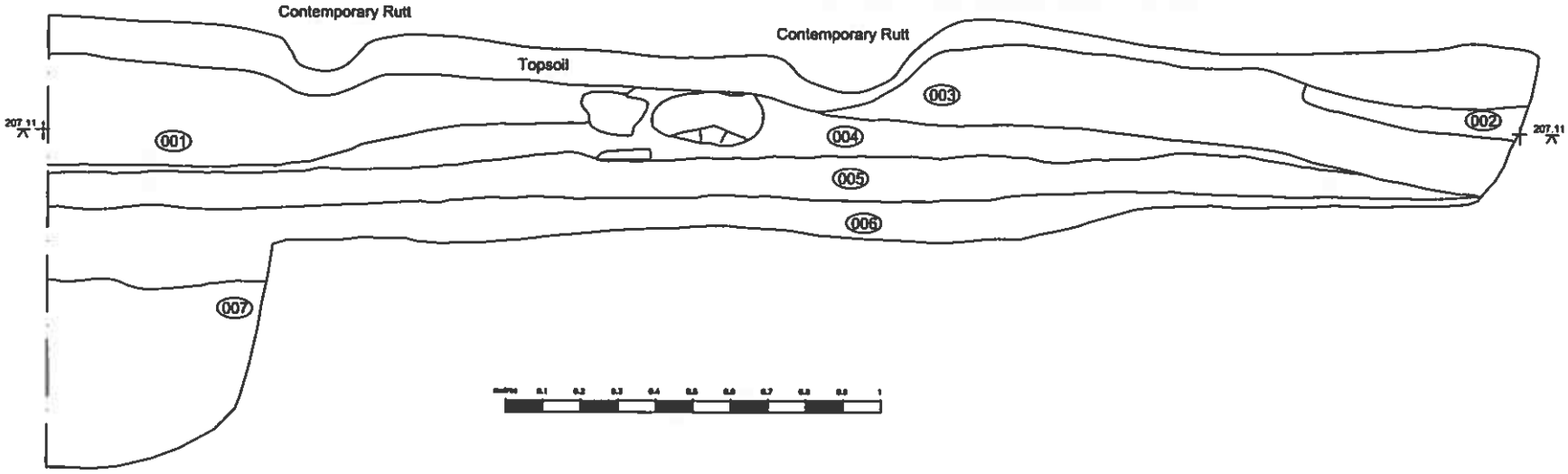
Drawing status
FINAL

Scale:	1:200 @ A4	Do Not Scale
JB no.	JB0025200	
Client no.	n/a	

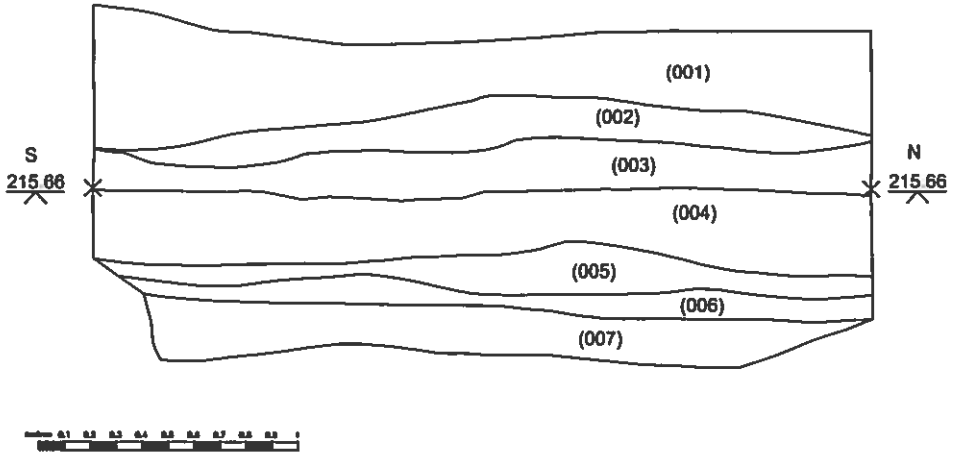
Drawing number
JB0025200/A/24

Rev
0

Site 255b Tramway



Site 255a. Main line



Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	09.03.09	First issue	AB		

JACOBS BABTIE

Client

Project: A465 Abergavenny to Hirwaun Dualling

Drawing title: Site 255a and 255b
East Facing Section
Aberdare and Rhonnda Main Line & tramway

Drawing status: FINAL

Scale: Do not scale

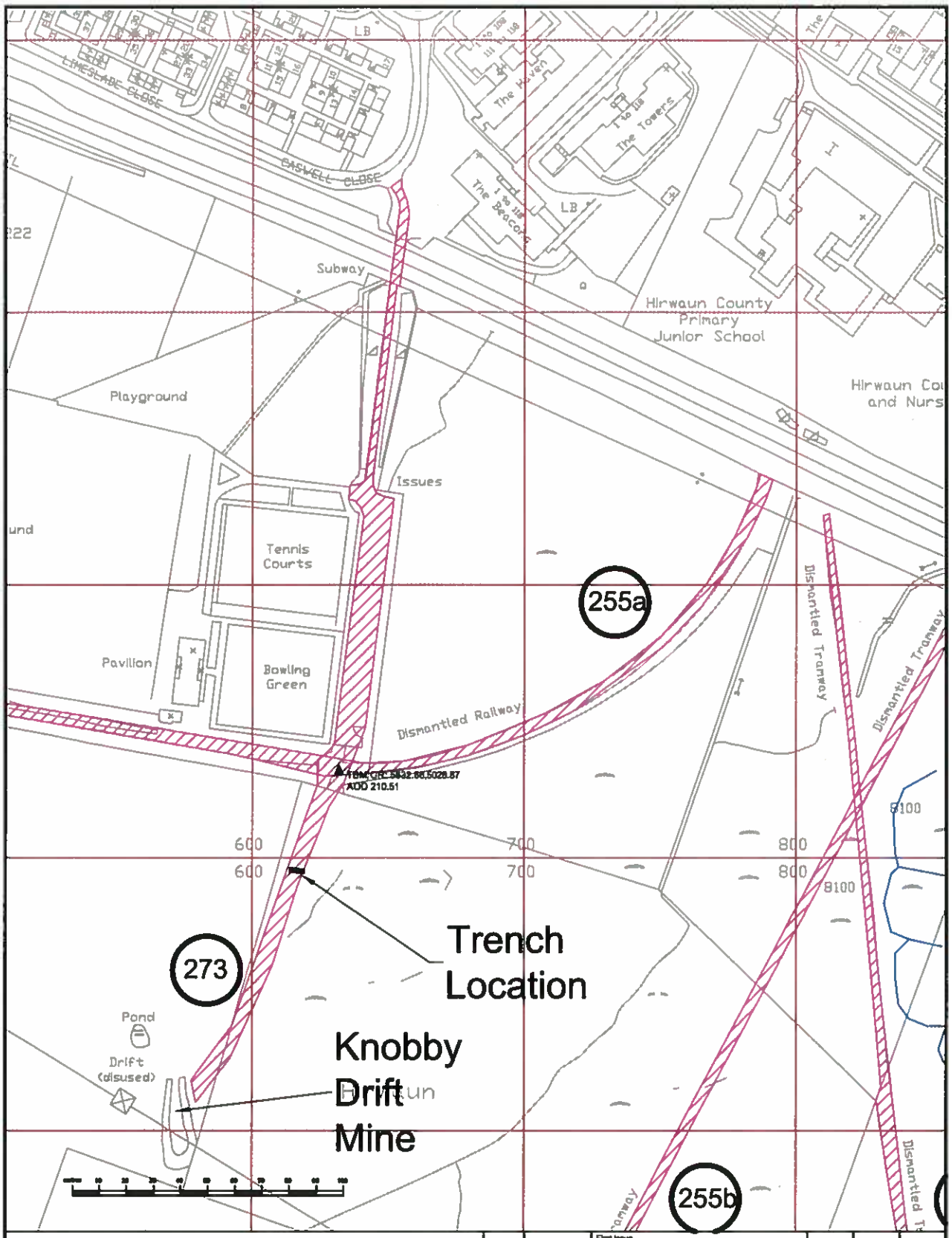
Job no.

Client no.

Drawing number: JB0025200/A/25

Rev: 0

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.03.06	First issue	AB		

JACOBS BABTIE
Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20353200 Fax: 029 20353222
www.jacobsbabtie.com

Client

Project
A465 Abergavenny to Hirwaun Dualling

Drawing title
Site 273
Trench location
Branch tramroad to Knobby Drift

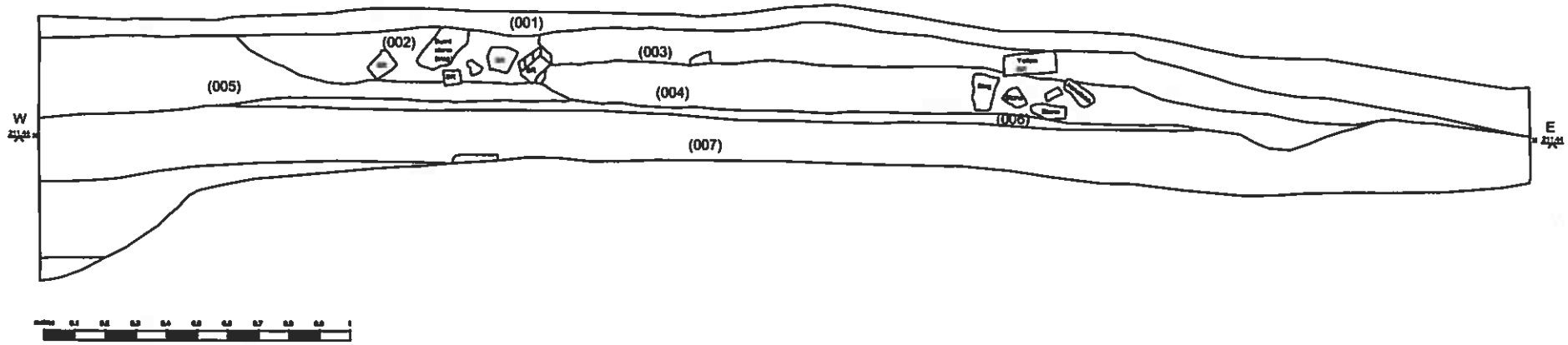
Drawing status
FINAL

Scale:	1:200@A4	Do Not Scale
JB no.	JB0025200	
Client no.	n/a	

Drawing number
JB0025200/A/26

Rev
0

K:\Civil\Archaeology\A465 Abergavenny to Hirwaun\Drawings\Drawings\Evaluations\Section 7\Final Figures\Figure 7.13.dwg



Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.03.06	First issue	AB		

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

JACOBS BABTIE
Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20353200 Fax: 029 20353222
www.jacobsbabtie.com

Client

Project
A465 Abergavenny to Hirwaun Dualling

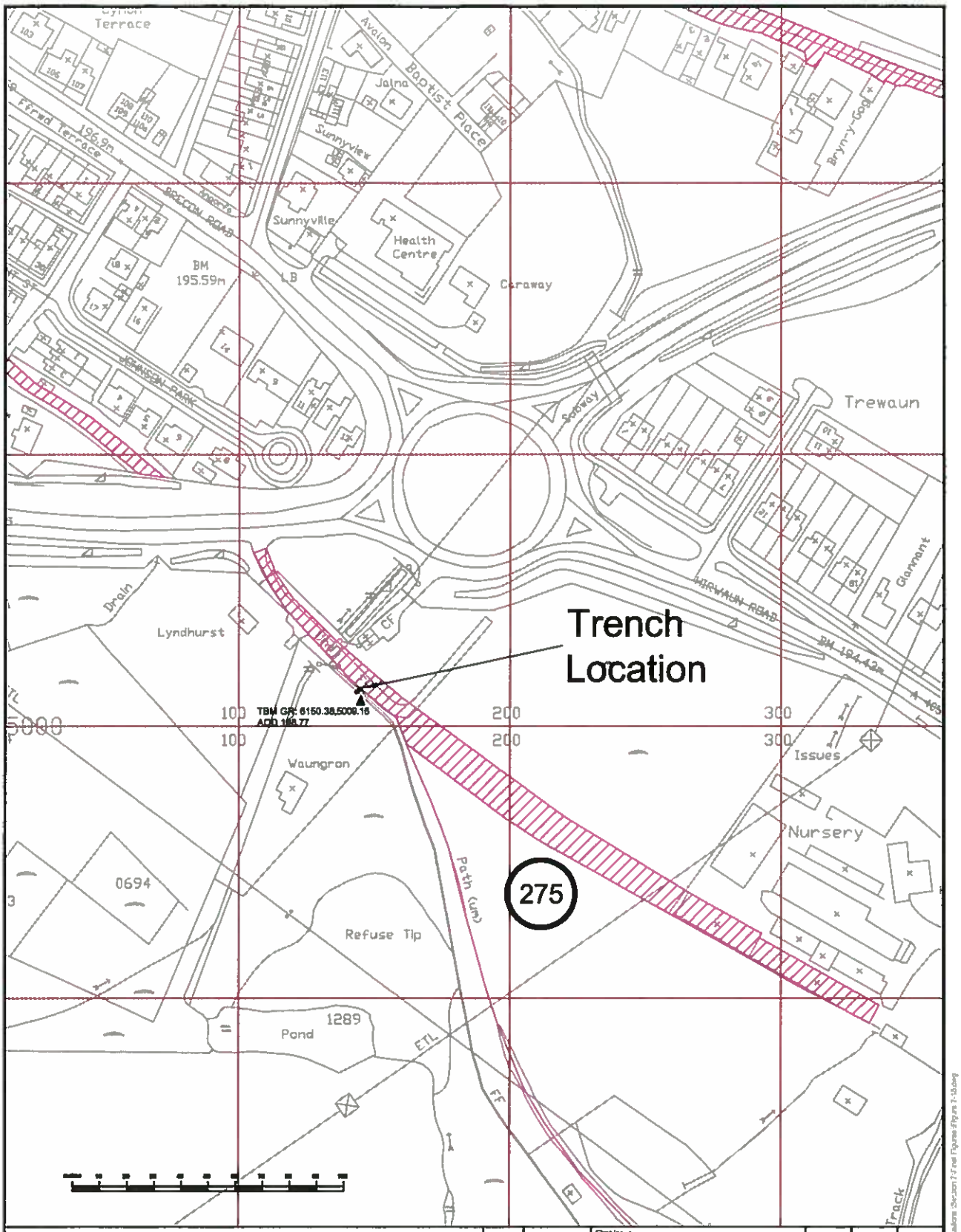
Drawing title
Site 273
South Facing section
Branch tramroad to Knobby Drift

Drawing status: FINAL

Scale	1:20 @ A4	Do not scale
JB no.	JB0025200	
Client no.	n/a	

Drawing number: JB0025200/A/27
Rev: 0

N:\Civil\Archaeology\A465 Abergavenny to Hirwaun\Drawings\Drawings C Illustrator\Section - Final Figures\Fig 5.dwg



This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.03.06	First issue	AB		

JACOBS BABTIE
Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20353200 Fax: 029 20353222
www.jacobsbabtie.com

Client

Project
A465 Abergavenny to Hirwaun Dualling

Drawing title
Site 275
Trench location
Tramway Branch- Hirwaun Common Railway

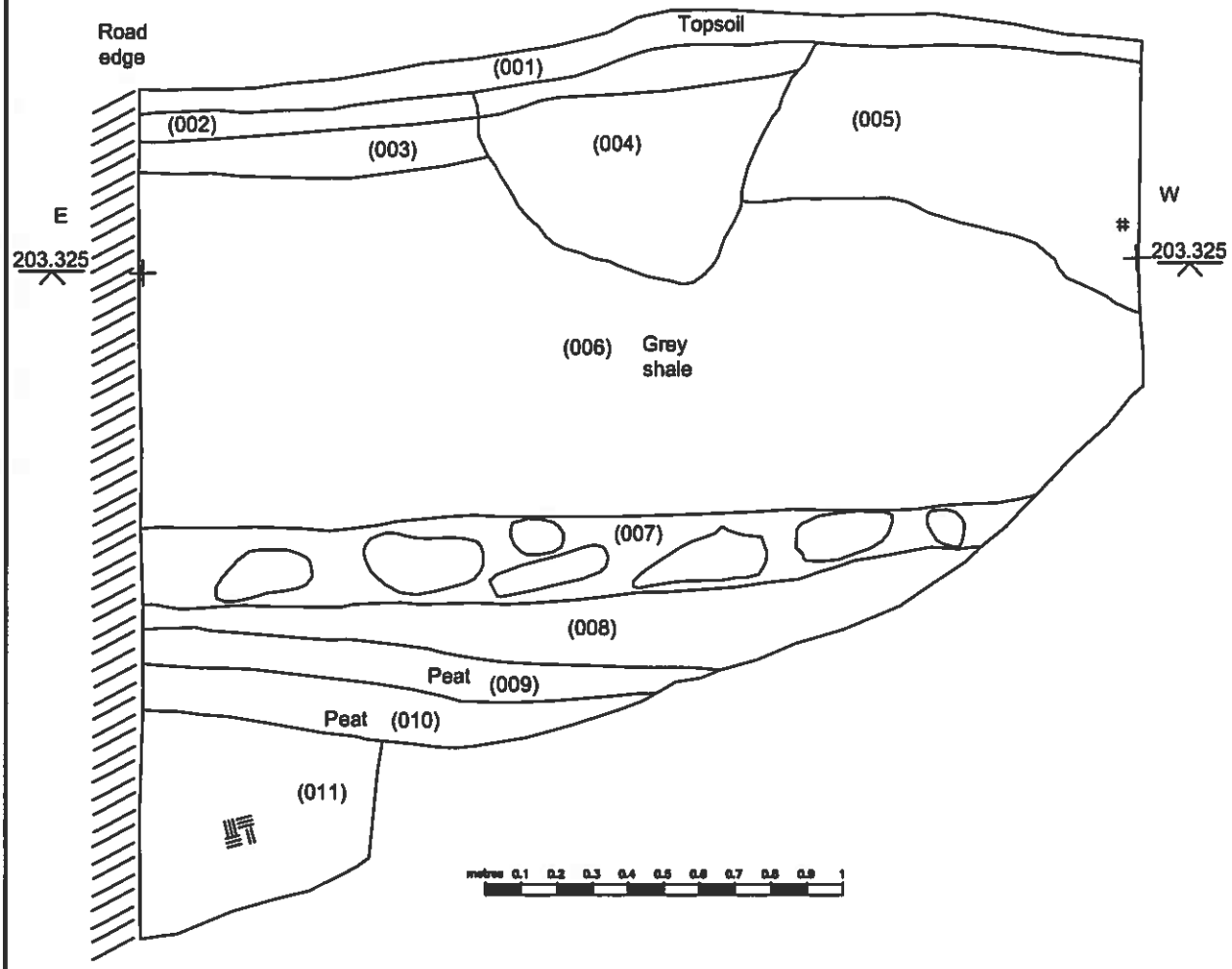
Drawing status
FINAL

Scale:	1:200@ A4	Do Not Scale
JB no.	JB0025200	
Client no.	n/a	

Drawing number
JB0025200/A/28

Rev
0

K:\Civil\Abergavenny to Hirwaun\Drawings\Drawings\Evaluations\Section 7\Final Figures\Figure 7.1-3.dwg



This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.03.06	First issue	AB		

JACOBS BABTIE
Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20353200 Fax: 029 20353222
www.jacobsbabtie.com

Client

Project
A465 Abergavenny to Hirwaun Dualling

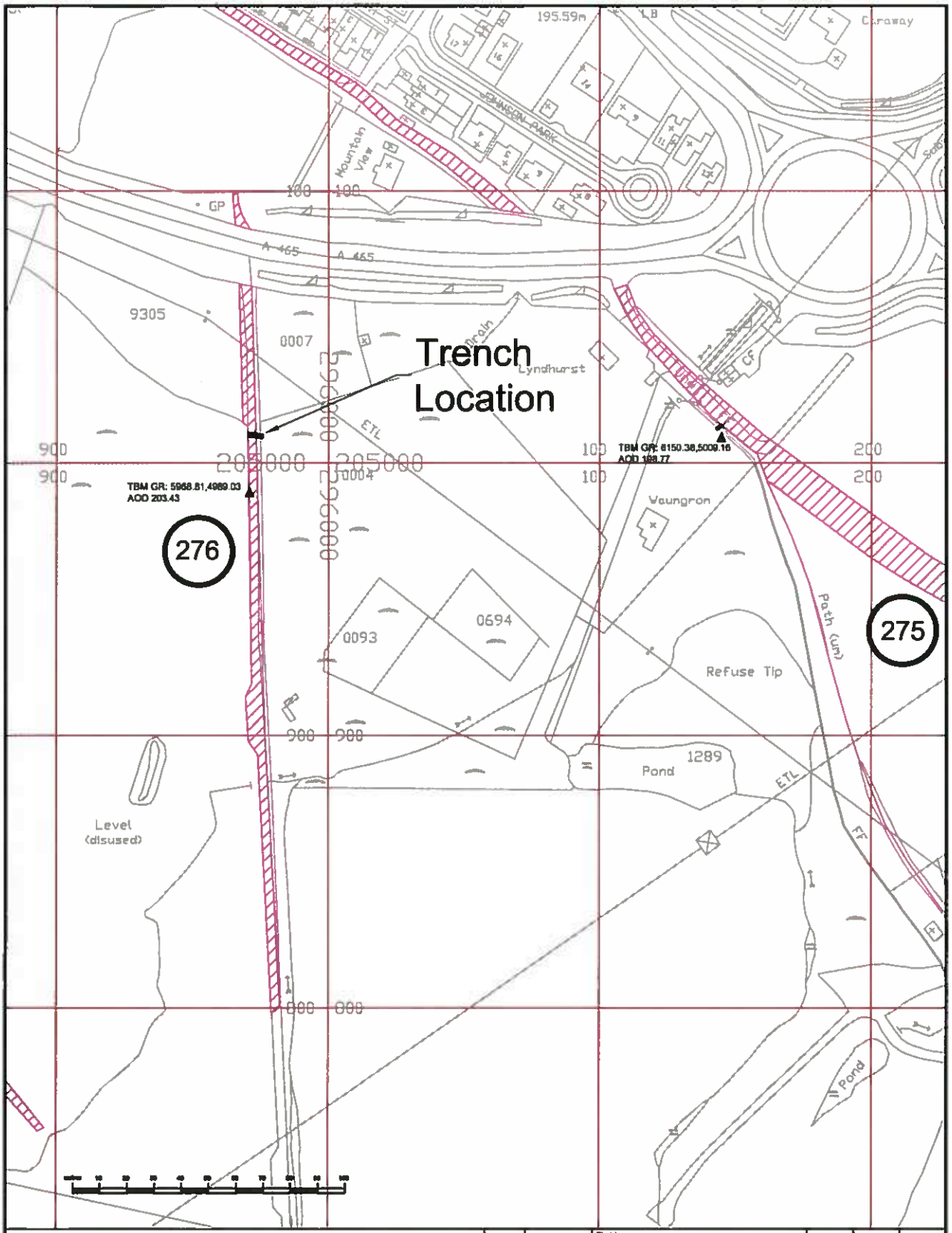
Drawing title
Site 275
North Facing Section
Tramway Branch - Hirwaun Common Railway

Drawing status: FINAL

Scale:	1:20 @ A4	Do Not Scale
JB no.	JB0025200	
Client no.	n/a	

Drawing number: JB0025200/A/29
Rev: 0

N:\Civil Archaeology\A465 Abergavenny to Hirwaun\Drawings\Drawings Folder\Site 275\Section 17 and Figures\Figure 1.15.dwg



This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.03.06	First issue	AB		

JACOBS BABTIE
Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20353200 Fax: 029 20353222
www.jacobsbabtie.com

Client

Project
A465 Abergavenny to Hirwaun Dualling

Drawing title
Site 276
Trench location
Hirwaun Common Mineral Railway

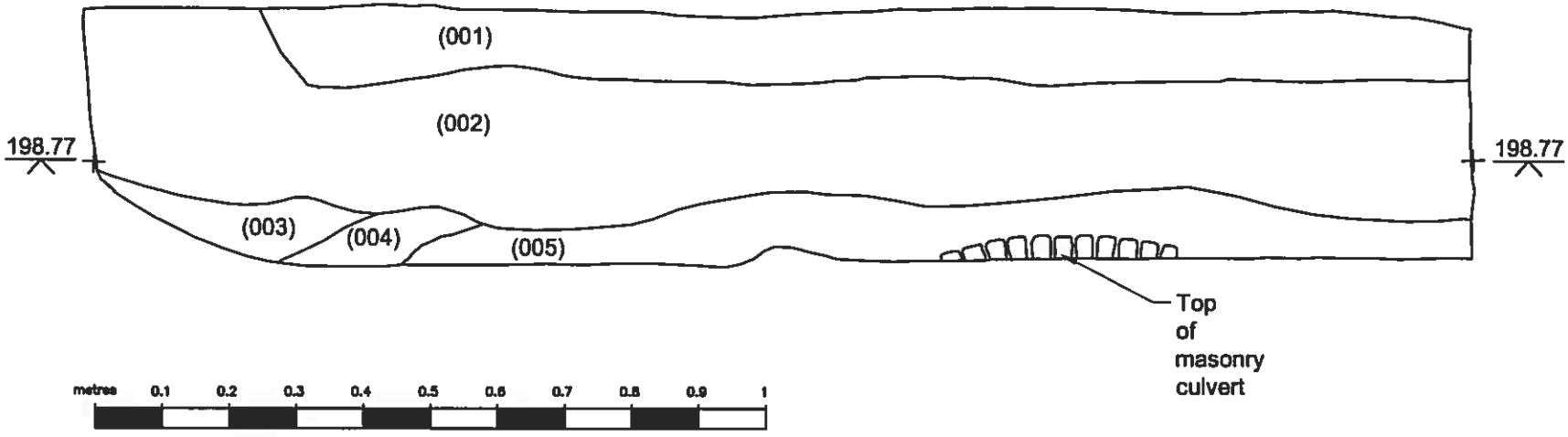
Drawing status
FINAL

Scale:	1:200 @ A4	Do Not Scale
JB no.	JB0025200	
Client no.	n/a	

Drawing number
JB0025200/A/30

Rev
0

N:\Civil\Archaeology\A465 Abergavenny to Hirwaun\Drawings\Drawings Embedded in Section 7 Final Figures\Figure 7.1.dwg



Rev	Revision Date	Purpose of revision	Drawn	Checked	Approved
0	08.03.06	First issue	AB		

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

JACOBS BABTIE
Churchill House, Churchill Way, Cardiff, CF10 2HH, UK
Tel: 029 20863200 Fax: 029 20863222
www.jacobsbabtie.com

Client

Project
A465 Abergavenny to Hirwaun Dualling

Drawing title
East facing section
Site 276
Hirwaun Common Mineral Railway

Drawing status
FINAL

Scale	1:10 @ A4	Do not scale
JB no.	JB0025200	
Client no.	n/a	

Drawing number
JB0025200/A/31

Rev
0

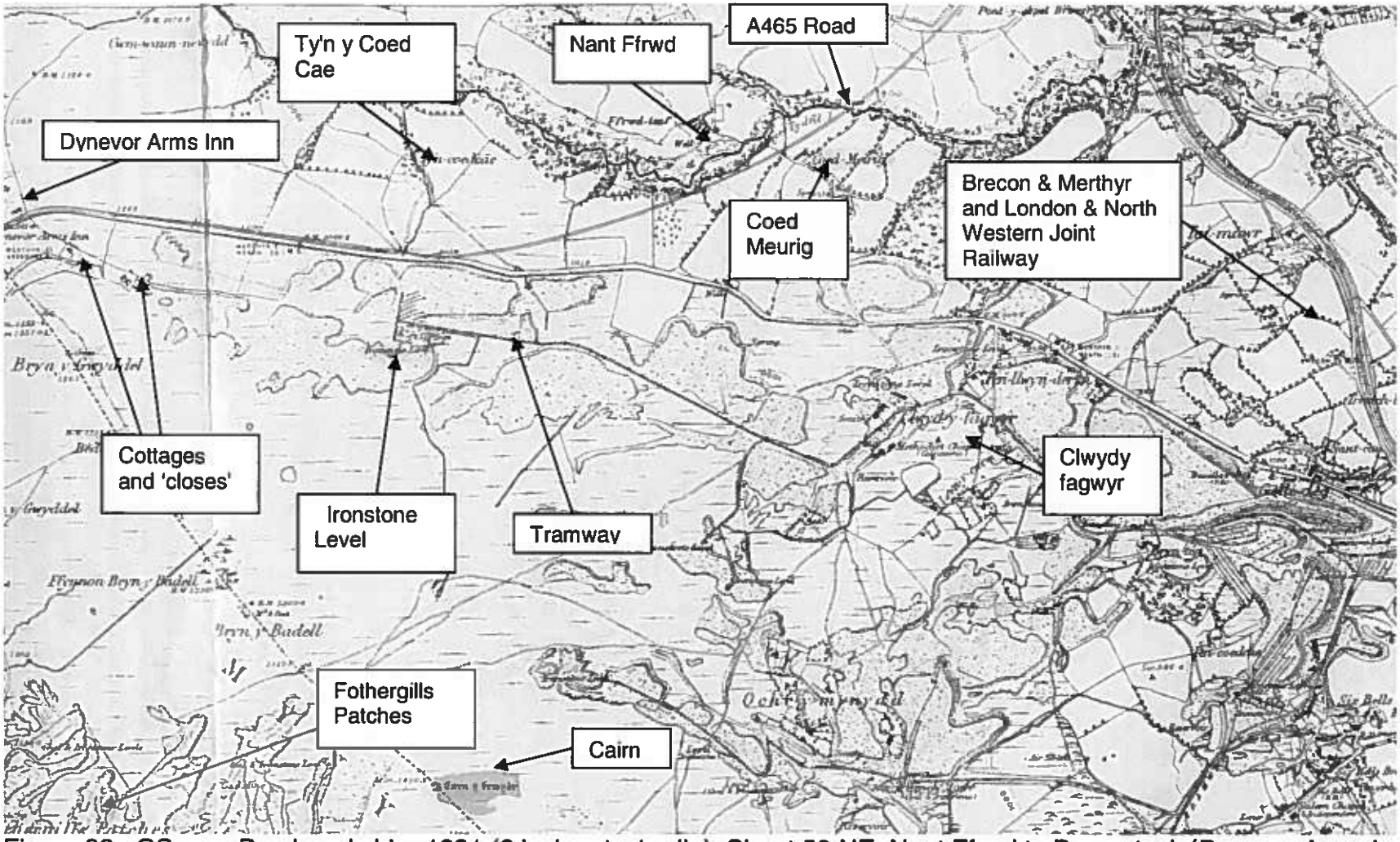


Figure 32: OS map Brecknockshire 1891 (6 inches to 1 mile). Sheet 50.NE. Nant Ffrwd to Baverstock (Dynevor Arms Inn)

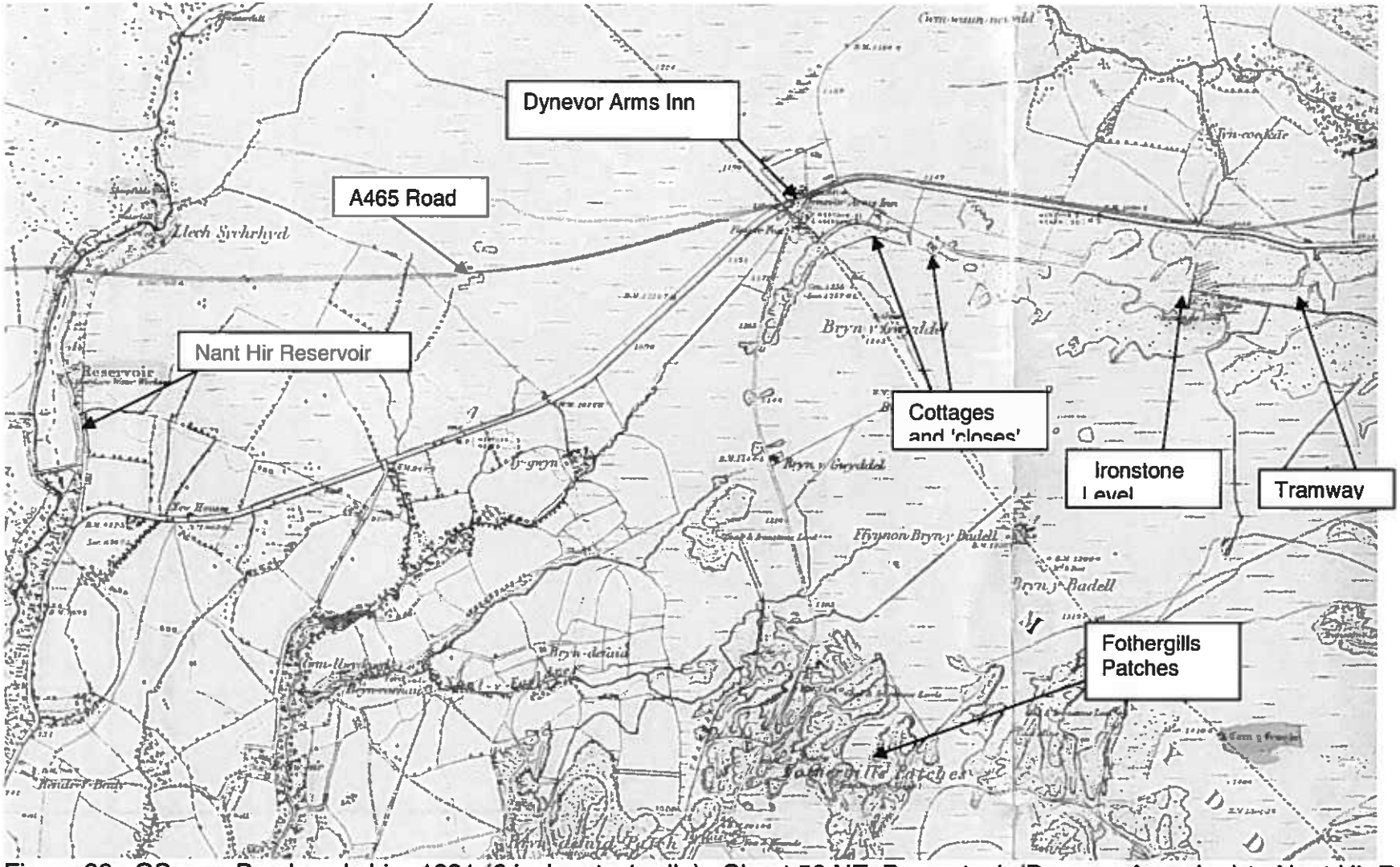


Figure 33: OS map Brecknockshire 1891 (6 inches to 1 mile). Sheet 50.NE. Baverstock (Dynevor Arms Inn) to Nant Hir Reservoir

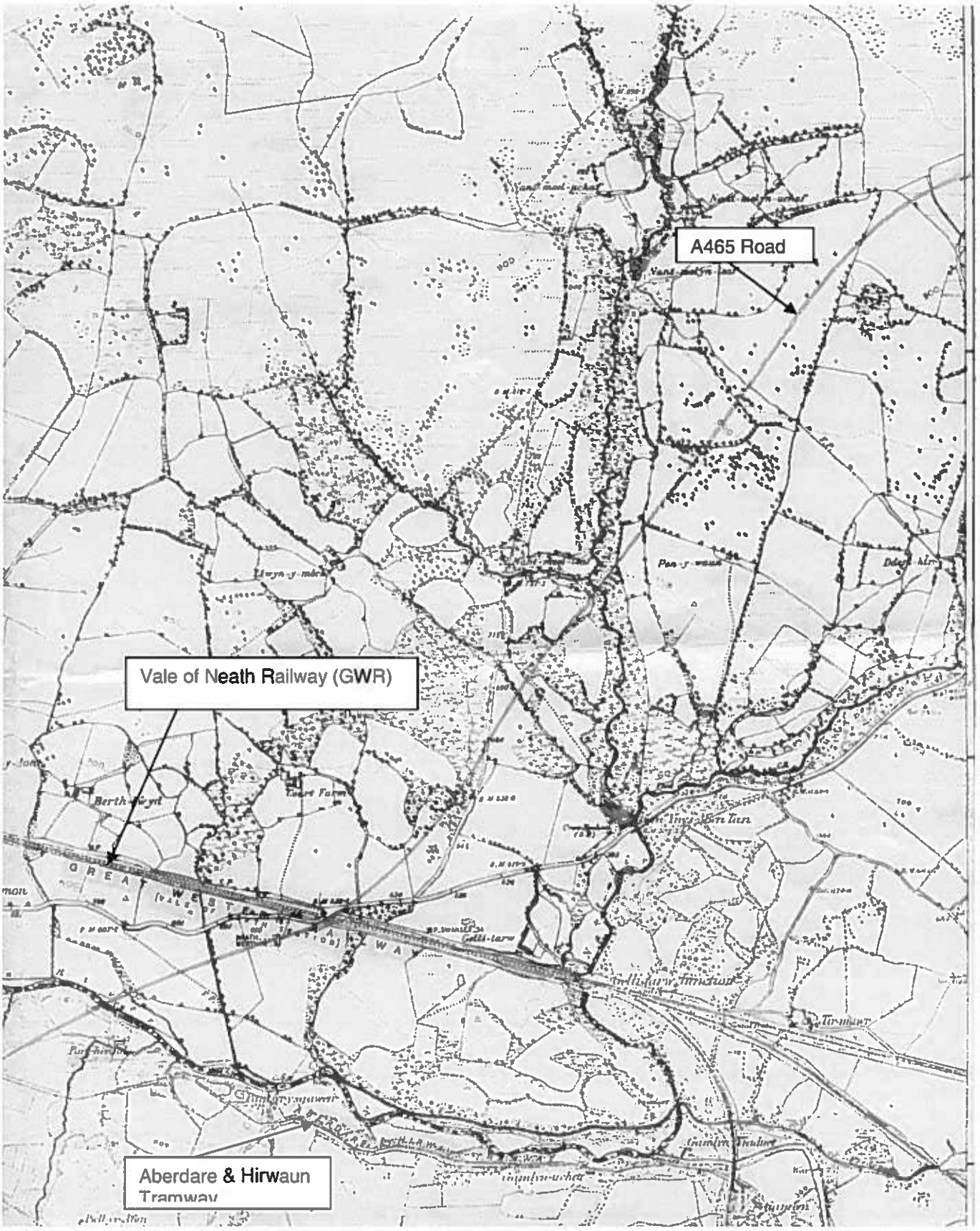


Figure 34: OS map Brecknockshire 1891 (6 inches to 1 mile). Sheet 50.NE. Nant Moel

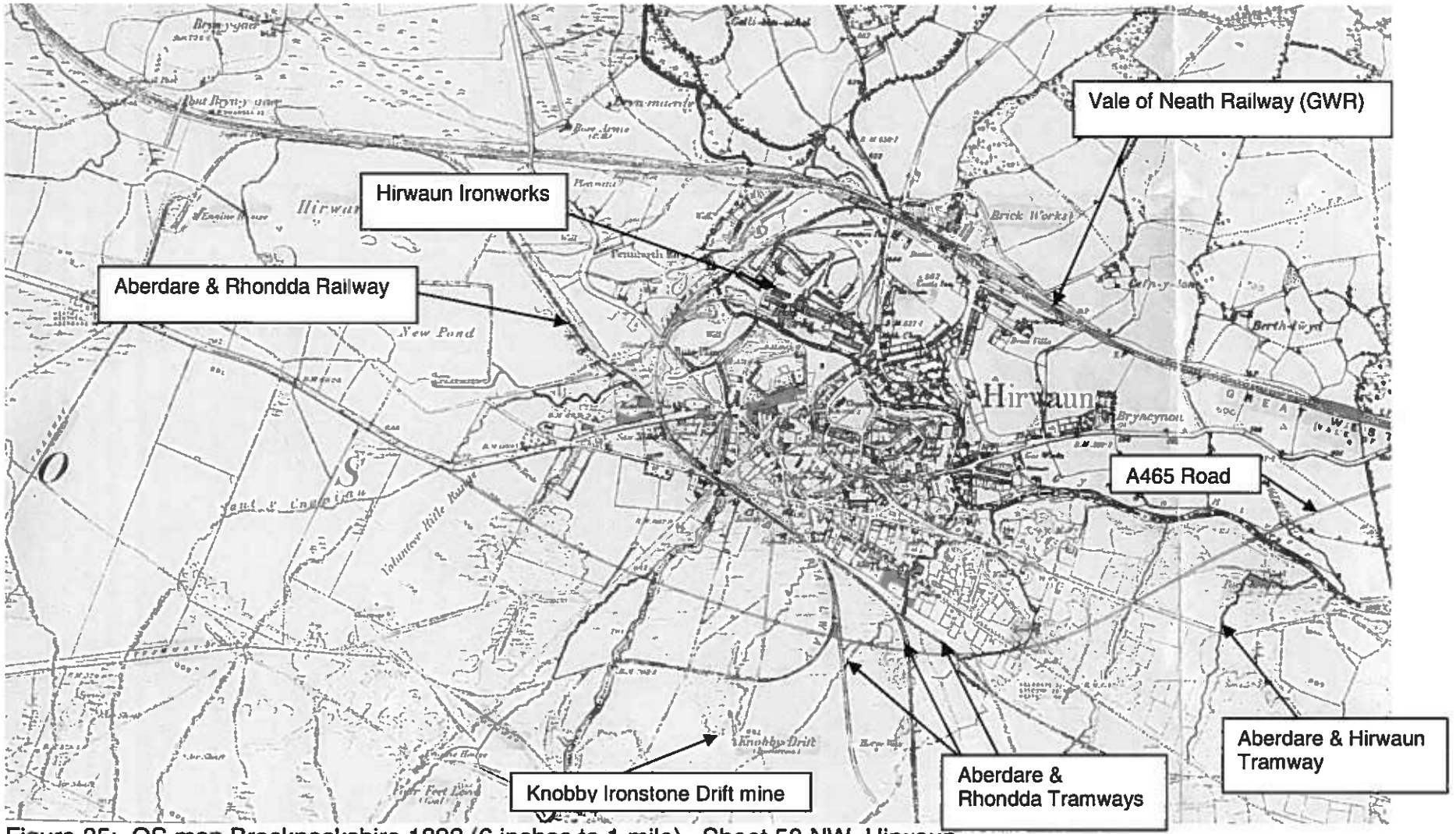


Figure 35: OS map Brecknockshire 1892 (6 inches to 1 mile). Sheet 50.NW. Hirwaun

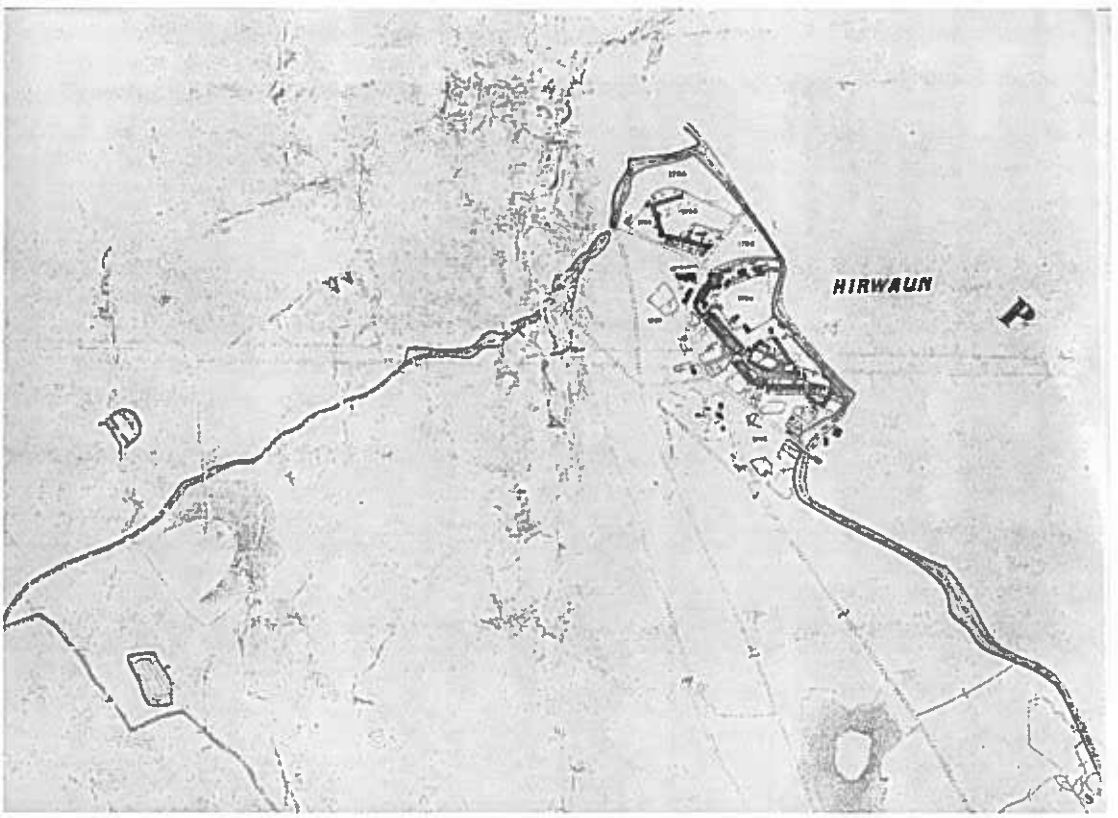


Figure36: The village of Hirwaun in 1818. Survey for the Marquess of Bute

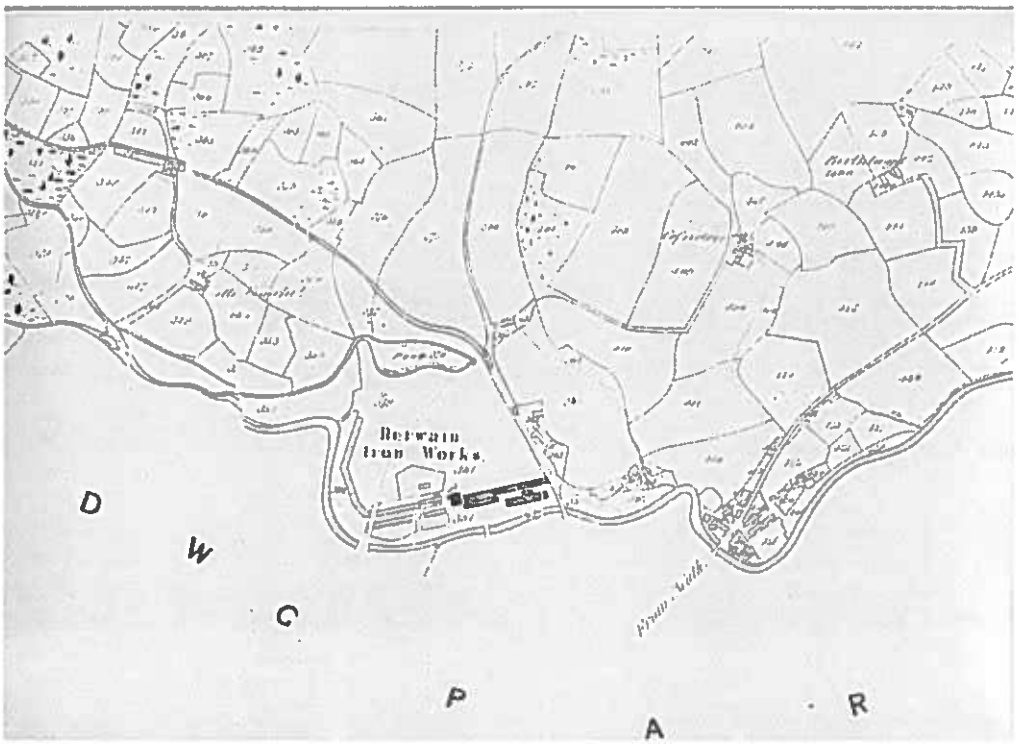


Figure 37: Hirwaun Ironworks. Aberdare Tithe Map 1840

Plate 1: Site 232 Aerial view looking west of tramway, crows-foot tips and settlement with field boundaries.
Baverstock hotel in top right hand corner.

Plate 2: Site 232 Baverstock settlement, general view

Plate 3: Site 232 Junction of Trench 1 and Trench 2 showing east-west walls (007) (right) and (006) (left)

Plate 4: Site 232. Trench 1: Looking east showing wall (007) (front) and (006) (background).

Plate 5: Site 232: Trench 1. Looking west showing stub wall (005) (front), wall (006) (middle) and wall (007) (background).

Plate 6: Site 232: Trench 1. Looking south showing wall (006) to possible Utility Room.

Plate 7: Site 232: Trench 1. Looking south showing western gable end of wall (007), flag floor and internal and external drains (010).

Plate 8: Site 232: Trench 2. Southern end of trench looking north

Plate 9: Site 232: Trench 3. Southern end looking north

Plate 10: Site 232: Trench 4. Section looking east

Plate 11: Site 232: Trench 4. North facing section

Plate 12: Site 232: Trench 5. Looking south

Plate 13: Site 232: Trench 5. Looking north

Plate 14: Site 232: Trench 5. East facing section with stone cairn at centre (left)

Plate 15: Site 232: Trench 6. South facing section

Plate 16: Site 232: Trench 6. Looking south

Plate 17: Site 232: Trench 6. Looking east

Plate 18: Site 275: South facing section

Plate 19: Site 275: General view of Tower Road

Plate 20: Site 255c: Trench abandoned due to water-logging

Plate 21: Site 252: South facing section

Appendix 10A - Landscape and Visual Impact Assessment Criteria (IAN 135/10 W)

Table 10A.1: Magnitude of landscape impact and typical descriptors

Magnitude of impact	Criteria descriptors
Major adverse	Total loss or large scale damage to existing character or distinctive features and elements, and / or the addition of new but uncharacteristic conspicuous features and elements.
Moderate adverse	Partial loss or noticeable damage to existing character or distinctive features and elements, and / or the addition of new but uncharacteristic noticeable features and elements.
Minor adverse	Slight loss or damage to existing character or features and elements, and / or the addition of new but uncharacteristic features and elements.
Negligible adverse	Barely noticeable loss or damage to existing character or features and elements, and / or the addition of new but uncharacteristic features and elements.
No change	No noticeable loss, damage or alteration to character or features or elements.
Negligible beneficial	Barely noticeable improvement of character by the restoration of existing features and elements, and / or the removal of uncharacteristic features and elements, or by the addition of new characteristic elements.
Minor beneficial	Slight improvement of character by the restoration of existing features and elements, and / or the removal of uncharacteristic features and elements, or by the addition of new characteristic elements.
Moderate beneficial	Partial or noticeable improvement of character by the restoration of existing features and elements, and / or the removal of uncharacteristic and noticeable features and elements, or by the addition of new characteristic features.
Major beneficial	Large scale improvement of character by the restoration of features and elements, and / or the removal of uncharacteristic and conspicuous features and elements, or by the addition of new distinctive features.

Table 10A.2: Landscape sensitivity and typical examples

Sensitivity	Criteria descriptors and examples
High	Landscapes which by nature of their character would be unable to accommodate change of the type proposed. Typically these would be: • of high quality with distinctive elements and features making a positive contribution to character and sense of place; • likely to be designated, but the aspects which underpin such value may also be present outside designated areas, especially at the local scale; • areas of special recognised value through use, perception or historic and cultural associations; and • likely to contain features and elements that are rare and could not be replaced.
Moderate	Landscapes which by nature of their character would be able to partly accommodate change of the type proposed. Typically these would be: • comprised of commonplace elements and features creating generally unremarkable character but with some sense of place; • locally designated, or their value may be expressed through non-statutory local publications; • containing some features of value through use, perception or historic and cultural associations; and • likely to contain some features and elements that could not be replaced.
Low	Landscapes which by nature of their character would be able to accommodate change of the type proposed. Typically these would be: • comprised of some features and elements that are discordant, derelict or in decline, resulting in indistinct character with little or no sense of place; • not designated; • containing few, if any, features of value through use, perception or historic and cultural associations; and • likely to contain few, if any, features and elements that could not be replaced.

Table 10A.3: Significance of landscape effect categories

		Magnitude of landscape impact				
		No change	**Negligible**	**Minor**	**Moderate**	**Major**
Landscape sensitivity	**High**	Neutral	Slight	Slight / moderate	Moderate / large	Large / very large
	Moderate	Neutral	Neutral / slight	Slight	Moderate	Moderate / large
	Low	Neutral	Neutral / slight	Neutral / slight	Slight	Slight / moderate

Table 10A.4: Descriptors of significance of landscape effect categories

Significance category		Typical descriptors of effect
1	Very large beneficial (positive) effect	The project would: • greatly enhance the character (including quality and value) of the landscape; • create an iconic high quality feature and / or series of elements; and • enable a sense of place to be created or greatly enhanced.
2	Large beneficial (positive) effect	The project would: • enhance the character (including quality and value) of the landscape; • enable the restoration of characteristic features and elements lost as a result of changes from inappropriate management or development; and • enable a sense of place to be enhanced.
3	Moderate beneficial (positive) effect	The project would: • improve the character (including quality and value) of the landscape; • enable the restoration of characteristic features and elements partially lost or diminished as a result of changes from inappropriate management or development; and • enable a sense of place to be restored.
4	Slight beneficial (positive) effect	The project would: • complement the character (including quality and value) of the landscape; • maintain or enhance characteristic features and elements; and • enable some sense of place to be restored.
5	Neutral effect	The project would: • maintain the character (including quality and value) of the landscape; • blend in with characteristic features and elements; and • enable a sense of place to be retained.
6	Slight adverse (negative) effect	The project would: • not quite fit the character (including quality and value) of the landscape; • be at variance with characteristic features and elements; and • detract from a sense of place.
7	Moderate adverse (negative) effect	The project would: • conflict with the character (including quality and value) of the landscape; • have an adverse impact on characteristic features or elements; and • diminish a sense of place.
8	Large adverse (negative) effect	The project would: • be at considerable variance with the character (including quality and value) of the landscape; • degrade or diminish the integrity of a range of characteristic features and elements; and • damage a sense of place.
9	Very large adverse (negative) effect	The project would: • be at complete variance with the character (including quality and value) of the landscape; • cause the integrity of characteristic features and elements to be lost; and • cause a sense of place to be lost.

Table 10A.5: Magnitude of visual impact and typical descriptors

Magnitude of impact	Typical criteria descriptors
Major	The project, or a part of it, would become the dominant feature or focal point of the view.
Moderate	The project, or a part of it, would form a noticeable feature or element of the view which is readily apparent to the receptor.
Minor	The project, or a part of it, would be perceptible but not alter the overall balance of features and elements that comprise the existing view.
Negligible	Only a very small part of the project would be discernible, or it is at such a distance that it would form a barely noticeable feature or element of the view.
No Change	No part of the project, or work or activity associated with it, is discernible.

Table 10A.6: Visual receptor sensitivity and typical examples

Sensitivity	Criteria descriptors and examples
High	• Residential properties. • Users of Public Rights of Way or other recreational trails (for example, National Trails, footpaths, bridleways). • Users of recreational facilities where the purpose of that recreation is enjoyment of the countryside (for example, Country Parks, National Trust or other access land).
Moderate	• Outdoor workers. • Users of scenic roads, railways or waterways or users of designated tourist routes. • Schools and other institutional buildings, and their outdoor areas.
Low	• Indoor workers. • Users of main roads (for example, trunk roads) or passengers in public transport on main arterial routes. • Users of recreational facilities where the purpose of that recreation is not related to the view (for example, sports facilities).

Table 10A.7: Significance of visual effect categories

		Magnitude of visual impact				
		No change	**Negligible**	**Minor**	**Moderate**	**Major**
Visual receptor sensitivity	**High**	Neutral	Slight	Slight / moderate	Moderate / large	Large / very large
	Moderate	Neutral	Neutral / slight	Slight	Moderate	Moderate / large
	Low	Neutral	Neutral / slight	Neutral / slight	Slight	Slight / moderate

Table 10A.8: Typical descriptors of significance of visual effect categories

Typical descriptors of effect	
Very large beneficial (positive) effect	• The project would create an iconic new feature that would greatly enhance the view.
Large beneficial (positive) effect	• The project would lead to a major improvement in a view from a highly sensitive receptor.
Moderate beneficial (positive) effect	• The proposals would cause obvious improvement to a view from a moderately sensitive receptor, or perceptible improvement to a view from a more sensitive receptor.
Slight beneficial (positive) effect	• The project would cause limited improvement to a view from a receptor of medium sensitivity, or would cause greater improvement to a view from a receptor of low sensitivity.
Neutral effect	• No perceptible change in the view.
Slight adverse (negative) effect	• The project would cause limited deterioration to a view from a receptor of medium sensitivity, or cause greater deterioration to a view from a receptor of low sensitivity.
Moderate adverse (negative) effect	• The project would cause obvious deterioration to a view from a moderately sensitive receptor, or perceptible damage to a view from a more sensitive receptor.
Large adverse (negative) effect	• The project would cause major deterioration to a view from a highly sensitive receptor, and would constitute a major discordant element in the view.
Very large adverse (negative) effect	• The project would cause the loss of views from a highly sensitive receptor, and would constitute a dominant discordant feature in the view.

Page left intentionally blank.

Appendix 10B – Zone of Theoretical Visibility (ZTV) Methodology

Zone of Theoretical Visibility (ZTV) Methodology

Viewsheds

ZTVs have been generated in ArcGIS using the 'Viewshed' tool under the 'Surface' section of the Spatial Analyst software extension. Viewsheds are used to display where a designated point on the ground is visible from the surrounding topography.

Viewsheds have been generated based on an Ordnance Survey (OS) digital terrain model (DTM) dataset which extends 10 km from the proposed scheme. Two datasets have been used to generate viewsheds:

- a topography layer in raster format; and
- a point dataset of target points representing points along the existing road or the proposed scheme, as relevant to the applicable ZTV scenario.

Topography layer

The final output of the generation of the viewsheds is a raster image, indicating the ZTV.

Three viewshed / ZTV scenarios have been generated:

- existing road;
- winter year 1 without planting mitigation; and
- summer year 15 with planting mitigation.

For the existing road and winter year 1 scenarios, the OS DTM model has been used without any modifications, for example 'bare earth'. In the summer year 15 scenario, proposed mitigation planting has been extruded to the heights listed below and combined with the 'bare earth' OS DTM model, to form the topography base layer for this ZTV, which takes into account the screening effects of the proposed planting mitigation:

- 8 m – woodland, woodland edge and individual tree planting + ancient woodland transplantation;
- 5 m - shrubs with intermittent trees;
- 3 m – shrub ad scrub; and
- 2 m – hedgerow.

The above planting height is based upon a conservative estimate of growth over a period of fifteen years.

The potential screening effect of existing vegetation or surrounding buildings has not been included in the modelling of any of the three scenarios.

Point database / target points

The point database has been aligned to the design centreline, using the proposed scheme chainage data to identify target points at 100 m intervals. Target points 4.5 m above the level of the scenario carriageway have been used to represent the height of heavy goods vehicles (HGV) traffic using the roads. In addition, target points at 10 or 12 m above the level of the scenario carriageway have been used to represent the height of lighting columns in areas that are currently lit, or proposed to be lit, as applicable to the relevant scenario. The exact height of the target points for the lighting columns has been chosen based upon estimated height of existing lighting columns or indicative proposed height of lighting columns for the proposed scheme which is mostly 10 m, but 12 m in some locations.

Theoretical range of visibility

A theoretical range of visibility, from low to high (indicated by colour), has been used to illustrate the three scenarios examined in the assessment. Higher visibility indicates that a higher number of target points are theoretically visible along the existing road or within the proposed scheme, and lower visibility indicates that fewer target points are theoretically visible along the existing road or within the proposed scheme.

The resulting raster image generated contains value columns ranging from 0 to 15, where 0 is not visible. A symbology has been automatically applied to the raster dataset as it is loaded into ArcGIS, grouping 0 alone and the remaining values together (showing Not Visible and Visible extents).

Appendix 10C – National and County Borough Landscape Character Area Summary Descriptions

Extracts from Brecon Beacons and Black Mountains NLCA30 (NRW 31 March 2014)

Summary description

This is the highest range of mountains in southern Britain, rising to Pen y fan at 886 m. The vast swathes of smooth, unenclosed moorland rise up gentle ridges, between which run deeply cut valleys that terminate in high mountain passes. The Beacons themselves are made up of Old Red Sandstones, a relatively soft rock that has weathered and been sharpened by ice to create consistent, simple, smooth-sided slopes, falling abruptly and dramatically from ridges to provide the sharp outlines that are so characteristic, and which contrast with the lush, hedged, enclosed farmed landscapes of the deeper valleys.

Green to their summits in summer, these mountains are internationally renowned and provide an iconic image for rural upland South Wales akin to that of Snowdonia in the north. All of the area lies within Brecon Beacons National Park and is a popular destination for walkers and tourists to enjoy the dramatic upland scenery, the picturesque, lush green enclosed valleys, and generally the contrast to the adjacent lowland or industrial areas to the east and south.

The principle valley of the Usk separates the central Beacons from the Black Mountains to the east. Here, the high country runs in a series of lumbering north–south ridges, most emphatically along the Wales - England border, delineated by a section of the long-distance Offa's Dyke Footpath.

The character varies, with distinct open moorland, smooth ridge, valley and classic limestone areas. The latter includes an area famous as 'Waterfalls Country', centred around Ystradfellte, where a number of deep, wooded, river gorges issue down into the Neath Valley. There are show caves at Dan-yr-Ogof.

Key Characteristics

- **The highest mountains in South Wales** - distinctive flat-topped mountains and a prominent escarpment of Devonian Old Red Sandstone, with smaller bands of Carboniferous Limestone and Millstone Grit in the south.
- **Heavily glaciated** – classic upland cirque formations, ridges, glacial lakes and moraines, over-deepened and 'U' shaped valleys.
- **The source of a number of rivers** - Four major rivers, the Usk, Neath, Tawe and Aman, flow generally south through the landscape, fed by fast flowing streams and waterfalls from the surrounding uplands.
- **Numerous reservoirs** - have been created forming notable landscape features.
- **Rough moorland habitats** - open, exposed, mainly sheep grazed, some commons.
- **Classic limestone scenery** – to lower parts to the south including clints, grykes and caves, the best examples in South Wales, waterfalls, stone walls and buildings. However there are also a number of old limestone quarries and associated remnant infrastructure.
- **Strong field pattern with many small fields** - pasture enclosed by stone walls at higher altitudes and in limestone areas but thick hedgerows elsewhere and in the valley bottoms, with improved pasture fields found on the lower valley slopes.
- **Large conifer blocks** - cover some valley side slopes in certain areas.
- **Bio- and geodiversity** - large parts are designated. Features include arctic-alpine cliff flora and species-rich limestone grasslands.
- **Tourism** - the Brecon Beacons National Park symbolises the iconic beauty of South Wales and attracts thousands of visitors each year.
- **Scattered, small settlements** – confined to valleys; overall the area is sparsely settled.

- **Highly tranquil** - The windswept uplands display little intrusion of modern forms. High points afford panoramic views across the area and far beyond. The area is recognised for its dark skies.

Extracts from South Wales Valleys NLCA37 (NRW 31 March 2014)

Summary Description

Many deep, urbanised valleys dissect an extensive upland area. Combined with industrial heritage and the distinct identity of its people, the South Wales Valleys provide some of Wales' most widely known and iconic national images.

Extensive ribbon development fills many valley bottoms and lower slopes. Their urban and industrial character is juxtaposed with dramatic upland settings with steep hillsides, open moors or forests. Networks of railways and roads connect valley settlements. Topography constrains passage between valleys, and there are only a limited number of high passes between valleys. The noise and business of many valleys contrast with the relatively remote and wild qualities of adjacent hill plateaux.

Underlying geology and mineral deposits provided the resources that fuelled a rapid spread of industrial development in the C19th. Once rail transport became possible, new coal, steel and iron industries created an extensive infrastructure of large buildings, furnaces, towers, chimneys, viaducts, spoil heaps and levels. Housing for workers resulted in the extensive and iconic rows of terraced houses that run along hillsides. Their needs in turn brought chapels, shops, schools and other facilities to create new settlements with an urban character. The way of life and harsh environment resulted in the image of a tough, rugby playing and radically minded society. But the decline of industries in the late C20th resulted in the closure, removal, abandonment or redevelopment of many former industrial sites. These changes continue today, as do the consequential social changes to the way of life and community identity. The area is now seen as part of a wider, increasingly post-industrial, 'city region', the largest in Wales. A new iconic image is at times unclear, but heritage-based activities set within a softer, greener environment are emerging as part of this.

While greenness is returning to some former industrial landscapes many of the new woodlands are coniferous. Waterways are slowly welcoming back fish, and mammals such as otters. The importance of wildlife conservation being undertaken hand-in-hand with economic regeneration is being recognised as one of the keys to the sustained revitalisation of this most iconic Welsh 'bro', in the Heads of the Valleys and Valleys Regional Park initiatives.

Key Characteristics

- **Extensive Upland plateaux** – typically wild and windswept, often with unenclosed tracts, running roughly north-south as 'fingers' parallel between intervening deep valleys.
- **Numerous steep-sided valleys** - typically aligned in parallel, flowing in southerly directions, shaped by southward flowing glaciers, leaving behind distinctive corrie ('cwm') and crag features. Major rivers include the Tawe, Taff and Rhymney.
- **Ribbon urban and industrial areas in valleys** – in places extending up valley sides and to valley heads. The area is sometimes regarded as being part of a 'city region'. Middle and eastern valleys tend to be the most heavily and continuously developed, for example Rhondda Valley. The uplands by comparison have little or no settlement.
- **Extensive remains of heavy industry** – with a mix of derelict, preserved and largely redeveloped areas, notably for coal mining. Preserved as heritage (World heritage Site) at Blaenafon this typically includes old railway alignments, buildings and former tips.
- **Contrast of urban valley activity next to quiet uplands** – for example busy roads, new developments, traffic noise, night lighting, versus the adjacent wilder, remoter, quieter uplands.
- **Large blocks of coniferous plantation and deciduous woodland fringes** – covering many steep hillsides and hilltops, most notably in the middle to western portion of the area, providing a softer contemporary landscape where there was once industry.

- **Heather, rough grassland and steep bracken slopes** – dominate many plateaux and are grazed mainly by sheep. Much is common land.
- **Improved pastures on some lower valley sides** - grazed by sheep and some dairy cattle.
- **Field boundaries** - dry stone walls mark the boundary of common land while fields on lower slopes are bounded by dense hawthorn hedges, interspersed with swathes of broadleaved woodland.
- **Transport routes restricted to valleys** – the intervening topography makes valley to valley travel difficult, except at heads and bottoms of valleys. Occasionally there are roads that climb steeply over passes with dramatic views and 'hair pin' bends.
- **Iconic cultural identity** – many popular images of a tough, rugby-playing, religious, radically-minded society still remain associated with the South Wales Valleys, however today's post-industrial, internet-connected reality is somewhat different.

Extracts from Brecon Beacons National Park Landscape Character Assessment (2012)

3. Fforest Fawr

A bleak, upland moorland landscape, the character of which is locally influenced by its past use as a royal hunting ground and more recent estate ownership, apparent through the dry stone boundary walls, estate cottages, shelterbelts and former rabbit farms. Remains of prehistoric and medieval occupation, and later industrial archaeological sites, are visible in the landscape. Away from the occasional roads which run across the area, it feels tranquil, and with a sense of remoteness and relative wildness. Its distinctive flat-topped summits and steep northern escarpment are prominent in views from the north.

(Note: 'Special qualities' referred to in the landscape character assessment include high scenic quality, strong sense of place, high tranquillity and spectacular views).

4. Waterfall Country and Southern Valleys

"The predominantly limestone geology of this LCA creates its characteristic rough texture and grey colour, appearing in the crags, walls and buildings of this enclosed and relatively settled pastoral landscape. Ancient woodlands surround the streams and spectacular waterfalls which are found in the south of the LCA, flowing in deep, fern-filled gorges. Between the valleys are ridges of higher land with a more open quality and long views. The dark green of the extensive blocks of conifers in the south of the area contrasts with the surrounding grasslands.

(Note: 'Special qualities' referred to in the landscape character assessment include high scenic quality and strong sense of place due to features including rivers, waterfalls and rugged limestone backdrop, and strong sense of time depth).

8. Talybont and Taff Reservoir Valleys

"This LCA is characterised by its reservoirs, surrounded by steep sided, dark green forested valleys. Between the reservoir valleys are more open ridges of upland moorland which have long views across the reservoirs and their surrounding forests. This LCA is easily accessed from Merthyr Tydfil and the A470, and is a popular recreation destination.

(Note: 'Special qualities' referred to in the landscape character assessment include high scenic quality and strong sense of place due to features including waterbodies, forests and landform, geology, and tranquillity).

Extract from Brecon Beacons National Park Management Plan 2010 – 2015 Managing Change Together – Special Qualities of the Brecon Beacons National Park (Table 3.1 page 34)

Special Qualities

A National Park offering **peace and tranquillity** with opportunities for quiet enjoyment, inspiration, relaxation and spiritual renewal.

A feeling of **vitality and healthfulness** that comes from enjoying the Park's fresh air, clean water, rural setting, open land and locally produced foods.

A **sense of place and cultural identity** - "Welshness" - characterized by the indigenous Welsh language, religious and spiritual connections, unique customs and events, traditional foods and crafts, relatively unspoilt historic towns and villages, family farms and continued practices of traditional skills developed by local inhabitants to live and earn a living here, such as common land practices and grazing.

A **sense of discovery** where people explore the Park's hidden secrets and stories such as genealogical histories, prehistoric ritual sites, relic medieval rural settlements, early industrial sites, local myths and legends and geological treasures from time immemorial.

The Park's **sweeping grandeur and outstanding natural beauty** observed across a variety of harmoniously connected landscapes, including marvellous gorges and waterfalls, classic karst geology with caves and sink holes, contrasting glacial landforms such as cliffs and broad valleys carved from old red sandstone and prominent hilltops with extensive views in all directions.

A working, living "patchwork" of **contrasting patterns, colours, and textures** comprising well-maintained farmed landscapes, open uplands, lakes and meandering rivers punctuated by small-scale woodlands, country lanes, hedgerows and stone walls and scattered settlements.

Extensive and widespread access to the Park's **diversity of wildlife and richness of semi-natural habitats**, such as native woodlands, heathland and grassland, natural lakes and riparian habitats, ancient hedgerows, limestone pavement and blanket bogs including those of international and national importance.

In the context of the UK, **geographically rugged, remote and challenging** landscapes.

Enjoyable and accessible countryside with extensive, widespread and varied opportunities to pursue walking, cycling, fishing, water-based activities and other forms of sustainable recreation or relaxation.

An **intimate sense of community** where small, pastoral towns and villages are comparatively safe, friendly, welcoming and retain a spirit of cooperation.

Appendix 10D – LANDMAP Evaluation

Table 10D.1 : LANDMAP visual and sensory evaluation summary (Note: Overall evaluation text has been taken directly from LANDMAP without amendment)

Local landscape character area (landscape character type)	Main LANDMAP 'level 3' visual and sensory landscape aspect areas	Condition	Value	Scenic quality	Character evaluation	Overall evaluation
Hirwaun (built land)	Aberdare (urban)	Unassessed	Low	Low	Low	Low Without any positive visual and sensory qualities, this urban area with remnants of past mining industry has little or no importance. The views out to the adjacent upland areas are the only limited visual quality, and these are usually compromised by an element of built form.
Tower Colliery (workings)	Tower Colliery (excavation)	Fair	Low	Low	Moderate	Low Although distinct and relatively rare, its disturbed and unattractive qualities mean that it is overall low.
Hirwaun Common (hills / valleys and fields)	Craing Nantmelyn (hillside and scarp slopes grazing)	Unassessed	Moderate	Moderate	Moderate	Moderate No single defining feature of regional importance to justify more than local importance. Scenic quality and integrity both reduced by the presence of urban areas.
	Hirwaun Common (upland grazing)	Unassessed	High	High	High	High Attractive largely unspoilt upland area with strong sense of place and good views.
Penderyn and Abernant (hills / valleys and fields)	Penderyn (hillside and scarp slopes mosaic)	Unassessed	Moderate	Moderate	Moderate	Moderate Valley sides with pattern of field boundaries / woodland, but detractive elements, for example urban edge, pylons traffic noise, of local importance.

Local landscape character area (landscape character type)	Main LANDMAP 'level 3' visual and sensory landscape aspect areas	Condition	Value	Scenic quality	Character evaluation	Overall evaluation
	Abernant and Surrounds (hillside and scarp slopes mosaic)	Unassessed	Moderate	Moderate	Moderate	Moderate Valley sides with pattern of field boundaries / woodland and more open upland areas, but detractive elements, for example, urban area in valley below, pylons across valley and traffic noise and movement from A4059.
Penmoelallt Forest **(forestry)**	Penmoelallt (wooded upland and plateaux)	Unassessed	Moderate	Moderate	Moderate	Moderate Fairly typical upland coniferous plantation with limited views out and limited attractive features within.
Mynydd y glog **(open plateau)**	Cadair Fawr (upland grazing)	Unassessed	High	High	High	High Attractive largely unspoilt upland area with strong sop and good views. (sop = sense of place)
Baverstock **(open plateau)**	Merthyr West Flank (open / wooded mosaic upland valleys)	Fair	Moderate	Moderate	High	Moderate The area has a distinctive sense of place, especially around Cwm Glo with a mix of vegetation and industrial heritage features and patterns with a particular richness. The area provides a positive backcloth to the town of Merthyr and dominates its views west. However, there are detractors such as unvegetated tips.
	Taf / Cynon Ridge (mosaic upland and plateaux)	Fair	Low	Moderate	Low	Low The area is an important skyline between Taf and Cynon valleys and enjoys wide panoramic views of the coalfield plateau. The vegetation cover is diverse bordering on the incoherent with no discernible pattern. There

Local landscape character area (landscape character type)	Main LANDMAP 'level 3' visual and sensory landscape aspect areas	Condition	Value	Scenic quality	Character evaluation	Overall evaluation
						are detractors including a wireless mast.
	Abernant and Surrounds (hillside and scarp slopes mosaic)	Unassessed	Moderate	Moderate	Moderate	Moderate Valley sides with pattern of field boundaries / woodland and more open upland areas, but detractive elements, for example, urban area in valley below, pylons across valley and traffic noise and movement from A4059.
	Taf Fawr (open / wooded mosaic upland valleys)	Fair	High	High	High	High The area is an attractive upland valley with good views and distinctive features such as scree slopes and rocky outcrops. It is generally unspoilt and acts as a setting to the uplands of the Beacons to the north.
Cefn Coed **(hills / valleys and fields)**	Taf Fawr (open / wooded mosaic upland valleys)	Fair	High	High	High	High The area is an attractive upland valley with good views and distinctive features such as scree slopes and rocky outcrops. It is generally unspoilt and acts as a setting to the uplands of the Beacons to the north.
	Penmoelallt (wooded upland and plateaux)	Unassessed	Moderate	Moderate	Moderate	Moderate Fairly typical upland coniferous plantation with limited views out and limited attractive features within.
Taf Fawr **(gorge)**	Taf Fawr (open / wooded mosaic upland valleys)	Fair	High	High	High	High The area is an attractive upland valley with good views and distinctive features such as scree slopes and rocky outcrops. It is generally unspoilt and acts as a setting to the uplands of the Beacons to the north.

Local landscape character area (landscape character type)	Main LANDMAP 'level 3' visual and sensory landscape aspect areas	Condition	Value	Scenic quality	Character evaluation	Overall evaluation
	Penmoelallt (wooded upland and plateaux)	Unassessed	Moderate	Moderate	Moderate	Moderate Fairly typical upland coniferous plantation with limited views out and limited attractive features within.
Taf Fechan **(gorge)**	Taf Fechan (wooded upland valleys)	Fair	High	High	High	High The valley is a superb wooded gorge with interesting features such as a viaduct and stone bridges and adjacent derelict quarries, all of which give a particular and distinctive scenic quality. The area has a clear sense of place and unity.
Merthyr Tydfil **(built land)**	Merthyr Tydfil (urban)	Poor	Low	Low	Low	Low The town has a very complex form with no discernible pattern and coherence. Some areas are in poor condition and there are numerous detractors. New development and reclamation have obscured the important heritage of the area in parts. Though there is a significant story to tell about Merthyr this is not apparent.
	Cyfarthfa Park (amenity land)	Good	High	High	High	High Cyfarthfa Park acts as an important setting to the castle and is prominent in views from the A470 and other parts of Merthyr. It has a strong visual relationship with the related furnaces across the valley which is a rare feature. The park is very attractive with mature trees and well maintained grounds.
	Merthyr East Flank	Fair	Low	Low	Low	Low

Local landscape character area (landscape character type)	Main LANDMAP 'level 3' visual and sensory landscape aspect areas	Condition	Value	Scenic quality	Character evaluation	Overall evaluation
	(derelict / waste ground)					The area is still a raw landscape, prominent on the valley sides above Merthyr. While some areas are establishing a landscape infrastructure there are extensive areas which are open and lacking diversity of texture and cover. There remain a few detractors.
Morlais **(hills / valleys and fields)**	Merthyr North Flank (mosaic upland and plateaux)	Poor	Moderate	Moderate	Moderate	Moderate The mosaic of post-industrial and prehistoric features, combined with moorland, create a landscape of distinctive character with dramatic characteristics in places.
	Vaynor Farmlands (upland grazing)	Fair	Moderate	Moderate	Moderate	Moderate The area is a pleasant pastoral human scale landscape with views to adjacent uplands and valley. It has a consistent character with distinctive stone walls and small scale field pattern.
Gelligaer Common **(hills / valleys and fields)**	Rhoslas (upland grazing)	Unassessed	Moderate	High	Moderate	Moderate Partially degraded upland landscape with industrial debris and other visual detractors. Potential to regenerate to natural type.
	West of Rhymney (hillside and scarp slopes mosaic)	Unassessed	Moderate	Moderate	Moderate	Moderate Open generally unspoilt valley side, but detractive elements, for example, urban edge, pylons traffic noise.

Table 10D.2 : LandMAP historic evaluation summary

Local landscape character area (landscape character type)	Main LANDMAP 'level 3' geological landscape aspect areas	Overall evaluation
Hirwaun (built land)	Cynon Valley Corridor (nucleated settlement)	Outstanding
Tower Colliery (workings)	Tower Colliery (reclaimed land)	High
Hirwaun Common (hills / valleys and fields)	Hirwaun Common, Enclosure (regular fieldscapes)	High
	Rhondda Uplands (marginal land)	Outstanding
	Tower Colliery (reclaimed land)	High
Penderyn and Abernant (hills / valleys and fields)	Cwm Wyrfa (regular fieldscapes)	Moderate
	Cynon Valley Corridor (nucleated settlement)	Outstanding
	Fothergill's Patches & Bryn Mawr (extractive)	High
	Penderyn (other fieldscapes)	Outstanding
	Tower Colliery (reclaimed land)	High
Penmoelallt Forest (forestry)	Fothergill's Patches & Bryn Mawr (extractive)	High
	Mynydd-y-glog & Cefn Cadlan (marginal land)	Outstanding
	Upper Cwm Taf (irregular fieldscapes)	High
Mynydd y glog (open plateau)	Mynydd-y-glog & Cefn Cadlan (marginal land)	Outstanding
Baverstock (open plateau)	Cwm-glo and Bryn-y-Badell (extractive)	Outstanding
	Taf Fawr valley (irregular fieldscapes)	Moderate

Local landscape character area (landscape character type)	Main LANDMAP 'level 3' geological landscape aspect areas	Overall evaluation
Cefn Coed (hills / valleys and fields)	Taf Fawr valley (irregular fieldscapes)	Moderate
Taf Fawr (gorge)	Merthyr Tydfil Core (nucleated settlement)	Outstanding
	Taf Fawr valley (irregular fieldscapes)	Moderate
Taf Fechan (gorge)	Merthyr Tydfil Core (nucleated settlement)	Outstanding
	Taf Fechan valley (irregular fieldscapes)	High
Merthyr Tydfil (built land)	Cyfarthfa Castle	Outstanding
	Merthyr Tydfil Core (nucleated settlement)	Outstanding
Morlais (hills / valleys and fields)	Morlais (marginal land)	Outstanding
	Morlais Quarries (extractive)	High
	Pen March (marginal land)	High
	Taf Fechan valley (irregular fieldscapes)	High
Gelligaer Common (hills / valleys and fields)	Blaen Rhymni (other fieldscapes)	Moderate
	Gelligaer Common (marginal land)	Outstanding
	Ogmore Forest (woodland)	Low

Table 10D.3 : Cultural evaluation summary

Local landscape character area (landscape character type)	Main LANDMAP 'level 3' cultural landscape aspect areas	Rarity	Group value	Overall evaluation
Hirwaun (built land)	Aberdare (urban)	Commonplace	Considerable	High
	Hirwaun (industrial)	Unassessed	Unassessed	High
Tower Colliery (workings)	The Rhigos (places)	Unassessed	Considerable	High
Hirwaun Common (hills / valleys and fields)	Designated Landscape Areas (institutions)	Commonplace	Exceptional	High
	The Rhigos (places)	Unassessed	Considerable	High
Penderyn and Abernant (hills / valleys and fields)	Brecon Beacons National Park (institutions)	Commonplace	Considerable	Outstanding
	The Rhigos (places)	Unassessed	Considerable	High
Penmoelallt Forest (forestry)	Brecon Beacons National Park (institutions)	Commonplace	Considerable	Outstanding
Mynydd y glog (open plateau)	Brecon Beacons National Park (institutions)	Commonplace	Considerable	Outstanding
Baverstock (open plateau)	Gellideg, Heolgerrig, Mynydd Aberdar (urban)	Commonplace	Unassessed	Moderate
Cefn Coed (hills / valleys and fields)	Brecon Beacons National Park (institutions)	Commonplace	Considerable	Outstanding
	Gellideg, Heolgerrig, Mynydd Aberdar (urban)	Commonplace	Unassessed	Moderate
Taf Fawr (gorge)	Brecon Beacons National Park (institutions)	Commonplace	Considerable	Outstanding
	Cefn Coed y Cymmer and cemetery (urban)	Commonplace	Unassessed	High
	Garn Ddu Uplands (rural)	Commonplace	Moderate	High

Local landscape character area (landscape character type)	Main LANDMAP 'level 3' cultural landscape aspect areas	Rarity	Group value	Overall evaluation
Taf Fechan (gorge)	Cefn Coed y Cymmer and cemetery (urban)	Commonplace	Unassessed	High
	Garn Ddu Uplands (rural)	Commonplace	Moderate	High
Merthyr Tydfil (built land)	Cefn Coed y Cymmer and cemetery (urban)	Commonplace	Unassessed	High
	Cynfarthfa Castle, Park, Furnaces and Po (places)	Commonplace	Limited	Outstanding
	Dowlais, Dowlais Top, Dowlais Great Tip (urban)	Representative	Moderate	Outstanding
	Dowlais Superstore Estate (urban)	Commonplace	Limited	Outstanding
	Gellideg, Heolgerrig, Mynydd Aberdar (urban)	Commonplace	Unassessed	Moderate
	Gurnos and Galon Uchaf Estates and Hospital (urban)	Representative	Considerable	Outstanding
	Pantyscalliog (urban)	Commonplace	Unassessed	High
Morlais (hills / valleys and fields)	Merthyr Common (rural)	Representative	Limited	High
	Morlais Castle and Quarries (infrastructure)	Rare	Considerable	Outstanding
	Vaynor (inc Pontsticyll, Pontsarn, Fiel (rural)	Rare	Unassessed	Outstanding
Gelligaer Common (hills / valleys and fields)	Designated Landscapes (institutions)	Commonplace	Exceptional	High

Table 10D..4 : Habitats evaluation summary

Local landscape character area (landscape character type)	Main LANDMAP 'level 3' habitats landscape aspect areas	Cennectivity / cohesion	Overall evaluation
Hirwaun (built land)	CynonLH060 unnamed (residential / green space)	Unassessed	Low
	CynonLH061 unnamed (river corridors)	Moderate	High
	CynonLH051 unnamed (mosaic)	High	Outstanding
Tower Colliery (workings)	CynonLH051 unnamed (mosaic)	High	Outstanding
	CynonLH053 unnamed (improved grassland)	High	Low
	CynonLH054 unnamed (acid grassland)	Low	High
Hirwaun Common (hills / valleys and fields)	CynonLH053 unnamed (improved grassland)	High	Low
	CynonLH054 unnamed (acid grassland)	Low	High
	CynonLH058 unnamed (mosaic)	Moderate	High
Penderyn and Abernant (hills / valleys and fields)	CynonLH049 unnamed (mosaic)	Moderate	High
	CynonLH050 unnamed (mosaic)	Low	Moderate
	CynonLH051 (mosaic)	High	Outstanding
	CynonLH055 (improved grassland)	Low	High
	CynonLH056 (dwarf shrub heath)	Low	High
	CynonLH061 (river corridors)	Moderate	High
	MRTHRLH008 (dwarf shrub heath)	Low	High
Penmoelallt Forest (forestry)	CynonLH049 (mosaic)	Moderate	High
Mynydd y glog (open plateau)	CynonLH045 (mosaic)	Moderate	High

Local landscape character area (landscape character type)	Main LANDMAP 'level 3' habitats landscape aspect areas	Cennectivity / cohesion	Overall evaluation
Baverstock (open plateau)	MRTHRLH008 (dwarf shrub heath)	Low	High
Cefn Coed (hills / valleys and fields)	CynonLH052 (mosaic)	Low	Moderate
	MRTHRLH004 (improved grassland)	Moderate	High
Taf Fawr (gorge)	CynonLH049 (mosaic)	Moderate	High
	MRTHRLH001 (marsh / marshy grassland)	Moderate	High
	MRTHRLH004 (improved grassland)	Moderate	High
	MRTHRLH009 (residential / green space)	Low	Moderate
Taf Fechan (gorge)	MRTHRLH005 (improved grassland)	High	Outstanding
Merthyr Tydfil (built land)	MRTHRLH009 (residential / green space)	Low	Moderate
Morlais (hills / valleys and fields)	MRTHRLH005 (improved grassland)	High	Outstanding
	MRTHRLH006 (calcareous grassland)	Moderate	High
	MRTHRLH007 (acid grassland)	Low	High
Gelligaer Common (hills / valleys and fields)	CynonLH109 (mosaic)	Moderate	Moderate
	CynonLH112 (mosaic)	Moderate	High

Table 10D.5 : Geological evaluation summary

Local landscape character area (landscape character type)	Main LANDMAP 'level 3' geological landscape aspect areas	Rarity / uniqueness	Overall evaluation
Hirwaun (built land)	Upper Cynon Valley – East (glacial mountain valley)	High	High
	Upper Cynon Valley – West (glacial mountain valley)	High	High
	Rhigos (glacial mountain valley)	Outstanding	Outstanding
Tower Colliery (workings)	Upper Cynon Valley – West (glacial mountain valley)	High	High
Hirwaun Common (hills / valleys and fields)	Upper Cynon Valley – West (glacial mountain valley)	High	High
	Rhigos (glacial mountain valley)	Outstanding	Outstanding
Penderyn and Abernant (hills / valleys and fields)	Upper Cynon Valley – East (glacial mountain valley)	High	High
Penmoelallt Forest (forestry)	Upper Cynon Valley – East (glacial mountain valley)	High	High
	Penderyn (tectonically controlled valley)	Outstanding	Outstanding
	Pen moelallt (glacial mountain valley)	Low	Moderate
Mynydd y glog (open plateau)	Upper Cynon Valley – East (glacial mountain valley)	High	High
	Penderyn (tectonically controlled valley)	Outstanding	Outstanding
Baverstock (open plateau)	Gellideg (glacial mountain valley)	Moderate	Moderate
Cefn Coed (hills / valleys and fields)	Gellideg (glacial mountain valley)	Moderate	Moderate
	Pen moelallt (glacial mountain valley)	Low	Moderate
Taf Fawr (gorge)	Avon Taf Fawr (active upland river or stream channel system)	Low	Moderate
	Cwm Taf Fechan (doline or sink field, pavements, dray valleys etc.)	Outstanding	Outstanding

Local landscape character area (landscape character type)	Main LANDMAP 'level 3' geological landscape aspect areas	Rarity / uniqueness	Overall evaluation
	Gellideg (glacial mountain valley)	Moderate	Moderate
	Penderyn (tectonically controlled valley)	Outstanding	Outstanding
Taf Fechan **(gorge)**	Bryniau (upland valley slope)	High	High
	Cwm Taf Fechan (doline or sink field, pavements, dray valleys etc.)	Outstanding	Outstanding
Merthyr Tydfil **(built land)**	Bryniau (upland valley slope)	High	High
	Gellideg (glacial mountain valley)	Moderate	Moderate
	Pen y darren (glacial mountain valley)	Moderate	Moderate
Morlais **(hills / valleys and fields)**	Bryniau (upland valley slope)	High	High
	Cwm Taf Fechan (doline or sink field, pavements, dray valleys etc.)	Outstanding	Outstanding
	Pen y darren (glacial mountain valley)	Moderate	Moderate
Gelligaer Common **(hills / valleys and fields)**	Upper Rhymney and Bargoed Rhymney valley (glacial mountain valley)	Low	Moderate
	Uppermost Rhymney valley (glacial mountain valley)	High	Outstanding

Page left intentionally blank

Appendix 10E – Visual Effects Schedule: People in Residential Properties

Table 10E.1 Visual effects schedule: people in residential properties

Value / sensitivity to change: High

Notes:

Residential properties assessed are generally two storey properties. Exceptions have been noted where this affects visibility.

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-R1 (3)	32 Fairview and 20 – 21 Richmond Drive, Hirwaun.	760 m	Bungalows positioned on slightly elevated ground. Oblique middle distance views south-west across rooftops, to partially filtered glimpses of tops of lighting columns and trees at Hirwaun junction, especially in winter. Longer distance views south to south-west to the opencast workings and distinctive ridgeline within Hirwaun Common. Mast and pylons are detracting features in the middle distance.	<u>Construction</u> Middle distance views south-west, partially filtered by intervening trees, of tall construction plant for construction of Hirwaun junction over bridge with associated highway infrastructure, including lighting columns. Also possible middle distance glimpsed and filtered views south-east through intervening trees, to major earthworks activities for offline A465 in foreground of Hirwaun Common, seen in context of existing detractors. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				<u>Operation</u> Middle distance glimpsed views south-west, partially filtered by intervening trees, to tops of high sided vehicles on overbridge at Hirwaun junction and highway infrastructure, such as lighting columns / light spill. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would generally screen traffic flow at Hirwaun junction in the middle distance to south-west, though some glimpsed views of tops of high sided vehicles would remain. Tops of lighting columns / light spill at the junction would remain. The magnitude of impact would be **negligible adverse**.	**Slight adverse**
S6-R2 (16)	12 – 18 Fairview, 20 – 25 Devonshire Drive, 15 - 21 Penmark Row and Redwood Penderyn Road, Hirwaun.	530 m	Mix of bungalows and two storey houses positioned on slightly elevated and sloping ground. Lower level views are contained by properties and garden vegetation, as well as trees. Oblique, slightly elevated middle distance views from bungalows and upper storey of houses, south-west, above rooftops, to partially filtered glimpses of tops of lighting columns and trees at Hirwaun	<u>Construction</u> Middle distance views south-west, partially filtered by intervening trees, of tall construction plant for construction of Hirwaun junction over bridge with associated highway infrastructure, including lighting columns. Also possible middle distance glimpsed and filtered views south-east through intervening trees, to major earthworks activities for offline A465 in foreground of Hirwaun Common, seen in context of existing detractors. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**

[1] Refer to Figure 10.8

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			junction, especially in winter. Longer distance views south-east to south-west to the opencast workings and distinctive ridgeline within Hirwaun Common. Mast and pylons are detracting features in the middle distance.	<u>Operation</u> Middle distance glimpsed views south-west, partially filtered by intervening trees, to tops of high sided vehicles on overbridge at Hirwaun junction and highway infrastructure, such as lighting columns / light spill. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would generally screen traffic flow at Hirwaun junction in the middle distance to south-west, though some glimpsed views of tops of high sided vehicles would remain. Tops of lighting columns / light spill at the junction would also remain. The magnitude of impact would be **negligible adverse**.	**Slight adverse**
S6-R3 (16)	3 – 14 Cae Bryn Hyfryd, Ty Hyfryd and Challis House, Penderyn Road, and, Railway Cottage and Brooklyn House, Challis Row, Hirwaun.	420 m	Elevated longer distance views south above trees and rooftops, from back gardens and upper storey windows, to opencast workings and distinctive ridgeline within Hirwaun Common. Tops of lighting columns visible in views south-west.	<u>Construction</u> Middle distance views south-west, partially filtered by intervening trees, of tall construction plant for construction of Hirwaun junction over bridge with associated highway infrastructure, including lighting columns The magnitude of impact would be **minor adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				<u>Operation</u> Middle distance glimpsed views south-west, partially filtered by intervening trees, to tops of high sided vehicles on overbridge at Hirwaun junction and highway infrastructure, such as lighting columns / light spill. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would generally screen traffic flow at Hirwaun junction in the middle distance to south-west, though some glimpsed views of tops of high sided vehicles would remain. Tops of lighting columns / light spill at the junction would also remain. The magnitude of impact would be **negligible adverse**.	**Slight adverse**
S6-R4 (12)	Conifers, Treetops, Hollybush, Cherry Trees and Bryn Coch, Rhigos Road, and 1 – 7 Redhill Close, Hirwaun.	125 m	Dense belt of mixed deciduous and evergreen vegetation generally contain views west. Lighting columns at Hirwaun junction are visible above vegetation. Close filtered views of high-sided vehicles in the winter. Views south are generally contained by properties and belts of vegetation. Elevated glimpsed longer distance views to distinctive ridgeline within Hirwaun Common.	<u>Construction</u> Construction of Hirwaun junction screened by existing vegetation belt. Close views south-west of construction of A465 overbridge, on skyline above existing vegetation, including installation of highway infrastructure and lighting columns. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				<u>Operation</u> Existing vegetation would continue to screen views of traffic flow at Hirwaun junction. Mainly upper storey close views south-west to traffic flow on A465 overbridge'. Tops of lighting columns / light spill at Hirwaun junction and full extent of lighting columns / light spill on overbridge also visible. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Existing vegetation would continue to screen views of traffic flow at Hirwaun junction. Established mitigation planting would soften and screen views south-west to A465 overbridge at Hirwaun junction, though some views of traffic would remain, mainly from upper stories. Tops of lighting columns / light spill at Hirwaun junction and overbridge also visible. The magnitude of impact would be **minor adverse**.	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-R5 (8)	Hawthorns, Greensleeves, Highcroft, Crud-yn Awel, Rhian Fa and Brodawel and 15-16 Rhigos Road, Hirwaun	105 m	Close oblique view west, along Rhigos Road, to Hirwaun junction. Dense vegetation screens most of junction. Tops of lighting columns visible above vegetation. Glimpsed views of traffic, particularly around the footway between Rhigos Road and the junction. Longer distance glimpses of distinctive ridgeline within Hirwaun Common. Views south are contained by dense belt of deciduous vegetation along A465 and back of gardens. Filtered views through vegetation to traffic in winter.	Construction Loss of trees at Hirwaun junction would open up generally oblique views south-west, though existing intervening vegetation would partially screen and filter views to construction of Hirwaun junction and A465 overbridge, including highway infrastructure, such as signage, lighting columns. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Moderate adverse**
				Operation Partially filtered generally oblique views south-west to traffic flow and highway infrastructure at Hirwaun junction, including highway infrastructure such as signage and lighting columns / light spill. Traffic visible on A465 overbridge. The magnitude of impact would be **minor adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation planting would generally screen oblique views south-west to traffic flow on Hirwaun junction and, traffic flow on the A465 overbridge, though some glimpsed views would remain of traffic on the overbridge and views of tops of lighting columns / light spill. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S6-R6 (1)	16 Longfield Court, Hirwaun	327 m	Oblique views south contained by deciduous vegetation and school buildings at lower level, with slightly elevated longer distance views above vegetation to distinctive ridgeline within Hirwaun Common. Direct view south-east along Longfield Court, contained by mix of evergreen and deciduous vegetation at end of Johnson Park.	Construction Middle distance views south-east between and above buildings to demolition of properties, traffic on temporary A465 diversion road and construction activities at Trewaun junction, including new roundabout, bridge and highway infrastructure such as signage and lighting columns, opened up by loss of trees at junction and evergreen vegetation at end of Johnson Park. The magnitude of impact would be **minor adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				Operation Middle distance views south-east to tops of high sided vehicles and highway infrastructure, including signage and lighting columns / light spill, above 2 m high environmental barrier at Trewaun junction, opened up by loss of existing vegetation. The magnitude of impact would be **minor adverse.**	**Slight adverse**	Summer Year 15 Established mitigation planting would generally screen views of Trewaun junction, though 2 m high environmental barrier and tops of lighting columns / light spill at junction would remain visible in middle distance, seen in context of existing street lighting in foreground. The magnitude of impact would be **negligible adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-R7 (19)	1-15 Galant Street and, Ty Newydd and 1a, 1 and 2 Longfield Court, Hirwaun.	120 m	Views south are mostly screened by deciduous vegetation belt along field at rear of properties and intermittent deciduous vegetation belt along the A465 in summer. Filtered views through vegetation in winter to traffic and lighting columns on A465, as well as occasional traffic on access track to windfarm. Pylons in the middle distance are detracting features. Distinctive ridgeline within Hirwaun Common in the longer distance. Oblique view along Galant Street, south-east, contained by properties and, close boarded fence and mix of evergreen and deciduous vegetation at end of Johnson Park in summer. Filtered views through vegetation above fence, to tops of vehicles and lighting columns at Trewaun junction in winter.	<u>Construction</u> Close glimpses and views south filtered by intervening vegetation to construction of Mynydd Bwllfa Wind Farm junction and access bridge, and offline A465 cutting, mainly from upper storey windows. Also close oblique views south-east to demolition of properties, traffic on temporary A465 diversion road and construction activities at Trewaun junction, including new roundabout, bridge and highway infrastructure such as signage, lighting columns and environmental barrier, opened up by loss of vegetation and fencing. The magnitude of impact would be **minor adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				<u>Operation</u> Traffic flow on A465 to south and south-east would be screened by cutting. Close filtered views south through intervening vegetation, mainly from upper storey windows, to high sided vehicles at Mynydd Bwllfa Wind Farm junction and access bridge would not appear very different, with exception of visible tops of lighting columns / light spill on access bridge. Close oblique views south-east to tops of high sided vehicles and highway infrastructure, including signage and lighting columns / light spill above 2 m high environmental barrier, at Trewaun junction opened up by loss of vegetation and fencing. The magnitude of impact would be **minor adverse.**	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would soften close glimpses and filtered views through intervening vegetation of high sided vehicles at Mynydd Bwllfa Wind Farm junction and access bridge, though tops of lighting columns / light spill would remain visible. Established mitigation planting would generally screen close oblique views of Trewaun junction, though 2 m high environmental barrier and tops of lighting columns / light spill at junction would remain visible, seen in context of existing street lighting in foreground. The magnitude of impact would be **negligible adverse.**	**Slight adverse**
S6-R8 (13)	1 – 5 Ffrwd Terrrace, 2 - 4 and 107 – 110 Brecon Road, Hirwaun.	115 m	Oblique middle distance views south-east along Brecon Road (which is lined by lighting columns) to road signage and trees at junction with existing A465. Views in other directions generally contained by properties, but some glimpsed, longer distance, elevated views south to distinctive ridgeline within Hirwaun Common.	<u>Construction</u> Loss of trees would open up close oblique views south-east to construction activities at Trewaun junction, associated with major earthworks, a new bridge and highway infrastructure, such as signage, lighting columns and environmental barriers. The magnitude of impact would be **minor adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
				<u>Operation</u> Close oblique views south-east to traffic flow and highway infrastructure, including signage, lighting columns / light spill and 2 m high environmental barrier, at Trewaun junction opened up by loss of existing vegetation, which also would change skyline locally. The magnitude of impact would be **minor adverse.**	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would screen 2 m high environmental barriers at Trewaun junction and soften close views south-east to traffic flow and highway infrastructure, including signage and lighting columns / light spill, at junction. The magnitude of impact would be **negligible adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-R9 (2)	Beech Tree and Mountain View, Hirwaun.	55 m	Close direct views south and south-east are contained by dense belt of primarily deciduous vegetation, above which there are elevated longer distance views to distinctive ridgeline within Hirwaun Common. Filtered glimpses to traffic and lighting on A465 in winter. Views east are contained by properties.	<u>Construction</u> Close glimpses and views south-west filtered by intervening vegetation to construction of Mynydd Bwllfa Wind Farm junction and access bridge, and offline A465 cutting, mainly from upper storey windows. Also close filtered views south-east to demolition of properties, traffic on temporary A465 diversion road and construction of Trewaun junction, including highway infrastructure such as signage and lighting columns, opened up by loss of vegetation. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				<u>Operation</u> Close filtered views south-west through intervening vegetation, mainly from upper storey windows, to traffic at Mynydd Bwllfa Wind Farm junction and access bridge with lighting columns / light spill. Possible glimpses of tops of high sided vehicles in A465 cutting. Close oblique views south-east to traffic flow and highway infrastructure above 2 m high environmental barrier, including signage and lighting columns / light spill, at Trewaun junction opened up by loss of vegetation. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Existing vegetation would generally screen views south-east, though tops of lighting columns / light spill at access bridge would remain visible. Established mitigation planting would screen traffic flow in A465 cutting and at Trewaun junction, though glimpses of 2 m high environmental barrier and tops of lighting columns / light spill at junction would remain visible. The magnitude of impact would be **negligible adverse.**	**Slight adverse**
S6-R10 (13)	1 – 6, 9 and 14 - 15 Johnson Park, Hirwaun.	36 m	Close views south-west and south contained by mix of deciduous and evergreen vegetation, above which there are elevated longer distance views to distinctive ridgeline within Hirwaun Common. Filtered glimpses to traffic, signage and lighting on A465 in winter. Mainly oblique views south-east along Johnson Road are contained by mix of deciduous and evergreen vegetation in summer. Filtered views above fence and through vegetation to tops of vehicles at Trewaun junction in winter. Properties with rear facing the lit Brecon Road also have filtered views south-east to traffic, lighting, signage and trees at Trewaun junction.	<u>Construction</u> Close, mainly oblique views south-east to demolition of properties, traffic on temporary A465 diversion road, minor road improvements and construction activities at Trewaun junction, including new roundabout, bridge and highway infrastructure such as signage and lighting columns and environmental barrier, opened up by loss vegetation and fencing. The magnitude of impact would be **major adverse.**	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				<u>Operation</u> Close oblique views south-east to tops of high sided vehicles, highway infrastructure such as signage and lighting columns / light spill above 2 m high environmental barrier at Trewaun junction opened up by loss of vegetation. Also possible upper storey glimpses from closest properties to tops of vehicles in cutting below junction. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would partially screen 2 m high environmental barrier and generally screen close oblique views of Trewaun junction, though tops of lighting columns / light spill at junction would remain visible, seen in context of existing street lighting along Hirwaun Road. The magnitude of impact would be **negligible adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-R11 (2)	Angorfa and Sunnyville, Brecon Road, Hirwaun.	95 m	Close oblique views south-east along Brecon Road (which is lined by lighting columns) to lighting columns, signage, traffic and trees at junction with A465. Views in other directions generally contained by properties and garden vegetation, with the exception of slightly elevated longer distance views south to distinctive ridgeline within Hirwaun Common. Pylons are detracting features.	Construction Loss of trees would open up close direct and oblique views south-east to traffic on temporary A465 diversion road, construction activities at Trewaun junction, associated with major earthworks, a new bridge and highway infrastructure, such as signage and lighting columns. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				Operation Close direct and oblique views south-east to traffic flow and highway infrastructure such as signage and lighting columns / light spill and 2 m high environmental barriers, at Trewaun junction opened up by loss of existing vegetation, which also would change skyline locally. Also possible upper storey glimpses to tops of vehicles in cutting below Trewaun junction. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation planting would partially screen or soften close direct and oblique views south-east to traffic flow and highway infrastructure such as signage and environmental barriers, at Trewaun junction. Tops of lighting columns / light spill at junction would remain visible, seen in context of existing street lighting in foreground. The magnitude of impact would be **negligible adverse.**	**Slight adverse**
S6-R12 (1)	Caraway, 114 Brecon Road, Hirwaun.	12 m	Views south and east contained by mature deciduous vegetation in summer. Glimpsed views to tops of lighting columns on A465. Filtered views through vegetation in winter, to traffic and lighting columns on A465 and Trewaun junction.	Construction South-eastern extent of garden would be lost to proposed scheme. Loss of trees would open up close views west to north-east to traffic on temporary A465 diversion road, demolition of properties, construction activities at Trewaun junction and A465 mainline cutting, including major earthworks, a new bridge and highway infrastructure such as signage, lighting columns and environmental barriers, as well as middle distance views of construction of Pentwyn Cynon (Tramway) footbridge. The magnitude of impact would be **major adverse.**	**Very large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**
				Operation Close views south opened up by loss of vegetation, to 2 m high environmental barriers, which would partially obscure traffic flow and highway infrastructure such as signage and lighting columns / light spill, at Trewaun junction. Also close views south to north-east to 2 m high environmental barrier along A465 mainline, which together with cutting would screen views of traffic, except upper storey glimpses to tops of high sided vehicles. Upper parts of Pentwyn Cynon (Tramway) footbridge also visible to north-east. The magnitude of impact would be **major adverse.**	**Large adverse**	Summer Year 15 Established mitigation planting would generally screen views of traffic flow and highway infrastructure such as signage and 2 m high environmental barriers at Trewaun junction and along A465 mainline cutting, though tops of lighting columns / light spill at junction would remain visible. Glimpses of top of Pentwyn Cynon (Tramway) footbridge might also remain to north-east. The magnitude of impact would be **minor adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-R13 (11)	1 - 5 Ivy Cottages and, Bryn-y-Gog and 1 – 3 Tramway, Hirwaun.	14 m	Views south and south-east from houses positioned slightly lower than nearby A465, are contained by deciduous belt of vegetation along A465. Close filtered views to traffic and lighting columns at approach to Trewaun junction through vegetation in winter, mainly south.	<u>Construction</u> South-eastern extent of garden would be lost to proposed scheme.Close views south to construction of Trewaun junction with highway infrastructure, including signage and lighting columns. Close views south-east to traffic on temporary A465 diversion road, which would encroach on gardens, as well as construction of A465 mainline cutting with highway infrastructure such as environmental barrier, opened up by loss of trees on edge of gardens. Also, close views and glimpses, filtered by intervening vegetation from properties to east, to construction of Pentwyn Cynon (Tramway) footbridge. The magnitude of impact would be **major adverse.**	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**
				<u>Operation</u> Close views south and south-east open up by loss of trees, to traffic flow at Trewaun junction and 2 m high environmental barrier along A465 mainline, which together with cutting would screen traffic. Also views to Pentwyn Cynon (Tramway) footbridge to east. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Summer Year 15</u> Established mitigation planting would mostly screen views of 2 m high environmental barrier, as well as traffic flow and highway infrastructure such as signage at Trewaun junction, though tops of lighting columns / light spill at junction would remain visible. Views to Pentwyn Cynon (Tramway) footbridge to east would also be softened by established mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S6-R14 (1)	Cynon Farm, Hirwaun.	20 m	House positioned slightly lower than nearby A465, with slightly elevated, close, oblique views south-east, above deciduous vegetation, to traffic on A465 overbridge across NCR 46. Also filtered glimpses through vegetation to traffic on A465 to south in winter. Pylon is a detracting feature in landscape behind A465. Views east across field contained by woodland adjacent to A465.	<u>Construction</u> Close views, south-west to east to traffic on temporary A465 diversion road, which would encroach on garden. Views also opened up due to loss of trees, to construction of Pentwyn Cynon (Tramway) footbridge and A465 mainline cutting and embankments with highway infrastructure such as environmental barriers. The magnitude of impact would be **major adverse.**	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**
				<u>Operation</u> Close views south-west to south-east, opened up by loss of trees, to Pentwyn Cynon (Tramway) footbridge and tops of high sided vehicles and tall retaining wall above 2 m high environmental barrier along A465 mainline. Glimpses of tops of lighting columns / light spill at Trewaun junction to south-west. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Summer Year 15</u> Established mitigation planting would mostly screen 2 m high environmental barrier, high sided vehicles on A465 mainline and retaining wall to south of road, with exception of direct views north-west. Views of Pentwyn Cynon (Tramway) footbridge would also be softened and partially screened. Some glimpse of tops of lighting columns / light spill at Trewaun junction to south-west might remain. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-R15 (1)	Waungron, Hirwaun Road, Hirwaun.	43 m	Views generally contained by mix of evergreen and deciduous vegetation, including mature belts and groups of trees. Glimpsed views west across grassland to more trees. Elevated longer distance views west to distinctive ridgeline within Hirwaun Common. Possible glimpses of tops of lighting columns at Trewaun junction, mainly in winter.	<u>Construction</u> Close views north and north-east to construction of Trewaun junction, including new roundabout, bridges and highway infrastructure such as signage and lighting columns, opened up by loss of trees. Close filtered views to construction compound with stockpiles to east. Also close views north-west, filtered by intervening vegetation, to traffic on temporary A465 diversion road and, construction of A465 mainline cutting and Mynydd Bwllfa Wind Farm access bridge. The magnitude of impact would be **major adverse.**	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**
				<u>Operation</u> Close views north and north-east to access road to property and traffic flow and highway infrastructure, including signage and lighting columns / light spill, at Trewaun junction opened up by loss of trees. Close filtered views through intervening vegetation north-west to occasional traffic on Mynydd Bwllfa Wind Farm access bridge and and lighting columns / light spill, traffic flow on realigned 'old A465' and tops of vehicles in A465 mainline cutting. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Summer Year 15</u> Close view to realigned access road to property. Established mitigation planting would generally screen Trewaun junction and A465 mainline cutting, though some filtered glimpses of traffic flow and signage might remain to north and north-east. Tops of lighting columns / light spill at junction would remain visible. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S6-R16 (18)	1 -7 and 12 – 18 Trewaun, Glannant, Ambleside and Heulwen, Hirwaun Road, and 5 Montana Park, Hirwaun.	17 m	Oblique views west to north to traffic and infrastructure at Trewaun junction, filtered and softened by mature trees along Hirwaun Road and at roundabout. Garden vegetation and belt of trees along A465 approach to junction provides limited screening of traffic in summer. Close direct view south-west to traffic and vegetation belt on Hirwaun Road, with filtered views of ridgeline within Hirwaun Common in background.	<u>Construction</u> Views opened up by loss of vegetation. Close views from south to north-west of traffic on temporary A465 diversion roads, construction compound with stockpiles, construction of Trewaun junction including new roundabout, bridges and highway infrastructure such as signage and lighting columns, opened up loss of trees. Also close views north-west to north-east of construction of A465 mainline cutting with environmental barrier and upper storey views to construction of Pentwyn Cynon (Tramway) footbridge in middle distance. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				Operation Close views south to west to traffic flow and highway infrastructure, including signage and lighting columns / light spill, at Trewaun junction, opened up by loss of trees. New junction slightly further away from receptor. Also close views west to north-east to 2 m high environmental barrier along A465 mainline cutting and upper storey views to Pentwyn Cynon (Tramway) footbridge in middle distance. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation planting would filter views south to west to traffic flow and signage at Trewaun junction, though tops of lighting columns / light spill would be visible above the planting. 2 m high environmental barrier along A465 mainline cutting and Pentwyn Cynon (Tramway) footbridge would generally be screened by established mitigation planting, though some glimpses would remain to north and north-east. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S6-R17 (4)	8 - 11 Trewaun, Hirwaun.	17 m	Mix of deciduous and evergreen vegetation along A465 generally contains views north-west, north and north-east, except close glimpsed views in summer and filtered view in winter, to traffic and lighting columns on A465. Close oblique glimpses south between properties to traffic and lighting columns on Hirwaun Road, with distinctive ridgeline within Hirwaun Common in background. Electricity lines and pylons are detracting features within surroundings.	Construction Close, partially filtered views through garden vegetation, west to north-east to to traffic on temporary A465 diversion roads and construction of A465 mainline cutting with highway infrastructure such as environmental barrier, opened up by loss of vegetation. Close oblique glimpses between buildings to south-west to construction of Trewaun junction with highway infrastructure such as signage and lighting columns. Also oblique upper storey views to construction of Pentwyn Cynon (Tramway) footbridge in middle distance. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				Operation Close, partially filtered views through garden vegetation, west to north-east, opened up by loss of vegetation, to 4 m high environmental barrier, as well as upper storey glimpses north-east to tops of high sided vehicles in cutting and Pentwyn Cynon (Tramway) footbridge in middle distance. Glimpsed views between buildings to south-west to traffic flow at Trewaun junction and lighting columns / light spill. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation planting would screen A465 to north-east and much of the 4m high environmental barrier to north, with exception of barrier at bottom of gardens facing A465 which would not already be screened by existing garden vegetation. Trewaun junction would be softened by established mitigation planting in glimpsed views between buildings, though tops of some lighting columns / light spill would remain visible. Upper storey glimpses of top of Pentwyn Cynon (Tramway) footbridge would also remain to north-east in middle distance. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S6-R18 (32)	39 – 70 Trenant, Hirwaun.	42 m	Views to the north and west are contained by mature, generally deciduous vegetation, as well as bunding along parts of the A465. Close filtered views from upper storeys through trees to high-sided vehicles and lighting columns on the A465 in winter. Pylons are detracting features. Slightly elevated distant views to hills within BBNP in the	Construction Close, mainly upper storey views west to north, filtered by intervening vegetation, to traffic on temporary A465 diversion roads, construction of Pentwyn Cynon (Tramway) footbridge and A465 mainline cutting with associated highway infrastructure such as environmental barrier, opened up by loss of vegetation. Also close filtered views of construction of attenuation ponds and access track to north. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			background.	<u>Operation</u> Close, mainly upper storey views west to north, filtered by intervening vegetation, to Pentwyn Cynon (Tramway) footbridge and 2 m high environmental barrier along A465 mainline cutting, opened up by loss of vegetation. barrier and cutting would generally screen traffic flow on road. Also close filtered views of earthworks for attenuation ponds and access track to north. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would soften views filtered by intervening vegetation to Pentwyn Cynon (Tramway) footbridge and generally screen 2 m high environmental barrier along A465 mainline. Also close filtered views of earthworks for attenuation ponds and access track to north. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S6-R19 (approx. 800)	Properties at Penywaun estate within 1 km of proposed scheme.	385 m	Views to west are contained by properties and vegetation. Close views to properties and belts of trees. Elevated views north-west to north-east above properties on sloping ground, to BBNP and Baverstock ridge in background. Glimpses of traffic on A465 as it descends from Baverstock ridge towards Hirwaun, particularly in winter, when deciduous vegetation does not screen road as well. Pylons and gas works are detracting features in the distance.	<u>Construction</u> Middle distance views north of construction of A465 mainline through Croesbychan junction, opened up by loss of trees on edge of BBNP. Distant views north-east to construction of widened A465 mainline between Nant Hir and Baverstock junction, including major earthworks for junction and attenuation ponds. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Moderate adverse**
				Operation Filtered glimpses north through trees in middle distance to tops of high sided vehicles on A465 mainline through Croesbychan junction, as well as tops of lighting columns / light spill at junction on edge of BBNP. Distant views north-east to Baverstock junction, widened Nant Hir viaduct and A465 mainline between Nant Hir viaduct and Baverstock junction with associated traffic flow and light spill. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	Summer Year 15 Established mitigation planting would generally screen views of Croesbychan junction and A465 mainline to north, though glimpses of tops of tops of lighting columns / light spill would remain in middle distance. Established mitigation planting would also soften views to Baverstock junction and screen parts of traffic flow on A465 mainline, though much of the route would be left open without any mitigation proposed. Light spill would remain more noticeable at junction. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S6-R20 (7)	33 – 39 Llys Cynon, Hirwaun.	120 m	Views south contained by dense woodland on a small hill. Glimpsed filtered distant views to Hirwaun Common in winter. Close filtered glimpsed views through vegetation, particularly from upper storey, south-east along river valley, to traffic on A465 River Cynon crossing. Views east, across field, contained by climbing landform, mature belt of trees and properties.	<u>Construction</u> Upper storey middle distance views south-east, opened up by loss of trees, to construction of Afon Cynon overbridge and embankments for widened A465. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				<u>Operation</u> Upper storey middle distance views south-east, opened up by loss of trees, to tops of high sided vehicles above 2 m high environmental barrier on A465 mainline east of Afon Cynon overbridge. Intervening trees would partially filter views to traffic flow on Afon Cynon overbridge. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would generally screen 2 m high environmental barrier and traffic flow on A465 mainline, with exception of glimpses of traffic flow on Afon Cynon overbridge, which would be filtered by intervening trees. The magnitude of impact would be **negligible adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-21 (6)	2 – 12 (evens) Greenwood Drive, Hirwaun.	85 m	Close views south in summer between rows of houses to deciduous tree belt along A465, as well as some glimpses of traffic, seen above close boarded fence. Close filtered views of traffic in winter, as well as longer distance views to distinctive ridgeline within Hirwaun Common. Views west and east contained by properties and vegetation.	<u>Construction</u> Close range partial views south between properties to construction of widened A465 with highway infrastructure, including signage and environmental barrier, opened up by loss of tree belt along road. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				Operation Close range partial views south to tops of high sided vehicles above 2 m high environmental barrier on embankment for A465. The magnitude of impact would be **minor adverse**.	**Slight adverse**	Summer Year 15 Established mitigation planting would screen views of environmental barrier and traffic flow on A465. The magnitude of impact would be **no change.**	**Neutral**
S6-R22 (49)	1-2 Oaklands Close, 1-13 Meadow Close, 1 – 17 (odds) Greenwood Drive, 4 – 7 Riverside and 8 – 24 Denbeigh Court, Hirwaun.	24 m	Views south-west to east from bungalows and houses often contained by garden vegetation, close boarded fences and / or tree belts, including belt along A465. Gaps in tree belt allow close views to traffic flow from some properties, whilst there are filtered views through tree belt to traffic flow from other properties. Some filtered longer distance views in winter to Hirwaun Common.	<u>Construction</u> Close range views south to construction of widened A465 with highway infrastructure, including signage and environmental barrier, opened up by loss of tree belt along road. Also views to construction of Vale of Neath underbridge, from eastern edge of settlement. The magnitude of impact would be **moderate adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				<u>Operation</u> Close range views south to tops of high sided vehicles above 2 m high environmental barrier on embankment for A465. Glimpses of tops of lighting columns / light spill at southern periphery of Croesbychan junction, from eastern edge of settlement. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would screen environmental barrier and traffic flow on A465. Glimpses of tops of lighting columns / light spill at southern periphery of Croesbychan junction, from eastern edge of settlement. The magnitude of impact would be **negligible adverse.**	**Slight adverse**
S6-R23 (17)	1 – 6, 25 - 35 Denbeigh Court, Hirwaun.	55 m	Close partial or oblique filtered views south between properties to traffic on A465 through belts of mainly deciduous trees. Traffic on A465 more visible in winter. Rising landform with close boarded fence and belts of vegetation beyond contain views to the north-east.	<u>Construction</u> Close range partial views south between properties to construction of widened A465 with highway infrastructure, including signage and environmental barrier, opened up by loss of tree belt along road. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				<u>Operation</u> Close range partial views south to tops of high sided vehicles above 2 m high environmental barrier on embankment for A465, opened up by loss of tree belt along road. Possible glimpses of tops of lighting columns / light spill at Croesbychan junction to north-east. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would screen views of 2 m high environmental barrier and traffic flow on A465. Possible glimpses of tops of lighting columns / light spill at Croesbychan junction to north-east would remain. The magnitude of impact would be **negligible adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-24 (1)	7 Denbeigh Court, Hirwaun.	32 m	Close oblique and direct views south-west to south-east filtered by deciduous tree belt along A465, to traffic flow and road restraint. Views more open in summer. Upper storey views north-east above hedge to minor road bridge across Vale of Neath railway.	<u>Construction</u> Close range views south-west to east to construction of widened A465 with highway infrastructure, including Vale of Neath underbridge, and highway infrastructure, such as signage and environmental barrier, opened up by loss of tree belt along road. Also upper storey views north-east to construction compound / stockpiles and construction of southern periphery of Croesbychan junction with highway infrastructure, including signage and lighting columns. The magnitude of impact would be **major adverse**.	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**
				<u>Operation</u> Close range views south-west to south-east to traffic flow above 2 m high environmental barrier on embankment for A465, opened up by loss of tree belt along road. Close range views of full traffic flow at Vale of Neath crossing. Upper storey views of southern periphery of Croesbychan junction with traffic and highway infrastructure, including signage and tops of lighting columns / light spill. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Summer Year 15</u> Established mitigation planting would screen views of 2 m high environmental barrier and traffic flow on A465 in views from south-west to south-east and soften upper storey views east and north-east to Vale of Neath underbridge and southern periphery of Croesbychan junction. Some glimpses of traffic flow and tops of lighting column/light spill on A465 and junction would remain. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
S6-R25 (1)	Gelli Tarw Farm, Croes Bychan Road, Llwydcoed.	195 m	Views north-west generally contained by dense evergreen vegetation and landform. Glimpsed views in summer and filtered views through trees in winter north to traffic on A465. Views south contained by mature belts of trees.	<u>Construction</u> Close range glimpsed or filtered views through garden vegetation north-west and north to construction of attenuation pond and southern extent of Croesbychan junction, including highway infrastructure such as signage and lighting columns, opened up by loss of trees. Also middle distance glimpses of construction of elevated A465 mainline in background. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				<u>Operation</u> Close range filtered views north-west and north to attenuation pond and, traffic flow and highway infrastructure, such as signage and lighting columns / light spill, at southern extent of Croesbychan junction, opened up by loss of trees. Also middle distance glimpses of traffic flow on elevated A465 mainline in background, partly screened by 1 m high environmental barrier along south side of A465 mainline. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would soften close range views north of attenuation pond and, partially obscure and soften traffic flow and signage at eastern extent of Croesbychan junction. Traffic flow on A465 mainline and 1 m high environmental barrier would generally be screened by established mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-R26 (1)	Court Lodge, Swansea Road to Nantmoel Farm, Croesbychan, Llwydcoed.	37m	Views south to north-east contained by mature deciduous and evergreen garden vegetation and tree belts along lane. Close filtered glimpses through trees to traffic on A465 in winter.	<u>Construction</u> Close views south and east to construction of Croesbychan junction, including highway infrastructure such as signage and lighting columns, and construction of elevated A465 mainline with environmental barrier. Also views of construction compounds including stockpiles. Views opened up by loss of trees, including trees on southern and south-eastern edge of garden which would be directly affected by works to realign local road and construct new drive to property. The magnitude of impact would be **major adverse.**	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Very large adverse**
				<u>Operation</u> Close views south and east, opened up by loss of trees, to tops of vehicles on realigned local road in cutting at bottom of garden, as well as tops of vehicles and highway infrastructure, such as signage and lighting columns / light spill, at Croesbychan junction, and tops of high sided vehicles above with 1 m high environmental barrier on elevated A465 mainline. The magnitude of impact would be **major adverse.**	**Very large adverse**	<u>Summer Year 15</u> Established mitigation planting would generally screen views of traffic flow and highway infrastructure on realigned local road and Croesbychan junction. Established mitigation planting would also screen A465 mainline, though some filtered glimpses of 1 m high environmental barrier and tops of high sided vehicles would remain, as well as glimpses of tops of lighting columns / light spill at junction. The magnitude if impact would be minor adverse.	**Moderate adverse**
S6-R27 (2)	Ingledene and The Oaks, Swansea Road to Nantmoel Farm, Croesbychan, Llwydcoed.	60m	Views south to north-east contained by mature deciduous and evergreen garden vegetation and tree belts along lane. Close filtered glimpses through trees to traffic on A465 in winter.	<u>Construction</u> Close views opened up by loss of trees, but partially filtered by intervening garden vegetation, south and east to construction of realigned local road, construction of slip road at Croesbychan junction with environmental barrier and signage, construction of elevated A465 mainline, and construction compounds including stockpiles. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Large adverse**
				<u>Operation</u> Close views opened up by loss of trees, but partially filtered by intervening garden vegetation, south and east to vehicles on realigned local road, tops of high sided vehicles above 1 m high environmental barrier on elevated slip road at Croesbychan junction and on A465 mainline. Tops of lighting columns / light spill at junction also visible. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Summer Year 15</u> Established mitigation planting would soften views of traffic on local road to south, and generally screen 1 m high environmental barrier and traffic flow on elevated slip road at Croesbychan junction and on A465 mainline to south and east. Glimpses of tops of lighting columns / light spill at junction would remain. The magnitude of impact would be **minor adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-R28 (1)	Lynwood, Croes Bychan Road, Croesbychan, Llwydcoed.	40 m	Views south to north-east contained by deciduous vegetation along A465 and woodlands. Close filtered glimpses through trees to traffic on A465 in winter. Pylons are detracting features in landscape, visible above trees in views north-east. Elevated distant glimpses south to Hirwaun Common.	Construction Eastern extent of garden would be lost to proposed scheme. Close views to demolition of garage and greenhouse in garden. Close views east (oblique) and north-east, opened up by loss of vegetation, and close filtered views south through intervening vegetation, to construction of Croesbychan junction, including highway infrastructure such as signage, lighting columns and environmental barrier, and elevated A465 mainline. Also views of construction compound including stockpiles. The magnitude of impact would be **major adverse.**	**Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Large adverse**
				Operation Close views east (oblique) and north-east, opened up by loss of vegetation, and close filtered views south through intervening vegetation, to traffic flow and highway infrastructure such as signage and lighting columns / light spill at Croesbychan junction and elevated A465 mainline, partially screened by 1 m high environmental barrier to east and south-east. The magnitude of impact would be **major adverse.**	**Large adverse**	Summer Year 15 Established mitigation planting would screen environmental barrier, traffic flow and signage on Croesbychan junction, but partial views of traffic flow on elevated A465 mainline to north-east would remain. Tops of lighting columns / light spill at junction also visible. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
S6-R29 (1)	Min-Y-Coed, Swansea Road to Nantmoel Farm, Croesbychan, Llwydcoed.	155 m	Views from bungalow north-east and south-east contained by dense woodland surrounding property. Close views east across field to woodland along A465. Filtered views to traffic on A465 in winter.	Construction Close views east opened up by loss of woodland, but partially filtered by intervening garden vegetation, to construction of NMU route, north-western periphery of Croesbychan junction, including highway infrastructure such as signage and lighting columns, and elevated A465 mainline. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				Operation Close views east opened up by loss of woodland, but partially filtered by intervening garden vegetation, to users on NMU route, traffic flow and highway infrastructure, such as signage and lighting columns / light spill, at Croesbychan junction, and traffic flow on elevated A465 mainline. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation planting would screen traffic flow at Croesbychan junction and A465 mainline, though users on NMU route and tops of lighting columns / light spill at junction would remain visible. The magnitude of impact would be **minor adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-R30 (1)	Nant Hir House, Nant Cae Farm, Crematorium Road, Llwydcoed.	240 m	Views west contained by deciduous vegetation along Nant Hir Reservoir. Ascending middle distance views north and north-east across fields to filtered glimpses through thin vegetation belt to mainly tops of high sided vehicles on A465 above false cutting, seen against woodland background. Views east across fields towards Nant Livery Farm, tree belts and woodland blocks.	<u>Construction</u> Middle distance ascending views north and north-east to construction compounds with large stockpiles, construction of large attenuation ponds with access tracks, widened A465 mainline with parallel NMU route, and, expanded Baverstock junction with associated highway infrastructure such as signage and lighting columns. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				<u>Operation</u> Middle distance views north-west to north-east to earthworks and access tracks for attenuation ponds, traffic flow on Nant Hir viaduct, widened A465 mainline and, expanded Baverstock junction with highway infrastructure such as signage and lighting columns / light spill. Users on NMU route also visible to north-east. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> NMU route, attenuation ponds and access tracks would remain visible.Established mitigation planting would generally screen views of traffic flow at Baverstock junction to north-east, though traffic flow on Nant Hir viaduct and A465 mainline would remain more noticeable to north-west and north due to loss of vegetation belt and false cutting. Tops of lighting columns / light spill would also be visible at junction. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
S6-R31(1)	Nant Livery Farm Farmhouse, Crematorium Road, Llwydcoed.	363 m	Views west to Nant Cae Farm and primarily deciduous vegetation along Nant Hir Reservoir. Views north generally contained by farm buildings. Ascending middle distance glimpsed view north across fields to woodland. Filtered glimpses of high-sided vehicles on A465 through sparse belt of deciduous vegetation. Views east contained by farm buildings and tree belt.	<u>Construction</u> Middle distance ascending views north-west and glimpsed views between farm buildings north, to construction of NMU route, large attenuation ponds and widened A465 mainline with associated signage. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				<u>Operation</u> Middle distance ascending views north-west and glimpsed views between farm buildings north, to users on NMU route, earthworks and access tracks for attenuation ponds, and, traffic flow and highway infrastructure on A465 mainline. Existing vegetation would continue to screen views east. The magnitude of impact would be **minor adverse.**	**Slight adverse**	<u>Summer Year 15</u> NMU route, attenuation ponds and access tracks would remain visible Established mitigation planting to north of A465 would not affect middle distance views north-west and glimpsed views between farm buildings north, to users on NMU route and, traffic flow and highway infrastructure on widened A465 mainline. The magnitude of impact would be **minor adverse.**	**Sight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-R32 (1)	Ty Gwyn Farm, Crematorium Road, Llwydcoed.	260 m	Views west and south-west across fields to tree belts and woodlands, with distinctive ridgeline within Hirwaun Common in background. Ascending, partially filtered views through intermittent vegetation, north-west to north-east across grassland to deciduous hedgerow along Crematorium Road, middle distance glimpses of high sided vehicles on A465 and lit A465 junction with Crematorium Road, seen against backdrop of forest on Baverstock Ridge.	<u>Construction</u> Close to middle distance ascending views north-west to north-east to construction compound with large stockpiles and, construction of expanded Baverstock junction with highway infrastructure including signage, lighting columns and attenuation pond, A465 mainline and parallel NMU route and link road, opened up by loss of vegetation along farm access track for construction of new track. Associated loss of forest would be apparent. Also distant glimpses of construction activities along A465 further south-west, such as for offline section south of Hirwaun. The magnitude if impact would be **major adverse.**	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Very large adverse**
				<u>Operation</u> Close to middle distance ascending views north-west to north-east to traffic flow and highway infrastructure such as signage, lighting columns / light spill and attenuation pond associated with Baverstock junction, as well as users on NMU route and, traffic flow on A465 mainline and parallel link road. Also distant glimpses of traffic on A465 further south-west, such as at offline section south of Hirwaun. The magnitude if impact would be **major adverse.**	**Very large adverse**	<u>Summer Year 15</u> Established mitigation planting would generally screen traffic flow on A465 mainline, though some glimpses would remain. Together with rock and scree features, established mitigation planting would also soften and partially screen views to Baverstock junction, though traffic flow and highway infrastructure such as signage, lighting columns / light spill and attenuation pond at south-facing part of junction would remain dominant in close ascending views north-west to north-east, including traffic flow on southern roundabout and link road. Users on NMU route would also remain visible. The magnitude of impact would be **moderate adverse.**	**Large adverse**
S6-R33 (1)	Jah Jireh Care Home, Heads of the Valleys Road / A465, Llwydcoed.	55 m	Fronts onto A465. Close view south to traffic on A465, with tree belt and forest in background. Mast on Mynydd Abererdar is a detracting feature in distance. Close view south-west to traffic and infrastructure at A465 Baverstock junction, with distant views across woodlands to Hirwaun Common. Close views west across access road to gas works and dense, mainly evergreen	<u>Construction</u> Close views south-west to construction of expanded Baverstock junction with highway infrastructure such as signage and lighting columns, and construction compound with large stockpiles, opened up by loss of forest. Also, close partially filtered views south and east through intervening trees, to construction of access track, widened A465 mainline, parallel link road and NMU route, involving major earthworks and loss of forest. The magnitude of impact would be **major adverse.**	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Large adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			forest.	Operation Close views south-west to south-east to traffic flow and highway infrastructure such as signage and lighting columns / light spill at expanded Baverstock junction and slightly sunken A465 mainline, opened up to south-west by loss of forest. Also views to occasional traffic on access track, traffic flow on link road and users of NMU route to south and south-east. Extensive cutting slope to south would be dominant in view. The magnitude of impact would be **major adverse.**	**Large adverse**	Summer Year 15 Established mitigation planting would generally screen traffic and highway infrastructure, such as signage, at Baverstock junction, A465 mainline and parallel link road in most views, though some glimpses of traffic would remain to south-west and south-east. Users of NMU route would also partially be screened by established mitigation planting. Tops of lighting columns at junction would remain visible. Occasional traffic on access track in foreground to south would be less noticeable than existing traffic flow on A465. Extensive cutting slope to south would remain a dominant feature in the view. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
S6-R34 (1)	Tyn-Y-Coedcae Farm, Merthyr Tydfil.	165 m	Views north and west contained by mature evergreen and deciduous trees, as well as rising landform. Close glimpsed filtered views, possibly only from upper storeys, to traffic on A465 in winter. Views east across grassland to wooded Nant Ffrwd valley and fields in the BBNP, with Gurnos and mountains in the BBNP in the distance beyond. Possible descending glimpses towards lighting columns at the A470 junction.	Construction Views south-west generally contained by evergreen trees and rising landform. Close filtered views south through intervening trees and open views to south-east, due to loss of trees, to construction of attenuation pond with access track, and elevated A465 mainline and link road with highway infrastructure such as signage beyond in middle distance. Also distant glimpses to construction activities associated with proposed scheme further east, such as offline route at Y Graig. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				Operation Views south-west generally contained by evergreen trees and rising landform. Close filtered views south through intervening trees and open views to south-east, due to loss of trees, to attenuation pond with access track, and, traffic flow and highway infrastructure, such as signage, on elevated A465 mainline and link road beyond in middle distance. Also longer distance and distant glimpses of traffic on A465 further east, such as offline route at Y Graig. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation planting would soften close views south-east of attenuation pond and generally screen traffic flow on elevated A465 mainline, though glimpses of high sided vehicles on link road would be visible. Established mitigation planting would also screen or soften longer distance and distant glimpses to views of traffic on A465 further east, such as offline route at Y Graig. The magnitude of impact would **minor adverse.**	**Slight adverse**
S6-R35 (1)	Ffrwd-Isaf Farm, Cefn Coed, Merthyr Tydfil.	170 m	Views west and south contained by woodland along the Nant Ffrwd valley and tree belt along the A465. Upper storey views east and north-east, between tree canopies, across fields to traffic and lighting columns on the A465. Filtered views through trees in winter from lower storeys to A465. Possible longer distance views to lighting columns	Construction Middle distance views east and north-east, mainly from upper storeys, framed or filtered by trees, to demolition of property, construction of eastbound slip road to A470 junction and A465 mainline with associated retaining walls, bridges, major earthworks and highway infrastructure. Construction compounds and stockpiles would also be visible. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			at A470 junction.	Operation Middle distance views east and north-east, mainly from upper storeys, framed or filtered by trees, to traffic flow and highway infrastructure on slip road to A470 junction and A465 mainline, elevated on retaining walls and bridges. Also glimpses of tops of lighting columns / light spill at A470 junction. The magnitude of impact would be **minor adverse.**	**Slight adverse**	Summer Year 15 Middle distance views east and north-east, mainly from upper storeys, framed or filtered by existing trees in leaf, to traffic flow and highway infrastructure on slip road to A470 junction and A465 mainline, elevated on retaining walls and bridges. Also glimpses of tops of lighting columns / light spill at A470 junction. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S6-R36 (8)	1 – 8 Clos Cribyn, Clwydyfagwyr, Merthyr Tydfil.	70 m	Lower level views north-west to south-east generally contained by close boarded fencing and deciduous trees along Swansea Road in summer. Oblique views north-west across trees to moorland and Penmoelallt forest within BBNP. Middle distance glimpsed view of traffic on A465 as it descends Baverstock ridge. Views north-east across trees to urban edge of Gurnos and Cefn Cli-Sanws in BBNP. Lighting columns along Swansea Road and pylons are detracting features in views.	Construction Close views north-west to north-east opened up by loss of trees to construction of Swansea Road link road and A465 mainline including highway infrastructure such as signage, as well as minor adjustments to track below properties. Also distant glimpses to construction activities associated with proposed scheme further east, such as offline route at Y Graig. The magnitude of impact would be **major adverse.**	**Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Large adverse**
				Operation Close views north-west to north-east opened up by loss of trees to traffic flow and highway infrastructure, such as signage, on Swansea Road link road and A465 mainline. Also distant glimpses of traffic on A465 further east, such as offline route at Y Graig. The magnitude of impact would be **major adverse.**	**Large adverse**	Summer Year 15 Established mitigation planting would generally screen traffic flow and highway infrastructure on Swansea Road link road to north-west and A465 mainline to north, though tops of high sided vehicles would remain noticeable on link road in close views above garden fence. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S-6-R37 (13)	9 – 22 Heol Corn Du, Clwydyfagwyr, Merthyr Tydfil.	130 m	Oblique views west across remnant shale and grassland on undulating landforms of historic workings, with middle distance glimpses of high-sided vehicles and lighting columns on A465, with BBNP in background. Pylons are detracting features in landscape. Views north and north-east across properties and vegetation belts to BBNP.	Construction Middle distance oblique views north-west across remnant shale mounds to major earthworks and loss of vegetation for construction of link road, NMU route and A465 mainline in cutting. The magnitude of impact would be **minor adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
				Operation Middle distance oblique views north-west across remnant shale mounds to traffic flow on Swansea Road link road and users of NMU route. The magnitude of impact would be **minor adverse.**	**Slight adverse**	Summer Year 15 Middle distance oblique views north-west across remnant shale mounds to traffic flow on Swansea Road link road and users of NMU route would remain, though established mitigation planting would slightly soften these views. The magnitude of impact would be **minor adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-R38 (66)	Maes r Awelon,the Haven and Tramar House,Swansea Road, and, 1-22, 24 – 34 and 44 – 73 Pen y Dryffyn, Clwydyfagwyr, Merthyr Tydfil.	55 m	Close, generally oblique, filtered views through vegetation north-west and north-east across fields to deciduous vegetation belt along A465 in summer. Filtered views through trees to tops of high sided vehicles and lighting columns / light spill in winter. Longer distance glimpsed, slightly elevated views north-east, between houses and trees, towards hills within BBNP, Trefechan, Cefn Coed and Gurnos. Glimpses of traffic on A465, as it winds its way up towards Gurnos.	<u>Construction</u> Close to middle distance, generally oblique, filtered views through vegetation north-west and north-east to construction of A465 mainline including highway infrastructure and A470 junction, including major earthworks for cutting, opened up by loss of trees. Also glimpses of construction of link road to west, from western edge, and construction compounds with stockpiles and longer distance views to construction activities associated with proposed scheme further east, such as offline route at Y Graig from eastern edge. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				<u>Operation</u> Close to middle distance, generally oblique, filtered views through vegetation to vehicles on A465 mainline to north-west, traffic flow on A465 mainline to north-east and, glimpses of traffic and highway infrastructure such as lighting columns / light spill at A470 junction, opened up by loss of trees and changes to landform. Also longer distance filtered glimpses from eastern edge to traffic on A465 further east, such as offline route at Y Graig. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would generally screen traffic on A465 mainline, though tops of high sided vehicles would remain visible to north-east. Traffic at A470 junction to north-east would also be screened by established mitigation planting, though tops of lighting columns / light spill would remain. Longer distance filtered glimpses from eastern edge to traffic on A465 further east, such as offline route at Y Graig, would be softened by established mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S6-R39 (7)	35 – 41 Pen Y Dyffryn, Clwydyfagwyr, Merthyr Tydfil.	60 m	Lower level views north contained by close boarded fencing. Close filtered upper storey views north and north-west, mainly in winter, through trees, across fields to traffic and lighting columns on A465. Filtered views in winter north-east to Cefn Coed, Trefechan and glimpses of traffic on the A465 as it climbs up towards Gurnos.	<u>Construction</u> Close to middle distance, partially filtered views through vegetation north-west to north-east above fencing, mainly from upper storeys, to construction of A465 mainline with highway infrastructure and A470 junction, including major earthworks for cutting, opened up by loss of trees. Also middle distance views of construction of attenuation pond with access track and construction compounds with stockpiles to north-east, and longer distance views to construction activities associated with proposed scheme further east, such as offline route at Y Graig. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				Operation Close to middle distance, partially filtered views through vegetation north-west to north-east above fencing to traffic flow on A465 mainline, partially screened by 2 m high environmental barrier, and glimpses of traffic and highway infrastructure, such as tops of lighting columns / light spill, at A470 junction, opened up by loss of trees and changes to landform. Also middle distance views of attenuation pond to north-east and longer distance glimpses of traffic on A465 further east, such as offline route at Y Graig. The magnitude of impact would be **minor adverse.**	**Slight adverse**	Summer Year 15 Established mitigation planting would generally screen traffic on A465 mainline, though tops of high sided vehicles would remain visible to north-east. Also middle distance views of attenuation pond and glimpses of traffic and tops of lighting columns / light spill at A470 junction. Longer distance filtered glimpses to traffic on A465 further east, such as offline route at Y Graig, would be softened by established mitigation planting. The magnitude of impact would be **negligible adverse.**	**Slight adverse**
S6-R40 (3)	23, 42 and 43 Pen Y Dyffryn, Clwydyfagwyr, Merthyr Tydfil.	115 m	Lower level views north contained by close boarded fencing. Close direct upper storey views from 23 and 42, and oblique views from 43, north across fields to gaps in vegetation belt along A465. Traffic, lighting columns and signage visible. More extensive filtered views through vegetation in winter. Longer distance views north-east to Cefn Coed and Trefechan. Glimpsed view of High Street overbridge with traffic and lighting columns in Cefn Coed, and traffic on A465 as it climbs up towards Gurnos. BBNP in background to the north and north-east. Pylons are detracting features in landscape.	Construction Close to middle distance views north and north-east, to construction of A465 mainline with highway infrastructure and A470 junction, including major earthworks for cutting, opened up by loss of vegetation. Also middle distance views of construction of attenuation pond with access track and construction compounds with stockpiles, and longer distance views to construction activities associated with proposed scheme further east, such as offline route at Y Graig. The magnitude of impact would be **major adverse.**	**Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				Operation Close to middle distance views to traffic flow on A465 mainline, and glimpses of traffic and highway infrastructure, such as tops of lighting columns / light spill, at A470 junction to north-east, opened up by loss of trees and changes to landform. Also middle distance views of attenuation pond to north-east and longer distance glimpses of traffic on A465 further east, such as offline route at Y Graig. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation planting would generally screen traffic on A465 mainline, though tops of high sided vehicles would remain visible to north-east. Also middle distance views of attenuation pond and glimpses of traffic and tops of lighting columns / light spill at A470 junction. Longer distance filtered glimpses to traffic on A465 further east, such as offline route at Y Graig, would be softened by established mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S6-R41 (5)	Four Winds, Gorwelion, Heathlands, Promise and Crosswinds, Coedmeyrick Close, Clwydyfagwyr,	245 m	Mainly upper storey views north across fields and trees, to glimpses of traffic and lighting columns / light spill on A465. Cefn Cli-Sanws in the BBNP in background.	Construction Mainly upper storey middle distance views north-west to north-east, to construction of A465 mainline and A470 junction, including major earthworks for cutting, opened up by loss of vegetation. Also middle distance views of construction of attenuation pond with access track and compounds with stockpiles to north-east. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
	Merthyr Tydfil.			Operation Mainly upper storey middle distance views north-west to north-east to traffic flow on A465 mainline and, traffic flow and highway infrastructure, such as tops of lighting columns / light spill, at A470 junction, opened up by loss of vegetation. Also middle distance views of attenuation pond to north-east. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation planting would generally screen traffic flow on westbound slip road at A470 junction, though tops of high sided vehicles on A465 mainline and tops of lighting columns / light spill at A470 junction would remain visible. Middle distance views of attenuation pond to north-east would also remain. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S6-R42 (1)	Coed Meurig Farm, Swansea Road, Clwydyfagwyr, Merthyr Tydfil.	39 m	Close glimpses in summer and filtered views through vegetation in winter south-west to north-east to traffic, signage and lighting columns on A465. Fields in BBNP in background.	Construction Close glimpses and filtered views through vegetation in winter south-west to north-east to construction of elevated A465 mainline with highway infrastructure and A470 junction including bridges across Nant Ffrwd, opened up by loss of vegetation. Also close views east to construction of attenuation pond and access track. The magnitude of impact would be **major adverse.**	**Very large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Large adverse**
				Operation Close glimpses and filtered views through vegetation in winter south-west to north-east to traffic flow and highway infrastructure on elevated A465 mainline and westbound slip road at A470 junction. Also close views east to attenuation pond and access track. Lighting columns / lighting spill in views would be less noticeable, though some glimpses to north-east would remain. The magnitude of impact would be **major adverse.**	**Large adverse**	Summer Year 15 Established mitigation planting would generally screen traffic on A465 mainline and westbound A470 junction slip road, though tops of high sided vehicles on A465 mainline would remain visible to north-east. Attenuation pond and access track would also generally be screened by established mitigation planting. Lighting columns / lighting spill in views north-east would be less noticeable. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R1 (2)	Grawen House and Foxfields, Grawen Lane, Cefn Coed, Merthyr Tydfil.	36m	Direct views west, across wooded Taf Fawr valley. Middle distance oblique views south-west to traffic, lighting columns and signs on parts of A470 junction that are not screened / filtered by deciduous trees. Also, close mainly oblique views south to traffic and lighting columns on A465 Taf Fawr Viaduct, with Cefn Coed Viaduct and A470 Viaduct beyond. Urban edge of Gellideg with	Construction Close views south and middle distance views south-west to construction of A470 junction / elevated A465 mainline, including major earthworks, attenuation pond / tanks, two viaducts across Taf Fawr and highway infrastructure, such as signage, lighting columns and environmental barrier, opened up by loss of trees. Construction of viaducts would be particularly dominant. Also views of large construction compounds and stockpiles. The magnitude of impact would be **major adverse.**	**Very large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Large adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			detracting pylons and Mynydd Aberdar in background. Views east contained by garden vegetation, properties and deciduous trees along A465.	Operation Close views south and middle distance views south-west opened up by loss of trees, to traffic flow at A470 junction / A465 mainline, including traffic flow brought closer to properties on two viaducts across Taf Fawr, though traffic on slip road would be partially screened by 2 m high environmental barrier. Associated highway infrastructure such as signage and lighting columns / light spill also visible. Loss of attractive views towards Cefn Coed Viaduct. The magnitude of impact would be **major adverse.**	**Large adverse**	Summer Year 15 Established mitigation planting would partially screen and soften views south-west to cutting slopes, traffic flow and highway infrastructure such as signage, at western part of A470 junction. Close views south to traffic flow on two new viaducts across Taf Fawr would largely be unaffected by established mitigation planting, but would continue to be partially screened by 2 m high environmental barrier on slip road viaduct. Llighting columns / light spill would also remain visible at junction. The magnitude of impact would be **major adverse.**	**Large adverse**
S5-R2 (7)	1-6 Grawen Houses and Kattery, Grawen Lane, Cefn Coed, Merthyr Tydfil	6m	Views south-west to south-east generally contained by dense belt of deciduous trees along edge of gardens and A465. Lighting columns and glimpses of traffic on Grawne Lane to south-east.	Construction Southern extent of garden would be lost to proposed scheme. Close partially filtered views south-west to south-east through garden vegetation, to construction of A470 junction / elevated A465 mainline, including attenuation pond / tanks, two viaducts across Taf Fawr, and highway infrastructure, such as lighting columns, signage, retaining wall and environmental barriers, opened up by loss of trees. Also close oblique filtered views east through garden vegetation to construction of widened A465 cutting, opened up by loss of trees. The magnitude of impact would be **major adverse.**	**Very large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Large adverse**
				Operation Views opened up by loss of trees. Close oblique filtered views south-west through garden vegetation, to traffic flow and lighting columns / light spill through A470 junction, partially screened by 2 m high environmental barrier. Also close direct views south to east to retaining wall, attenuation tank and tops of high sided vehicles above 2 m high environmental barrier on A465 mainline and A470 slip roads, opened up by loss of trees. The magnitude of impact would be **major adverse.**	**Large adverse**	Summer Year 15 Established mitigation planting would generally screen retaining wall, attenuation tank, 2 m high environmental barrier and tops of high sided vehicles on A465 mainline in views south to east, and soften close glimpses through existing trees to traffic flow at A470 junction to south-west. Glimpses of tops of lighting columns / light spill at junction would remain to south-west. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R3 (4)	Autumn Leaves, Carnbrae, Lyndale House and Metford House, Grawen Lane Cefn Coed, Merthyr Tydfil	37m	Views west, south and east are generally contained by garden vegetation, properties and trees along A465. Close glimpses of tops of lighting columns on the A465 and Grawen Lane. Some glimpsed and slightly elevated views to woodland in BBNP.	Construction Close filtered views south-east through intervening garden vegetation and / or above properties to construction of widened A465 cutting with associated highway infrastructure, such as environmental barrier, opened up by loss of trees. Also oblique glimpses of construction of cutting for A470 junction within BBNP to south-west. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				<u>Operation</u> Close filtered views south-east through intervening garden vegetation and / or above properties to glimpses of tops of high sided vehicles on A465 mainline and 2 m high environmental barrier along southern edge of A465, opened up by loss of trees. Also oblique glimpses south-west to top of cutting for A470 junction. The magnitude of impact would be **minor adverse.**	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would screen tops of high sided vehicles and 2 m high environmental barrier on A465 to south-east and soften views of top of cutting for A470 junction to south-west. The magnitude of impact would be **negligible adverse.**	**Slight adverse**
S5-R4 (5)	Penbryn, Greystones, Nelita, Prencelyn and Heddfan, Cilsanws Lane, Cefn Coed, Merthyr Tydfil.	325 m	Descending view south-west across wooded Taf Fawr valley to fields with hedgerows and trees within BBNP. A465 Taf Fawr Viaduct and A470 junction in the middle distance, including traffic and lighting columns. Woodlands, properties in Clwydyfagwyr and Baverstock ridge in background, including glimpses of vehicles on A465.	<u>Construction</u> Descending middle distance, sometimes oblique, views south-west to construction of A470 junction, including major earthworks and loss of vegetation, construction of elevated A465 mainline, highway infrastructure such as lighting columns and attenuation pond. Also distant glimpses of construction of A465 cutting at Baverstock. Properties and vegetation would screen construction of widened A465 to south-east. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
				<u>Operation</u> Descending middle distance, sometimes oblique, views south-west to traffic flow on A470 junction, including elevated A465 mainline, as well as highway infrastructure such as lighting columns / light spill and attenuation pond. Glimpses of slight change to skyline at Baverstock ridge and traffic on widened A465 descending from ridge. The magnitude of impact would be **minor adverse.**	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would screen attenuation pond at A470 junction and generally soften views of junction to some extent. However, traffic flow on elevated A465 and parts of junction slips would remain visible. Some glimpses of traffic on widened A465 descending from ridge would also remain in gaps in mitigation planting. The magnitude of impact would **minor adverse.**	**Slight adverse**
S5-R5 (2)	Cilsanws House, Upper High Street, Cefn Coed, Merthyr Tydfil.	21 m	Property fronts on to Upper High Street and Vaynor Road. Direct view south-west along lit Grawen Lane to dense evergreen and deciduous vegetation between lane and A465. Upper storey views to A465 Taf Fawr Viaduct and A470 junction in middle distance, including traffic and lighting columns, with Mynydd Aberdar in background. Close, mainly upper storey views south to High Street overbridge, including railings, signage and lighting on top of	<u>Construction</u> Close, mainly upper storey ascending views south-west to south-east, to demolition and construction of High Street overbridge, construction of widened A465 mainline cutting with highway infrastructure such as environmental barriers and, demolition and construction of NMU overbridge, and demolition of properties, opened up by loss of vegetation. Also middle distance views south-west to construction of A470 junction, including elevated A465 mainline and highway infrastructure such as signage, environmental barriers and lighting columns, opened up by loss of trees. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			bridge, as well bridge abutments and ascending views to lighting column, traffic and signage on A465 in cutting. A465 screened by vegetation and cutting in oblique views east along Vaynor Road.	<u>Operation</u> Close views south-west to tops of high sided vehicles in A465 mainline cutting, opened up by loss of vegetation, and middle distance views to traffic flow and highway infrastructure such as signage and lighting columns / light spill at A470 junction and elevated A465 mainline. Views of High Street overbridge would be similar to existing views. Close, upper storey ascending glimpses south and south-east above 3 m high environmental barrier to tops of high sided vehicles in A465 cutting, environmental barrier along southern edge of cutting and users on NMU overbridged, opened up by loss of vegetation. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Views of High Street overbridge would be similar to existing views. Established mitigation planting would generally screen 2 m high environmental barrier north of A465 mainline cutting, NMU overbridge and tops of high sided vehicles in A465 mainline cutting, with exception of close ascending glimpses south. Upper storey views south-west to A470 junction and elevated A465 mainline would also be partially screened and softened by established mitigation planting, though some views of traffic flow and tops of lighting columns / light spill would remain. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R6 (8)	1-11 and 29 Gersanws, Fronheulog and Colindale, Upper Vaynor Road, 1 Somerset Lane Cefn Coed, Merthyr Tydfil.	42 m	Views partially screened in summer and filtered in winter by deciduous and evergreen trees. Close views of High Street overbridge with traffic from properties to west. Mostly oblique middle distance views south-west to glimpses of A465 with traffic and lighting columns in vicinity of A470 junction and / or at Taf Fawr viaduct, with fields and trees in BBNP and Baverstock ridge in background. Direct views south / south-east to vegetation belt along top of A465 cutting. Gellideg and Mynydd Aberdar in background.	<u>Construction</u> Close, often partially filtered views south-west to south-east through intervening garden vegetation, to demolition and construction of High Street overbridge, construction of widened A465 mainline cutting with highway infrastructure such as environmental barriers and, demolition and construction of NMU overbridge, opened up by loss of vegetation. Also middle distance glimpsed views south-west to construction of A470 junction, including elevated A465 mainline with highway infrastructure. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				<u>Operation</u> Close, often partially filtered ascending views south-west to south-east through intervening garden vegetation, to traffic on High Street overbridge, 2 m high environmental barriers along A465 mainline cutting and glimpses of users on NMU overbridge, with urban edge of Cefn Coed beyond, opened up by loss of vegetation. Also middle distance glimpsed, mainly oblique, views south-west to traffic flow and highway infrastructure such as lighting columns / light spill at A470 junction and elevated A465 mainline. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would generally screen views of 2 m high environmental barrier along northern edge of A465 mainline cutting, as well as traffic on High Street overbridge from properties to the east. Views of the High Street overbridge form properties to west would be softened and be similar to existing views. Glimpses of users on NMU overbridge would remain from some properties. Established mitigation planting would soften mainly oblique middle distance glimpsed views south-west to traffic flow and highway infrastructure such as lighting columns / light spill at A470 junction and elevated A465 mainline. The magnitude of impact would be **minor adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S5-R7 (3)	Tynewydd Bungalow, Upper Vaynor Road, Cefn Coed, Merthyr Tydfil.	17 m	Views from bungalows south-west to south-east generally contained by vegetation on cutting slope to A465. Close oblique view south through gap in vegetation, across A465 cutting to non-motorised users on footpath 111/38 and Church of St John the Baptist tower. Top of lighting column on A465 visible. Filtered ascending views south-east in winter to traffic and lighting columns on A465 in vicinity of Taf Fechan viaduct, with Y Graig in background.	<u>Construction</u> Close, partially filtered oblique views south-west and south through intervening garden vegetation, to construction of widened A465 in cutting with highway infrastructure such as signage and environmental barrier, and realigned NMU route, including demolition and construction of overbridge across A465, opened up by loss of vegetation. Also close glimpses and filtered views south-east through intervening trees, partially opened up by loss of trees, to construction of widened Taf Fechan viaduct and NMU bridge across gorge, as well as offline A465 mainline through Y Graig in middle distance to east. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be moderate adverse.	**Moderate adverse**
				<u>Operation</u> Close, partially filtered oblique views south-west and south through intervening garden vegetation, to 2 m high environmental barrier and users of NMU route, opened up by loss of vegetation. Also close and middle distance partially filtered views south-east and east through intervening garden vegetation, opened up by loss of trees, to traffic and highway infrastructure on A465 mainline, which would be more visible at offline section through Y Graig. Lighting columns / light spill from A465 would be removed. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would screen users on NMU route, but would not affect close views south of 2 m high environmental barrier. Views towards offline A465 mainline through Y Graig would also be softened by established mitigation planting, though traffic and highway infrastructure would remain more visible in partially filtered views through garden vegetation south-east and east. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
S5-R8 (10)	1 - 9 Vaynor Villlas, Upper Vaynor Road, Cefn Coed, Merthyr Tydfil.	41 m	Oblique view south-west generally contained by trees along top of A465 cutting, looking towards Baverstock ridge in background. Views south and south-east generally contained by vegetation along top of A465 cutting and properties. Filtered views and glimpses through vegetation, generally from upper storeys, to lighting column on A465 and non-motorised	<u>Construction</u> Close views south-west and south to construction of widened A465 in cutting with highway infrastructure such as signage and environmental barrier, realigned NMU route and, demolition and construction of NMU overbridge, opened up by loss of vegetation. Views south-east generally screened by properties and vegetation, though there would be some upper storey glimpses of construction of A465 mainline through Y Graig to north-east. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			users on Taff Trail overbridge, with trees and St John the Baptist Church tower beyond.	Operation Close views south-west and south to users on realigned NMU route and 2 m high environmental barriers along top of A465 mainline cutting, opened up by loss of vegetation. Also upper storey filtered glimpses through intervening trees to traffic on A465 mainline through Y Graig to north-east. Lighting columns / light spill from A465 would be removed. The magnitude of impact would be **minor adverse.**	**Slight adverse**	Summer Year 15 Established mitigation planting would soften and partially screen views of realigned NMU route and 2 m high environmental barriers along A465 mainline cutting to south and south-west, as well as softening glimpsed views of traffic on A465 mainline through Y Graig to north-east. The magnitude of impact would be **negligible.**	**Slight adverse**
S5-R9 (14)	Yr Aelwyn, St Davids, Leiros, Upper Vaynor Road, Wycombe, Bronant, Bryn-onen, Woodbury, Harwin, New Haven and Uplands, Vaynor Lane, and Dunromin, Glascoed, Bryngolwg, Brynheulog, Lon Maes Du, Cefn Coed, Merthyr Tydfil.	80 m	Views south-west generally contained by properties and garden vegetation, except slightly elevated glimpses of distant Mynydd Aberdar. Close to middle distance ascending views south-east, to Taf Fechan valley including A465 Taf Fechan viaduct with traffic. Y Graig woodland and Gurnos in middle distance.	Construction Close to middle distance views south-east, sometimes filtered by intervening vegetation, to construction of widened A465 Taf Fechan viaduct and parallel NMU bridge, as well as offline A465 mainline through Y Graig, slightly opened up by loss of vegetation. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
				Operation Close to middle distance views south-east sometimes filtered by intervening vegetation, to traffic flow on widened A465 Taf Fechan viaduct, slightly opened up by loss of vegetation. Traffic flow on offline A465 mainline through Y Graig would be partially screened by cutting. The magnitude of impact would be **minor adverse.**	**Slight adverse**	Summer Year 15 Established mitigation planting would generally not affect close to middle distance views of traffic flow on widened A465 Taf Fechan viaduct or A465 mainline through Y Graig, though the earthworks would be softened. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R10 (8)	Hawthorns, Westwood and Tanglewood, Oakdene, Tir-Pont-y-Capel, Wind Rush, Maubray House and Kilcohen House, Job's Lane, Cefn Coed, Merthyr Tydfil.	42 m	Middle distance direct view west to traffic and lighting at A470 junction, with fields and tree belts within the BBNP in background. Close oblique views north-west to traffic, lighting columns and signage on 465 Taf Fawr Viaduct, with mature deciduous trees and specimen conifers within Cefn Coed Cemetery in background. Oblique views north and north-east contained by evergreen hedge, close boarded fencing and vegetation belt	Construction Properties close to A465 to north would experience worst effects. Close views north-west to north, and middle distance views west to construction of elevated A465 mainline and A470 junction, including major earthworks, attenuation pond / tanks, two viaducts across Taf Fawr and highway infrastructure, such as lighting columns, signage and environmental barriers, opened up to some extent by loss of trees. Also views of large construction compounds and stockpiles in valley. Views seen in context of existing A465 viaduct in foreground. The magnitude of impact would be **major adverse.**	**Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			along A465. Tops of lighting columns on A465 visible above vegetation. Filtered glimpses of high-sided vehicles in winter.	<u>Operation</u> Properties close to A465 to north would experience worst effects. Close views north-west to north, and middle distance views south-west and west to traffic flow at A470 junction, including traffic flow on elevated A465 mainline viaduct across Taf Fawr and associated highway infrastructure such as signage, lighting columns / light spill, and attenuation pond, opened up by loss of trees. Only tops of high sided vehicles would be visible above the 3 m high environmental barrier to north. Views west seen in context of existing A465 viaduct in foreground. Traffic flow on southern approach of A470 to junction would also become visible as a result of vegetation loss. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Properties close to A465 to north would experience worst effects. Established mitigation planting would screen attenuation pond and traffic on southern approach of A470 to junction with A465 and soften western part of A470 junction in views south-west. Traffic flow on elevated A465 mainline and highway infrastructure at junction, such as signage and lighting columns / light spill, would remain visible in views south-west and west. Tops of high sided vehicles and environmental barrier to north would also be softened and partially screened by established mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
S5-R11 (3)	Old Brewery Cottage, Pontycapel Road, Cefn Coed, Merthyr Tydfil.	198 m	Property positioned at bottom of river valley facing the A465. Views west and south-west screened by rising valley sides and mature deciduous trees. Partially filtered views north-west through intervening trees, along detracting yard and Taf Fawr river valley to A465 Taf Fawr Viaduct with traffic and lighting columns, elevated above valley.	<u>Construction</u> Middle distance partially filtered views through intervening trees north-west to construction of two viaducts across Taf Fawr with associated highway infrastructure such as signage and lighting columns, seen in context of the existing A465 viaduct in foreground. Also views of large construction compounds and stockpiles below viaducts, opened up by vegetation loss in river valley. Possible glimpsed views above trees to construction activities at eastern corner of A470 junction. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				<u>Operation</u> Middle distance partially filtered ascending views through intervening trees north-west to tops of high sided vehicles on elevated A465 mainline viaduct, as well as additional signage on existing A465 viaduct and tops of lighting columns / light spill on new slip road viaduct, seen in context of existing lit A465 viaduct. Possible filtered glimpses west through and above existing trees, to earthworks for attenuation pond, as well as tops of high sided vehicles and lighting columns / light spill at A470 junction. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would generally screen A470 junction, though glimpses of tops of lighting columns / light spill might remain. Due to elevated nature of A465 mainline viaduct across the Taf Fawr, mitigation planting would only soften eastern abutment. Tops of high sided vehicles on A465 mainline viaduct, as well as additional signage on existing A465 viaduct and tops of lighting columns / light spill on new slip road viaduct would therefore remain visible in middle distance to north-west, partially filtered through intervening trees, but seen in context of existing lit A465 viaduct. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S5-R12 (26)	1 – 15 and 17 – 26 Maesygarreg, Cefn Coed, Merthyr Tydfil.	33 m	Views south-west to north-west generally contained by properties, with exception of partial and glimpsed middle distance to close, often oblique, views between properties and above rooftops from upper storeys to traffic and lighting at A470 junction and Taf Fawr Viaduct. Fields and tree belts within BBNP and mature deciduous trees and specimen conifers within Cefn Coed Cemetery in the background. Generally oblique views north and north-east screened in summer, except tops of lighting columns and traffic above close boarded fence at Grawen Lane junction, and filtered views in winter through vegetation belt along A465, to high-sided vehicles.	<u>Construction</u> Middle distance to close, often oblique, glimpses and partial views south-west to north-east to construction of A465 mainline and A470 junction, including major earthworks, attenuation pond / tanks, two viaducts across Taf Fawr and highway infrastructure, such as lighting columns, signage, retaining wall and environmental barriers, opened up to some extent by loss of trees. Also glimpses of large construction compounds and stockpiles in valley. Views to construction of new viaducts, seen in context of existing A465 viaduct. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				<u>Operation</u> Middle distance to close, often oblique, glimpses and partial views south-west to north-west to traffic flow at A470 junction, including traffic flow on elevated A465 mainline viaduct across Taf Fawr and associated highway infrastructure such as signage and lighting columns / light spill, opened up by loss of trees, but seen in context of existing A465 viaduct. Traffic flow on southern approach of A470 to junction would also become visible as a result of vegetation loss. To north and north-east, only tops of high sided vehicles on A465 would be visible above the 3 m high environmental barrier and existing lighting columns / light spill from A465 would be removed. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would screen southern approach of A470 to junction with A465, and soften western part of A470 junction in views south-west and west, but traffic flow on elevated A465 mainline and highway infrastructure at junction, such as signage and lighting columns / light spill, would remain visible in these views. Tops of high sided vehicles and environmental barrier to north and north-east would also be softened and partially screened by established mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R13 (3)	Flats 1 - 9, Ty Vaynor, Flats 1 – 12 Ty Penderyn and 1 – 12 Ty Ystradfellte (Flats facing west / north-west / north-east), Station Road, Cefn	135 m	Four storey flats. Generally views from ground level are intermittently screened by deciduous trees and properties; while views are wide open from upper storeys. Middle distance view south-west and west above rooftops to mature deciduous trees and tops of lighting columns at A470 junction and, traffic and lighting columns on the Taf Fawr Viaduct with fields and tree belts within BBNP in background. Middle distance views	<u>Construction</u> Middle distance views south-west and west to construction of elevated A465 mainline and A470 junction, including, highway infrastructure, such as lighting columns, signage and environmental barriers, and construction compounds, opened up to some extent by loss of trees. Also glimpsed middle and longer distance views, mainly from upper storeys, to construction of widened A465 mainline in cutting to north, involving demolition of properties, and offline A465 mainline through Y Graig to north-east. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
	Coed, Merthyr Tydfil.		above rooftops north-west to north-east to tops of lighting columns and upper storey glimpses of high sided vehicles on A465. Y Graig woodland and pylon in background of St John the Baptist Church tower to north-east.	<u>Operation</u> Middle distance views south-west and west to traffic flow at A470 junction, including traffic flow on elevated A465 mainline and associated highway infrastructure such as signage, lighting columns / light spill, and attenuation pond, opened up to some extent by loss of trees. Also glimpsed middle and longer distance views, mainly from upper storeys, to environmental barriers along top of A465 cutting to north, and traffic flow on A465 mainline through Y Graig to north-east. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would screen attenuation pond and soften middle distance views south-west and west to traffic flow at A470 junction, though traffic flow on elevated A465 mainline and highway infrastructure at junction, such as signage and lighting columns / light spill, would remain visible. Established mitigation planting would also soften views of environmental barriers to north and traffic flow on A465 mainline through Y Graig to north-east. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R14 (2)	2 and 4 Pearces Court , Cefn Coed, Merthyr Tydfil	21 m	Views south-west across rooftops to glimpses of vegetation belt along A470, tops of lighting columns and high-sided vehicles. Views west generally contained by properties and vegetation. Glimpses of tops of lighting columns on A465. Fields with trees in BBNP and Baverstock ridge in background. Close views north / north-east to High Street overbridge and highway infrastructure including lighting, as well as glimpses of lighting columns on A465. Traffic on A465 screened by cutting and, deciduous and evergreen tree belt.	<u>Construction</u> North-western extent of garden would be lost to proposed scheme. Close direct views north-west of widened A465 including highway infrastructure such as retaining walls, 3 m environmental barrier and attenuation tanks, opened up by loss of vegetation. Oblique views north-east to demolition and construction of High Street overbridge. Also middle distance views south-west above adjacent properties to construction activities for A470 junction. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				<u>Operation</u> Close direct views north-west to 3 m high environmental barrier, with upper storey glimpses of tops of high sided vehicles in cutting on A465 mainline, while existing lighting columns / light spill would be removed. Traffic on High Street overbridge would be slightly more visible in close oblique views north-east. Also middle distance views south-west above adjacent properties to tops of lighting columns at A470 junction and tops of high sided vehicles on elevated A465 mainline. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> As per operation without mitigation planting. Close direct views north-west to 3 m high environmental barrier, with upper storey glimpses of tops of high sided vehicles in cutting on A465, while existing lighting columns / light spill would be removed. Traffic on High Street overbridge would be slightly more visible in close oblique views north-east. Also middle distance views south-west above adjacent properties to tops of lighting columns at A470 junction and tops of high sided vehicles on elevated A465 mainline. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
S5-R15 (8)	1 Pearces Court and 101 - 105 and 109 – 110 High Street, , Cefn Coed, Merthyr Tydfil.	23 m	Views south-west and west generally contained by garden vegetation and properties. Upper storey glimpsed middle distance views to lighting columns at A470 junction, with fields with trees in BBNP and Baverstock ridge in background. Close, mainly oblique views north-west to High Street overbridge and highway infrastructure including lighting at High	<u>Construction</u> Close views west to north-east to construction of widened A465 cutting with highway infrastructure such as environmental barrier and signage, and demolition and construction of High Street overbridge, opened up by loss of vegetation. Demolition of near properties to north-east. Also upper storey middle distance glimpses of construction of A470 junction to south-west, from rear of properties on south side of High Street. The magnitude if impact would be **major adverse.**	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			Street / Grawen Lane junction. Views north-east contained by properties and tree belt along A465. Traffic on A465 screened by cutting and vegetation from all but closest properties.	<u>Operation</u> Close views west to north-east to 2 m high environmental barrier along top of A465 cutting, either side of High Street overbridge, while existing lighting columns / light spill from A465 mainline would be removed. Views of overbridge, similar to existing views, though loss of vegetation in vicinity of overbridge would make traffic on Grawen Lane visible. Some glimpses from closest properties to tops of high sided vehicles in A465 mainline cutting either side of overbridge. Also upper storey glimpses south-west to tops of lighting columns at A470 junction and tops of high sided vehicles on elevated A465 mainline. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would as screen traffic on Grawen Lane and, soften and partially screen 2 m high environmental barrier to north and north-east, but not affect visibility of the barrier to west. Extent of traffic and highway infrastructure in views towards High Street overbridge would be similar to existing views. Upper storey glimpses south-west to tops of lighting columns at A470 junction and tops of high sided vehicles on elevated A465 mainline would remain. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R16 (11)	97 – 100 and 111 – 115 High Street and, 1 and 2 Station Road, Cefn Coed, Merthyr Tydfil.	60 m	Most views contained by properties and garden vegetation, except close oblique views north-west to High Street overbridge and, signage and lighting columns at High Street / Grawen Lane junction. Traffic on A465 screened by cutting and mix of deciduous and evergreen trees.	<u>Construction</u> Close oblique views north-west to demolition and construction of High Street overbridge. Also glimpses of construction activities for widened A465 mainline, including loss of vegetation. The magnitude impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude impact would be **minor adverse.**	**Slight adverse**
				<u>Operation</u> Close oblique views north-west to traffic on High Street overbridge would be similar to existing views, with exception of some loss of vegetation in vicinity of overbridge making traffic on Grawen Lane visible. Also filtered glimpses through intervening garden vegetation to 2 m high environmental barrier to north. The magnitude impact would be **minor adverse.**	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would soften close oblique views north-west to High Street overbridge and 2 m high environmental barrier to north, as well as screening traffic on Grawen Lane, making these views similar to existing views. The magnitude impact would be **negligible adverse.**	**Slight adverse**
S5-R17 (9)	Maen Mellin, Glendere Care Home and 1, 3 - 6, St. John's Close, and Gan yr Eglwys and Valbonne, New Church Street.	20 m	Views south-west to east generally contained by mature garden vegetation and dense deciduous and evergreen vegetation belt along A465 cutting. Close filtered views in winter to tops of lighting columns on A465.	<u>Construction</u> Northern extent of gardens of 5 St. John's Close and Valbonne would be lost to proposed scheme.Close views west to north-east of widened A465 cutting with highway infrastructure such as environmental barrier and signage, and demolition and construction of High Street overbridge and NMU overbridge, opened up by loss of vegetation. Views south-west and east would continue to be contained by vegetation and properties. The magnitude if impact would be **major adverse.**	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				Operation Close views west to north-east to 2 m high environmental barrier along top of A465 cutting, while existing lighting columns / light spill from A465 mainline would be removed. Views of NMU users on overbridge from some properties. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation planting would soften and partially screen 2 m high environmental barriers to west and north-east, and soften approach to NMU overbridge. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R18 (5)	Cherry Cottage, Cartref, Morlals Villas 1 and 2 and Taf Fechan House, Lower Vaynor Road, Cefn Coed, Merthyr Tydfil.	30 m	Views north-west contained by rising landform and mature vegetation. Oblique views north along Lower Vaynor Road to junction with A465, including traffic, lighting columns and signage. Middle distance filtered views north-east through vegetation in winter and upper storey views in summer, to Y Graig woodland and properties in Gurnos, with glimpses of traffic on A465.	Construction Close, mainly oblique views to construction of stopped up road at Lower Vaynor Road and new NMU route to north, as well as construction of widened A465 mainline to north and north-east, including Taf Fechan viaduct crossing with environmental barrier and parallel NMU bridge, partially opened up by loss of vegetation. Associated construction compounds and stockpiles also noticeable. Oblique glimpses of demolition of NMU bridge to north-west opened up by loss of vegetation. Middle distance filtered views through intervening trees to construction of A465 mainline through Y Graig to north-east. The magnitude of impact would be **moderate adverse.**	**Moderate averse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				Operation Close, mainly oblique views north and north-east to traffic flow on widened A465 mainline / Taf Fechan viaduct above 1 m high environmental barrier, partially opened up by loss of vegetation. Traffic flow brought closer to properties. Also views of parallel NMU bridge and highway infrastructure such as signage and a retaining wall, while existing lighting columns / light spill would be removed. Middle distance filtered glimpses of traffic flow on offline A465 mainline through Y Graig to north-east. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation planting would soften and partially screen views towards traffic flow and highway infrastructure on A465 mainline immediately north and in middle distance views to Y Graig to north-east. Traffic flow on western extent of Taf Fechan viaduct above 1 m high environmental barrier, would remain slightly more visible. The magnitude of impact would be **negligible adverse.**	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S5-R19 (8)	Ty Pont Pren, Vale View and Alandale, Brewery Lane, and 9a -11 and Old Police Station, Lower Vaynor Road, Cefn Coed, Merthyr Tydfil.	75 m	Views north-west contained by properties and mature vegetation. Close partially filtered views north to A465 Taf Fechan viaduct with traffic. Views north-east to wooded Taf Fechan valley, with glimpses of Y Graig woodland and Gurnos in the middle distance. Pylons are detracting features in landscape.	<u>Construction</u> Close, mainly oblique views to construction of dead end at Lower Vaynor Road and new NMU route to north, as well as construction of widened A465 mainline to north and north-east, including open views to construction of Taf Fechan viaduct crossing with environmental barrier and parallel NMU bridge, partially opened up by loss of vegetation. Associated construction compounds and stockpiles also noticeable. Oblique glimpses of demolition of NMU bridge to north-west opened up by loss of vegetation. Middle distance filtered views through intervening trees to construction of A465 mainline through Y Graig to north-east. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
				<u>Operation</u> Loss of vegetation would make traffic flow on widened A465 mainline / Taf Fechan viaduct slightly more visible above 1 m high environmental barrier, in close, mainly oblique views north and north-east. Also views of parallel NMU bridge and glimpses of highway infrastructure such as signage. Existing lighting columns / light spill to north would be removed. Middle distance filtered glimpses of traffic flow on offline A465 mainline through Y Graig to north-east. The magnitude of impact would be **minor adverse.**	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would soften and partially screen traffic flow and highway infrastructure on A465 mainline in views along Lower Vaynor Road to a greater extent than in existing views, but would not affect views of traffic flow on Taf Fechan viaduct and parallel NMU bridge. Traffic flow and highway infrastructure on offline A465 mainline through Y Graig to north-east would also be screened by existing trees and established mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R20 (8)	84 – 87 and 94 - 95b Lakeside Gardens, Gurnos, Merthyr Tydfil.	65 m	Slightly elevated oblique views south-west across Cefn Coed to the Baverstock ridge, including distant glimpses of traffic on the A465 descending from the ridge. Views north-west to north-east from these bungalows and two storey properties are generally contained by mix of deciduous and evergreen trees. Filtered glimpses across Y Graig Open Access Land in winter. The A465 is screened by	<u>Construction</u> Close filtered views north-west to construction of widened A465 Taf Fechan viaduct with parallel NMU route and associated compound and stockpiles. Also near open views north and north-east, due to vegetation loss, to construction of offline A465 mainline, with associated highway infrastructure such as signage and environmental barrier, parallel NMU route and a large attenuation pond. Distant glimpses of construction of A465 at Baverstock ridge to south-west. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Large adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			landform and vegetation.	<u>Operation</u> Close filtered views north-west to traffic flow on Taf Fechan viaduct above 1 m integrated environmental barrier, and parallel NMU bridge. Also near open views north and north-east, due to vegetation loss, to earthworks for large attenuation pond and users on NMU route, as well as traffic flow on offline A465 mainline, partially screened by 1 m high environmental barrier and cutting. Traffic flow on A465 descending from Baverstock ridge would generally be screened by cutting in distance to south-west. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Summer Year 15</u> Established mitigation planting would screen or soften views of attenuation pond and users of NMU route, and in combination with cutting, generally screen environmental barrier and traffic flow on offline A465 mainline to north and north-east. Taf Fechan viaduct and parallel NMU bridge would be screened by existing trees in leaf. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R21 (4)	80 – 83 Lakeside Gardens, Gurnos, Merthyr Tydfil.	120 m	Slightly elevated direct views south-west across Cefn Coed to the Baverstock Ridge. Distant glimpses of traffic on the A465 descending from the ridge. Views north and north-west generally contained by properties and garden vegetation. Views north-east screened by trees in summer, while there are filtered ascending glimpses across Y Graig open access land in winter.	<u>Construction</u> Close and middle distance, generally oblique, filtered views through intervening trees north and north-east, partially opened up by loss of vegetation, to construction of offline A465 mainline, with associated highway infrastructure such as signage, parallel NMU route and a large attenuation pond. Distant glimpses of construction of A465 at Baverstock ridge to south-west. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
				<u>Operation</u> Close and middle distance, generally oblique, filtered views through intervening trees north and north-east, partially opened up by loss of vegetation, to earthworks for large attenuation pond and users on NMU route. Also some views of traffic flow on offline A465 mainline to north and north-east, though cutting and landform would generally screen traffic on the offline route further up the hill. Traffic flow on A465 descending from Baverstock ridge would generally be screened by cutting in distance to south-west. The magnitude of impact would be **minor adverse.**	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would screen attenuation pond and, in combination with cutting, generally screen traffic flow on offline A465 mainline to north and north-east, though some glimpses of users of NMU route would remain. The magnitude of impact would be **negligible adverse.**	**Slight adverse**
S5-R22 (8)	13 - 20 Maple Crescent, Trefechan, Merthyr Tydfil.	405 m	Middle distance views south and south-east across Taf Fechan Valley to tree belts, including deciduous belt along A465. Filtered views through trees of traffic on A465 in winter. Glimpses and filtered views to properties in Gurnos in background.	<u>Construction</u> Middle distance views south and partially filtered views south-east through intervening trees, across valley to construction of elevated A465 offline route north of Gurnos, including highway infrastructure such as environmental barrier and attenuation ponds with access tracks, opened up by loss of trees. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				Operation Middle distance views south-east, partially filtered through intervening trees, across valley to traffic flow on elevated offline A465, as well as associated highway infrastructure such as 3 m high environmental barrier and attenuation ponds with access tracks. Traffic on A465 to south generally screened by cutting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation planting would generally screen traffic and highway infrastructure associated with offline A465 to south-east, though occasional glimpses of traffic might remain. The magnitude of impact would be **negligible adverse.**	**Slight adverse**
S5-R23 (3)	1-3 Gurnos Farm Cottages, Gurnos Ring Road, Gurnos, Merthyr Tydfil.	13 m	Views south-west to east are generally contained by garden vegetation and vegetation belt along A465 in summer. Close direct filtered views to traffic on A465 in winter.	Construction Close views south-west to east, partially filtered by garden vegetation, to construction of retaining structure and embankments for widened and elevated A465, including highway infrastructure such as signage and environmental barrier. Loss of southern extent of gardens. Oblique filtered views through garden vegetation to construction of attenuation pond to east. The magnitude of impact would be **major adverse.**	**Very large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Very large adverse**
				Operation Close views south-west to east, partially filtered by garden vegetation, to tall retaining structure and embankments, traffic flow and highway infrastructure such as signage, on A465. Oblique filtered views east through garden vegetation to earthworks for attenuation pond. Glimpses of tops of lighting columns / light spill to north-east above existing trees. The magnitude of impact would be **major adverse.**	**Very large adverse**	Summer Year 15 Established mitigation planting would screen lower part of vehicles on A465 and highway infrastructure , though tops of high sided vehicles and signage, and glimpses of retaining structure and environmental barrier would remain. Filtered views of attenuation pond to east would remain. Possible glimpses of tops of lighting columns / light spill to north-east. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
S5-R24 (62)	7 – 13 (odds), 12 – 26 (evens) and 59 – 65 (odds) Heather Road, 1 – 17 (odds) Lupin Close, 2 – 56 (evens) and 11 – 33 (odds) Lanvender Road, and 2 –	145 m	Wide open views south-west and west across urban areas of Cefn Coed and Clwydyfagwyr to Baverstock ridge and BBNP in background. Glimpsed views of traffic and lighting columns on A465 in Cefn Coed and near A470 junction and Baverstock ridge. Lower level views north-west and north to edge of Y Graig open space, with BBNP in background. Pylons are detracting features in landscape.	Construction Middle distance views west to construction of widened A465 with highway infrastructure through Cefn Coed, including demolition and construction of NMU bridge, and widened viaduct and new NMU bridge at Taf Fechan, as well as glimpses of construction of offline route and attenuation pond at Y Graig, opened up by loss of vegetation. Longer distance and distant views south-west to construction of A470 junction with elevated A465 mainline and widened A465 with parallel link road to Baverstock. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
	12 Clover Road, , Gurnos, Merthyr Tydfil.			Operation Middle distance views west to traffic flow and highway infrastructure on widened A465 at eastern edge of Cefn Coed, including southern extent of offline route through Y Graig, opened up further by loss of vegetation. Earthworks on edge of BBNP, traffic flow on elevated A465 through A470 junction and on ascent to Baverstock ridge, more prominent in longer distance and distant views south-west due to loss of vegetation and vertical alignment, as well as parallel link road. Overall reduction in lighting columns / light spill along route perceptible at night. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation planting in combination with landform would screen views of traffic flow on offline route through Y Graig and generally soften middle distance to distant views of traffic flow and highway infrastructure on A465 to west and south-west, although traffic would remain slightly more prominent. Overall reduction in lighting columns / light spill along route perceptible at night. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R25 (45)	33 – 57 Forsythia Close, 9 - 16 Pen-Y-Dre and 1 - 12 Pen Gurnos, Gurnos, Merthyr Tydfil.	80 m	Views generally contained locally by surrounding properties and deciduous trees. Close filtered glimpses through trees to traffic on A465 to north in winter. Slightly elevated longer distance filtered views north-west to BBNP.	Construction Close views above properties, partial views between properties and/or filtered through vegetation north-west to north, to construction of NMU route, new access track / underpass to Gurnos Farm, and elevated offline A465 mainline through Y Graig, with highway infrastructure such as signage and environmental barrier, opened up by loss of vegetation. Also close glimpses of minor improvements on Gurnos Ring Road. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				Operation Close views above properties, partial views between properties and/or filtered through vegetation north-west to north, to users on NMU route, access track / underpass to Gurnos Farm and traffic flow on elevated offline A465 mainline through Y Graig, limited to tops of high sided vehicles above 3 m high environmental barrier to east of underpass, opened up by loss of vegetation. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation planting would generally screen underpass to Gurnos Farm and traffic flow on A465, though filtered glimpses of tops of high sided vehicles and 3 m high environmental barrier would remain, as well as some views north from Pen Gurnos where tops of high sided vehicles and environmental barrier would be unaffected by planting. Users on NMU route and part of access track to Gurnos Farm would remain visible in views north-west. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R26 (12)	13 – 16 Pen Gurnos and, 1 - 8 Pen-Y-Dre, Gurnos, Merthyr Tydfil.	80 m	Views generally contained locally by surrounding properties and deciduous trees. Close filtered glimpses through trees of traffic on A465 to north in winter. Slightly oblique elevated longer distance glimpsed views in summer and filtered views through intervening deciduous vegetation in winter, north-west to BBNP.	Construction Close views west to north to construction of NMU route, new access track / underpass to Gurnos Farm, and elevated offline A465 mainline through Y Graig, with highway infrastructure such as signage and environmental barrier, opened up by loss of vegetation. Also close views to minor improvements in foreground on Gurnos Ring Road. The magnitude of impact would be **major adverse.**	**Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Large adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				Operation Close views west to north to users on NMU route, access track / underpass to Gurnos Farm and traffic flow on elevated offline A465 mainline through Y Graig, limited to tops of high sided vehicles above 3 m high environmental barrier to east of underpass, opened up by loss of vegetation. The magnitude of impact would be **major adverse.**	**Large adverse**	Summer Year 15 Established mitigation planting would generally screen underpass to Gurnos Farm and traffic flow on A465, though filtered glimpses of tops of high sided vehicles and 3 m high environmental barrier would remain. Users on NMU route and access track would remain visible in views west. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R27 (27)	17 - 32 Pen Gurnos, Ty Gwanfarren Residential Home, and 5-12 and 47 – 48 Penyfan View Gurnos, Merthyr Tydfil.	37 m	Close direct views north across Gurnos Ring Road to tree belt along A465, which screens views of traffic flow in summer and filters views in winter. Glimpses to underpass to Gurnos Farm to north-west. Views west and east contained by adjacent properties and/or trees, with exception of distant, generally oblique views above trees west to glimpses of traffic on A465 descending from Baverstock ridge.	Construction Close views west, north and east to construction of widened and elevated A465 mainline including tall retaining wall and embankment, as well as highway infrastructure such as signage and environmental barrier, opened up by loss trees. Also close generally oblique views west to construction of access track / underpass to Gurnos Farm, with distant glimpses to construction at Baverstock ridge in background. The magnitude of impact would be **major adverse.**	**Very large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Very large adverse**
				Operation Close views west, north and east across Gurnos Ring Road, opened up by loss of trees, to tops of high sided vehicles and signage on A465 mainline above 3 m high environmental barrier on tall retaining wall and embankment, which would appear very dominant in views. Also close generally oblique views west to access track / underpass to Gurnos Farm, with distant glimpses to traffic flow on A465 mainline and parallel link road descending from Baverstock ridge in background. The magnitude of impact would be **major adverse.**	**Very large adverse**	Summer Year 15 Established mitigation planting would soften views of embankment and screen 3 m high environmental barrier and traffic flow on A465 in some views, but would not fully mitigate views of tall retaining wall, 3 m high environmental barrier and tops of high sided vehicles opposite some properties on Pen Gurnos. Access track / underpass to Gurnos Farm would generally be screened by established mitigation planting to west, while some oblique distant glimpses to traffic flow on A465 mainline and parallel link road descending from Baverstock ridge would remain. The magnitude of impact would be **major adverse.**	**Large adverse**
S5-R28 (32)	1 – 4 and 19 - 46 Penyfan View, Gurnos, Merthyr Tydfil.	75 m	Views generally contained locally by surrounding properties and deciduous trees. Close filtered glimpses between properties and through trees to traffic on A465 to north in winter.	Construction Close partial views north between properties to construction of widened and elevated A465 mainline including tall embankment above low retaining wall, as well as highway infrastructure such as signage and environmental barrier, opened up by loss of trees. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				<u>Operation</u> Close partial views north between properties, opened up by loss of vegetation, to tops of high sided vehicles and signage on A465 mainline above 3 and 4 m high environmental barrier, on tall embankment above low retaining wall. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would soften views of embankment and generally screen 3 and 4 m high environmental barrier and traffic flow on A465. The magnitude of impact would be **negligible adverse.**	**Slight adverse**
S5-R29 (15)	13 – 18 Penyfan View and 1- 8 Fernhill Close, Gurnos, Merthyr Tydfil.	70 m	Views generally contained locally by surrounding properties and deciduous trees. Close oblique filtered views through trees to traffic on A465 to north and north-east in winter.	<u>Construction</u> Close oblique views north and north-east to construction of widened A465 mainline and western extent of expanded Prince Charles Hospital junction, including embankments and retaining walls, as well as highway infrastructure such as environmental barrier, opened up by loss of trees. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				<u>Operation</u> Close oblique views north and north-east across Gurnos Ring Road to tops of high sided vehicles above 3 m high environmental barrier on A465 mainline and western extent of Prince Charles Hospital slip roads, opened up by loss of trees. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would partially screen and soften views of tops of high sided vehicles above 3 m high environmental barrier on A465 mainline and western extent of Prince Charles Hospital slip roads, in oblique views north and north-east across Gurnos Ring Road. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R30 (25)	1 - 9 Hornbeam Close, 2 - 12 (evens) Whitebeam Close and, 1 – 5 (odds) and 2 -12 (evens) Wellingtonia Close, Gurnos,	50 m	Lower level views generally contained locally by surrounding properties and deciduous trees. Close oblique views east to Goitre Underpass. Filtered views west, north and east in winter through trees to traffic on A465. Also slightly elevated distant views south-west to glimpses of traffic on A465 descending from Baverstock ridge.	<u>Construction</u> Close views west, north and east to minor NMU improvements along Gurnos Ring Road and construction of widened A465 and western half of expanded Prince Charles Hospital junction, with highway infrastructure such as signage, lighting columns and environmental barriers, opened up by loss of trees. Distant glimpses south-west to construction activities at Baverstock ridge. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Large adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
	Merthyr Tydfil.			Operation Close views west and north across lit Gurnos Ring Road to tops of high sided vehicles above 3 m high environmental barriers on widened A465 mainline, opened up by loss of vegetation. Traffic and highway infrastructure at Prince Charles Hospital junction to north and north-east would generally be screened by cutting and 3 and 4 m high environmental barriers in lower storey views, with exception of tops of lighting columns / light spill and tops of high sided vehicles on slip road on northern side of junction. Distant glimpses south-west to traffic on A465 mainline and parallel link road descending from Baverstock ridge. The magnitude of impact would be **major adverse.**	**Large adverse**	Summer Year 15 Established mitigation planting would partially screen and soften views of tops of high sided vehicles above 3 m high environmental barrier on A465 mainline to west and slightly soften views north-east to Prince Charles Hospital junction, though glimpses of tops of lighting columns / light spill would remain. Views north would not be changed and tops of high sided vehicles on slip road on northern side of junction would remain visible above 3 and 4 m high environmental barrier, as well as some upper storey views to traffic in cutting. Also distant glimpses south-west to traffic on A465 mainline and parallel link road descending from Baverstock ridge. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
S5-R31 (29)	14 – 44 (evens) and, 7- 13 and 21 (odds), Wellingtonia Close and 50 – 56 Cypress Close, Gurnos, Merthyr Tydfil.	80 m	Lower level views generally contained locally by surrounding properties and deciduous trees. Close oblique views east to Goitre Underpass. Filtered views through trees in winter west, north and east, between properties, to traffic on A465.	Construction Close partial views north and north-east between properties or oblique views from properties on eastern edge, to minor NMU improvements along Gurnos Ring Road and construction of western half of expanded Prince Charles Hospital junction, with highway infrastructure such as signage, lighting columns and environmental barriers, opened up by loss of trees. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				Operation Close partial views north and north-east between properties or oblique views from properties on eastern edge, across lit Gurnos Ring Road to western half of expanded Prince Charles Hospital junction, where traffic and highway infrastructure would generally be screened by cutting and 3 and 4 m high environmental barrier, with exception of tops of lighting columns / light spill to north-east and tops of high sided vehicles on slip road on northern side of junction. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation planting would slightly soften views north and north-east to Prince Charles Hospital junction, although glimpses of tops of lighting columns / light spill would remain, with views of 3 and 4 m high environmental barrier in foreground. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R32 (1)	Dan-y-Castell Farm, Pontsarn Road, Merthyr Tydfil.	160 m	The farmhouse has direct front views between garden trees towards vegetation along the A465 with upper floors of the school and hospital buildings visible beyond.	Construction Views from the farmhouse would include tree clearance, earthworks and construction of the raised junction at Prince Charles Hospital in fields south of the property and the realigned Goitre Road NMU. The magnitude of impact would be **moderate adverse.**	**Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Large adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				Operation Traffic and lighting columns / light spill on the raised junction and slip roads and the link road would be visible. The NMU in cutting would limit views of people on it. The magnitude of impact would be **moderate adverse**.	**Large adverse**	Summer Year 15 Established mitigation planting around the junction would screen views of traffic, but the top of lighting columns / light spill would remain visible. Traffic, particularly high sided vehicles, would be visible above shrubs on the northern off slip road at the junction. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-R33 (1)	Fernhill, Pontsarn Road, Merthyr Tydfil.	300 m	This elevated property has panoramic views from upper floors with ground floor views partially screened by woodland on the slope to the south. Vegetation along the A465, The Trade Centre for Wales, Pen-Y Dre high school and the hospital are visible.	Construction Partial descending views of tree clearance between intervening woodland on the slope south of the property, particularly from upper floor windows would be possible together with construction works, including demolition, earthworks, retaining walls, the A465, ponds and the northern link road. The compound would also be glimpsed beyond the construction. Views would extend intermittently from the Trade Centre Wales demolition site to the Prince Charles Hospital junction. The magnitude of impact would be **minor adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Moderate adverse**
				Operation Partial descending views of traffic in cutting would be visible on the A465, and on the link road through fields to the north of the A465. Lighting columns / light spill at the junction would be visible. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	Summer Year 15 Established mitigation planting along the A465 and around the junction would reduce views but the link road would remain partially in view. The magnitude of impact would be **negligible adverse**.	**Slight adverse**
S5-R34 (1)	Kimberley, Bungalow, Pontsarn Road, Merthyr Tydfil.	145 m	Views from the front of this property look out over the road to open access land of rough grass ascending gently to the north with roofs of large industrial buildings visible beyond. The views are partial; over and between garden vegetation. To the rear descending views are oblique towards the Trade Centre for Wales and direct towards the A465 under garden trees and screened by vegetation along the A465 and fields.	Construction Loss of existing vegetation along A465 and within eastern end of garden would open up views across the A465 to Pen-Y-Dre school and towards demolition of the Trade Centre for Wales. and earthworks together with retaining wall and road construction would be visible, including the raised Prince Charles Hospital junction, between vegetation in the garden and intervening fields. The compound on the south side of the A465 would be visible. Construction of the attenuation pond and new junction slip road cutting across the corner of the garden would be visible at close proximity. The magnitude of impact would be **major adverse.**	**Very Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				Operation There would be traffic passing on the junction slip road at close proximity and the lit junction on embankment would be visible adjacent to the school. The enlarged A465 corridor would be closer and with traffic in cutting as well as on Gurnos Ring road would be visible in descending views south west. The magnitude of impact would be **major adverse.**	**Large adverse**	Summer Year 15 Established mitigation planting on cutting slope of the A465 and on the junction embankment would reduce views of traffic in these locations and of vehicles on Gurnos Ring Road. The junction slip road, vehicles on it and commercial units remaining at the Trade Centre Wales would remain visible in the view to the south, and the balancing pond to the north of the property. The magnitude of impact **would be moderate adverse**.	**Moderate adverse**
S5-R35 (19)	39 - 61 (odds) and 46 First Avenue, 28, 30,31 and 32 Sixth Avenue, and, 17and 19 Eighth Avenue, Galon Uchaf, Merthyr Tydfil.	90 m	Views from the rear of these properties north west towards the A465 beyond school playing fields and Gurnos Ring road are screened by vegetation along the A465, the school boundary and, in places, by garden buildings and scrub located to the rear of the properties.	Construction Loss of existing vegetation along A465 would open up views across the A465 to commercial areas and wider countryside. Compound hoarding along Gurnos Ring Road would limit views of work, materials and machinery within the compound from ground floor locations. Construction of the new junction opposite Pen-Y-Dre school buildings would be glimpsed from first floor windows beyond the compound and filtered by intervening vegetation. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				Operation The A465 would be further away. Traffic and lighting columns / light spill at the Prince Charles Hospital junction would be glimpsed over and filtered by intervening vegetation. Views beyond the A465 from first floor windows would remain. The magnitude of impact would be **minor adverse**.	**Slight adverse**	Summer Year 15 The mitigation planting would have established along the A465 and views of traffic and the traffic on junction would be reduced. Lighting columns / light spill at the junction would remain visible above the trees. The magnitude of impact would be **no change**.	**Neutral**
S5-R36 (18)	37 First Avenue, 2 – 18 (evens) and 25 – 39 (odds), Galon Uchaf Road, Merthyr Tydfil.	45 m	These properties are slightly elevated and have rear views towards the A465 to the north and west screened by vegetation along the A465 and a copse of trees in the open space along their rear boundaries.	Construction Loss of existing vegetation along A465 would open up views across the A465 to commercial areas, demolition and countryside. Compound hoarding along Gurnos Ring Road would partially limit views of work, materials and machinery within the compound from ground floor locations close to the work. From these slightly elevated properties descending views of compound and roadworks would be possible. With construction of the new junction opposite Pen-Y-Dre school buildings visible from first floor windows filtered by intervening vegetation. The magnitude of impact would be **moderate adverse**.	**Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Moderate adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				Operation The A465 would be further away. Views to traffic on the A465 and commercial properties on the north side of the road would be possible, although filtered by vegetation. The junction and lighting columns / light spill would be visible crossing the A465 opposite Pen-Y-Dre school. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	Summer Year 15 The mitigation planting would have established along the A465 and views of traffic and the traffic on junction would be reduced. Lighting columns / light spill at the junction would remain visible above the trees. The magnitude of impact would be **no change**.	**Neutral**
S5-R37 (8)	74 and 76 Galon Uchaf Road, 1,1b,2,4 and 6 Twelfth Avenue, and 1 Mitchell Cresent, Glaon Uchaf, Merthyr Tydfil.	65 m	From their elevated position these properties look out over the existing Gurnos Ring road roundabout and bridge over the A465 to glimpsed traffic on A465 and industrial areas to the north, partially screened by woodland north of the A465. On the southern side the A465 is screened to the south west by woodland and to the east by the industrial building on the west side of the roundabout.	Construction Loss of existing vegetation would open up and increase views across the A465 to commercial and industrial areas north of the A465. These properties would have direct views to construction of the Galon Uchaf bridge and new roundabout on the north side. There would be oblique glimpsed views of demolition and descending views to construction of the A465 from first floor windows. The magnitude of impact would be **major adverse**.	**Very Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Large adverse**
				Operation Traffic would be more visible particularly on northern carriageway of the widened A465 and open views to the industrial areas on the north of the A465 would remain. The magnitude of impact would be **moderate adverse.**	**Large adverse**	Summer Year 15 Mitigation planting would have established to the west of the bridge on both north and south sides and would reduce views of traffic and commercial buildings. Individual trees would define the edge of the industrial area and reduce views of the large building units slightly. The magnitude of impact would be **minor adverse.**	**Moderate adverse**
S5-R38 (12)	25 – 36 Rocky Road, Galon Uchaf, Merthyr Tydfil.	23 m	These properties have front north and north east views towards the A465 beyond Rocky Road and the slip road off the A465. The views of the A465 are largely screened in summer and filtered in winter by woodland between Rocky Road and the slip road and along the A465. More open views of the A465 and traffic in cutting are possible for properties at the northern end of the group.	Construction Tree clearance along the A465 and slip road and earthworks to construct the pond would be visible in both direct and oblique views and would open up views of the industrial area to the north and increase views of the A465 and construction along it to the east. The magnitude of impact would be **major adverse**.	**Very Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				Operation From upper floor windows traffic on the A465 would be visible before the Galon Uchaf overbridge and extending east towards Pant viaduct. The industrial units on the northern side of the A465 would be visible. The earthworks for the pond and access road would be visible for the more northern receptors in this group. There would no longer be a slip road off the A465 joining Rocky Road adjacent to these receptors at this location and this reduction in views of traffic would improve the view for these receptors. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	Summer Year 15 Established mitigation planting along the A465 would screen traffic along part of the A465 and the majority of the industrial area in views north-east from some properties. The magnitude of impact would be **minor adverse**.	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S5-R39 (approx. 240)	East side of Twelfth Avenue and all properties along Roberts Avenue, 1 – 42 & 43 – 77 (odds) Mitchell Crescent, 1 – 48 Marshall Crescent, 33 – 92 Haydn Terrace, 68 – 94 (evens) Penybryn (north east edge).	50 m	These properties ascend a steep east facing hillside from which panoramic views from front elevations extend to the commercial buildings and Asda at Dowlais Top. Pant Viaduct and the A465 west of it above vegetation within Ifor Park are in view until the Dowlais Cwm Community Woodland rises up the hillside and screens the road as it passes to the north.	<u>Construction</u> Tree clearance would open up and emphasise the route of the A465 from these elevated viewpoints. Earthworks and construction of the attenuation pond and road widened on embankment would be visible between Dowlais Cwm Community Woodland and Pant viaduct. There would be a clear view of the new viaduct being constructed over Pant Road. The compound area north of Pant viaduct would be partially visible. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **negligible adverse**.	**Slight adverse**
				<u>Operation</u> Traffic on embankment above Ifor Park and crossing the new widened Pant viaduct would be visible above remaining vegetation within Ifor Park. The route of the widened A465 would be just visible as it approaches Dowlais junction at Asda and glimpsed longer distance views of traffic on the elevated road over the junction, as well as lighting columns / light spill at it, would be possible. The magnitude of impact would be **negligible adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting along the length of the A465 would screen views of it and integrate it into its surroundings. Pant viaduct would remain visible. The magnitude of impact would be **negligible adverse.**	**Neutral**
S5-R40 (13)	Avoca, Wattisham, Meriel, Glendewloine, Hazeldene, Linter and 1 – 4 Rocky Road, and 1,10 and 19 Parc Brychan, Galon Uchaf, Merthyr Tydfil.	125 m	Mostly bungalows with ascending front views north east towards the A465 are possible from these properties, set back in a slightly elevated position above Rocky Road. Traffic on the A465 is visible on the horizon beyond scattered trees in Ifor Park with housing descending along the eastern edge of the park. To the west views of the A465 are screened by Dowlais Cwm Community Woodland. Similar views are possible from north west facing windows of detached properties on Parc Brychan.	<u>Construction</u> Tree removal along the A465 would increase views of the A465 corridor on the horizon through scattered trees on the sloping ground of Ifor Park. Large scale earthworks and machinery would be visible on the horizon and extend into the park as the road is widened. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **negligible adverse**.	**Slight adverse**
				<u>Operation</u> There would be an increase in traffic visible on the horizon between Cwm community woodland and Pant viaduct. The magnitude of impact would be **negligible adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting on the embankments and edge of Ifor Park would screen views of traffic on the A465 travelling across the horizon. The magnitude of impact would be **no change.**	**Neutral**
S5-R41 (115)	1 – 17 Ifor Terrace, 1 – 55 Winifred Street, 1 – 9 and 14 – 17 Wimborne Street (south side), 1 – 23	100 m	The terraced properties on this steep north west facing slope have either front or rear views direct, slightly oblique, level or ascending, over Ifor Park to the A465 on the ridge between Pant viaduct and Dowlais Cwm Community Woodland at Galon Uchaf. Views are filtered by	<u>Construction</u> Tree clearance would increase views of the A465 corridor. Earthworks to create the widened road on embankment at the north end of Ifor Park would be visible and construction of the attenuation pond would be glimpsed between existing vegetation. The magnitude of impact would be **minor adverse**.	**Moderate Adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight Adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
	Frances Street, 8 – 9 Pant Terrace and, 1 – 6 and Maelog House, Cross Ivor Terrace, Dowlais, Merthyr Tydfil.		intermittent vegetation within Ifor Park.	Operation Traffic on the widened road extending on embankment between Pant viaduct and Galon Uchaf would be more visible. The magnitude of impact would be **minor adverse**.	**Slight Adverse**	Summer Year 15 Established mitigation planting to the south of the A465 would screen views of the road and traffic on it. The magnitude of impact would be **no change**.	**Neutral**
S5-R42 (17)	1 – 10 Henlwen Close and 72 – 78 Hen Rhyd-Y-Beds, Pant, Merthyr Tydfil	175 m	These properties have direct and oblique south east views towards the A465 over undulating open ground. They have slightly ascending views of the Pant viaduct and traffic on it.	Construction The loss of vegetation along the north side of the A465 would open up views to the A465 west and east of Pant viaduct. There would be views of the new Pant viaduct construction, including earthworks, retaining walls and use of cranes. Glimpsed views of higher elements within the compound would be possible. The magnitude of impact would be **moderate adverse**.	**Large Adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Moderate Adverse**
				Operation Elevated traffic on embankment and viaduct would be visible from Jones Street to the industrial estate in the west. 1 m high Environmental barriers would help screen traffic east of the viaduct. The magnitude of impact would be **minor adverse**.	**Moderate Adverse**	Summer Year 15 Established mitigation planting on the road embankments to east and west of Pant viaduct would screen views of traffic on the A465. The new Pant viaduct is not as long as the existing viaduct and the length of traffic open to views would be reduced although the structure would be wider, and capable of taking a greater volume of traffic at any one time. The magnitude of impact would be **no change**.	**Neutral**
S5-R43 (32)	1 – 8, 21 and 22 Primrose Close, 1 – 19 (odds) Hedl-Y-Bryniau and 1 – 12 King Street, Pant, Merthyr Tydfil	330 m	These properties have direct and oblique south east views towards the A465 over undulating open ground. They have slightly ascending views of the Pant viaduct and traffic on it.	Construction The loss of vegetation along the north side of the A465 would open up views to the A465 west and east of Pant viaduct. There would be views of the new Pant viaduct construction, including earthworks, retaining walls and use of cranes. Glimpsed views of higher elements within the compound would be possible. The magnitude of impact would be **moderate adverse**.	**Large Adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Moderate Adverse**
				Operation Elevated traffic on embankment and viaduct would be visible from Jones Street to the industrial estate in the west. 1 m high Environmental barriers would help screen traffic east of the viaduct. The magnitude of impact would be **minor adverse**.	**Moderate Adverse**	Summer Year 15 Established mitigation planting on the road embankments to east and west of Pant viaduct would screen views of traffic on the A465. The new Pant viaduct is not as long as the existing viaduct and the length of traffic open to views would be reduced although the structure would be wider, and capable of taking a greater volume of traffic at any one time. The magnitude of impact would be **no change**.	**Neutral**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S5-R44 (22)	1 – 22 Caeraca Villas, Pant, Merthyr Tydfil.	355 m	These three storey properties are situated in elevated locations within Pant and have intermittent oblique and direct views towards the A465 between Jones Road to Pant Road viaduct over and between intervening buildings and the views continue west behind the industrial estate. The A465 is partly concealed by trees on embankment and mature trees within the Hafod housing estate, but Pant Road viaduct is visible as are houses on Cross Houlson Street south of the A465.	<u>Construction</u> The loss of vegetation along the A465 would open up views to the A465 west and east of Pant viaduct. There would be partial views of earthworks, the new Pant viaduct construction, retaining walls and the use of cranes. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				<u>Operation</u> Elevated traffic on embankment and viaduct would be visible from Jones Street to the industrial estate in the west. 1 m high Environmental barriers would help screen traffic east of the viaduct. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting on the road embankments to east and west of Pant viaduct would screen views of traffic on the A465. The new Pant viaduct is not as long as the existing viaduct and the length of traffic open to views would be reduced although the structure would be wider, and capable of taking a greater volume of traffic at any one time. The magnitude of impact would be **no change**.	**Neutral**
S5-R45 (9)	57 – 49 Glanmorlais, (3 storey), Pant, Merthyr Tydfil.	339 m	These three storey properties are situated in elevated locations within Pant and have intermittent oblique and direct views towards the A465 between Jones Road to Pant Road viaduct over and between intervening buildings and the views continue west behind the industrial estate. The A465 is partly concealed by trees on embankment and mature trees within the Hafod housing estate, but Pant Road viaduct is visible as are houses on Cross Houlson Street south of the A465.	<u>Construction</u> The loss of vegetation along the A465 would open up views to the A465 west and east of Pant viaduct. There would be partial views of earthworks, the new Pant viaduct construction, retaining walls and the use of cranes. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				<u>Operation</u> Elevated traffic on embankment and viaduct would be visible from Jones Street to the industrial estate in the west. 1 m high Environmental barriers would help screen traffic east of the viaduct. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting on the road embankments to east and west of Pant viaduct would screen views of traffic on the A465. The new Pant viaduct is not as long as the existing viaduct and the length of traffic open to views would be reduced although the structure would be wider, and capable of taking a greater volume of traffic at any one time. The magnitude of impact would be **no change**.	**Neutral**
S5-R46 (19)	1 - 5 Pant Road, 1 – 8 Windsor Place (Pant Road) and 1 – 6 Haford Cottages, Pant, Merthyr Tydfil.	100 m	These properties have front and rear oblique ascending views south towards the A465 at Pant viaduct and embankments. Views are possible along Pant Road and across open ground west of Pant Road and land within Haford housing estate on the east. Woodland on embankment either side of Pant viaduct	<u>Construction</u> Tree removal would extend views of the A465 on embankment either side of Pant viaduct. During construction there would be views of earthworks as well as removal of the existing viaduct and construction of the new viaduct including the use of cranes. The compound along Pant Road would be visible at close proximity. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			and within housing east of Pant Road reduces views of traffic particularly to the west of the viaduct.	<u>Operation</u> Elevated traffic on embankment and viaduct would be visible on the viaduct and on embankment, west behind the industrial area and east below housing south of the A465. Environmental barriers would be visible at the top of the embankment and screen traffic east of the viaduct. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting along the embankments either side of Pant viaduct would limit views of traffic on the embankment to the viaduct. The magnitude of impact would be **no change**.	**Neutral**
S5-R47 (24)	82 – 89 and 94 – 109 Hafod Cottages, Pant, Merthyr Tydfil.	38 m	Direct and oblique views from front and rear elevations towards the A465 at Pant Road viaduct and Jones Street overbridge are possible. The A465 on embankment and landform south of the Haford Housing estate is partially screened by vegetation.	<u>Construction</u> Tree removal would increase views of the elevated A465 between Pant viaduct and Jones Street overbridge. The widening of the road would result in views of large scale earthworks at close proximity in addition to construction of bridges and the use of cranes. Glimpsed views of the compound would be partially screened by intervening trees and buildings. The magnitude of impact would be **major adverse**.	**Very Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				<u>Operation</u> The A465 would be on embankment and all but high sided vehicels screened by 1 m high environmental barriers in ascending views south from these properties. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> The mitigation planting on the embankment slopes would have established and screened the A465 environmental barriers and high sided vehicles. The magnitude of impact would be **no change**.	**Neutral**
S5-R48 (29)	1 – 9 Beacon View, 1 – 6 Cross Houlson Street, 7 – 9 Houlson Street, 6 - 8 Davies Street, 5 - 7 Jones Street, 31 – 35 Guest Cottages, Dowlais, Merthyr Tydfil.	21 m	These properties have direct or oblique descending views north towards the A465 in close proximity. Beyond the A465 the views are extensive, towards Pant with open hillsides beyond, partially obstructed by trees on embankments and within the wider landscape. Elevated views extend along the A465 west towards Galon Uchaf and east towards Dowlais	<u>Construction</u> The road widening earthworks, Pant viaduct and Jones Road overbridge construction would be visible in addition to the road surfacing in close proximity. The compound would be visible to the west. The magnitude of impact would be **major adverse**.	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				<u>Operation</u> The increased road surface and traffic on it would be visible with 2 and 3 m high environmental barriers reducing views of traffic on the road east of Pant viaduct and extending east beyond Jones Street overbridge. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting on embankments would reduce longer views along the A465 to the east and west but the section of road between Pant viaduct and Jones Street would remain visible. The magnitude of impact would be **minor adverse**.	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S5-R49 (34)	Wern House, Garn House, Bryn Awel & Fronheulog, Upper Street, 1 – 28 Guest Cottages, and, 3 and 4 Jones Street, Dowlais, Merthyr Tydfil.	33 m	These terraced properties have rear northern views to the A465 over a field and filtered through intervening vegetation and partially screened by outbuildings. Traffic on the A465 is screened by roadside vegetation.	<u>Construction</u> Vegetation clearance along the A465 would open up views of the A465 and fields beyond, including the earthworks around the reservoir. Construction activities including earthworks, movement of machines and road surfacing would be visible. Views of the NMU overbridge construction would also be possible. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				<u>Operation</u> The A465 and traffic on it would be visible in slight cutting between the NMU overbridge and Guest Cottages where it would be visible on embankment approaching Jones Street overbridge. The NMU overbridge earthworks and 3 m high environmental barrier would partially screen traffic on the road. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting along the A465 would screen traffic on the road. NMU overbridge would remain in the view. The magnitude of impact would be **minor adverse**.	**Slight adverse**
S5-R50 (11)	7, 7a,8,9,9a and 10 – 15 Upper Row, and Penn-y-Wern House, Dowlais, Merhtyr Tydfil.	130 m	There are rear northern views to the A465 over Upper Row and parked cars, open space and play area filtered through scattered vegetation in the open space behind the properties and vegetation along the edge of the A465.	<u>Construction</u> Vegetation clearance along the A465 would open up views of the A465 and fields beyond, including the earthworks around the reservoir. Construction activities including earthworks, movement of machines and road surfacing would be visible. Views of the NMU overbridge construction would also be possible. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				<u>Operation</u> The A465 and traffic on it would be visible in shallow cutting between the NMU overbridge and Guest Cottages, and on embankment east of the NMU overbridge. The NMU overbridge earthworks and 3 m high environmental barrier would screen traffic on the road for its length. The NMU bridge and people using it would be in view. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting along the A465 would screen traffic on the road. NMU overbridge would remain in the view. The magnitude of impact would be **minor adverse**.	**Slight adverse**

Reference number[1] with number of properties in brackets * Listed Building	Location / address	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S5-R51 (31)	25 – 30 Station Terrace, 32 – 48 and 50 High Street,1 – 3 New Houses, High Street and, 13 – 16 and 21 Coedcae Row, Dowlais, Methyr Tydfil.	85 m	These properties have slightly ascending views north to the A465 and the Asda building over open space, filtered by vegetation, and oblique views north east towards the roundabout junctions with the retail area and A4060.	<u>Construction</u> Vegetation removal along the A465 would open up views north beyond the A465 to Asda and other commercial buildings on rising ground. Construction activities would include large scale earthworks within adjacent field, bridge construction and road surfacing. Lighting would also be installed at the junction. The magnitude of impact would be **major adverse**.	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse**	**Large adverse**
				<u>Operation</u> Traffic on embankment travelling on the main line and slip roads would be visible, limited to high sided vehicles where 1 m high environmental barriers restrict views west of the junction overbridges. Oblique views would be possible to high level traffic passing over the junction and lighting columns / light spill would be prominent. Beyond the A465 embankments views of Asda would be reduced. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Summer Year 15</u> Established mitigation planting would largely screen traffic on the embankments up to the overbridges at the junction of the A465 with the A4060, but the west bridges and traffic on it would remain visible. The east bridge would be screened by planting on the roundabout. The magnitude of impact would be **minor adverse**.	**Slight adverse**

Page left intentionally blank

Appendix 10F – Visual Effects Schedule: Users of Public Rights of Way and Open Access Land

Table 10F.1 Visual effects schedule: users of Public Rights of Way and Open Access Land

Value / sensitivity to change: High

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-A1 (80 ha)	Hirwaun Common Countryside and Rights of Way Act Open Access Land.	510 m	Wide range of middle distance to distant views including panoramic views from cairn at 515 m A.O.D. Opencast workings prominent in foreground. Hirwaun visible with distant views to hills in BBNP beyond to the north. Glimpsed views north-east, through gaps in vegetation, to traffic on A465 as it descends from Baverstock ridge to Hirwaun. The A465 / A4059 junction is visible.	<u>Construction</u> Construction plant for construction of Hirwaun junction overbridge with associated highway infrastructure, including lighting columns visible. Also glimpsed distant views north-east of construction at Baverstock including major earthworks activities for deep cutting. Some construction works at Trewaun junction also visible including Trewaun South temporary diversion and traffic. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				<u>Operation</u> Middle distance to distant views north, particularly of the elevated Hirwaun junction with associated traffic flow and highway infrastructure including overbridge signage and lighting columns / light spill. Trewaun junction also visible. Offline section south of Hirwaun screened in some views by road cutting and opencast workings. Distant views north-east of A465 and traffic and deep cutting at Baverstock. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would partly screen traffic flow and highway infrastructure at approaches to Hirwaun junction overbridge. Distant views north-east of A465 and traffic and deep cutting at Baverstock would remain. The magnitude of impact would be **minor adverse**.	**Slight adverse**
S6-A2 (840 m)	Rhigos Public Footpath 25, link 2 east (RHI/25/2).	100 m	Views north, from footpath north of opencast workings, generally contained by deciduous groups and belts of trees in the summer. Filtered glimpses to tops of high sided vehicles on A465 in middle distance in winter. Tops of lighting columns at Hirwaun junction and approaches visible above	<u>Construction</u> Close views of offline section of A465 and major cutting earthworks, south of Hirwaun. Tall construction plant for construction of Hirwaun junction overbridge with associated highway infrastructure, including lighting columns and visible to north-west. Loss of some existing vegetation opens up views to construction works and Hirwaun beyond. Some construction works at Trewaun junction also visible. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**

[1] Refer to Figure 10.8

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			vegetation. Intermittent views north-west and north between trees, across fields to deciduous groups and belts of trees. Views north-east across grassland and gorse, contained by tall evergreen tree belt along recreation ground.	<u>Operation</u> Close views of offline section of A465 south of Hirwaun with associated traffic flow and highway infrastructure, including overbridge, signage and lighting columns / light spill at Hirwaun junction to north / north-west. Some views of A465 with associated traffic flow looking east into cutting, with Trewaun junction visible beyond. Gravel track linking to Tower Road also visible. Some screening of proposed scheme from remaining existing vegetation. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	<u>Summer Year 15</u> Close views of offline section of A465 south of Hirwaun with associated traffic flow and highway infrastructure, including overbridge, signage and lighting columns / light spill at Hirwaun junction to north / north-west, although established mitigation planting would partly screen the proposed scheme at approaches to the junction. Some views of A465 with associated traffic flow looking east into cutting, with Trewaun junction visible beyond. Gravel track linking to Tower Road also visible. The magnitude of impact would be **moderate adverse**.	**Slight adverse**
S6-A3 (240 m)	Hirwaun Public Footpath 43, link 1 (HIR/43/1).	0 m	Wide open view south across gorse and grassland to distinctive ridgeline within Hirwaun Common. Stretch of powerlines and pylons, as well as opencast workings in the middle distance, are detracting features in landscape.	<u>Construction</u> Close views of offline section of A465 and major cutting earthworks, south of Hirwaun. Loss of some existing vegetation opens up views to construction works to west with glimpses of Hirwaun junction construction. Some construction works at Trewaun junction also visible and Trewaun South temporary diversion and traffic prominent. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				<u>Operation</u> Cutting screens much of the A465 in this area although some close views of offline section of A465 south of Hirwaun with associated traffic flow and highway infrastructure would be possible. Glimpses of Hirwaun junction to west. Partial views of A465 with associated traffic flow looking east into cutting, with Trewaun junction visible beyond. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would largely screen the proposed scheme which is also for the most part in cutting in this area. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S6-A4 (1.3 km)	Hirwaun Public Footpath 44, links 1 and 4 (HIR/44/1 and HIR/44/4).	0 m	Stretch of overhead lines and pylons, as well as opencast workings, are detracting features in the landscape. Views north and north-east and north-west across open grassland with scattered clumps of scrub in places. Sports pavilion and floodlit tennis courts	<u>Construction</u> Close views of construction of offline section of A465 and major cutting earthworks, south of Hirwaun. Loss of some existing vegetation opens up views to construction works to west with glimpses of Hirwaun junction construction. Some construction works at Trewaun junction, including Trewaun South temporary diversion and traffic, also visible. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			visible. Traffic on A465 is generally screened by deciduous trees in the summer, with exception of area at footpath overbridge over HIR/42/3. More extensive filtered views through vegetation, in winter, to traffic on the A465. Background views north-west to north-east from all of path to Hirwaun town, hills within the BBNP and the Baverstock ridge. Gas works are a detracting feature in the distance.	<u>Operation</u> Close views of offline section of A465 with associated traffic flow and highway infrastructure. Hirwaun junction visible to west with associated traffic flow and highway infrastructure, including overbridge, signage and lighting columns / light spill. Partial views of A465 with associated traffic flow looking east into cutting, with Trewaun junction visible beyond. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Summer Year 15</u> Close views of offline section of A465 with associated traffic flow and highway infrastructure. Hirwaun junction visible to west with associated traffic flow and highway infrastructure, including overbridge, signage and lighting columns / light spill although established mitigation planting would partly screen the proposed scheme at approaches to the junction. Partial views of A465 with associated traffic flow looking east into cutting, with Trewaun junction visible beyond. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
S6-A5 (200 m)	Hirwaun Public Footpath 42, link 3 (HIR/42/3).	0 m	Wide open view south across gorse and grassland to distinctive ridgeline within Hirwaun Common. Stretch of overhead lines and pylons, as well as opencast workings in the middle distance, are detracting features in landscape. Close views north of sports pavilion and flood lit tennis courts.	<u>Construction</u> Close and middle distance views of construction of offline section of A465 and major cutting earthworks, south of Hirwaun. Loss of some existing vegetation opens up views to construction works to west with middle distance glimpses of Hirwaun junction construction. Some construction works at Trewaun junction also visible and Trewaun South temporary diversion and traffic prominent. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				<u>Operation</u> Cutting screens much of the A465 in this area although some close views of offline section of A465 south of Hirwaun, with associated traffic flow and highway infrastructure would be possible. Middle distance glimpses of Hirwaun junction to west. Partial views of A465 with associated traffic flow looking east into cutting, with Trewaun junction visible beyond. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would largely screen the proposed scheme which is also for the most part in cutting in this area. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S6-A6 (940 m)	National Cycle Route 46 (NCR 46).	0 m	Conveyor from opencast workings is detracting feature crossing route. Lighting columns at Hirwaun junction, visible in views south-east from section of route along Rhigos Road, while tall hedgerow and trees	<u>Construction</u> Construction plant for construction of the Hirwaun junction overbridge with associated highway infrastructure, including lighting columns would be prominent in close and middle distance views. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Large adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			contain views north. Close channelled view to traffic and lighting columns at junction from off-road section of route. Traffic and infrastructure at junction visible where route crosses junction. Longer distance views south-west from NMU bridge across A465 linking with Tower Road, looking across scrub and trees to opencast workings and distinctive ridgeline within Hirwaun Common. Views from route along Tower Road generally contained by mature deciduous trees and properties, although there are close glimpsed views to lighting columns on A465 looking south-west.	<u>Operation</u> The elevated Hirwaun junction, with associated traffic flow and highway infrastructure, including overbridge, signage and lighting columns / light spill, would be prominent in close and middle distance views. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Summer Year 15</u> Established mitigation planting would partly screen the proposed scheme at approaches to the Hirwaun junction. The overbridge with associated highway infrastructure, including lighting columns would however, remain prominent in close and middle distance views. The magnitude of impact would be **moderate adverse.**	**Large adverse**
S6-A7 (240 m)	National Cycle Route 46 and Hirwaun Public Footpath 23, link 1 (NCR 46 and HIR/23/1).	0 m	Traffic on A465 generally screened by properties and mature deciduous vegetation in views along the Tramway, with the exception of close views to the A465 overbridge across the NMU route. A pylon is a detracting feature beyond trees to east of the A465.	<u>Construction</u> Construction of the highly prominent Trewaun north temporary diversion and traffic visible in close views. Localised construction works and removal of existing vegetation associated with the new A465 cutting and NMU overbridge and ramps would also be prominent from the Tramway in close and middle distance views. The magnitude of impact would be **major adverse**.	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Large adverse**
				<u>Operation</u> The change from NMU underpass to overbridge with step and ramp access where the NMU route (Tramway) crosses the A465 would be locally prominent. The 2 m high environmental barrier would be visible below the overbridge. The overbridge would present a new viewpoint for views north to the BBNP and south towards Hirwaun Common. The new A465 would however be prominent in close and middle distance views from the overbridge. The magnitude of impact would be **moderate adverse**.	**Large adverse**	<u>Summer Year 15</u> Established mitigation planting and the new road cutting would screen the A465 in views along the Tramway and integrate the A465 into the surrounding landscape in views from the new NMU overbridge. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
S6-A8 (100 m)	National Cycle Route 46 and Penywaun Public Footpath 3, link 4 (NCR 46 and	0 m	Traffic on A465 generally screened by mature deciduous vegetation and landform in view along route, towards A465 overbridge across NMU route. Traffic visible at close distance in summer and filtered	<u>Construction</u> Localised construction works and removal of existing vegetation associated with the new A465 cutting and NMU overbridge would also be prominent from the NMU route in close and middle distance views. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Large adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
	AUN/3/4) within Special Landscape Area and Cynon Valley River Park, locally designated under Rhondda Cynon Taf Local Development Plan.		views through vegetation at slightly further distance in winter. .	<u>Operation</u> The change from NMU underpass to overbridge with step and ramp access where the NMU route crosses the A465 would be locally prominent. The overbridge would present a new viewpoint for views north to the BBNP and south towards Hirwaun Common. The new A465 would however be prominent in close and middle distance views from the overbridge. The magnitude of impact would be **moderate adverse**.	**Large adverse**	<u>Summer Year 15</u> Established mitigation planting and the new road cutting would screen the A465 in views along the NMU route and integrate the A465 into the surrounding landscape in views from the new NMU overbridge. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
S6 – A9 (885 m)	Penywaun Public Footpath 7, link 1 (AUN/7/1).	360 m	Wide views west, north and north-east across grassland with scattered trees and scrub. Caravans, outbuildings, dumped rubbish, a large number of pylons and electricity poles, and opencast workings are detracting features in landscape. Longer distance views west to distinctive ridgeline within Hirwaun Common. Blocks of deciduous trees screen edge of Hirwaun to the north-west. Urban edge of Trewaun and Penywaun to north-east. Elevated longer distance and distant views to BBNP and Baverstock ridge. Glimpses of traffic on A465 as it descends from Baverstock ridge towards Hirwaun.	<u>Construction</u> Middle distance views north and north-west of construction of offline section of A465 and major cutting earthworks, south of Hirwaun, and Trewaun junction with adjacent construction compound with stockpiles. Trewaun South temporary diversion and traffic also visible. Loss of some existing vegetation opens up views to construction works to north and north east with longer distance and distant glimpses of construction at Croesbychan and Baverstock including junctions. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Moderate adverse**
				<u>Operation</u> Middle distance views of offline section of A465 south of Hirwaun, and the Trewaun junction with associated traffic flow and highway infrastructure, although the mainline of the road would largely be screened by cutting. Longer distance and distant glimpses of A465 with associated traffic flow and highway infrastructure at Croesbychan and Baverstock, including junctions, particularly where the proposed scheme is elevated. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would partially screen the proposed scheme at the Croesbychan and Trewaun junctions although some middle distance and longer distance and distant glimpses of the A465 with associated traffic flow and highway infrastructure would remain. The magnitude of impact would be **minor adverse.**	**Slight adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-A10 (750 m)	Penywaun Public Footpath 10, link 1 (AUN/10/1).	475 m	Wide views north and north-east across grassland with scattered trees and scrub. Pylons and opencast workings are detracting features in landscape to north and north-west. Distinctive ridgeline within Hirwaun Common in longer distance views west. Blocks of deciduous trees screen edge of Hirwaun to north-west. Urban edge of Trewaun and Penywaun to north-east. Elevated longer distance to distant views to BBNP and Baverstock ridge with glimpses of the A465 and traffic. Pylons and gas works are detracting features in the distance.	<u>Construction</u> Middle to longer distance views of construction of offline section of A465 and major cutting earthworks, south of Hirwaun, and Trewaun junction with adjacent construction compound with stockpiles. Trewaun South temporary diversion and traffic also visible. Longer distance and distant glimpses of construction at Croesbychan and Baverstock (including major earthworks activities for deep cutting) to north-east and Hirwaun to north-west, including junctions, particularly from higher ground to the south. These glimpses increased through the loss of some existing vegetation along the existing road as a result of construction. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
				<u>Operation</u> Middle to longer distance views of offline section of A465 south of Hirwaun and Trewaun junction, with associated traffic flow and highway infrastructure. Longer distance and distant glimpses of A465 with associated traffic flow and highway infrastructure, at Croesbychan and Baverstock (including deep cutting) to north-east and Hirwaun to north-west, including junctions, particularly from higher ground to the south. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would partly screen traffic flow and highway infrastructure at Croesbychan, Hirwaun and Trewaun junctions. Longer distance and distant glimpses of A465 with associated traffic flow and highway infrastructure and deep cutting at Baverstock, looking north-east, would remain. The magnitude of impact would be **minor adverse**.	**Slight adverse**
S6-A11 (440 m)	Penywaun Public Footpaths 12 and 13 (AUN/12/1 and AUN/13/1/10).	810 m	Wide distant elevated views north to north-east across rough grassland, fields, woodland and scattered properties to the BBNP and Baverstock ridge. Glimpses of traffic on the A465, including the Nant Hir viaduct, as it descends from Baverstock ridge towards Hirwaun, particularly in winter, when deciduous vegetation does not screen road as well.	<u>Construction</u> Distant views to construction of widened Nant Hir viaduct and elevated A465 between Nant Hir viaduct and Baverstock junction, including major earthworks and attenuation ponds. Also possible glimpses of construction at Croesbychan junction. The magnitude of impact would be **minor adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				<u>Operation</u> Distant views north-east to Baverstock junction, widened Nant Hir viaduct and A465 mainline between Nant Hir viaduct and Baverstock junction with associated traffic flow and highway infrastructure, including overbridge, signage and lighting columns / light spill. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would soften views to Baverstock junction and screen parts of traffic flow on A465 mainline, though much of the route would be left open without any mitigation proposed. Light spill would remain more noticeable at junction. The magnitude of impact would be **minor adverse**.	**Slight adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-A12 (85 m)	Hirwaun Public Footpath 6, link 1 (HIR/6/1).	18 m	View south along path enclosed by deciduous trees. Slightly elevated close view to traffic on A465 as path approaches A465 underpass. Filtered views through trees to traffic from slightly further distance in the winter.	<u>Construction</u> Close view south along footpath of elevated A465 immediately beyond. Visibility of works increased through the loss of some existing roadside vegetation. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**
				<u>Operation</u> Close view south along footpath of the A465, with associated traffic flow and highway infrastructure. Visibility of the road increased through the loss of existing roadside vegetation. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Summer Year 15</u> Close view south along footpath of the A465, with associated traffic flow and highway infrastructure. Established mitigation planting would provide some screening. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
S6-A13 (350 m)	Penywaun Public Footpath 1, link 1 (AUN/1/1) within Cynon Valley River Park, locally designated under Rhondda Cynon Taf Local Development Plan Policy NSA 26.	18 m	Close views of A465 and traffic looking north and north-west along approach to A465, although some screening provided by existing roadside vegetation. Further east dense mature woodland vegetation alongside the footpath and landform contain views. Pylons are detracting features in landscape.	<u>Construction</u> Close view north and north-west along footpath of construction of the A465. Visibility of works increased through the loss of most existing roadside vegetation. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Large adverse**
				<u>Operation</u> Close view north and north-west along footpath of the A465, with associated traffic flow and highway infrastructure. Visibility of the road increased through the loss of existing roadside vegetation. The magnitude of impact would be **moderate adverse**.	**Large adverse**	<u>Summer Year 15</u> Close view north and north-west along footpath of the A465, with associated traffic flow and highway infrastructure. Some screening provided by established mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
S6-A14 (370 m)	Hirwaun Public Footpath 7, link 1 (HIR/7/1).	145 m	Gellitarw cottages and adjacent vegetation screen views of the A465 from the southern part of path. View west across open field to belt of trees along A465 and Court Lodge junction with Croes Bychan Road. Glimpsed middle distance views in summer and filtered views through trees in winter to traffic on A465. Views north to traffic on Croes Bychan Road and tree belt along A465 beyond.	<u>Construction</u> Close view of construction of attenuation pond and new roundabout on Croes Bychan Road. Middle distance views of A465 construction to the west and north, including Croesbychan junction exacerbated by loss of existing roadside vegetation. The magnitude of impact would be **moderate adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				<u>Operation</u> Close view of attenuation pond and new roundabout on Croes Bychan Road, with associated lighting and signage. Middle distance views of A465 to the west and north, including Croesbychan junction, with associated traffic flow and highway infrastructure including 1 m high environmental barrier, exacerbated by loss of existing roadside vegetation. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Summer Year 15</u> Close view of attenuation pond and new roundabout on Croes Bychan Road, with associated lighting and signage, and middle distance views of A465 to the west and north, including Croesbychan junction, with associated traffic flow and highway infrastructure, would be partially screened by established mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-A15 (910 m)	Hirwaun Public Footpath 4, links 1- 3 (HIR/4/1, HIR/4/2 and HIR/4/3), and Hirwaun Public Footpath 5, links 1 and 2 (HIR/5/1 and HIR/5/2).	0 m	Footpaths cross the A465. There are closed glimpsed views in summer and filtered views in winter to traffic on the road, as the paths approach the crossings. Elsewhere, views are generally contained by deciduous woodland and mature tree belts, although there are views in places across fields.	Construction Close view of construction of A465 and Croesbychan junction including major embankment earthworks activities, exacerbated by loss of existing roadside vegetation. The magnitude of impact would be **major adverse**.	**Very large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**
				Operation Close views north, south and west (depending on viewpoint location) of A465 and Croesbychan junction, elevated mainline and sliproads, all with associated traffic flow and highway infrastructure including overbridge, signage, lighting columns / light spill and 1 m high environmental barrier. New roundabout on Croes Bychan Road, with associated lighting and signage, visible to the south. The magnitude of impact would be **major adverse**.	**Large adverse**	Summer Year 15 Close views of A465 and Croesbychan junction, elevated mainline and sliproads, with associated traffic flow and highway infrastructure including overbridge, signage and lighting columns / light spill partially screened by established mitigation planting. New roundabout on Croes Bychan Road, with associated lighting and signage, also partially screened by established mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
S6-A16 (720 m)	Hirwaun Public Footpath 3, link 1 (HIR/3/1).	0 m	View west and south-west across fields towards tree belts and woodlands. Distant views to Hirwaun and distinctive ridgeline within Hirwaun Common. Pylons are detracting features in landscape in middle distance. Views south-east and east to deciduous tree belt on cutting along A465. Filtered middle distance views south-east through deciduous trees to high-sided vehicles on A465, especially in winter.	Construction Close and middle distance views of construction of elevated A465 and attenuation pond access tracks including major embankment and underpass earthworks activities, exacerbated by loss of existing roadside vegetation. The magnitude of impact would be **major adverse**.	**Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**
				Operation Close and middle distance views of elevated A465, with associated traffic flow and highway infrastructure. Attenuation pond access tracks also visible. Loss of roadside vegetation. The magnitude of impact would be **major adverse**.	**Large adverse**	Summer Year 15 Some close and middle distance views of elevated A465, with associated traffic flow and highway infrastructure would remain. Attenuation pond access tracks also visible. Some screening by established mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
S6-A17 (295 m)	Hirwaun Public Footpath 3, link 1 (HIR/3/1).	0 m	Views south-west across fields to mature tree belts. Stables with small mennage at Bleannant Hir Isaf Farm immediately adjacent to path. Penywaun and distinctive ridgeline within Hirwaun Common in background. View from NMU bridge across A465 to traffic in	Construction Close and middle distance views of construction of elevated A465 and attenuation pond access tracks including major embankment and underpass earthworks activities, exacerbated by loss of existing roadside vegetation. Some existing roadside vegetation on south side of road retained. Glimpses of A465 Nant Hir viaduct construction. The magnitude of impact would be **major adverse**.	**Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			cutting lined with mature trees. Views north include Nant Hir Reservoir and arched viaduct carrying the existing A465 across the reservoir.	<u>Operation</u> Close and middle distance views of elevated A465, with associated traffic flow and highway infrastructure, partially screened by retained existing vegetation on south side of road. Attenuation pond access tracks also visible. Loss of roadside vegetation. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Summer Year 15</u> Some close and middle distance views of elevated A465, with associated traffic flow and highway infrastructure would remain. Attenuation pond access tracks also visible. Some limited screening by localised established mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
S6-A18 (450 m)	National Cycle Route 46 (NCR 46).	0 m	Views north from southern part of route generally contained by hedgerows and trees along road. Small number of glimpsed views to high-sided vehicles on A465 in summer. Filtered views through hedgerow to vehicles on A465 in winter. Middle distance views north and north-east from northern part of route on Crematorium Road across grassland to glimpses of high-sided vehicles and upper three-quarters of light columns on A465, set against backdrop of woodland.	<u>Construction</u> Close and middle distance views of construction of elevated A465 at Baverstock junction, the junction roundabouts and attenuation pond, including major earthworks activities. Views of construction exacerbated by some loss of existing vegetation. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**
				<u>Operation</u> Mainly close views, with intermittent middle distance views, of elevated A465 at Baverstock junction, with associated traffic flow and highway infrastructure including overbridge, signage, lighting columns / light spill, new roundabout and attenuation pond. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Summer Year 15</u> Close views, and intermittent middle distance views, of elevated A465, with associated traffic flow and highway infrastructure would remain. Attenuation pond would also be visible. Some limited screening by localised established mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**
S6-A19 (65 ha)	Mynydd y glog Countryside and Rights of Way Act Open Access Land and Registered Common Land within BBNP.	260 m	Views east towards Baverstock ridge with gas works visible breaking the skyline. Broad panorama south and south east across Hirwaun to hills and Hirwaun Common, in distance on south side of valley. Glimpsed views south in summer and filtered descending views in winter, from south-eastern corner of land, along wooded valley at Nant Hir Reservoir to high-sided vehicles on A465 Nant Hir Viaduct.	<u>Construction</u> Distant views east of construction of Baverstock junction, including major earthworks activities, creating slight notch in skyline. Middle distance views of construction of cutting between chainages 6400 and 6650, although cutting itself would screen much of the construction activity. Some loss of existing roadside vegetation would be apparent. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				<u>Operation</u> Baverstock junction just visible in distant views, with a slight notch in the skyline. Cutting between chainages 6400 and 6650 would largely screen A465, with associated traffic flow and highway infrastructure. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Baverstock junction would remain visible in distant views east, with a slight notch in the skyline. Some screening by established mitigation planting. The magnitude of impact would be **negligible adverse**.	**Slight adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-A20 (110 ha)	Penmoelallt Forest and Countryside and Rights of Way Act Open Access Land (partially within BBNP).	30 m	Longer distance views south from edge of forest and moorland, looking across moorland to Jah Jireh Care Home, traffic and lighting columns on A465. In places, views are screened in summer and filtered in winter through intermittent vegetation along A465. Glimpsed views to Baverstock junction. Several pylons are detracting features in landscape. Mynydd Aberdar in background. Views from south-eastern edge to traffic on A470 approaching A470 junction.	<u>Construction</u> From edge of forest and open areas, close, middle distance and longer distance views south of construction of A465 on embankment including major earthworks activities, and attenuation pond access track on north side of A465. Upper part of Baverstock cutting works visible although much of construction screened by the cutting. Longer distance views to south-east of A470 junction and Taf Fawr viaduct structures construction. The magnitude of impact would be **moderate adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Large adverse**
				<u>Operation</u> From edge of forest and open areas, close, middle distance and longer distance views south of A465 on embankment with associated traffic flow and highway infrastructure. Attenuation pond access track also visible. Upper part of south face of Baverstock cutting visible, although cutting would also screen part of A465. Longer distance view to south-east of A470 junction including slip roads, roundabouts and Taf Fawr viaducts, with associated traffic flow and lighting columns / light spill. The magnitude of impact would be **moderate adverse**.	**Large adverse**	<u>Summer Year 15</u> Close, middle distance and longer distance views of A465 and attenuation pond access track would remain. Baverstock cutting would be screened by established mitigation planting. Longer distance view to south-east of A470 junction would remain. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
S6-A21 (95 ha)	Mynydd Aberdar Countryside and Rights of Way Act Open Access Land (including scheduled ancient monument - Iron Ore Scours and Patch Workings at Winch Fawr, Merthyr Tydfil).	0 m	Close partial views from northern-most corner of open access land to traffic and lighting columns at Baverstock junction, with Jah Jireh Care Home in background Wide views from north-facing part of open access land, north across moorland to traffic and lighting columns on A465. Very sparse scattered vegetation along A465 provides limited screening in summer. Several pylons are detracting features in landscape. BBNP in background. Wide close and middle distance views north-east to properties within Gellideg. A465 and A470 generally screened by properties and vegetation. BBNP in background.	<u>Construction</u> Close, middle distance and longer distance views north of construction of A465 on embankment including major earthworks activities. Some of Baverstock cutting works visible although much of construction screened by the cutting. Longer distance glimpses to east / north-east of A470 junction and Taf Fawr viaduct structures construction. The magnitude of impact would be **moderate adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				<u>Operation</u> Close, middle distance and longer distance views south of A465 on embankment with associated traffic flow and highway infrastructure. Part of Baverstock cutting visible, although cutting would also screen part of A465. Longer distance glimpses east / north-east of A470 junction including slip roads, roundabouts and Taf Fawr viaducts, with associated traffic flow, signage and lighting columns / light spill. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Summer Year 15</u> Close, middle distance and longer distance views of A465 on embankment, with associated traffic flow and highway infrastructure, would remain and part of Baverstock cutting would be visible. Longer distance glimpses to east / north-east of A470 junction would remain. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-A22 (1.9 km)	National Cycle Route 46 (NCR 46) under negotiation.	45 m	Route would run parallel with the A465. Close views west to traffic and lighting at Baverstock junction and north to traffic and lighting on A465, filtered in places by sparse vegetation. Distant ascending panoramic views east to north-east, to Gurnos and Y Graig woodland, with hills in the BBNP in the background.	<u>Construction</u> Close views of A465 construction activities including major earthworks activities associated with the Baverstock cutting. Route would however, be closed and / or re-routed for part of construction period. The magnitude of impact would be **major adverse**.	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**
				<u>Operation</u> Cycle route re-routed along new Swansea Road. Close views of A465 and Swansea Road with associated traffic flow and highway infrastructure. Baverstock cutting highly visible. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Summer Year 15</u> Some screening of A465 by established mitigation planting, but close views of parts of the A465 and Swansea Road, with associated traffic flow and highway infrastructure would remain. The magnitude of impact would be **major adverse**.	**Large adverse**
S6-A23 (640 m)	National Cycle Route 46 (NCR 46).	80 m	Lower level views north-west to north-east generally contained by trees and / or properties. Elevated, often glimpsed longer distance, views to Trefechan, Cefn Coed, Gurnos and hills within BBNP in background. Tops of light columns on A465 and filtered glimpses through trees to traffic on A465 in views north at western extent of route. Glimpsed and filtered middle distance view in winter across fields and trees to high-sided vehicles, signage and tops of lighting columns on A465, from bus-stop on Swansea Road. Glimpsed longer distance views from Heol Llwyn Brain, to tops of lighting columns on approach to A465 Taf Fechan viaduct and view of viaduct with traffic. Close glimpsed views, through and above vegetation in summer, and filtered in winter, from route approaching underpass below A470, to traffic, lighting columns and signage on A470 approaching junction with A465 in foreground.	<u>Construction</u> Close and middle distance views of A465 construction activities including major earthworks activities associated with the Baverstock cutting. Route would however, be closed and / or re-routed for part of construction period. Close views of Taf Fawr viaduct structures construction from east section of cycle route. The magnitude of impact would be **major adverse**.	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**
				<u>Operation</u> Cycle route re-routed along new Swansea Road. Close and middle distance views of A465 and Swansea Road, with associated traffic flow and highway infrastructure, from west part of cycle route. Baverstock cutting highly visible. Close views of Taf Fawr viaduct structures from east section of cycle route. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Summer Year 15</u> Some screening of A465 by established mitigation planting, but close and middle distance views of parts of the A465 and Swansea Road, with associated traffic flow and highway infrastructure would remain for west part of cycle route. Close views of Taf Fawr viaduct structures from east section of cycle route would remain. The magnitude of impact would be **major adverse**.	**Large adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S5-A1 (521 m)	National Cycle Route 8 (NCR 8) and Park Public Bridleway 3 (113/3) and Vaynor Public Bridleway 38 (111/38).	0 m	Highly cherished and historic views looking 360 degree views from Cefn Coed Viaduct across river valley. A470 Viaduct with traffic and lighting columns in close views south-west. Glimpses of signage on approach to junction with A465. Gellideg and woodlands within BBNP in middle distance. Pylons are detracting features. A465 Taf Fawr viaduct prominent to north in middle distance. A470 junction screened in views west by mature deciduous trees, although tops of lighting columns and glimpses of high-sided vehicles visible above vegetation. Where the route crosses the A465 to the east, close to middle distance views north along Taf Fechan valley, and east to A465 Taf Fechan viaduct with traffic and lighting. Middle distance view west to Cefn Coed High Street bridge.	<u>Construction</u> Construction activities associated with the A470 junction and Taf Fawr viaduct structures prominent in middle distance views to the north-west. Visibility of construction works, partly exacerbated by loss of existing vegetation. Upper parts of major cutting earthworks activities in north-west quadrant of junction also visible with loss of existing vegetation. Where the route crosses the A465 to the east, close views east and west of road construction activities including cutting earthworks activities. Construction of the Taf Fechan viaduct prominent to the east, and Cefn Coed High Street bridge to west Significant loss of existing roadside and gorge vegetation. The magnitude of impact would be **major adverse**.	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**
				<u>Operation</u> A470 junction and Taf Fawr viaduct structures prominent in middle distance views to the north-west, with associated traffic flow and highway infrastructure, including signage, lighting columns / light spill. Upper parts of major cutting for slip road in north-west quadrant of junction also visible as 'scar' in landscape. Where the route crosses the A465 to the east (on new realigned overbridge), close views east and west of A465, with associated traffic flow and highway infrastructure, including signage, lighting columns / light spill. Taf Fawr slip roads and new cutting faces also visible edged with 2 and 3 m high environmental barriers in places. Widened Taf Fechan viaduct visible to the east and new Cefn Coed High Street bridge, to west. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Summer Year 15</u> A470 junction and Taf Fawr viaduct structures would remain prominent in middle distance views to the north-west, with associated traffic flow and highway infrastructure, including signage, lighting columns / light spill. Upper parts of major cutting for slip road in north-west quadrant of junction would blend into landscape with establishment of mitigation planting and recolonisation of cutting. Where the route crosses the A465 to the east (on new realigned overbridge), close views east and west of A465, with associated traffic flow and highway infrastructure would remain. Taf Fawr slip roads and new cutting faces, edged with environmental barriers in places, softened by recolonisation. Widened Taf Fechan viaduct would remain visible to the east and new Cefn Coed High Street bridge, to west. The magnitude of impact would be **major adverse**.	**Large adverse**
S5-A2 (1 km)	Vaynor Public Bridleway 32 (111/32).	320 m	Close views south to detracting pylon, properties and trees. Descending panoramic with longer distance views south-west to north-east. Gellideg and Mynydd Aberdar to south-west. Merthyr Tydfil, Y Graig woodland and Gurnos against a mountainous background to south-east. Tree-belt along A465	<u>Construction</u> Construction of A465 visible in longer distance views to south-east including major earthworks activities associated with attenuation ponds between chainages 12300 and 12500 north side and embankments to mainline and attenuation pond access roads. Visibility of works exacerbated by loss of existing roadside vegetation and adjacent mature tree belts. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			clearly visible in middle distance views west, with glimpses of traffic in summer. Filtered views of traffic through trees in winter. Near floodlighting at sports ground and chimney at Prince Charles Hospital in middle distance are detracting features in landscape.	<u>Operation</u> Longer distance views of A465, with associated traffic flow and highway infrastructure, to south-east and embankments associated with attenuation ponds between chainages 12300 and 12500 north side, and access road to ponds and A465 main line. Part of mainline screened by cutting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Summer Year 15</u> Longer distance views of A465, with associated traffic flow and highway infrastructure, to south-east and embankments associated with attenuation ponds between chainages 12300 and 12500 north side, and access road to ponds and A465 main line. Part of mainline screened by cutting and establishment of mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
S5-A3 (180 ha)	Countryside and Rights of Way Act Open Access Land, also allocated as Cilsanws Open Space.	230 m	Descending panoramic middle distance to distant views across moorland south-west to north-east. Distant glimpses of A465 as it descends from Baverstock ridge to south-west. A465 Taf Fawr Viaduct, A470 junction and A470 approach to junction, including traffic and lighting columns visible to south-west, with fields with hedgerows and trees within BBNP, Gellideg and Mynydd Aberdar in background. Merthyr Tydfil, Y Graig woodland and Gurnos against a mountainous background to south-east. Tree-belt along A465 clearly visible in middle distance views east, with glimpses of traffic in summer and filtered views of traffic through trees in winter. Views south-west framed by trees, across wooded Taf Fawr valley to fields with hedgerows and trees within BBNP. A465 Taf Fawr Viaduct and A470 junction in middle distance, including traffic and lighting columns.	<u>Construction</u> Descending middle to longer distance views south-west to construction of A470 junction, including major earthworks and loss of vegetation, construction of elevated A465 mainline and highway infrastructure. Also distant glimpses of construction of A465 mainline at Baverstock ridge. Longer distance views south-east to demolition of Trade Centre Wales and construction of expanded Prince Charles Hospital junction and, offline and widened A465 mainline including major earthworks activities associated with attenuation ponds near Gurnos Farm and embankments to mainline and attenuation pond access roads. Visibility of works exacerbated by loss of existing roadside vegetation and adjacent mature tree belts. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				<u>Operation</u> Descending middle to longer distance views south-west to traffic flow on A470 junction, including elevated A465 mainline, as well as highway infrastructure such as signage, lighting columns / light spill. Slight change to skyline at Baverstock ridge and distant glimpses of traffic visible. Longer distance views of offline and widened A465 mainline, with associated traffic flow and highway infrastructure, to south-east and embankments associated with attenuation ponds and associated access roads near Gurnos Farm, and A465 main line. Part of mainline through Y Graig screened by cutting and existing trees. Also views of traffic and highway infrastructure, such as signage, lighting columns / light spill at expanded Prince Charles Hospital junction, opened up by loss of trees. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would screen attenuation pond at A470 junction and generally soften views of junction to south-west to some extent, though traffic flow on elevated A465 and parts of junction slips would remain visible. Established mitigation planting, in combination with localised cutting and existing vegetation, would generally screen longer distance views to A465 mainline, though some filtered glimpses of attenuation ponds near Gurnos Farm and tops of vehicles would remain. Longer distance to distant views of Prince Charles Hospital junction would also be softened and partially obscured by established mitigation planting, though some glimpses of traffic and tops of lighting columns /light spill would remain. The magnitude of impact would be **minor adverse.**	**Slight adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S5-A4 (1.1 km)	Vaynor Public Footpath 43 and 45 (111/43 and 111/45).	0 m	Footpath is enclosed by overhanging trees either side of A465. Dark underpass below A465.	Construction Close views of construction of Taf Fawr viaducts exacerbated by some loss of existing vegetation. Localised re-routing of footpaths during construction. The magnitude of impact would be **major adverse**.	**Very large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Moderate adverse**
				Operation Removal of underpass with more open route under viaducts partly offsets greater extent of Taf Fawr viaduct structures overhead in close views. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	Summer Year 15 Little change in view by Year 15. Taf Fawr viaduct structures prominent overhead in close views. The magnitude of impact would be **minor adverse**.	**Moderate adverse**
S5-A5 (830 m) (5.5 ha)	Vaynor Public Footpath 35 (111/35) and Taf Fechan Nature Reserve Open Space allocation.	12 m	Close filtered views and occasional clear views, through gaps in vegetation, to traffic on A465, to the south. Traffic more visible in winter. Y Graig woodland and tree belt along A465 in background. Pylons are detracting features in landscape.	Construction Close views of construction of Taf Fechan viaduct exacerbated by some loss of existing vegetation. Construction of A465 visible to south including major earthworks activities associated with attenuation ponds between chainages 12300 and 12500 north side and embankments to mainline and attenuation pond access roads. Visibility of works exacerbated by loss of existing roadside vegetation and adjacent mature tree belts. Localised re-routing of footpath during construction. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				Operation Close views to south and west of A465 and widened Taf Fechan viaduct, with associated traffic flow and highway infrastructure. Embankments associated with attenuation ponds between chainages 12300 and 12500 north side, and access road to ponds and A465 main line also visible in close views. Part of A465 mainline moves further away to the south and would be screened by cutting and retained existing vegetation in middle distance views. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	Summer Year 15 Established mitigation planting would effectively screen embankments associated with attenuation ponds and access road to ponds and A465 main line, with associated traffic flow and highway infrastructure. Minor change to views west of widened Taf Fechan viaduct, with associated traffic. The magnitude of impact would be **minor adverse**.	**Slight adverse**
S5-A6 (610 m) (5.5 ha as for S5-A5)	Vaynor Public Footpath 34 (111/34) and Taf Fechan Nature Reserve Open Space	0 m	Close and middle distance elevated views north, south, south-west and above and glimpses through mature deciduous trees, to A465 Taf Fechan viaduct with traffic. More extensive filtered views to	Construction Close and middle distance views to north, south, south-west and above of Taf Fechan viaduct widening construction and working areas, exacerbated by significant loss of mature existing woodland in gorge. The magnitude of impact would be **major adverse**.	**Very large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
	allocation.		arch structure and traffic in winter. Views south to tall rock face with deciduous and evergreen vegetation belt along A465. Filtered views in winter of high-sided vehicles.	Operation Close and middle distance views to north, south, south-west and above of A465 and widened Taf Fechan viaduct, with associated traffic flow and highway infrastructure. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	Summer Year 15 Close and middle distance views to north, south, south-west and above of A465 and widened Taf Fechan viaduct, with associated traffic flow and highway infrastructure would remain in long term. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
S5-A7 (19.6 ha)	Countryside and Rights of Way Act Open Access Land and natural / semi natural greenspace at Y Graig.	0 m	Close intermittent views north of A465 and traffic although screening is provided by mature roadside vegetation and scattered trees and scrub. Development at Gurnos and Cefn Coed visible in close and middle distance views to east and west respectively. A465 rising up to the Baverstock ridge visible in distance to the west with hills of the BBNP forming the backdrop to the north and north-west.	Construction The proposed scheme would cut across the area and construction of the A465 would be highly visible in close and middle distance views to north and south. This would include views of major earthworks activities associated with the attenuation pond between chainages 11650 and 11760 south side and embankments / cuttings to mainline and attenuation pond access roads. Visibility of works would be exacerbated by loss of existing roadside and other existing vegetation. The magnitude of impact would be **major adverse**.	**Very large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Large adverse**
				Operation The A465 would be largely screened by cutting to the north-east / south - east. Some close oblique views into the cutting would however, be possible with the road and associated traffic flow and highway infrastructure visible. The A465 and associated traffic flow and highway infrastructure would be prominent to the north-west / south-west where on slight embankment. Embankments associated with the attenuation pond and access roads would also be visible in close and middle distance views. Some longer distance and distant views to the west of the A470 junction with associated infrastructure including light columns / light spill, and the A465 as it rises up to the Baverstock ridge. The magnitude of impact would be **moderate adverse**.	**Large adverse**	Summer Year 15 Established mitigation planting would provide effective screening to the A465 in close and middle distance views to the north-west / south-west where it is on slight embankment. The attenuation pond would also be screened by planting although the pond access roads would remain visible. The longer distance and distant views to the west of the A470 junction and the A465 as it rises up to the Baverstock ridge would remain. Visibility of the highway infrastructure would however, be reduced by established mitigation planting in those areas. Close and middle distance views to north, south, south-west and above of A465 and widened Taf Fechan viaduct, with associated traffic flow and highway infrastructure would remain in long term. The magnitude of impact would be **minor adverse**.	**Slight adverse**
S5-A8 (540 m)	Bridleway / byway Merthyr 1 (103/1).	0 m	Route crosses A465 through an unpleasant underpass. Close views either side of A465 and traffic. Further north towards Pontsarn Road there are pleasant views south across grassland fields with wooded field boundaries. Settlement areas of Merthyr Tydfil	Construction Route diverted at site of Prince Charles Hospital junction. Close and middle distance views of construction of elevated Prince Charles Hospital junction and slip roads, particularly on north side of A465. Earthworks activities associated with formation of mainline A465 / junction embankments and attenuation ponds also prominent. The magnitude of impact would be **major adverse**.	**Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			are visible in the distance with skyline of hills including Baverstock ridge beyond.	<u>Operation</u> Route diverted across Prince Charles Hospital junction. The A465 and elevated Prince Charles Hospital junction and slip roads, with associated traffic flow and highway infrastructure, including roundabout overbridges, signage and lighting columns / light spill, would be prominent in close and middle distance views. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Summer Year 15</u> The A465 and elevated Prince Charles Hospital junction and slip roads, with associated traffic flow and highway infrastructure, including roundabout overbridges, signage and lighting columns / light spill, would remain prominent in close views. Established mitigation planting would partly screen the junction in middle distance views. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
S5-A9 (1.5 km) (5.7 ha)	Merthyr proposed claimed rights of way (103/10x and 10311x) between Pontsarn Road and A465 and west of Bryniau Road and Parc Bryniau Countryside and Rights of Way Act Open Access Land, all within approximately 400 m of the A465.	40 m	Views of A465 and traffic. Further north towards Pontsarn Road there are pleasant views south across grassland fields with wooded field boundaries. Settlement areas of Merthyr Tydfil are visible in the distance with skyline of hills including Baverstock ridge beyond.	<u>Construction</u> Close and middle distance views of demolition of Trade Centre Wales and construction of elevated Prince Charles Hospital junction and slip roads, particularly on north side of A465, and Pontsarn / Bryniau Road roundabout. Earthworks, activities associated with formation of mainline A465 / junction embankments and attenuation ponds also visible. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**
				<u>Operation</u> The A465 and elevated Prince Charles Hospital junction and slip roads, with associated traffic flow and highway infrastructure, including roundabout overbridges, signage and lighting columns / light spill, would be prominent in close and middle distance views. Attenuation ponds also visible. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Summer Year 15</u> The A465 and elevated Prince Charles Hospital junction and slip roads, with associated traffic flow and highway infrastructure, including roundabout overbridges, signage and lighting columns / light spill, would remain prominent in close views. Established mitigation planting would partly screen the junction in middle distance views. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
S5-A10 (4.6 km) (15 ha)	Morlais Castle and Merthyr proposed claimed rights of way north of Pontsarn Road / Bryniau Road, west of Francis	400 m	Wide ranging panoramas from higher ground of moorland, quarries and sparse stunted trees. Settlement areas of Merthyr Tydfil are visible in the distance with skyline of hills including Baverstock ridge in far distance beyond. Lower down views south across grassland	<u>Construction</u> Middle distance and longer distance views of demolition of Trade Centre Wales and construction of elevated Prince Charles Hospital junction and slip roads, particularly on north side of A465 and Pontsarn Road / Bryniau Road roundabout. Major earthworks activities for roundabout cutting and various embankments also visible. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
	Terrace and Parc Bryniau Countryside and Rights of Way Act Open Access Land, all beyond approximately 400 m of A465.		fields with wooded field boundaries. A465 and traffic visible to varying degrees but not prominent due to existing cutting and roadside vegetation. Industrial / business development also visible in vicinity of Pontsarn Road / Bryniau Road junction.	<u>Operation</u> Middle and longer distance views, generally from higher ground, partially filtered by existing vegetation, to traffic flow and highway infrastructure including signage and lighting columns / light spill at elevated and expanded Prince Charles Hospital junction to south-west and south, opened up by loss of vegetation. Traffic flow on A465 mainline through junction would generally be screened by cutting. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting and existing woodlands and groups of trees in wider landscape would generally screen traffic and highway infrastructure at Prince Charles Hospital junction in views south-west and south. Tops of lighting columns / light spill at junction would remain visible. The magnitude of impact would be **negligible adverse**.	**Slight adverse**
S5-A11 (640 m) (18.4 ha)	Ifor Park open space and associated PRoW (including Merthyr 102/13 and 102/14 and Merthyr proposed claimed right of way 102/102x).	0 m	Close intermittent view of A465 from footpath 102/14 on north side of road with screening by existing roadside vegetation. Close and middle distance views from the south across Ifor Park of grassland, scrub and trees which partly screen A465 and traffic.	<u>Construction</u> Close and middle distance views of construction of A465 and major earthworks activities associated with cutting and embankment formation and attenuation pond in Ifor Park. Construction of attenuation pond access and embankments also visible. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				<u>Operation</u> Close and middle distance views of A465, with associated traffic flow and highway infrastructure, where on embankment between chainages 14400 and 14700. Footpath 102/14 would be diverted along new access to Ifor Park attenuation pond. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would largely screen the A465, with associated traffic flow and highway infrastructure. Established mitigation planting would also partly screen attenuation pond. The magnitude of impact would be **negligible adverse**.	**Slight adverse**
S5-A12 (7 ha)	Pant Hollow open space.	0 m	Views across open space with existing grassland and trees. Pant viaduct and A465 traffic prominent to the south.	<u>Construction</u> Close views of demolition of existing Pant viaduct and construction of new A465 viaduct together with major earthworks activities associated with viaduct embankment formation. Construction of new side road across south part of open space and its junction with Pant Road also visible. Construction compounds in the open space prominent. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				Operation Close views of new A465 viaduct, with associated traffic flow and highway infrastructure, together with new side road across south part of open space and its junction with Pant Road. 1 m high environmental barrier along north side of mainline would be visible to the south east but would also screen some of the traffic. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	Summer Year 15 Close views of new A465 viaduct, with associated traffic flow and highway infrastructure would remain, although established mitigation planting on viaduct embankments would provide some screening. The new side road across south part of open space and its junction with Pant Road, with associated traffic flows and highway infrastructure, would also remain visible in the long term. Environmental barrier to south east largely screened by planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
S5-A13 (PRoW 2.4 km) (NCR 46 1 km) (Open space 9.6 ha) (Open Access Land 2.5 ha)	Penywern Ponds North open space, and PRoW north of A465 / east of Francis Terrace and Pant Road (including footpaths 105/2, 105/4, 105/5. 105/7, 105/8, 105/9 and 105/10, and NCR 46). Merthyr Common Countryside and Rights of Way Act Open Access Land, all south of substation access road.	0m	Views across open space with existing grassland and trees and Penywern Pond (north). Development visible beyond with hills in the distance. Close and middle distance intermittent views to the south of A465 and traffic.	Construction Close views of construction of A465 and Dowlais junction eastbound egress slip road, together with major earthworks activities associated with embankment formation. Visibility of construction exacerbated by loss of existing roadside vegetation on north side of road. New NMU crossing overbridge construction also visible. Construction intermittently visible to varying degrees in middle distance to distant views looking south from higher ground. The magnitude of impact would be **major adverse**.	**Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				Operation Partly elevated A465 and Dowlais junction slip road, with associated traffic flow and highway infrastructure, including new NMU overbridge, most prominent in close views but also intermittently visible to varying degrees in middle distance to distant views looking south from higher ground. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	Summer Year 15 Intermittent close views of partly elevated A465 and Dowlais junction slip road, with associated traffic flow and highway infrastructure, including new NMU overbridge, would remain although established mitigation planting on embankments would provide some effective screening. The magnitude of impact would be **minor adverse**.	**Slight adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S5-A14 1.9 km (13.7 ha)	Penywern Ponds South open space, and associated PRoW (including footpaths 102/1, 102/2, 102/3, 102/4, 102/5, 102/6, 102/8, 102/10 and 102/11).	0 m	Views across open space with existing grassland and trees and Penywern Pond (south). Development visible beyond with hills in the distance. Close and middle distance intermittent views to the north of A465 and traffic.	<u>Construction</u> Close and middle distance views of construction of A465 and Dowlais junction westbound access slip road, together with major earthworks activities associated with embankment formation. Visibility of construction exacerbated by loss of existing roadside vegetation on south side of road. Demolition of stables also visible. Construction of the Dowlais junction A465 viaduct visible to the east and new NMU crossing overbridge construction visible to the north-west. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Large adverse**
				<u>Operation</u> Partly elevated A465 and Dowlais junction slip road and viaduct, with associated traffic flow and highway infrastructure, prominent in close and middle distance views. 1 m high environmental barrier along south side of mainline and slip would be visible to the east but would also screen some of the traffic. New NMU overbridge would also be visible. The magnitude of impact would be **moderate adverse**.	**Large adverse**	<u>Summer Year 15</u> Intermittent close and middle distance views of partly elevated A465 and Dowlais junction slip road and viaduct, with associated traffic flow and highway infrastructure including environmental barrier, would remain although established mitigation planting on embankments would provide some effective screening. The new NMU overbridge would also be intermittently visible. The magnitude of impact would be **minor adverse**.	**Slight adverse**
S5-A15 (1.95 km)	NCR 46 east of Penywern Ponds North open space.	50 m	Close views of existing A465 and Dowlais junction roundabout with development of Merthyr Tydfil visible in middle and longer distance views, with a backdrop of distant hills including extensive opencast mining activity at Dowlais, to the south. Superstores and industrial units at Dowlais Top prominent in close and middle distance views to the north. Elevated views from existing NMU bridge over superstore access road.	<u>Construction</u> Close and middle distance views of construction of A465 and Dowlais junction including mainline viaduct, together with major earthworks activities associated with embankment formation. Visibility of construction exacerbated by loss of existing roadside vegetation between Asda superstore carpark and A465. The magnitude of impact would be **major adverse**.	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse**.	**Large adverse**
				<u>Operation</u> Cycle route re-routed along new track on embankment. Partly elevated A465 and mainline viaduct, with associated traffic flow and highway infrastructure including signage and lighting columns / light spill, prominent in close and middle distance views. 1 m high environmental barrier along south side of mainline would also be visible and mainline viaduct would be prominent in elevated views from existing NMU bridge over superstore access road. The magnitude of impact would be **major adverse**.	**Large adverse**	<u>Summer Year 15</u> Partly elevated A465 and mainline viaduct, with associated traffic flow and highway infrastructure including signage and lighting columns / light spill, would be intermittently prominent in close and middle distance views. Established mitigation planting on new cycle route embankments between Asda superstore carpark and A465 and on A465 mainline embankments, would provide some effective screening. The mainline viaduct would remain prominent in elevated views from existing NMU bridge. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
S5-A16 (12.5 km)	PRoW to the south of the	60 m	Range of views across Merthyr Tydfil with associated development	<u>Construction</u> Construction of Dowlais junction visible to north and north-	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting.	**Slight adverse**

Reference number[1] with length / area of PRoW / space affected in brackets	PRoW number or land name and designation	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
(119 ha)	A465 and A4060 (including Gelligaer FP95, FP98, FP100, FP109 and FP151 and 102/22, 102/34 to 39 and bridleway BR99). Note: Various PRoW diversions are in place at Ffos-y-Fran opencast mine. Merthyr Common Countryside and Rights of Way Act Open Access Land south of A465.		areas and the A465 to the north, north-west and west, including superstores and industrial units at Dowlais Top, with distant hills of the BBNP beyond to the north, north-east and north-west. Opencast mining activity is also prominent in the Dowlais area south of the A465.	west including mainline viaduct construction and major earthworks activities associated with embankment formation. The magnitude of impact would be **moderate adverse**.		The magnitude of impact would be **minor adverse**.	
				<u>Operation</u> Partly elevated A465 and Dowlais junction slip roads and viaduct, with associated traffic flow and highway infrastructure, visible in middle distance to distant views to north-west. 1 m high environmental barriers along south side of mainline and slip would also be just visible to the north-west but would also screen some of the traffic. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Partly elevated A465 and Dowlais junction slip roads and viaduct, with associated traffic flow and highway infrastructure, would remain intermittently visible in middle distance to distant views to north-west. Established mitigation planting would provide some effective screening. The magnitude of impact would be **negligible adverse**.	**Slight adverse**
S5-A17 (185 ha)	Merthyr Common Countryside and Rights of Way Act Open Access Land north of A465 and east of superstores and industrial units at Dowlais Top, within Special Landscape Area, locally designated under Caerphilly Local Development Plan.	16 m	Range of open moorland views towards Merthyr Tydfil with associated development areas and the A465 to the south-west, including superstores and industrial units at Dowlais Top. Backdrop of distant hills including extensive opencast mining activity at Dowlais, to the south.	<u>Construction</u> Construction of A465 and Dowlais junction visible in close and middle distance views to south-west including mainline viaduct construction and major earthworks activities associated with embankment formation. Superstores and industrial units at Dowlais Top however, screen some of the works. The magnitude of impact would be **moderate adverse**.	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				<u>Operation</u> Partly elevated A465 and mainline viaduct, with associated traffic flow and highway infrastructure including signage and lighting columns / light spill, prominent in close and middle distance views. Superstores and industrial units at Dowlais Top however, provide some screening. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Summer Year 15</u> Partly elevated A465 and Dowlais junction slip roads and viaduct, with associated traffic flow and highway infrastructure, would remain intermittently visible in close and middle distance to distant views to south-west. Established mitigation planting would however, provide some effective screening. The magnitude of impact would be **minor adverse**.	**Slight adverse**

Appendix 10G – Visual Effects Schedule: People at Public Facilities and Spaces

Table 10G.1 Visual effects schedule: people at public facilities and spaces with high sensitivity to change

Value / sensitivity to change: High

Note: * Listed Building / Registered Park and Garden

Reference number[1] with approx. area / length of public receptor in brackets	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S5-P1 * (17.2 ha)	Cefn Coed Cemetery and Jewish Burial Ground (Grade II Registered Historic Park and Garden), Merthyr Tydfil.	0 m	Views within cemetery generally contained by large number of mature specimen trees, including conifers and deciduous trees, though there are filtered glimpses through vegetation in winter to traffic at A470 junction from southern edge of cemetery. Slightly elevated views west from higher ground, including southernmost Significant View (Figure 9.3), across tops of trees to fields within BBNP, while traffic on A470 is screened by trees. Partial middle distance views south-east framed by trees, from elevated ground in north-eastern part of cemetery, to traffic and lighting columns on A465 Taf Fawr viaduct, with properties in Gellideg and mountains in background.	<u>Construction</u> Part of cemetery grounds lost to proposed scheme for A470 junction. Close views west to south-east from southern part of cemetery opened up by loss of tree belt and trees in Taf Fawr valley, to construction of A470 junction, including major earthworks, realignment of A470 approaching junction, elevated A465 mainline through junction, two new viaducts and highway infrastructure such as signage and lighting columns. Also close views of construction compounds and stockpiles. Views from northern half of cemetery generally contained by vegetation, except partial views from higher ground, framed by trees, to construction of two viaducts with environmental barriers and lighting columns to south-east and views of loss of trees and earthworks on hillside in BBNP to south-west which would impact on southernmost Significant View. The magnitude of impact would be **major adverse.**	**Very large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Very large adverse**
				<u>Operation</u> Part of cemetery grounds lost to proposed scheme for A470 junction. Close views west to south-east from southern part of cemetery opened up by loss of tree belt and trees in Taf Fawr valley, to traffic flow and highway infrastructure such as signage and lighting columns at A470 junction, A470 approach to junction and elevated A465 mainline through junction. Cuttings would screen traffic flow to varying degrees in some locations. Views from northern half of cemetery generally contained by vegetation, except partial middle distance views from higher ground, framed by trees to south-east, to traffic flow and highway infrastructure such as lighting columns / light spill on two new closer viaducts across Taf Fawr, partially screened by 2 m high environmental barrier, as well as views of occasional traffic on minor road on hillside in BBNP to south-west, which would impact on	**Very large adverse**	<u>Summer Year 15</u> Established mitigation planting, in combination with cuttings in some locations, would screen much of the traffic flow at A470 junction and A470 approaching junction in close views west to south-east from southern part of cemetery, though tops of some lighting columns / light spill and some filtered views through vegetation or glimpses above vegetation to traffic on elevated A465 mainline through junction would remain. Established mitigation planting would also screen occasional traffic on minor road on hillside in BBNP in views south-west from higher ground in northern part of cemetery, including which would impact on southernmost Significant View. The extensive cutting slope to the west would generally be screened or softened by established mitigation planting in views from southern part of cemetery, although it would remain a noticeable feature in some filtered views through or above vegetation. Framed middle-distance views	**Moderate adverse**

[1] Refer to Figure 10.8

Reference number[1] with approx. area / length of public receptor in brackets	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				southernmost Significant View. Extensive cutting slope to west would be dominant in views west, from southern part of cemetery. The magnitude of impact would be **major adverse.**		south-east would not be affected by planting and traffic flow and highway infrastructure such as lighting columns on two new closer viaducts across Taf Fawr, partially screened by 2 m high environmental barrier, would remain visible. The magnitude of impact would be **moderate adverse.**	
S5-P2* (0.3 ha)	Capel Tabor (grade II listed chapel), Grawen Lane, Cefn Coed, Merthyr Tydfil.	30 m	Close oblique view south across lit Grawen Lane to dense belt of deciduous and evergreen vegetation. Close, slightly oblique view south-east to signage at Grawen Lane / High Street junction and High Street overbridge. Traffic on A465 screened by cutting with mix of deciduous and evergreen trees, though tops of lighting columns are visible, as well as filtered glimpses through bridge railings to signage on A465. Views east generally screened by wall, fencing and adjacent property.	<u>Construction</u> Close views south-west to south-east, to demolition and construction of High Street overbridge, construction of widened A465 mainline cutting with highway infrastructure such as environmental barriers, and demolition of properties, opened up by loss of vegetation. Also middle distance views south-west to construction of A470 junction, including elevated A465 mainline and highway infrastructure such as signage, environmental barriers and lighting columns, opened up by loss of trees. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				<u>Operation</u> Close views south-west and south opened up by loss of vegetation, to tops of vehicles in A465 mainline cutting, seen against 2 m high environmental barrier. Middle distance views south-west to traffic flow and highway infrastructure such as signage and lighting columns / light spill at A470 junction and elevated A465 mainline. Views of High Street overbridge would be similar to existing views. Close views south-east to environmental barrier along southern edge of A465 cutting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Views of High Street overbridge would be similar to existing views. Established mitigation planting would generally screen tops of vehicles in A465 mainline cutting; though some filtered glimpses in the vicinity of the overbridge would remain. Upper storey views south-west to traffic flow and tops of lighting columns / light spill at A470 junction and elevated A465 mainline would remain, but be partially screened and softened by established mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-P4* (0.1 ha)	St John the Baptist Church (grade II listed), Cefn Coed, Merthyr Tydfil.	24 m	Views north-west generally contained by mature evergreen trees and wall. Filtered views north through vegetation to non-motorised users on footpath 111/38 bridge across A465. Views north-east generally contained by properties and vegetation in summer, though Gurnos and Y-Graig woodland is visible in background.	<u>Construction</u> Close views north-west and north to demolition of garage at adjacent property, demolition of footbridge across A465 and installation of environmental barrier, opened up slightly by loss of vegetation. Properties on north side of A465 cutting also visible due to loss of vegetation. Loss of trees would also partially open up views north-east, including middle distance glimpses of construction of A465 mainline and parallel NMU route through Y-Graig. The magnitude of impact would be **minor adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
				<u>Operation</u> Close partially filtered views through vegetation to north to end of 2 m environmental barrier and properties on north side of A465 cutting. Middle distance glimpses north-east to traffic flow on A465 mainline and users on	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting would soften 2 m high environmental barrier to north and screen properties on north side of A465 cutting. Middle distance glimpses north-east to traffic flow on A465 mainline and users on parallel	**Slight adverse**

Reference number[1] with approx. area / length of public receptor in brackets	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				parallel NMU route through Y-Graig. The magnitude of impact would be **minor adverse.**		NMU route through Y-Graig would also be softened by established mitigation planting. The magnitude of impact would be **minor adverse.**	

Table 100.1 : Visual effects schedule: people at public facilities and spaces with moderate sensitivity to change

Value / sensitivity to change: Moderate

Reference number[2] with approx. area / length of public receptor in brackets	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-P1 (4.3 ha)	Recreation ground, including sports facilities and playground, Hirwaun.	35 m	Views west contained by mainly deciduous vegetation. Views south either contained by tall evergreen trees or close open views across rough grassland to opencast workings and other detractors such as stretch of powerlines and pylons, seen against ridgeline within Hirwaun Common in background. Lower level middle distance views east across rough grassland to deciduous vegetation, to occasional vehicles on windfarm access track, with mountains in background. Views north partially contained by deciduous vegetation in summer, though there are some close	<u>Construction</u> Tall evergreen and deciduous tree belts would continue to screen / filter most views south and west, from western part of recreation facilities. Loss of vegetation for realigned access track at south-western corner would open up partial view to construction activities. Close views south and south-east, mainly from eastern part of recreation facilities, to traffic on temporary A465 diversion road and construction of offline A465 mainline in cutting, which would noticeably change landform locally, and include highway infrastructure such as signage and lighting columns, seen in context of open cast workings. Also views above hedgerow from eastern edge, to construction of windfarm access bridge to south-east. The magnitude of impact would be **major adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**

[2] Refer to Figure 10.8

Reference number[2] with approx. area / length of public receptor in brackets	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			to middle distance views to A465 with traffic and lighting, amongst other on adjacent overbridge.	Operation Tall evergreen and deciduous tree belts would continue to screen / filter most views south and west, from western part of recreation facilities, except lighting / columns / light spill at south-western corner of recreation ground, where loss of vegetation would open up a partial view to fence for visual screening of traffic. Cutting would generally screen traffic flow on A465 mainline, though there would be glimpses of tops of high sided vehicles in cutting, mainly from eastern part of recreation facilities. Views south or south-east would also include tops of lighting columns / light spill along offline route. Occasional vehicles on windfarm access would appear similar to existing views. The magnitude of impact would be **minor adverse.**	**Slight adverse**	Summer Year 15 Established mitigation planting would screen previously open views south and south-east, screening offline A465 mainline, including traffic and lighting columns / light spill. Tops of lighting columns / light spill would, however, remain visible above fence for visual screening at south-western corner of recreation ground. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S6-P2 (1.9 ha)	Hirwaun County Primary Junior School and Hirwaun County Infants and Nursery School, Hirwaun. Including playgrounds and fields.	147 m	Views west to south-east generally contained by deciduous trees. Glimpsed or filtered views through vegetation to traffic and lighting on A465 to south, as well as occasional vehicles on windfarm access track to south-west.	Construction Glimpsed or filtered close to middle distance views south-west to south-east to traffic on temporary A465 diversion route and construction of offline A465 mainline within grassland, including highway infrastructure such as signage and lighting columns. Most noticeable activities associated with construction of windfarm overbridge to south-east. All views seen in context of traffic on A465 in foreground. Construction activities at Trewaun junction would not be noticeable due to screening from existing trees and properties. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
				Operation Glimpsed or filtered close to middle distance views south-west to south-east to tops of lighting columns / light spill from offline A465 mainline. Cutting would screen traffic flow and other highway infrastructure. Views of occasional vehicles at windfarm access track / bridge would appear similar to existing views. The magnitude of impact would be **minor adverse.**	**Slight adverse**	Summer Year 15 Established mitigation planting would screen lighting columns / light spill on offline A465 mainline, in glimpsed views through existing trees. Glimpses of occasional vehicles at windfarm access track / bridge would appear similar to existing views. The magnitude of impact would be **no change.**	**Neutral**

Reference number[2] with approx. area / length of public receptor in brackets	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S5-P3 (49.7 ha)	Merthyr Tydfil Golf Club, Cefn Coed, Merthyr Tydfil.	355 m	Descending panoramic middle distance to distant views across moorland south-west to north-east. Distant glimpses of A465 as it descends from Baverstock ridge to south-west. A465 Taf Fawr Viaduct, A470 junction and A470 approach to junction, including traffic and lighting columns visible to south-west, with fields with hedgerows and trees within BBNP, Gellideg and Mynydd Aberdar in background. Merthyr Tydfil, Y Graig woodland and Gurnos against a mountainous background to south-east. Tree-belt along A465 clearly visible in middle distance views east, with glimpses of traffic in summer and filtered views of traffic through trees in winter. Near mast and floodlighting at sports ground, and chimney at Prince Charles Hospital in longer distance are detracting features in the landscape.	<u>Construction</u> Descending middle to longer distance views south-west to construction of A470 junction, including major earthworks and loss of vegetation, construction of elevated A465 mainline and highway infrastructure. Also distant glimpses of construction of A465 mainline at Baverstock ridge. Longer distance views south-east to demolition of Trade Centre Wales and construction of expanded Prince Charles Hospital junction and, offline and widened A465 mainline including major earthworks activities associated with attenuation ponds near Gurnos Farm and embankments to mainline and attenuation pond access roads. Visibility of works exacerbated by loss of existing roadside vegetation and adjacent mature tree belts. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
				<u>Operation</u> Descending middle to longer distance views south-west to traffic flow on A470 junction, including elevated A465 mainline, as well as highway infrastructure such as lighting columns / light spill. Slight change to skyline at Baverstock ridge and distant glimpses of traffic visible. Longer distance views of offline and widened A465 mainline, with associated traffic flow and highway infrastructure, to south-east and embankments associated with attenuation ponds and associated access roads near Gurnos Farm, and A465 main line. Part of mainline through Y Graig screened by cutting and existing trees. Also views of traffic and highway infrastructure, such as lighting columns / light spill at expanded Prince Charles Hospital junction, opened up by loss of trees. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would screen attenuation pond at A470 junction and generally soften views of junction to south-west to some extent, though traffic flow on elevated A465 and parts of junction slips would remain visible. Established mitigation planting, in combination with localised cutting and existing vegetation, would generally screen longer distance views to A465 mainline, though some filtered glimpses of attenuation ponds near Gurnos Farm and tops of vehicles would remain. Longer distant to distant views of Prince Charles Hospital junction would also be softened and partially screened by established mitigation planting, though some glimpses of traffic and tops of lighting columns /light spill would remain. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-P5 (0.5 ha)	Ysgol-Y-Graig Primary School, Brewery Lane, Cefn Coed, Merthyr Tydfil.	75 m	Views north-west contained by rising landform, properties and mature vegetation. Close partially filtered elevated views north-west to A465 Taf Fechan viaduct with traffic. Ascending views north-east across wooded Taf Fechan valley, to glimpses of Y Graig woodland and Gurnos in the middle distance. Pylons are detracting	<u>Construction</u> Close ascending, partially filtered views through trees, north-west and north to construction of widened Taf Fechan viaduct with environmental barrier and parallel NMU bridge. Associated construction compounds and stockpiles also visible. Middle distance ascending filtered glimpses through intervening trees to construction of A465 mainline through Y Graig to north-east. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**

Reference number[2] with approx. area / length of public receptor in brackets	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			features in landscape.	Operation Traffic flow on widened Taf Fechan viaduct would be slightly more noticeable above 1 m high environmental barrier than traffic in existing close views north-west and north to A465, due to mainline being closer to school. Also views of parallel NMU bridge and glimpses of highway infrastructure such as signage. Existing vegetation and partial cutting would generally screen traffic flow on offline A465 mainline through Y Graig to north-east. The magnitude of impact would be **minor adverse.**	**Slight adverse**	Summer Year 15 Traffic flow on widened Taf Fechan viaduct would continue to be slightly more noticeable above 1 m environmental barrier than traffic in existing close views north-west and north to A465, due to mainline being closer to school. Traffic flow on offline A465 mainline through Y Graig would be screened by existing trees and established mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-P6 (44.8 ha)	Morlais Castle Golf Club, Pant, Merthyr Tydfil.	440 m	Views sometimes screened by clumps of trees or landform. Panoramic views across Merthyr Tydfil from higher ground south-west to south-east, with skyline of hills like Baverstock ridge in far distance in background. Traffic on A465 generally screened by trees and industrial development in middle-distance views, though there are some filtered glimpses through vegetation to traffic in winter. Glimpses of traffic flow descending from Baverstock ridge in distance to south-west.	Construction Middle distance views, generally from higher ground within golf course, to demolition of Trade Centre Wales and construction of expanded Prince Charles Hospital junction with highway infrastructure such as signage, lighting columns and drainage ponds, to south-west and south, opened up by loss of vegetation. Also views of construction activities along A465 further west and east, such as distant views to construction of A465 mainline descending from Baverstock ridge to south-west and glimpses of demolition and construction of Pant A465 overbridge to east. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Sight adverse**
				Operation Middle distance views, generally from higher ground within golf course, partially filtered by existing vegetation, to traffic flow and highway infrastructure such as signage and lighting columns / light spill at elevated and expanded Prince Charles Hospital junction to south-west and south, opened up by loss of vegetation. Traffic flow on A465 mainline through junction would generally be screened by cutting, though there would be longer distance and distant views and glimpses of traffic on A465 mainline further east, such as traffic descending from Baverstock ridge. Change to skyline at Baverstock ridge also perceptible, due to cutting and loss of forest. The magnitude of impact would be **minor adverse.**	**Sight adverse**	Summer Year 15 Established mitigation planting and existing woodlands and groups of trees in wider landscape would generally screen traffic and highway infrastructure at Prince Charles Hospital junction in views south-west and south. Tops of lighting columns / light spill at junction would remain visible. Distant views of traffic descending from Baverstock ridge also softened or partially screened by established mitigation planting. The magnitude of impact would be **negligible adverse.**	**Neutral**

Reference number[2] with approx. area / length of public receptor in brackets	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S5-P7 (7.8 ha)	Pen-Y-Dre High School with playing fields, Goitre Lane, Gurnos, Merthyr Tydfil.	55 m	Views west and east contained by trees and properties. Views north-west to north-east partially filtered by thin deciduous vegetation belt along periphery of school grounds, to traffic on lit Gurnos Ring Road and dense deciduous vegetation belt along A465. Close filtered views of traffic on A465 in winter. Roof of Trade Centre Wales visible above vegetation.	<u>Construction</u> Close, partially filtered views through vegetation on periphery of school grounds, north-west to north-east across Gurnos Ring Road to demolition of Trade Centre Wales, construction of widened A465 mainline and, partially elevated and expanded Prince Charles Hospital junction with highway infrastructure such as signage, lighting columns and attenuation ponds, opened up by loss of trees. Large construction compound with stockpiles also visible adjacent to Gurnos Ring Road. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Large adverse**
				<u>Operation</u> Close, partially filtered views through vegetation on periphery of school grounds, north-west to north of school buildings to traffic flow and highway infrastructure such as signage and lighting columns / light spill on partially elevated and expanded Prince Charles Hospital junction. Traffic flow on A465 mainline generally screened in by cutting in these views. High Vehicles and signage visible at junction and / or A465 mainline in views north and north-east across Gurnos Road from school playing fields., The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Summer Year 15</u> Established mitigation plating would generally screen views of traffic and highway infrastructure such as signage at A465 mainline and Prince Charles Hospital junction, in all views except close views to junction directly north from school buildings. Various extents of lighting columns / light spill from junction would also remain visible, but seen in context of existing lighting columns / light spill associated with Gurnos Ring Road. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
S5-P8 (96 m^2)	Hall, Eighth Avenue, Galon Uchaf, Merthyr Tydfil.	70 m	Views west and east generally contained by trees or properties. Filtered views through metal railings north-west to north-east to traffic on lit Gurnos Ring Road and dense deciduous vegetation belt along A465. Close filtered views of traffic on A465 in winter.	<u>Construction</u> Close filtered views through metal railings north-west to north-east across Gurnos Ring Road to demolition of Trade Centre Wales, construction of widened A465 mainline and new link road north of road with associated highway infrastructure such as signage and lighting columns, and demolition and construction of Bryniau Road bridge, opened up by loss of trees. Large construction compound with stockpiles visible in foreground adjacent to Gurnos Ring Road. The magnitude of impact would be **major adverse.**	**Large adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**

Reference number[2] with approx. area / length of public receptor in brackets	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				Operation Close filtered views through metal railings north-west to north-east across Gurnos Road open up by loss of vegetation, to vehicles and signage on A465 mainline, above cutting. Views to traffic and lighting columns / light spill at Bryniau Road bridge in oblique views north-east also opened up by loss of trees. Traffic and lighting columns / light spill on new link road to Prince Charles Hospital junction on north side of A465 also visible, but partially screened by industrial units. Lighting seen in context of existing lighting columns / light spill associated with Gurnos Ring Road. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation plating would generally screen views of traffic and highway infrastructure such as signage at A465 mainline. With exception of glimpses of tops of lighting columns / light spill from new link road to Prince Charles Hospital junction on north side of A465, views would be similar to existing views. The magnitude of impact would be **negligible adverse.**	**Neutral**
S5-P9 (0.3 ha)	Playground, Hayden Terrace Open Space, Merthyr Tydfil.	475 m	Views west contained by properties. Open middle distance views north and north-east across rooftops to partially wooded Ifor Park and with tops of high sided vehicles on A465 along edge of park, seen against backdrop of deciduous tree belt. Filtered glimpses through trees to Pant industrial estate to north in winter.	Construction Middle distance filtered views or glimpses north through / above trees to construction of large attenuation pond and access track with associated loss of trees. Middle distance views north and north-east across Ifor Park to construction of widened A465 mainline with highway infrastructure such as signage, made more visible due to loss of vegetation on northern edge of park. Tops of industrial units to north of road would also be more noticeable due to vegetation loss north of A465. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse.**	**Slight adverse**
				Operation Middle distance views north and north-east across Ifor Park to traffic flow and highway infrastructure such as signage on widened A465 mainline, opened up further due to loss of vegetation. Tops of industrial units to north of road would also be more noticeable due to vegetation loss north of A465. Existing trees in park would generally screen or filter views of attenuation pond and access track. The magnitude of impact would be **minor adverse.**	**Slight adverse**	Summer Year 15 Established mitigation planting would generally screen traffic flow and highway infrastructure on A465 mainline, as well as industrial units to north of road, in views to north and north-east across Ifor Park. In addition, established mitigation planting would add to existing vegetation, to screen earthworks for attenuation pond and access track. The magnitude of impact would be **negligible adverse.**	**Neutral**
S5-P10 (0.1 ha)	Playground on eastern edge of Ifor Park.	29 m	Close lower level views below Pant A465 viaduct and ascending views north to traffic on viaduct. Views to traffic on A465 to north-west screened in summer and filtered in winter through tree belt along road. Views north-east partially screened by tall evergreen hedge, with partial views	Construction Close views to demolition and construction of Pant viaduct and widened A465 to west, north and north-east, including large embankment on edge of playground, retaining wall to north-east and highway infrastructure. Also views of construction compound and stockpiles on north side of viaduct. The magnitude of impact would be **major adverse.**	**Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Large adverse**

Reference number[2] with approx. area / length of public receptor in brackets	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
			through gaps to vehicles at Merthyr Motor Auction and traffic on Pant A465 viaduct above.	Operation Close ascending views west to north-east to traffic flow and highway infrastructure on A465 mainline, including Pant viaduct. View north-west opened up by loss of trees, allowing glimpsed views of industrial units beyond road. Large embankment and viaduct brought closer to playground than in existing views and view below viaduct slightly more constrained due to embankment to north-west extending further east, and retaining wall to north-west extending up to Pant Road. However, much of the retaining wall would be screened by the existing evergreen hedge on boundary of Merthyr Motor Auction. The magnitude of impact would be **major adverse.**	**Large adverse**	Summer Year 15 Established mitigation planting, would soften embankment to north-west and screen traffic and highway infrastructure on A465 mainline, as well as industrial units in views west and north-west. Close ascending views of traffic flow on the closer and wider Pant viaduct to north and north-east, and part of retaining wall to north-east, would however, remain visible. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
S5-P11 (371 m2)	Playground off Station Terrace, Dowlais.	64 m	Views west generally contained by vegetation and landform. Close ascending views north to east, partially screened by stables to north, to traffic flow and lighting columns on Dowlais junction. Superstores, partially filtered by vegetation, in background.	Construction Close ascending views north to east of demolition of stables, construction of expanded Dowlais junction and elevated A465 mainline with highway infrastructure such as signage, lighting columns and environmental barriers. Construction of tall embankment for slip road in close proximity to playground would be particularly dominant. Construction of realigned NMU route to north of junction also visible. The magnitude of impact would be **major adverse.**	**Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Large adverse**
				Operation Close ascending views north to east to traffic flow and highway infrastructure such as signage and lighting columns / light spill, slightly screened by 1 m high environmental barriers above tall embankment, at expanded Dowlais junction and elevated A465 mainline. Slip road would be much closer to junction and no longer be screened by stables. The magnitude of impact would be **major adverse.**	**Large adverse**	Summer Year 15 Established mitigation planting would generally screen traffic flow and highway infrastructure such as signage and 1 m high environmental barriers at Dowlais junction, though intermittent views of traffic on elevated A465 mainline would remain, to north-east. Tops of and lighting columns / light spill would also remain visible. The magnitude of impact would be **minor adverse.**	**Slight adverse**

Page left intentionally blank

Appendix 10H – Visual Effects Schedule: People at Work

Table 10H.1 : Visual effects schedule: people at work with moderate sensitivity to change

Value / sensitivity to change: Moderate

Reference number[1] * Listed Building	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-W2	Outdoor workers at Cynon Farm, Hirwaun.	50 m	Views generally contained by vegetation in summer. Filtered views south and south-east through vegetation to traffic on A465 in winter. Pylon is a detracting feature in landscape behind A465.	<u>Construction</u> Close views, filtered by intervening vegetation to south and south-east, to construction of Pentwyn Cynon (Tramway) footbridge and A465 mainline cutting and embankments with highway infrastructure such as environmental barriers, opened up by loss of trees. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				<u>Operation</u> Close views south and south-east filtered by intervening vegetation, to Pentwyn Cynon (Tramway) footbridge, tall retaining wall south of A465 and traffic flow on A465 mainline opened up by loss of trees, but partially screened by 2 m high environmental barrier in vicinity of footbridge and cutting to south-east. Glimpses of tops of lighting columns / light spill at Trewaun junction to south-west. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would screen traffic flow and highway infrastructure on and in vicinity of A465 mainline in any glimpsed views through existing vegetation in leaf. Glimpses of top of Pentwyn Cynon (Tramway) footbridge to south-east and tops of lighting columns / light spill at Trewaun junction to south-west. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S6-W3	Outdoor workers at Bleannant Hir Isaf Farm, Crematorium Road, Llwydcoed.	80 m	View south-west to north-west partially screened by stables and contained by deciduous tree belt on cutting along the A465.	<u>Construction</u> Close views west and north partially screened by stables, of construction of widened A465 mainline with highway infrastructure, including signage, Nant Moel underbridge and access track, opened up by loss of trees. Existing trees would screen / filter views south-west towards attenuation pond construction and north-east towards Nant Hir viaduct construction. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				<u>Operation</u> Close views west and north partially screened by stables, to traffic flow and highway infrastructure, including signage, on slightly elevated A465 mainline, as well as attenuation pond access track to south-west. Existing trees would screen/filter views south-west towards attenuation pond and north-east towards widened Nant Hir (North) viaduct. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would generally screen traffic flow and highway infrastructure, including signage, on A465 to west and north, with exception of short stretch above Nant Moel underbridge. Attenuation pond access track also visible to south-west. The magnitude of impact would be **minor adverse**.	**Slight adverse**

[1] Refer to Figure 10.8

Reference number[1] * Listed Building	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-W4	Outdoor workers at Nant Cae Farm, Crematorium Road, Llwydcoed.	215 m	Views west contained by deciduous vegetation along Nant Hir Reservoir. Ascending middle distance views north and north-east across fields to filtered glimpses through thin vegetation belt to mainly tops of high sided vehicles on A465 above false cutting, seen against woodland background. Views east across fields towards Nant Livery Farm, tree belts and woodland blocks.	Construction Close views west and north to construction of NMU route within approx. 5 m of the farm. Middle distance views north-west across reservoir to construction of parallel viaduct at A465 Nant Hir crossing, opened up by loss of trees. Middle distance ascending views north and north-east to construction compounds with large stockpiles, construction of large attenuation ponds, widened A465 mainline and expanded Baverstock junction with associated highway infrastructure such as signage and lighting columns. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				Operation Close views west and north to users on new NMU route, opened up by loss of vegetation. Middle distance views north-west to north-east to earthworks and access tracks for attenuation ponds, traffic flow on Nant Hir (North) viaduct, A465 mainline and, expanded Baverstock junction with highway infrastructure such as signage and lighting columns / light spill. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Views of NMU route, attenuation ponds and access tracks would remain visible. Established mitigation planting would generally screen views of traffic flow at Baverstock junction to north-east, though traffic flow on Nant (North) Hir viaduct and A465 mainline would remain more noticeable to north-west and north due to loss of vegetation belt and false cutting. Tops of lighting columns / light spill would also be visible at junction. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**
S6-W5	Outdoor workers at Nant Livery Farm, Crematorium Road, Llwydcoed.	335 m	Views west to Nant Cae Farm and primarily deciduous vegetation along Nant Hir Reservoir. Partially filtered ascending views through foreground vegetation north and north-east across fields to woodland. Filtered middle distance glimpses of mainly tops of high-sided vehicles on the A465 above false cutting through thin belt of deciduous vegetation. Views east contained by tree belt.	Construction Middle distance partially filtered views north-west to north-east to construction of NMU route, large attenuation ponds and widened A465 with associated signage. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				Operation Middle distance partially filtered views north-west to north-east to users on NMU route, earthworks and access tracks for attenuation ponds, and, traffic flow and highway infrastructure on widened A465 mainline. Existing vegetation would continue to screen views east. The magnitude of impact would be **minor adverse.**	**Slight adverse**	Summer Year 15 Established mitigation planting to north of A465 would not affect middle distance views north-west to north-east to attenuation ponds with access tracks, users on NMU route and, traffic flow and highway infrastructure on widened A465 mainline, which would remain more noticeable. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-W2	Outdoor workers at Gurnos Farm Stud, Gurnos Ring Road, Gurnos, Merthyr Tydfil.	11 m	Views south-west to east contained by sheds/buildings and deciduous trees and vegetation belt along A465 in summer. Close glimpses in summer and filtered views in winter to traffic flow on A465.	Construction Close views south to east, in between and above sheds/buildings and filtered through trees, to construction of tall retaining structure and embankments for widened and elevated A465, including highway infrastructure such as signage, opened up by loss of vegetation. Partially filtered views through trees south-west to construction of attenuation ponds and embankments for realigned A465. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**

Reference number[1] * Listed Building	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				Operation Close views in between and above sheds/buildings and filtered through trees south-west to east to retaining structure and embankments, traffic flow on A465 and highway infrastructure such as signage, opened up by loss of vegetation. 3 m environmental barrier on south side of A465 mainline partly visible. Filtered views of earthworks for attenuation ponds through existing trees. Glimpses of tops of lighting columns / light spill to north-east above existing trees. The magnitude of impact would be **moderate adverse.**	**Moderate adverse**	Summer Year 15 Established mitigation planting would screen lower part of vehicles on A465 and highway infrastructure, though tops of high sided vehicles and signage, and glimpses of retaining structure would remain. Filtered views of attenuation ponds would be softened by established mitigation planting. Possible glimpses of tops of lighting columns / light spill to north-east. 3 m environmental barrier on south side of A465 mainline partly visible. The magnitude of impact would be **minor adverse**.	**Slight adverse**
S5-W4	Outdoor workers at Dan-Y-Castell Farm, Pontsarn Road, Merthyr Tydfil.	170 m	The farmland lies adjacent to, and has direct views south towards the A465 mostly screened by vegetation along the road. The Pen-Y-Dre High School buildings and hospital buildings are visible, glimpsed over the roadside trees from higher locations. The Trade Centre for Wales is visible to the east and western views are curtailed by woodland along Goitre Lane.	Construction Slightly descending views of tree clearance between intervening woodland would be possible from south facing slopes. Views towards construction activities between the Trade Centre Wales and the large new roundabout for Prince Charles Hospital junction would include demolition of the Trade Centre for Wales, earthworks, retaining walls, large western roundabout for Prince Charles Hospital junction, ponds and the link road crossing the farmland. The compound would also be glimpsed beyond the construction on the south side of the A465. The magnitude of impact would be **major adverse**.	**Large adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**
				Operation Partial descending views of traffic in cutting would be visible on the A465 and on the link road through fields to the north of the A465. Lighting at the junction would be visible and views opened up across the road to Pen-Y-Dre High School and housing in Gurnos and Galon Uchaf. The attenuation ponds would be in view along the link road. The magnitude of impact would be **moderate adverse**.	**Moderate adverse**	Summer Year 15 Planting along the A465 and around the junction would screen views but the attenuation ponds, link road and traffic on it would remain partially visible. The magnitude of impact would be **minor adverse**.	**Slight adverse**

Table 100.2 : Visual effects schedule: people at work with low sensitivity to change

Value/ sensitivity to change: Low

Reference number[2] * Listed Building	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S6-W1	Indoor workers at Smarter Training Group Ltd, Fairleap House, Brecon Road, Hirwaun.	55 m	Views south and east contained by mature deciduous vegetation in summer. Glimpsed views to tops of lighting columns on A465. Filtered views through vegetation in the winter, to traffic and lighting columns on A465.	Construction Loss of trees would open up close views west, south and east to traffic on temporary A465 diversion road, demolition of properties, construction activities at Trewaun junction and A465 mainline cutting, including major earthworks, a new bridge and highway infrastructure such as signage, lighting columns and environmental barriers, as well as middle distance glimpses of construction of Pentwyn Cynon (Tramway) footbridge. The magnitude of impact would be **major adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Slight adverse**
				Operation Close views south opened up by loss of vegetation, to 2 m high environmental barriers, which would partially obscure traffic flow and highway infrastructure such as signage and lighting columns / light spill, at Trewaun junction. Also close views south to east to 2 m high environmental barrier along A465 mainline, which together with cutting would screen views of traffic, except upper storey glimpses to tops of high sided vehicles. Also glimpses of upper parts of Pentwyn Cynon (Tramway) footbridge to north-east. The magnitude of impact would be **moderate adverse.**	**Slight adverse**	Summer Year 15 Established mitigation planting would generally screen views of traffic flow and highway infrastructure such as signage and 2 m high environmental barriers at Trewaun junction and along A465 mainline cutting, though tops of lighting columns / light spill at junction would remain visible. The magnitude of impact would be **negligible adverse.**	**Slight adverse**
S5-W1	Workers at Yard north-west of Old Brewery Cottage, Pontycapel Road, Cefn Coed, Merthyr Tydfil.	65 m	Yard positioned at bottom of river valley facing A465. Lower level views north-west along the Taf Fawr river valley to mature trees, including specimen trees within Cefn Coed Cemetery. Close, direct and elevated views to A465 with lighting columns and tops of high-sided vehicles on Taf Fawr Viaduct. Views west and south-west screened by rising valley sides and mature deciduous trees.	Construction Close range views north-west to construction of two viaducts across Taf Fawr with highway infrastructure such as signage and lighting columns, seen in context of the existing A465 viaduct in foreground. Also views of large construction compounds and stockpiles below viaducts, opened up by vegetation loss in river valley. Possible glimpsed views above trees to construction activities at eastern corner of A470 junction. The magnitude of impact would be **major adverse.**	**Moderate adverse**	Winter Year 1 As per operation without mitigation planting. The magnitude of impact would be **moderate adverse.**	**Slight adverse**
				Operation Close range ascending views north-west to tops of high sided vehicles on elevated A465 mainline viaduct, as	**Slight adverse**	Summer Year 15 Established mitigation planting at eastern corner of A470 junction would generally screen junction, though glimpses	**Slight adverse**

[2] Refer to Figure 10.8

Reference number[2] * Listed Building	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				well as additional signage on existing A465 viaduct and tops of lighting columns / light spill on new slip road viaduct, seen in context of existing lit A465 viaduct. Possible filtered glimpses west through and above existing trees, to earthworks for attenuation pond, as well as tops of high sided vehicles and lighting columns / light spill at A470 junction. The magnitude of impact would be **moderate adverse.**		of tops of lighting columns / light spill might remain. Due to elevated nature of A465 mainline viaduct across the Taf Fawr, mitigation planting would only soften eastern abutment. Tops of high sided vehicles on A465 mainline viaduct, as well as additional signage on existing A465 viaduct and tops of lighting columns / light spill on new slip road viaduct would therefore remain visible in middle distance to north-west, partially filtered through intervening trees, but seen in context of existing lit A465 viaduct. The magnitude of impact would be **moderate adverse.**	
S5-W3	Indoor workers at Gurnos Police Station, Gurnos Ring Road, Gurnos, Merthyr Tydfil.	41 m	Close direct views north across Gurnos Ring Road to tree belt along A465, which screens views of traffic flow in summer and filters views in winter. Views west and east contained by adjacent properties and garden vegetation.	<u>Construction</u> Close views north to construction of widened and elevated A465 mainline including low retaining wall, tall embankments and highway infrastructure such as signage and environmental barrier, opened up by loss trees. The magnitude of impact would be **major adverse.**	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **major adverse.**	**Moderate adverse**
				<u>Operation</u> Close views north across Gurnos Ring Road to tops of high sided vehicles and signage on A465 mainline above 3 m high environmental barrier, on tall embankment above low retaining wall. The magnitude of impact would be **major adverse.**	**Moderate adverse**	<u>Summer Year 15</u> Established mitigation planting would soften views of embankment and, screen 3 m high environmental barrier and traffic flow on A465, except in oblique views west. Glimpsed views of tops of signage. The magnitude of impact would be **minor adverse.**	**Slight adverse**
S5-W5	Indoor workers at commercial units, Pontsarn Road, Merthyr Tydfil.	17 m	There are limited views out from these commercial units and windows of offices are on the first floor and have views towards the A465 over the Trade Centre for Wales and vegetation along the edge of the A465 and more obliquely west towards Pen-Y-Dre High School.	<u>Construction</u> Vegetation clearance along the A465 would open up views to areas south of the A465, including housing, playing fields, and the school buildings. Demolition of the Trade Centre Wales and large scale earthworks to widen the road corridor would be visible in addition to retaining wall and road construction in near views west to south-east. Construction of the attenuation ponds and the link road from the large roundabout at Prince Charles Hospital junction to Pontsarn Road would cross fields close by and link into the grounds of the commercial units. The magnitude of impact would be **major adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Slight Adverse**
				<u>Operation</u> The properties would directly overlook road and traffic on it would be in close proximity. Traffic would be partially screened on the east bound carriageways by the retaining wall and would be less prominent in the view	**Slight adverse**	<u>Summer Year 15</u> The established mitigation planting along the cutting slope on the north side of the A465 would reduce views of traffic on the A465 and at the large roundabout at Prince Charles Hospital junction to the north-west. Planting on the south	**Slight Adverse**

Reference number[2] * Listed Building	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				because it is set below ground level and views are from windows on the upper level of the commercial buildings from where there are panoramic views south. Traffic would be visible along the link road and at the large roundabout at Prince Charles Hospital junction in oblique views. The magnitude of impact would be **moderate adverse**.		side of the A465 would form a backdrop to moving traffic on the A465 and fully screen traffic on Gurnos Ring road. The magnitude of impact would be **minor adverse**.	
S5-W6	Indoor workers at Creative House, Rocky Road, Galon Uchaf, Merthyr Tydfil.	22 m	There are views north, west and east from windows of this large industrial unit to the A465. This building is located in an elevated positon overlooking a junction of six roads, one of which leads onto a bridge over the A465. Views north are descending to the road as it passes under the Galon Uchaf bridge and west beyond the bridge as it extends towards Gurnos screened by planting on the south side of the road, and east along the slip road until the Dowlais Cwm Community woodland obscures further views.	<u>Construction</u> Loss of vegetation along the A465 would open up views further west and east along the road. Construction activities would take place within view of three elevations of this property and would include; demolition of old, and construction of the new bridge and associated retaining walls extending east and west of the bridge structure. North of the A465 construction of the new roundabout and demolition of the Trade Centre Wales would be visible. Views of the compound area extending along the proposed scheme to the west would be possible from the windows at the front of the building. The magnitude of impact would be **major adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Slight adverse**
				<u>Operation</u> Views of the new bridge and road network to the north, the A465 extending west towards Prince Charles Hospital junction and the link road from it to Pensarn Road would be visible from the front elevation. From the north elevation the A465 would be in cutting contained by retaining walls and embankment with the industrial area prominent in the view beyond. From the rear elevation there would no longer be a slip road off the A465. The magnitude of impact would be **moderate adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting along the A465 to the west and east of Prince Charles Hospital junction would reduce long views of the road and traffic on it. Tree planting along the edge of the industrial estate and around the new roundabout junction would improve visual amenity and integrate the new road layout in views from the south. The magnitude of impact would be **minor adverse**.	**Neutral**
S5-W7	Indoor workers at commercial units, Pant Industrial Estate, Access Road (north side), Pant, Merthyr Tydfil.	30 m	These two large units have frontages and office windows facing south west towards the Galon Uchaf over bridge and the junction with Bryniau Road. The A465 lies slightly to the south in their view screened by roadside vegetation.	<u>Construction</u> Vegetation removal would open up views to the south side of the A465 towards housing in Gurnos and a large commercial unit on the southern roundabout. Construction of the new industrial estate road layout and retaining walls to the widened A465 would be visible as would installation of the new overbridge; all in close proximity. The magnitude of impact would be **major adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Slight adverse**
				<u>Operation</u>	**Slight**	<u>Summer Year 15</u>	**Slight**

Reference number[2] * Listed Building	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
				Views south across the A465 would remain open and highway infrastructure and traffic at a lower level between retaining walls would be visible. The magnitude of impact would be **moderate adverse**.	**adverse**	Established tree planting along the north edge of the A465 would reduce views of traffic and of the commercial unit on the south side and improve the visual amenity at the entrance to the industrial estate. Mitigation planting on the south side to east and west of the overbridge would contain and integrate views. The magnitude of impact would be **minor adverse**.	**adverse**
S5-W8	Indoor / outdoor workers at commercial units, Pant Industrial Estate, Access Road (south side), Pant Merthyr Tydfil.	14 m	These commercial units occupy plots between the estate road and the A465. There are few windows in the large industrial units. They back straight onto the edge of the A465 separated from it by a thin line of hedgerow trees and shrubs at the western end which thicken into a small belt of woodland to the east at the end of the on slip. This belt of trees obscures views of traffic on the A465 with filtered views of traffic possible along the on slip.	<u>Construction</u> Loss of vegetation would open up views of the A465 corridor with the ground on the south side falling away to the south within Ifor Park and Dowlais Cwm Community Woodland. Construction of this section of new road along the ridge in close proximity would be visible from windows and frontages facing south. The magnitude of impact would be **major adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **moderate adverse**.	**Slight adverse**
				<u>Operation</u> Traffic on the A465 would be visible in close proximity. The magnitude of impact would be **moderate adverse**.	**Slight adverse**	<u>Summer Year 15</u> Mitigation planting along the northern side of the road would screen views of traffic for receptors in the eastern half while for those located at the western end traffic would remain visible above a boundary fence. The magnitude of impact would be **negligible adverse**.	**Neutral**
S5-W9	Indoor workers at Funeral Services, Pant Road, Dowlais, Merthyr Tydfil.	90 m	Views from this building are limited to the front door facing north east and windows overlooking Pant Road. From the car park views are filtered through high palisade fencing to the west and north. Views north east are towards Pant viaduct and the Merthyr Car Auctions on the east side of Pant Road around which a tall evergreen hedge forms a screen along the road. To the north ascending views are to traffic on embankment partially filtered through vegetation.	<u>Construction</u> Tree clearance along the A465 would open up views along the ridge at the top of Ifor Park open space. Construction activities would include; demolition of the existing viaduct and construction of the new viaduct over Pant Road and earthworks to widen to road on embankment adjacent to the play area. The retaining wall construction within the Merthyr Car Auctions site would be partially visible. The compound would be glimpsed in the open space north of the A465. The magnitude of impact would be **major adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**.	**Slight adverse**
				<u>Operation</u> The new viaduct and embankment, traffic visible on it, and highway infrastructure, would dominate views to the north, north east and north west. The retaining wall on the east side of the new viaduct would be visible above Merthyr Auctions boundary hedge and fence. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting on the embankments would reduce views of traffic on the embankment. Views through the viaduct and the retaining wall would remain. The magnitude of impact would be **negligible adverse**.	**Neutral**

Reference number[2] * Listed Building	Location	Approx. distance from nearest point of receptor to centre line of proposed A465 alignment	Existing view	Change in view and magnitude of impact without mitigation planting	Significance of effect without mitigation planting	Change in view and magnitude of impact with mitigation planting	Significance of effect with mitigation planting
S5-W10	Indoor / outdoor workers at Merthyr Motor Auctions, Pant Road, Pant, Merthyr Tydfil.	17 m	The Merthyr Motor Auctions are located at the base of a cutting which forms the eastern edge of the site and affords no views beyond. High evergreen hedges on its southern and western boundaries also curtail views out. There are views north and north west under Pant viaduct across open space to housing in Pant and also west and south west from the northern end of the premises along the A465 on embankment towards open space in Ifor Park and to a nearby play area on Pant Road close to housing.	<u>Construction</u> Loss of land under Pant viaduct, demolition of the viaduct and construction of a retaining wall across the northern boundary of the site stopping up direct views north. Construction of the new viaduct over Pant Road and earthworks to widen to road on embankment to the west. The compound would be partially in open space north of the A465. The magnitude of impact would be **major adverse**.	**Moderate adverse**	<u>Winter Year 1</u> As per operation without mitigation planting. The magnitude of impact would be **minor adverse**	**Slight adverse**
				<u>Operation</u> Views west along the A465 on embankment would be possible with traffic glimpsed on the southern edge of the road extending towards Dowlais Cwm Community wood and Prince Charles Hospital junction. Oblique views north under the viaduct to open space and new road junction in Pant would be possible, but views north along Pant Road would have been replaced by a retaining wall. The magnitude of impact would be **minor adverse**.	**Slight adverse**	<u>Summer Year 15</u> Established mitigation planting along the embankments would soften the view and screen glimpsed views of elevated traffic. The magnitude of impact would be **minor adverse**.	**Neutral**

Appendix 10I – Landscape Assessment

Table 10I.1 : Landscape assessment

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
Brecon Beacons National Park - landscape sensitivity: high (Note: includes part of the Fforest Fawr Geopark)		
The proposed scheme would cross the BBNP between ch. 4500 to 6650 and 10300 to 10870. It would be largely online apart from between ch. 5000 to 5600 where it would be aligned up to 20 m east of the existing A465 and at the A470 junction where it would be up to 80 m north of the existing A465. The existing A465 would form the westbound access slip road as part of the grade separation of the A470 junction. There would be sections on substantial embankments and in cuttings, with a particularly prominent cutting slope in the north west quadrant of the A470 junction. Key features would include the new grade separated Croesbychan and A470 junctions and associated structures, slip roads and lighting, the Nant Moel and Nant Ffrwd overbridges and some retaining walls. The Nant Hir viaduct would lie adjacent to the BBNP at ch. 6700. There would be attenuation ponds adjacent to the main line at ch. 5600 north side and ch 6000 and 10750 south side. The Croesbychan junction would include an elevated environmental barrier 1 m in height	Construction During construction the clearance of extensive established highway vegetation and adjacent woodland, including extensive areas of ancient woodland, and large scale earthworks within the construction footprint would have a direct adverse impact on localised parts of BBNP LCA 4. Waterfall Country and Southern Valleys (ch. 4500 to 6650) and BBNP LCA 8. Talybont and Taff Reservoir Valleys (ch. 10300 to 10900). This would be exacerbated by other construction activity and the moderate tranquillity of the BBNP in the vicinity of the A465 would be reduced. Construction activity associated with embankments and elevated elements of the junctions would be particularly prominent in characteristic long views from higher parts of the BBNP further to the north. The BBNP's 'special qualities' of peace and tranquillity, sense of place and high scenic quality, would be locally eroded. Magnitude of impact: major adverse. Significance of landscape effects: **very large adverse** (on local part of BBNP.	Operation winter year 1 Landscape ground modelling of the engineering embankments would slightly soften their impact. Finishes to bridge abutments forming part of the grade separation of the A470 junction and landscape ground modelling of the engineering embankments / cuttings would accentuate the role of the junction as a gateway to the BBNP and assist in integrating the proposed scheme into the landscape. Architectural input to the design of the Taf Fawr viaducts would enhance the contribution they make to the gorge landscape on the edge of the BBNP. The A465 would remain prominent and the moderate tranquillity of the BBNP in the vicinity of the A465 would be reduced by the new highway infrastructure including lighting and signage etc. and traffic particularly at the Croesbychan and A470 junctions. The BBNP's 'special qualities' of peace and tranquillity, sense of place and high scenic quality, would be locally eroded. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse** (on local part of BBNP).
	Operation The offline sections of the proposed scheme would	Operation summer year 15 Extensive tree and shrub planting would establish on the

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
and 485 m long.	introduce new highway infrastructure including lighting and signage etc. and traffic into localised parts of BBNP LCA 4. Waterfall Country and Southern Valleys and BBNP LCA 8. Talybont and Taff Reservoir Valleys. The dualling of online sections of the A465 would significantly increase the existing highway infrastructure footprint of the road, particularly at the new junctions. Sections of the proposed scheme on embankments would be particularly prominent and the moderate tranquillity of the BBNP in the vicinity of the A465 would be reduced by the new highway infrastructure and traffic. The removal of established highway vegetation and adjacent woodland, including extensive areas of ancient woodland, would increase the prominence of the A465 and disrupt the existing pattern of mature vegetation, particularly along the Nant-moel, the Nant Ffrwd and Pwll Annie. Overall the proposed scheme would have a linear urbanising effect on the rural character of the BBNP LCAs. The BBNP's 'special qualities' of peace and tranquillity, sense of place and high scenic quality, would be locally eroded. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse** (on local part of BBNP).	landscape ground modelling to effectively integrate parts of the proposed scheme in the vicinity of the Croesbychan junction into the landscape and locally reduce the prominence of the A465. The combination of architectural finishes and planting would have some beneficial impact on landscape amenity. The established planting would also partly mitigate the loss of existing vegetation and complement the existing pattern of mature vegetation. The extensive loss of loss of ancient woodland however, could not be mitigated. The road would remain prominent to the north of the Croesbychan junction and at the A470 junction. The open treatment of parts of the road to the north of the Croesbychan junction would allow extensive and attractive views to be experienced by the road users. There would be some significant residual adverse effects on the moderate tranquillity of the BBNP in the vicinity of the A465 and landscape character. The BBNP's 'special qualities' of peace and tranquillity, sense of place and high scenic quality, would be locally eroded. Magnitude of impact: moderate adverse. Significance of landscape effects: **large adverse** (on local part of BBNP).
Rhondda Cynon Taf SLAs - landscape sensitivity: high (Note: includes part of the RCTCBC Cynon Valley River Park)		
The proposed scheme would cross the SLA between ch. 3500 to 4600 and 6700 to 8400. It would include sections on substantial embankments and in deep cutting.	Construction During construction the clearance of extensive established highway vegetation and adjacent woodland, including ancient woodland at Nant Hir and coniferous forest, and large scale earthworks within the construction footprint	Operation winter year 1 Sensitive treatment of the Baverstock cutting slopes would accentuate the exposed geology and create drama and interest along part of the proposed scheme within the SLA. Overall however, the A465 would remain

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
Key features would include the Baverstock junction and its associated structures, slip roads and lighting, new side road links to the north-east and south-east of the Baverstock junction and the new Swansea Road running parallel to the mainline to the south. Other structures would include the Afon Cynon bridge, the Tramway footbridge, the Vale of Neath bridge and the Nant Hir viaduct. There would be attenuation ponds on the south side of the A465 at ch. 3650 to 3900, 4250, 6750 and 7000, south side. Additional attenuation ponds would also be included on the south side of the Cwmynysminton Road (side road) and the south side of the Baverstock junction.	would have a direct adverse impact on the SLA. This would be exacerbated by other construction activity and the tranquillity of the SLA would be reduced. Construction activity associated with embankments and elevated elements of the road would be particularly prominent and in the vicinity of Penmoelallt Forest substantial 'raw' cut faces would be visible from the east and west. Away from the A465 perpendicular to its alignment in the vicinity of Penmoelallt Forest, the cutting and remaining coniferous forest would reduce the influence of construction. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.	prominent and tranquillity would be reduced by the new highway infrastructure including lighting and signage etc. and traffic. The proposed tree and shrub planting at the Baverstock junction would have little impact at this stage. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.
	Operation The proposed scheme would introduce new highway infrastructure including lighting and signage etc. and traffic into the SLA and significantly increase the existing highway infrastructure footprint of the road, particularly at the Baverstock junction. Sections of the proposed scheme on embankments would be particularly prominent and the moderate tranquillity of the SLA would be reduced by the new highway infrastructure and traffic. The removal of established highway vegetation and adjacent woodland, including ancient woodland at Nant Hir and established coniferous forest, would increase the prominence of the A465 and disrupt the existing pattern of mature vegetation in the SLA. Overall the proposed scheme would have a linear urbanising effect on the rural character of the SLA and detract from its role in providing a setting to the BBNP. Magnitude of impact: moderate adverse. Significance of landscape effects: **large adverse**.	Operation summer year 15 Extensive tree and shrub planting would establish on the east side of the Baverstock junction to partly integrate parts of the proposed scheme into the landscape and locally reduce the prominence of the junction within the SLA. The planting would also partly mitigate the loss of existing coniferous forest. The loss of ancient woodland however, could not be mitigated. While the cutting slopes would continue to accentuate the exposed geology and provide drama and interest along part of the proposed scheme, particularly as some vegetation establishes on the cut faces and ledges, the substantial notch in the landscape would remain and there would be significant residual adverse effects on tranquillity and landscape character in the SLA and detract from its role in providing a setting to the BBNP. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
Hirwaun (built land) - landscape sensitivity: low		
The proposed scheme would cross the local LCA between ch. 0 to 1800 and 3100 to 4500 as an online dualling and include sections on substantial embankments and in deep cutting. Key features would include the grade separation of the existing at grade junction at Hirwaun and its associated structures, slip roads and lighting. Other structures would include the Trewaun, Pentwyn Cynon and Court Farm underpasses and the A465 bridge over the Afon Cynon. Embankments at Trewaun would result in the removal of four residential properties.	Construction During construction the clearance of extensive established highway vegetation and adjacent woodland, demolition of four properties, introduction of the temporary Trewaun north diversion and large scale earthworks within the construction footprint would have a direct adverse impact on part of the local LCA. This would be exacerbated by other construction activity, particularly at the junctions, and the already low tranquillity in the local LCA would be further reduced. Construction between ch. 0 to 1800 would be perceived next to the existing opencast mining activities and industrial scale earthworks of the adjacent Tower Colliery site and this would slightly lessen the significance of the impacts. Magnitude landscape impact: major adverse. Significance of landscape effects: **moderate adverse**.	Operation winter year 1 Finishes to bridge abutments forming part of the grade separation of the Hirwaun junction, landscape ground modelling of the engineering embankments and new landscape features/walls would accentuate the role of the junction as a gateway to the BBNP and assist in integrating the proposed scheme into the landscape. Individual tree planting using large nursery stock would make some immediate contribution to landscape amenity. The A465 would however, remain prominent and tranquillity, already low, would be reduced further by the new highway infrastructure including lighting and signage etc. and traffic. The townscape / streetscape would be slightly impacted by the removal of four properties at Trewaun. Magnitude of landscape impact: major adverse. Significance of landscape effects: **moderate adverse**.
	Operation The dualling, embankments / cut slopes and junctions at Hirwaun and Trewaun and associated structures and slip roads would significantly increase the existing highway infrastructure footprint in the local LCA. This includes the attenuation pond to the north at ch. 1000 to 1200. The removal of established highway vegetation and adjacent woodland would increase the prominence of the A465, albeit within an urban / industrial setting with existing	Operation summer year 15 Extensive tree and shrub planting would establish on the landscape ground modelling to effectively integrate the proposed scheme into the landscape and reduce the prominence of the A465. There would only be slight residual adverse effects on tranquillity and landscape character. Magnitude of landscape impact: moderate adverse.

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
	highway junctions. This would be exacerbated where the road is elevated on high embankment at the Hirwaun junction. The townscape / streetscape would be slightly impacted by the removal of four properties at Trewaun. Tranquillity in the local LCA, already low, would be reduced further by the new highway infrastructure including lighting and signage etc. and traffic. Magnitude of landscape impact: major adverse. Significance of landscape effects: **moderate adverse**.	Significance of landscape effects: **slight adverse**.
Tower Colliery (workings) - landscape sensitivity: low		
The proposed scheme would cross the local LCA between ch.1800 to 2300 as an offline dual carriageway and include a substantial embankment rising up to the Hirwaun junction to the west. Key features would include the slip road link to Tower Road to the south, the Nant y Bwlch crossing and an attenuation pond to the north at ch. 2250 to 2300.	Construction During construction the clearance of some mature vegetation and large scale earthworks within the construction footprint would have a direct adverse impact on part of the local LCA. This would be exacerbated by other construction activity and the already low tranquillity in the local LCA would be further reduced. The significance of the impacts would be lessened by the presence of existing opencast mining activities and industrial scale earthworks on the Tower Colliery site. Magnitude of impact: major adverse. Significance of landscape effects: **moderate adverse**.	Operation winter year 1 The A465 would remain prominent and tranquillity, already low, would be reduced further by the new highway infrastructure including lighting and signage etc. and traffic. The proposed tree and shrub planting would have little impact at this stage. Magnitude of impact: major adverse. Significance of landscape effects: **moderate adverse**.
	Operation This offline section of the proposed scheme would introduce extensive new highway infrastructure into this local LCA, including the attenuation pond to the north at ch. 2250 to 2300. The section of the A465 set on embankment would be prominent in the, albeit already disturbed, opencast mining landscape with an urban /	Operation summer year 15 Extensive tree and shrub planting would establish to effectively integrate the proposed scheme into the landscape and reduce the prominence of the A465. There would be slight residual adverse effects on tranquillity and landscape character.

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
	industrial backdrop to the north, east and north-west. Some mature vegetation would be removed and tranquillity in the local LCA, already low, would be reduced further by the new highway infrastructure including lighting and signage etc. and traffic. Magnitude of impact: major adverse. Significance of landscape effects: **moderate adverse**.	Magnitude of impact: moderate adverse. Significance of landscape effects: **slight adverse**.
Hirwaun Common (hills / valleys and fields) - landscape sensitivity: moderate		
The proposed scheme would cross the local LCA between ch. 2300 to 3100 as an offline dual carriageway and include a deep cutting falling to the Trewaun underpass to the east, spanned by the wind farm access overbridge.	Construction During construction the large scale earthworks within the construction footprint would have a direct adverse impact on a small part of the local LCA. This would be exacerbated by other construction activity and the introduction of the temporary Trewaun south diversion and the moderate tranquillity in the local LCA would be reduced. The significance of the impacts would however, be slightly lessened by the existing opencast mining activities and industrial scale earthworks on the Tower Colliery site to the west. Little vegetation would be removed as part of the proposed scheme. Magnitude of impact: major adverse. Significance of landscape effects: **moderate adverse**.	Operation winter year 1 The A465 would not be prominent but the moderate tranquillity in the local LCA would be reduced by the new highway infrastructure and traffic. The proposed tree and shrub planting would have little impact at this stage. Magnitude of impact: major adverse. Significance of landscape effects: **moderate adverse**.
	Operation This offline section of the proposed scheme would introduce new highway infrastructure into this local LCA including the new wind farm access overbridge. Set largely in cutting, the A465 would not be prominent and the landscape has already been historically disturbed in places. The moderate tranquillity in the local LCA would be	Operation summer year 15 Extensive tree and shrub planting would establish to effectively integrate the proposed scheme, its associated cutting slopes and the wind farm access overbridge into the landscape. There would be some residual adverse effects on tranquillity and landscape character.

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
	reduced by the new highway infrastructure and traffic although these would be partly screened by the cutting. Magnitude of impact: major adverse. Significance of landscape effects: **moderate adverse**.	Magnitude of impact: moderate adverse. Significance of landscape effects: **moderate adverse**.
Penderyn and Abernant (hills / valleys and fields) - landscape sensitivity: high		
The proposed scheme would cross the local LCA between ch. 4500 to 7800. It would be largely online apart from between ch. 5000 to 5600 and 6100 to 6600 where it would be aligned up to 20 m east and 15 m north-west of the existing A465 respectively. It would include sections on substantial embankments and in deep cutting. Key features would include the new grade separated junctions at Croesbychan and Baverstock and associated structures, slip roads and lighting, the Nant Moel overbridge and the Nant Hir viaduct. There would be attenuation ponds adjacent to the main line at ch. 5600, north side and ch. 3650 to 3900, 6000, 6750 and 7000, south side. Additional attenuation ponds would also be included on the south side of the Cwmynysminton Road (side road) and the south side of the Baverstock junction.	Construction During construction the clearance of extensive established highway vegetation and adjacent woodland, including ancient woodland, and large scale earthworks within the construction footprint would have a direct adverse impact on a large part of the local LCA. This would be exacerbated by other construction activity and the moderate tranquillity in the local LCA would be reduced. Construction activity associated with embankments and elevated elements of the junctions would be particularly prominent. Magnitude of impact: major adverse. Significance of landscape effects: **very large adverse**.	Operation winter year 1 Landscape ground modelling of the engineering embankments would slightly soften their impact. The A465 would remain prominent and the moderate tranquillity in the local LCA would be reduced by the new highway infrastructure including lighting and signage etc. and traffic. The proposed tree and shrub planting at the Croesbychan junction would have little impact at this stage. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.
	Operation The offline sections of the proposed scheme would introduce new highway infrastructure into this local LCA and the dualling of online sections of the A465 would significantly increase the existing highway infrastructure footprint of the road, particularly at the new junctions where there would also be lighting and signage etc. Sections of the proposed scheme on embankments would be particularly prominent and the moderate tranquillity in the local LCA would be reduced by the new highway infrastructure and traffic. The removal of established	Operation summer year 15 Extensive tree and shrub planting would establish on the landscape ground modelling to effectively integrate parts of the proposed scheme in the vicinity of the Croesbychan junction into the landscape and locally reduce the prominence of the A465. The established planting would also partly mitigate the loss of existing vegetation and complement the existing pattern of mature vegetation. The loss of ancient woodland however, could not be mitigated. The A465 would remain prominent where on embankment, particularly at the

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
	highway vegetation and adjacent woodland, including ancient woodland, would increase the prominence of the A465 and disrupt the existing pattern of mature vegetation, particularly along the Nant-moel in the vicinity of the Croesbychan junction. Overall the proposed scheme would have a linear urbanising effect on the rural character of the local LCA. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.	Croesbychan and Baverstock junctions. There would be significant residual adverse effects on tranquillity and landscape character. Magnitude of impact: moderate adverse. Significance of landscape effects: **large adverse**.
Penmoelallt Forest (forestry) - landscape sensitivity: moderate		
The proposed scheme would cross the local LCA between ch. 7800 to 8400 as an online dualling and include sections in deep cutting. Key features would include new side road links to the north-east and south-east of the Baverstock junction and the new Swansea Road running parallel to the mainline to the south.	Construction During construction the clearance of established coniferous forest and large scale earthworks within the construction footprint would have a direct adverse impact on part of the local LCA. This would be exacerbated by other construction activity and the moderate tranquillity in the local LCA would be reduced. Construction activity associated with the substantial cutting would be particularly prominent with substantial 'raw' cut faces being visible from the east and west. Away from the A465 perpendicular to its alignment, the cutting and remaining coniferous forest would reduce the influence of construction. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.	Operation winter year 1 Sensitive treatment of the cutting slopes would accentuate the exposed geology and create drama and interest along this part of the proposed scheme. The A465 would however, remain prominent from the east and west and the moderate tranquillity in the local LCA would be reduced by the new highway infrastructure including lighting and signage etc. and traffic. The proposed tree and shrub planting at the Baverstock junction would have little impact at this stage. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.
	Operation The dualling of the A465 and the introduction of the parallel Swansea Road would significantly increase the existing highway infrastructure footprint of the road. The	Operation summer year 15 Extensive tree and shrub planting would establish on the east side of the Baverstock junction to partly integrate parts of the proposed scheme into the landscape and

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
	deep cutting would create a substantial notch in the existing landform and geology and create a large 'scar' in the landscape. The removal of established coniferous forest would affect the forest character of the LCA. The moderate tranquillity in the local LCA would be reduced by the new highway infrastructure including lighting and signage etc. and traffic although, away from the A465 perpendicular to its alignment, the cutting and remaining coniferous forest would reduce the influence of the proposed scheme. Overall the proposed scheme would have a linear urbanising effect on the forested character of this local LCA. The setting of this local LCA would also be affected by the substantial new junction at Baverstock and associated infrastructure and lighting immediately to the west. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.	locally reduce the prominence of the junction. The planting would also partly mitigate the loss of existing coniferous forest. While the cutting slopes would continue to accentuate the exposed geology and provide drama and interest along this part of the proposed scheme, particularly as some vegetation establishes on the cut faces and ledges, the substantial notch in the landscape would remain and there would be significant residual adverse effects on tranquillity and landscape character. Magnitude of impact: moderate adverse. Significance of landscape effects: **moderate adverse**.
Mynydd y glog (open plateau) - landscape sensitivity: high		
The proposed scheme would pass immediately adjacent to the south side of the local LCA at ch. 6600 in the vicinity of the Nant Hir Reservoir. Key features of the proposed scheme, beyond this local LCA to the south, would be as described above for the Penderyn and Abernant local LCA between ch. 4500 to 7800.	Construction During construction the clearance of some mature vegetation and large scale earthworks within the construction footprint would have an indirect adverse impact on the setting of the local LCA viewed from the south. This would be exacerbated by other construction activity and the high tranquillity in the local LCA experienced away from the A465 would be eroded. Construction activity associated with embankments and elevated elements of the junctions would be particularly prominent in views south from the local LCA. To the east Penmoelallt Forest would screen construction.	Operation winter year 1 The A465 would remain prominent and the high tranquillity in the local LCA experienced away from the A465 would be reduced by the new highway infrastructure including lighting and signage etc. and traffic visible to the south beyond the local LCA. The proposed tree and shrub planting at the Croesbychan junction and the Nant Moel overbridge would have little impact at this stage and the junction and overbridge would remain visible features. Magnitude of impact: moderate adverse (indirect).

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
	Magnitude of impact: major adverse (indirect). Significance of landscape effects: **large adverse (indirect)**.	Significance of landscape effects: **moderate adverse (indirect)**.
	Operation The proposed scheme is in cutting at its nearest point to the local LCA and would not therefore be prominent in the landscape at this location. Further away from the local LCA the proposed scheme is elevated on embankment and this would increase the visible highway infrastructure of the A465. The high tranquillity in the local LCA experienced away from the A465 would be indirectly eroded. The removal of established highway vegetation and adjacent woodland, including ancient woodland, would increase the prominence of the A465 and disrupt the existing pattern of mature vegetation forming part of the setting to the local LCA. Some upland views south from the local LCA, a key characteristic, would be adversely impacted although Penmoelallt Forest would effectively screen the proposed scheme to the east. Magnitude of impact: moderate adverse (indirect). Significance of landscape effects: **moderate adverse (indirect)**.	Operation summer year 15 Extensive tree and shrub planting would establish to effectively integrate the Croesbychan junction and the Nant Moel overbridge into the landscape and locally reduce the prominence of the A465 to the south of the local LCA. The road would remain prominent, particularly at the Croesbychan junction. There would be some significant residual indirect adverse effects on tranquillity and landscape character. Magnitude of impact: minor adverse (indirect). Significance of landscape effects: **moderate adverse (indirect)**.
Baverstock (open plateau) - landscape sensitivity: moderate		
The proposed scheme would cross the local LCA between ch. 8400 to 9500 as an online dualling in deep cutting. Key features would include the new Swansea Road running parallel to the mainline to the	Construction During construction the large scale earthworks within the construction footprint would have a direct adverse impact on part of the local LCA. This would be exacerbated by other construction activity and the moderate tranquillity in the local LCA would be reduced. Construction activity	Operation winter year 1 Sensitive treatment of the cutting slopes would accentuate the exposed geology and create drama and interest along this part of the proposed scheme. The A465 would remain prominent from the east and west and the moderate tranquillity in the local LCA would be

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
south. There would be an attenuation pond adjacent to the main line at ch. 9400, north side.	associated with the substantial cutting would be large scale and be particularly prominent with substantial 'raw' cut faces being visible from the east and west. Away from the A465 perpendicular to its alignment, the cutting may reduce the influence of construction. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.	reduced by the new highway infrastructure and traffic. The localised proposed tree and shrub planting would have little impact at this stage. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.
	Operation The dualling of the A465 and the introduction of the parallel Swansea Road would significantly increase the existing highway infrastructure footprint of the road. The deep cutting would create a substantial notch in the existing landform and geology and create a large 'scar' in the landscape. The moderate tranquillity in the local LCA would be reduced by the new highway infrastructure and traffic although, away from the A465 perpendicular to its alignment, the cutting would reduce the influence of the proposed scheme. Overall the proposed scheme would have a linear urbanising, and 'gorge like' effect on the open character of this local LCA. Little vegetation of landscape importance would be removed as part of the proposed scheme. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.	Operation summer year 15 The localised tree and shrub planting would establish to partly integrate the proposed scheme into the landscape. While the cutting slopes would continue to accentuate the exposed geology and provide drama and interest along this part of the proposed scheme, particularly as some vegetation establishes on the cut faces and ledges, the substantial notch in the landscape would remain and there would be significant residual adverse effects on tranquillity and landscape character. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.
Cefn Coed (hills / valleys and fields) - landscape sensitivity: high		
The proposed scheme would cross the local LCA between ch. 9500 to 10870. The mainline would peel off the existing A465 alignment to the north, east of ch. 9900. The existing A465	Construction During construction the clearance of extensive established highway vegetation and adjacent woodland, including TPO woodland, and large scale earthworks within the	Operation winter year 1 Finishes to bridge abutments forming part of the grade separation of the A470 junction and landscape ground modelling of the engineering embankments / cuttings

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
would form the westbound access slip road as part of the grade separation of the A470 junction. Key features would include the Nant Ffrwd overbridges and various retaining walls. There would be an attenuation pond adjacent to the westbound access slip road at ch. 10300, south side.	construction footprint would have a direct adverse impact on part of the local LCA. This would be exacerbated by other construction activity and the already low tranquillity in the local LCA would be further reduced. Construction activity associated with the substantial cutting in the north west quadrant of the A470 junction would be particularly prominent with substantial 'raw' cut slopes being visible from the east and south. Magnitude of impact: major adverse. Significance of landscape effects: **very large adverse**.	would accentuate the role of the junction as a gateway to the BBNP and assist in integrating the proposed scheme into the landscape. The A465 would however, remain prominent and the already low tranquillity in the local LCA would be further reduced by the new highway infrastructure including lighting and signage etc. and traffic. The localised proposed tree and shrub planting would have little impact at this stage. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.
	Operation The dualling of the A465 and the introduction of the A470 junction slip roads would significantly increase the existing highway infrastructure footprint of the road. The already low tranquillity in the local LCA would be further reduced by the new highway infrastructure including lighting and signage etc. and traffic. The removal of established highway vegetation and adjacent woodland, including TPO woodland, would increase the prominence of the A465 and disrupt the existing pattern of mature vegetation and fields, particularly along the Nant Ffrwd and Pwll Annie. The landform of the local LCA would also be materially affected. Overall the proposed scheme would have an urbanising effect on the rural pastoral character of the local LCA. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.	Operation summer year 15 The localised tree and shrub planting on the landscape ground modelling would establish to further integrate the proposed scheme into the landscape. There would however, be significant residual adverse effects on tranquillity and landscape character. Magnitude of impact: moderate adverse. Significance of landscape effects: **large adverse**.

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
Taf Fawr (gorge) - landscape sensitivity: high (Note: includes part of the Cefn Coed Cemetery Registered Park and Garden)		
The proposed scheme would cross the local LCA between ch. 10700 to 10900. Key features would include the A470 underbridge, the Taf Fawr mainline, eastbound access and westbound egress slip road viaducts forming part of the grade separation of the A470 junction. There would be an attenuation pond adjacent to south roundabout in the south-east quadrant of the junction.	Construction During construction the clearance of extensive established highway vegetation and adjacent woodland, including ancient woodland, and large scale earthworks within the construction footprint would have a direct adverse impact on part of the local LCA. This would be exacerbated by other construction activity and the tranquillity of the gorge would be eroded. Construction activity associated with the substantial viaduct and other structures would be particularly prominent. Magnitude of impact: major adverse. Significance of landscape effects: **very large adverse**.	Operation winter year 1 Architectural input to the design of the Taf Fawr viaducts would enhance the contribution they make to the gorge landscape. The A465 would however, remain prominent and tranquillity would be reduced by the new highway infrastructure including lighting and signage etc. and traffic. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.
	Operation The dualling of the A465 and the introduction of the A470 junction slip roads and viaducts and other structures would significantly increase the existing highway infrastructure footprint of the road and the tranquillity of the gorge would be eroded by the new highway infrastructure including lighting and signage etc. and traffic. The removal of established highway vegetation and adjacent woodland would increase the prominence of the A465 and disrupt the existing pattern of mature vegetation and fields, particularly along the A465, A470 and the gorge. Overall the proposed scheme would have an urbanising effect on the unique character of the local LCA. It would also result in some landtake of the Cefn Coed Cemetery Registered Park and Garden and impact on the setting of the iconic listed Cefn Coed Viaduct. These impacts are examined in	Operation summer year 15 Architectural input to the design of the Taf Fawr viaducts would enhance the contribution they make to the gorge landscape. The loss of ancient woodland could not be mitigated and there is limited scope for mitigating the loss of other existing vegetation in the immediate area. The scale of the structures and the prominence of the traffic on them, means that there would be significant residual adverse effects on tranquillity and landscape character. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
	more detail in Chapter 8: Cultural Heritage. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.	
Taf Fechan (gorge) - landscape sensitivity: high		
The proposed scheme would cross the local LCA between ch. 11400 to 12300. It would include an offline section between ch.11700 to 12300. Some sections would be on embankment and in deep cutting. Key features would include the Taf Fechan viaduct widening. There would be attenuation ponds adjacent to the main line at ch.11650, south side and ch. 12300 to 12500 north side.	Construction During construction the clearance of extensive established highway vegetation and adjacent woodland, including ancient woodland and TPO woodland, and large scale earthworks within the construction footprint would have a direct adverse impact on part of the local LCA. This would be exacerbated by other construction activity and the tranquillity of the gorge would be eroded. Construction activity associated with the viaduct widening would be particularly prominent. Magnitude of impact: major adverse. Significance of landscape effects: **very large adverse**.	Operation winter year 1 Architectural input to the design of the Taf Fechan viaduct would ensure that the new widened structures complement the adjacent existing arched structure and enhance the contribution it makes to the gorge landscape. The A465 would however, remain prominent and tranquillity would be reduced by the new highway infrastructure and traffic. The proposed tree and shrub planting in the east part of this section would have little impact at this stage. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.
	Operation The dualling of the A465 including an offline section with the introduction of a new viaduct adjacent to the existing one, would significantly increase the existing highway infrastructure footprint of the road and the tranquillity of the gorge would be eroded by the new highway infrastructure and traffic. The removal of established highway vegetation and adjacent woodland, including ancient woodland and TPO woodland, would increase the prominence of the A465 and disrupt the existing pattern of mature vegetation along the A465 and the gorge. Overall the proposed	Operation summer year 15 Architectural input to the design of the Taf Fechan viaduct would ensure that the new structure complements the adjacent existing arched structure and enhance the contribution it makes to the gorge landscape. The proposed tree and shrub planting in the east part of this section would establish to integrate this part of the proposed scheme into the landscape and partly mitigate the loss of existing vegetation. The loss of ancient woodland could not be mitigated. There would be significant residual adverse effects on tranquillity and

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
	scheme would have an urbanising effect on the unique character of a localised part of the local LCA. It would also impact on the setting of heritage features in the gorge. This examined in more detail in Chapter 8: Cultural Heritage. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.	landscape character. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.
Merthyr Tydfil (built land) - landscape sensitivity: moderate		
The proposed scheme would cross the local LCA between ch. 10900 to 11400 and 12300 to 17500. Key features would include the Cefn Coed High Street, the Prince Charles Hospital junction overbridge, and its associated roundabout, slip roads and lighting, the Bryniaui Road overbridge, the Pant Road and Jones Street underbridges, the reservoir footbridge and the Dowlais junction and its associated structures, slip roads and lighting. There are also various retaining walls, required to accommodate the proposed scheme where the urban corridor narrows and attenuation ponds at the Prince Charles Hospital junction and adjacent to the main line at ch.14250, south side.	Construction During construction the clearance of extensive established highway vegetation, within the construction footprint would have a direct adverse impact on part of the local LCA and profoundly affect the setting of the A465 within the Merthyr townscape. This would be exacerbated by other construction activity and the construction of structures such as the Cefn Coed High Street and Galon Uchaf overbridges would be particularly prominent. Demolition of Trade Centre Wales would have a minor impact on townscape pattern. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.	Operation winter year 1 Finishes to bridge abutments, landscape ground modelling of the engineering embankments and sensitive treatment of the cutting slopes to accentuate the exposed geology and create interest along parts of the proposed scheme would all complement the sense of place of the A465 as it passes through the Merthyr townscape. Splayed widening either side of the Cefn Coed High Street overbridge would allow for an element of public realm to be introduced and improve the sense of separation between the High Street and the A465. The proposed tree and shrub planting, carried out where space allows, would have little impact at this stage and the A465 widening, with its new highway infrastructure including lighting and signage etc. and traffic, in the often narrow urban corridor would remain prominent. Slight impacts on the existing townscape pattern would also remain. Magnitude of landscape impact: major adverse. Significance of landscape effects: **large adverse**.

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
	Operation The dualling of the A465 would significantly increase the existing highway infrastructure footprint of the road as it passes through the Merthyr townscape. The removal of established highway vegetation would increase the prominence of the A465 and profoundly change the setting of the A465. While cuttings with retaining walls, such as those east and west of the Cefn Coed High Street overbridge, would reduce the prominence of the road they would also impact geology and existing exposed rock faces. The roundabout and slip roads associated with the Prince Charles Hospital junction and the removal of Trade Centre Wales would have a slight impact on the existing townscape pattern on the north side of the A465 in Pant Industrial Estate and on the south side along the Gurnos Ring Road and Rocky Road. The elevated mainline crossing the new grade separation of the Dowlais junction would be prominent and would cross an area of open land between the existing east and west bound carriageways of the A465. The existing highway infrastructure at this junction is however, already extensive. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.	Operation summer year 15 Extensive tree and shrub planting around the Prince Charles Hospital and Dowlais junctions would establish to partly integrate the proposed scheme into the townscape and reduce the prominence of the A465. Elsewhere the A465 widening would take place in the often narrow urban corridor where opportunities for screen planting would be limited. Magnitude of landscape impact: major adverse. Significance of landscape effects: **moderate adverse**.
Morlais (hills / valleys and fields) - landscape sensitivity: moderate		
The proposed scheme would pass immediately adjacent to the south side of the local LCA between ch. 12300 to 13800 and 15100 to 15800. Key features would include the east bound	Construction During construction the clearance of extensive established highway vegetation and adjacent woodland, including ancient woodland (part of Gymos Wood), within the construction footprint would have a direct adverse impact	Operation winter year 1 The A465 would remain prominent, particularly where on embankment, and tranquillity would be reduced by the new highway infrastructure including lighting and signage etc. and traffic. The proposed tree and shrub planting

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
egress slip road which crosses the local LCA at the Prince Charles Hospital junction and the east bound egress slip road and west bound access slip road of the Dowlais junction. The mainline and slip roads would be mostly on embankment.	on the southern fringe of the local LCA and affect its setting. This would be exacerbated by other construction activity and the construction of structures such as the Galon Uchaf overbridge and the elevated nature of much of the highway infrastructure. There would be direct localised effects resulting from construction of the east bound egress slip roads at the Prince Charles Hospital and Dowlais junctions. Magnitude of impact: major adverse. Significance of landscape effects: **large adverse**.	would have little impact at this stage. Magnitude of impact: major adverse. Significance of landscape effects: **moderate adverse**.
	Operation The dualling of the A465 would significantly increase the existing highway infrastructure footprint of the road as it passes adjacent to the local LCA. The removal of established highway vegetation and adjacent woodland and the elevated nature of much of the highway infrastructure including lighting and signage etc. and traffic would increase the prominence of the A465. There would be direct localised effects resulting from the east bound egress slip roads at the Prince Charles Hospital and Dowlais junctions. The tranquillity of the local LCA, already affected by the existing A465 and urban area of Merthyr, would be further reduced. Magnitude of impact: moderate adverse. Significance of landscape effects: **moderate adverse**.	Operation summer year 15 The tree and shrub planting on the north side of the proposed scheme would establish to integrate the highway infrastructure into the landscape and partly mitigate the loss of existing vegetation. The loss of ancient woodland (part of Gymos Wood) could not however, be mitigated and there would be some significant residual adverse effects on tranquillity and landscape character. Magnitude of impact: moderate adverse. Significance of landscape effects: **moderate adverse**.
Gelligaer Common (hills / valleys and fields) - landscape sensitivity: moderate		
The proposed scheme would pass immediately adjacent to the north side of the local LCA between ch. 16200 to 17500 partly on	Construction During construction the construction footprint would have an indirect adverse impact on part of the local LCA and	Operation winter year 1 The A465 and its associated infrastructure including lighting and signage etc. and traffic would remain

Key features of proposed scheme and approximate chainages (ch.) (m)	Assessment of landscape impacts and effects during construction and operation without landscape mitigation	Assessment of landscape impacts and effects during operation at winter year 1 and summer year 15 with landscape mitigation
embankment. Key features would include the Dowlais junction and its associated structures, slip roads and lighting beyond the local LCA to the north west.	affect its setting. The significance of the impacts would however, be lessened by the presence of existing opencast mining activities and industrial scale earthworks at Dowlais. The already low tranquillity in the local LCA would only be slightly further reduced as a result of the proposed scheme. Magnitude of impact: minor adverse (indirect). Significance of landscape effects: **slight adverse (indirect)**.	prominent, particularly where on embankment as the road rises over the Dowlais grade separated junction. The already low tranquillity of the local LCA would be slightly reduced by the new highway infrastructure and traffic. The proposed tree and shrub planting would have little impact at this stage. Magnitude of impact: minor adverse (indirect). Significance of landscape effects: **slight adverse (indirect)**.
	Operation The dualling of the A465 would increase the existing highway infrastructure footprint of the road as it passes through the area of open land between the existing east and west bound carriageways of the A465 and there would be an indirect adverse impact on the setting of the local LCA. This would be exacerbated by the elevated nature of part of the road and its associated infrastructure including lighting and signage etc. and traffic as it rises over the Dowlais grade separated junction. The tranquillity of the local LCA, already affected by the existing A465, the urban area of Merthyr and the presence of existing opencast mining activities and industrial scale earthworks at Dowlais, would only be slightly further reduced. Magnitude of impact: minor adverse (indirect). Significance of landscape effects: **slight adverse (indirect)**.	Operation summer year 15 The tree and shrub planting on the north side of the proposed scheme would establish to integrate the highway infrastructure into the landscape and partly mitigate the loss of existing vegetation. Extensive tree and shrub planting around the Dowlais junctions would mature to effectively integrate the proposed scheme into the townscape setting and reduce the prominence of the A465. There would be slight residual adverse effects on the already low tranquillity and landscape character of the local LCA. Magnitude of impact: minor adverse (indirect). Significance of landscape effects: **slight adverse (indirect)**.

Appendix 10J – Night Skies Assessment

Table 10J.1: Night skies assessment

Key features of proposed scheme that would affect the night skies	Assessment of impacts on night skies during construction and operation without landscape mitigation	Assessment of impacts and effects on night skies during operation at winter year 1 and summer year 15 with landscape mitigation
Environmental Zone E0 - High sensitivity		
The proposed scheme is within approximately 200 m of the Environmental Zones E0 at the closest point, near Nant Hir viaduct. The proposed partially lit Baverstock junction and A470 junction would be located within 1 km and 1.2 km respectively, from areas within this zone.	Construction The construction of the scheme would result in additional glare from headlight movements of construction vehicles during the hours of darkness, along haul routes on the A465 south of the Dark Sky Core Zone of the BBNP International Dark Sky Reserve. While there would be some loss of vegetation, intervening vegetation would remain between the road and the Core Zone, such as the extensive forest at Penmoelallt, which would reduce the impact of direct glare. Construction works for the scheme might have to be undertaken during the hours of darkness, which would require lighting. This would result in additional glare and light spill affecting the night skies. The exact locations of works required to be undertaken during the hours of darkness are not known. However, any such impact on the night skies would only cause a temporary effect, and would have a relatively localised effect within the wider Dark Sky Core Zone of the BBNP International Dark Sky Reserve. Magnitude of impact on the night skies: minor adverse. Significance of effect on the night skies: **moderate adverse.**	Operation winter year 1 As mitigation planting would not be established there would be glare from headlights on the road and additional lighting columns at the Baverstock and A470 junctions would cause some localised additional glare from outside the Core Zone. However, the use of dynamic systems of operation would provide the minimum amount of light required at different times, reducing the strength and duration of glare. In addition, the use of LEDs with appropriate cut off would prevent light spill from the junctions from affecting the night skies in the Core Zone of the BBNP International Dark Sky Reserve. Magnitude of impact on the night skies: negligible adverse. Significance of effect on the night skies: **slight adverse.**

Key features of proposed scheme that would affect the night skies	Assessment of impacts on night skies during construction and operation without landscape mitigation	Assessment of impacts and effects on night skies during operation at winter year 1 and summer year 15 with landscape mitigation
	Operation The widened and slightly realigned A465 would bring traffic with headlights slightly further north, towards the Core Zone, between chainage 5900 and 8100 approximately. Loss of vegetation would make headlights on the road slightly more visible. However, smaller woodlands and tree belts within the BBNP and significant forest at Penmoelallt would limit direct glare reaching the Core Zone. The proposed grade separated junctions at Baverstock and the A470 would be partially lit. While the existing junctions are fully lit, the light spill from proposed lighting columns at these larger junctions would cause some additional glare and sky glow which would be likely to impact on localised parts of the Core Zone. However, lighting would be removed from the section of the A465 between these two junctions. This would reduce direct glare and sky glow impacting a localised part of the Core Zone, to the north of this section of road. Magnitude of impact on the night skies: minor adverse. Significance of effect on the night skies: **slight adverse**.	Operation summer year 15 Woodland and hedgerow mitigation planting would have established and would provide some localised screening of headlights along the A465, as well as some luminaires on light columns at the Baverstock and A470 junctions. Although some direct glare might still influence the Core Zone it would not be significant. Magnitude of impact on the night skies: no change. Significance of effect on the night skies: **neutral.**

Key features of proposed scheme that would affect the night skies	Assessment of impacts on night skies during construction and operation without landscape mitigation	Assessment of impacts and effects on night skies during operation at winter year 1 and summer year 15 with landscape mitigation
Environmental Zone E1 in Western Part of Study Area – High sensitivity		
The proposed scheme would pass through Zone E1 between the Vale of Neath underbridge and Nant Hir viaduct. The main line and roundabouts would be lit through the Hirwaun junction; whilst at Croesbychan junction just the roundabouts would be lit.	Construction The construction of the scheme would result in additional glare from headlight movements of construction vehicles during the hours of darkness, along haul routes on the A465 within the Zone E1 in the BBNP International Dark Sky Reserve. Loss of vegetation and construction of embankments would make the direct glare travel slightly further, although the significant surrounding woodlands and tree belts would filter and screen light. Construction works for the scheme might have to be undertaken during the hours of darkness, which would require lighting. This would result in additional glare and light spill affecting the night skies. The exact locations of works required to be undertaken during the hours of darkness are not known. However, any such impact on the night skies would only cause a temporary effect, and would have a relatively localised impact on the Zone E1 in the BBNP International Dark Sky Reserve. Magnitude of impact on the night skies: moderate adverse. Significance of effect on the night skies: **large adverse.**	Operation winter year 1 As mitigation planting would not be established there would be glare from headlights on the road and additional lighting columns on the elevated mainline through Hirwaun junction, lighting of Croesbychan junction and partial lighting of the Baverstock junction that would continue to cause some localised additional glare from outside and within Zone E1. However, the use of dynamic systems of operation would provide the minimum amount of light required at different times, reducing the strength and duration of glare. In addition, the use of LEDs with appropriate cut off would prevent light spill from lighting of parts of the scheme outside Zone E1, from affecting the night skies within Zone E1 of the BBNP International Dark Sky Reserve. Light spill within Zone E1 at Croesbychan junction would also be significantly reduced by the use of the LEDs with appropriate cut off. Magnitude of impact on the night skies: moderate adverse. Significance of effect on the night skies: **moderate adverse.**

Key features of proposed scheme that would affect the night skies	Assessment of impacts on night skies during construction and operation without landscape mitigation	Assessment of impacts and effects on night skies during operation at winter year 1 and summer year 15 with landscape mitigation
	Operation Lighting of the elevated mainline through Hirwaun junction would cause more noticeable glare and light spill than the existing lit junction, which would be likely to affect the southern extent of the night skies within Zone E1 to the north of the junction. However, proposed lighting of the A465 between chainage 700 and 2800 approximately is not considered likely to significantly affect Zone E1, due to the existing vegetation which would filter and screen light, due to the lower level of the lighting columns positioned in the cutting south of Hirwaun, and due to the surrounding existing light spill already affecting the part of Zone E1 north of Hirwaun. The proposed lighting of the Croesbyhan junction would introduce additional direct lighting within the southern fringe of Zone E1. It would, however, only be likely to cause fairly localised direct glare and light spill within Zone E1, despite loss of some existing vegetation adjacent to the road, due to the remaining significant surrounding woodland and tree belts which would filter and screen light. However, it is considered likely that this would make this localised part of Zone E1 appear as an extension of the medium district brightness of Zone E3 in Hirwaun. Direct glare from headlights from traffic from a slightly wider and elevated (in part) road corridor than existing between the Croesbychan junction and Nant Hir viaduct would also affect a wider area due to loss of vegetation, but this would affect a relatively small part of the Zone E1, due to the topography and remaining existing vegetation. Glare and light spill from the partial lighting of the proposed enlarged Baverstock junction, which would be positioned slightly closer to Zone E1, than the existing junction, would be likely to have a localised effect on the eastern fringe of the night skies within this part of Zone E1, although the Penmoelallt forest would screen much of the light. Magnitude of impact on the night skies: moderate adverse. Significance of effect on the night skies: **moderate adverse.**	Operation summer year 15 Woodland mitigation planting would have established and would provide screening of headlights along parts of the A465, as well as screening of some luminaires at Hirwaun and Baverstock junctions, which would reduce direct glare from outside Zone E1 affecting the night skies within this zone. Established woodland and hedgerow mitigation planting within the proposed scheme in Zone E1 would also reduce the effect on the night skies from direct glare from headlights and, direct glare and light spill from luminaires at Croesbychan junction. The lighting of this junction would remain the main source of the residual effect and this localised part of the Zone E1 night skies would likely appear as a slight extension of the adjacent Zone E3 night skies, within the BBNP. Magnitude of impact on the night skies: minor adverse. Significance of effect on the night skies: **moderate adverse.**

Key features of proposed scheme that would affect the night skies	Assessment of impacts on night skies during construction and operation without landscape mitigation	Assessment of impacts and effects on night skies during operation at winter year 1 and summer year 15 with landscape mitigation
Environmental Zone E1 in Eastern Part of Study Area – Moderate sensitivity		
The proposed partially lit A470 junction, incorporating the Taf Fawr viaducts, would be located within Zone E1. However, the currently lit A465 mainline between Baverstock and the A470 is proposed to be unlit.	Construction The construction of the scheme would result in additional glare from headlight movements of construction vehicles during the hours of darkness, along haul routes on the A465 which pass through the southernmost tip of the Zone E1 in the BBNP International Dark Sky Reserve. While the loss of vegetation would make this glare slightly more visible, the effect on the night skies in this part of the BBNP would be relatively limited due to the existing influence of lighting from columns along the A465 between the Baverstock junction and the Lower Vaynor Road junction. Construction works for the scheme might have to be undertaken during the hours of darkness, which would require lighting. This would result in additional glare and light spill affecting the night skies. The exact locations of works required to be undertaken during the hours of darkness are not known. However, any such impact on the night skies would only cause a temporary effect, and are also considered likely to cause a relatively limited effect on the night skies in Zone E1 if required, due to the existing influence of lighting. Magnitude of impact on the night skies: minor adverse. Significance of effect on the night skies: **slight adverse.**	Operation winter year 1 As woodland and hedgerow mitigation planting would not be established there would be glare from headlights within the wider road corridor and the effect of additional lighting at the A470 junction. However, the use of dynamic systems of operation would provide the minimum amount of light required at different times, reducing the strength and duration of glare. In addition, the use of LEDs with appropriate cut off would also significantly reduce the light spill within this part of Zone E1 of the BBNP International Dark Sky Reserve. Magnitude of impact on the night skies: **no change.** Significance of effect on the night skies: **neutral.**

Key features of proposed scheme that would affect the night skies	Assessment of impacts on night skies during construction and operation without landscape mitigation	Assessment of impacts and effects on night skies during operation at winter year 1 and summer year 15 with landscape mitigation
	Operation There would be glare from headlights from traffic within a much wider road corridor than existing directly within the Zone E1, and also noticeably to the south-west, where the A465 and new link road to Swansea Road would descend in parallel from the Baverstock Ridge. Due to the upgrading of the A470 junction, including a new roundabout north of the proposed mainline and existing A465, there would be some additional lighting introduced within this part of the Zone E1. The mainline would, however, be unlit between the Baverstock junction and the eastern extent of the scheme, which would reduce the overall extent of lighting currently influencing the night skies in Zone E1. The existing retained surrounding vegetation, topography and proposed location of the A470 junction partially within cutting, would also contain the effect of the lighting on the night skies within a relatively localised part of Zone E1, which is already influenced by glare and light spill from road lighting, as well as light spill from Zone E3 in Merthyr Tydfil. Magnitude of impact on the night skies: minor adverse. Significance of effect on the night skies: **slight adverse.**	Operation summer year 15 Woodland and hedgerow planting at the A470 junction would have established and would provide some localised screening of glare from headlights and contain light spill from luminaires on columns. Magnitude of impact on the night skies: no change. Significance of effect on the night skies: **neutral.**

Key features of proposed scheme that would affect the night skies	Assessment of impacts on night skies during construction and operation without landscape mitigation	Assessment of impacts and effects on night skies during operation at winter year 1 and summer year 15 with landscape mitigation
Environmental Zone E2 in Western Part of Study Area – Generally moderate sensitivity, with localised area of moderate to low sensitivity		
The proposed offline section of the A465 on the northern edge of Zone E2, between the lit Hirwaun and Trewaun junctions is mainly proposed to be lit. The Mynydd Bwllfa Wind Farm overbridge is also proposed to be lit.	Construction The construction of the scheme would result in additional glare from headlight movements of construction vehicles during the hours of darkness, along haul routes on the A465 on the northern edge of Zone E2, as well as construction vehicles just within Zone E2 south of Hirwaun. Construction works for the scheme might also have to be undertaken during the hours of darkness, which would require lighting. This would result in additional glare and light spill affecting the night skies. The exact locations of works required to be undertaken during the hours of darkness are not known. However, any such impact on the night skies would only cause a temporary effect. The existing influence of lighting from the floodlit recreation ground located between the existing A465 and the proposed scheme, as well as light spill from Hirwaun would lead to minor impacts on the night skies. Magnitude of impact on the night skies: minor adverse. Significance of effect on the night skies: **slight adverse.**	Operation winter year 1 As mitigation planting would not be established there would be glare from headlights and, glare and light spill from lighting columns between Hirwaun junction and Trewaun junction. However, the use of dynamic systems of operation would provide the minimum amount of light required at different times, reducing the strength and duration of glare. In addition, the use of LEDs with appropriate cut off would also significantly reduce the light spill affecting the night skies within Zone E2. It is, however, considered that the magnitude of impact on the night skies within this zone would remain moderate adverse in the medium / long term mainly due to the prominent glare from headlights on the mainline through Hirwaun junction and glare from lighting columns. Magnitude of impact on the night skies: moderate adverse. Significance of effect on the night skies: **moderate adverse.**

Key features of proposed scheme that would affect the night skies	Assessment of impacts on night skies during construction and operation without landscape mitigation	Assessment of impacts and effects on night skies during operation at winter year 1 and summer year 15 with landscape mitigation
	Operation The proposed offline scheme alignment between Hirwaun and Trewaun junctions would introduce a new source of glare from headlights, as well as glare and light spill from light columns on the mainline between chainage 1800 and 2800 approximately within this part of Zone E2. The glare and light spill from the mainline through Hirwaun junction would be prominent due to the raised alignment, while the cutting would contain much of the glare from headlights along the eastern half of the offline road. There would also be some glare and light spill from lighting columns on the Mynydd Bwllfa Wind Farm overbridge and at Trewaun junction. It is considered likely that this would change the characteristics of the night skies on the northern fringe of Zone E2 from low to medium district brightness. There would be existing influence of light from the nearby built up areas in Hirwaun and the adjacent floodlit recreation ground within this localised part of Zone E2. Magnitude of impact on the night skies: moderate adverse. Significance of effect on the night skies: **moderate adverse**.	Operation summer year 15 Woodland and tree mitigation planting would have established and would provide some screening from glare from headlights of the section of mainline not in cutting. The mitigation planting would also filter or partially screen light spill from some of the light columns at Hirwaun and Trewaun junctions, although light spill from columns along the mainline, particularly through Hirwaun junction, would remain. The overall magnitude of impact on the night skies would reduce to minor adverse in the long term, although the night skies of the northern fringe of Zone E2 would likely appear as a slight extension of the adjacent Zone E3 night skies in Hirwaun. Magnitude of impact on the night skies: minor adverse. Significance of effect on the night skies: **slight adverse**.

Key features of proposed scheme that would affect the night skies	Assessment of impacts on night skies during construction and operation without landscape mitigation	Assessment of impacts and effects on night skies during operation at winter year 1 and summer year 15 with landscape mitigation
Environmental Zone E2 in Central Part of Study Area – Moderate sensitivity		
The proposed enlarged and more prominent Baverstock junction is proposed to be partially lit within Zone E2. However, existing lighting would be removed on the A465 mainline between Baverstock and the A470.	Construction The construction of the scheme would result in additional glare from headlight movements of construction vehicles during the hours of darkness, along haul routes on the A465 within Zone E2. Loss of vegetation along the route would make glare from the traffic, including construction activities, more prominent, particularly due to the topography within this part of the scheme. Construction works for the scheme might have to be undertaken during the hours of darkness, which would require lighting. This would result in additional glare and light spill affecting the night skies. The exact locations of works required to be undertaken during the hours of darkness are not known. While any such impact on the night skies would only cause a temporary effect, they would be very prominent in the landscape due to the road ascending and descending from the Baverstock ridge within Zone E2. Magnitude of impact on the night skies: moderate adverse. Significance of effect on the night skies: **moderate adverse**.	Operation winter year 1 As mitigation planting would not be established there would be glare from headlights and, glare and light spill from lighting columns at Baverstock junction, although glare form headlights would be reduced by the proposed false cutting along the southern edge of the A465 between Nant Hir viaduct and the Baverstock junction. In addition, the use of dynamic systems of operation would provide the minimum amount of light required at different times, reducing the strength and duration of glare. The use of LEDs with appropriate cut off would also significantly reduce the light spill affecting the night skies within Zone E2. Magnitude of impact on the night skies: minor adverse. Significance of effect on the night skies: **slight adverse**.

Key features of proposed scheme that would affect the night skies	Assessment of impacts on night skies during construction and operation without landscape mitigation	Assessment of impacts and effects on night skies during operation at winter year 1 and summer year 15 with landscape mitigation
	Operation Glare from headlights on the A465 between Nant Hir bridge and the Baverstock junction would be more prominent, due to the road being raised up on embankments. There would also be glare from headlights from traffic within a much wider road corridor within Zone E2 between the Baverstock junction and A470 junction, in particularly where the A465 and new link road to Swansea Road would run in parallel. However, the cutting slopes at the crest of the Baverstock ridge, would help to contain the glare to some extent. Glare and light spill form the proposed lighting columns at the partially lit Baverstock junction would be particularly prominent due to the elevated positon in the landscape, although Penmoelallt forest would provide screening to the north. However, this would to some extent be counter balanced by the removal of lighting from the A465 between Baverstock junction and the A470 junction. Magnitude of impact on the night skies: moderate adverse. Significance of effect on the night skies: **moderate adverse**.	Operation summer year 15 Woodland mitigation planting would provide some intermittent screening of glare from headlights along the route, but would generally not screen glare or light spill from lighting columns at Baverstock junction. Magnitude of impact on the night skies: minor adverse. Significance of effect on the night skies: **slight adverse**.

Key features of proposed scheme that would affect the night skies	Assessment of impacts on night skies during construction and operation without landscape mitigation	Assessment of impacts and effects on night skies during operation at winter year 1 and summer year 15 with landscape mitigation
Environmental Zone E2 in Eastern Part of Study Area – Generally moderate sensitivity, with localised areas of moderate to low sensitivity		
The proposed lit enlarged Prince Charles Hospital junction would encroach within the edge of Zone E2.	Construction The construction of the scheme would result in additional glare from headlight movements of construction vehicles during the hours of darkness, along haul routes on the A465 within localised parts of Zone E2 at Y Griag and Dowlais Top; and on the edge of Zone E2 north of Gurnos and Galon Uchaf. Loss of vegetation along the route would make glare from the traffic, including construction activities, slightly more visible than existing. Construction works for the scheme might have to be undertaken during the hours of darkness, which would require lighting. This would result in additional glare and light spill affecting the night skies. The exact locations of works required to be undertaken during the hours of darkness are not known. However, any such impact on the night skies would only cause a temporary effect. There would be existing influence of lighting from the adjacent Zone E3 in Merthyr Tydfil. Magnitude of impact on the night skies: moderate adverse. Significance of effect on the night skies: **moderate adverse**.	Operation winter year 1 As the proposed intermittent woodland planting would not be established there would be glare from headlights on the A465 or glare and light spill from light columns at Prince Charles Hospital junction. However, the use of dynamic systems of operation would provide the minimum amount of light required at different times, reducing the strength and duration of glare. In addition, the use of LEDs with appropriate cut off would also significantly reduce the light spill affecting the night skies within Zone E2. As such the magnitude of impact on the night skies in Zone E2 would reduce to minor adverse in the short / medium term, although the night skies of the southern fringe of Zone E2 would appear as a slight extension of the adjacent Zone E3 night skies in Galon Uchaf, due to the lighting columns at Prince Charles Hospital junction. Magnitude of impact on the night skies: minor adverse. Significance of effect on the night skies: **slight adverse**.

Key features of proposed scheme that would affect the night skies	Assessment of impacts on night skies during construction and operation without landscape mitigation	Assessment of impacts and effects on night skies during operation at winter year 1 and summer year 15 with landscape mitigation
	Operation Glare from headlights on the realigned A465 through Y Graig would be slightly more prominent than at present, since there would no longer be a dense vegetation belt offering screening either side of the road. However, the cutting slopes either side of the road would offer some screening. Loss of vegetation along the A465 and the slightly more elevated traffic on embankments north of Gurnos and at Dowlais Top, including the elevated mainline through Dowlais junction, would also make glare form headlights more visible. In addition, there would be glare and light spill from light columns at the fully lit junction at Prince Charles Hospital, which would extend within the edge of Zone E2. It is considered likely that this would lead to a minor localised change to the characteristics of the night skies on the southern fringe of Zone E2 in this location, from low to medium district brightness. There would be existing influence of lighting from the adjacent Zone E3 in Merthyr Tydfil, particularly at Dowlais Top. Magnitude of impact on the night skies: moderate adverse. Significance of effect on the night skies: **moderate adverse**.	Operation summer year 15 Woodland planting would provide some intermittent screening of glare from headlights. Magnitude of impact on the night skies: minor adverse. Significance of effect on the night skies: **slight adverse**.

Key features of proposed scheme that would affect the night skies	Assessment of impacts on night skies during construction and operation without landscape mitigation	Assessment of impacts and effects on night skies during operation at winter year 1 and summer year 15 with landscape mitigation
Environmental Zone E3 – Moderate to low sensitivity		
In the west, the A465 would be lit between Hirwaun Industrial Estate and Hirwaun Junction, where it is currently not lit. The elevated mainline is also proposed to be lit through Hirwaun junction. In the east, the currently lit Prince Charles Hospital junction is proposed to be made larger, which would increase the amount of lighting at this junction.	Construction The construction of the scheme would result in additional glare from headlight movements of construction vehicles during the hours of darkness, along haul routes on the A465 which pass along the fringes of the Zone E3 night skies in the Study Area. While the loss of vegetation along the route would make this glare slightly more visible, the effect on the night skies would be relatively limited due to the existing influence of lighting from built up areas within Zone E3. Construction works for the scheme might have to be undertaken during the hours of darkness, which would require lighting. This would result in additional glare and light spill affecting the night skies. The exact locations of works required to be undertaken during the hours of darkness are not known. However, any such impact on the night skies would only cause a temporary effect, and are also considered likely to cause a relatively limited effect on the night skies in Zone E1 if required, due to the existing influence of lighting. Magnitude of impact on the night skies: minor adverse. Significance of effect on the night skies: **slight adverse**.	Operation winter year 1 As mitigation planting would not be established there would be glare from headlights, additional lighting to the west of Hirwaun junction and at Prince Charles Hospital junction, and more prominent lighting at Hirwaun junction. However, the use of dynamic systems of operation would provide the minimum amount of light required at different times, reducing the strength and duration of glare. In addition, the use of LEDs with appropriate cut off would also significantly reduce the light spill affecting the night skies within Zone E3. Magnitude of impact on the night skies: negligible adverse. Significance of effect on the night skies: s**light adverse**.

Key features of proposed scheme that would affect the night skies	Assessment of impacts on night skies during construction and operation without landscape mitigation	Assessment of impacts and effects on night skies during operation at winter year 1 and summer year 15 with landscape mitigation
	Operation Glare from headlights on the widened A465 corridor would be slightly more noticeable than the current route due to loss of existing vegetation, particularly in locations where the mainline is proposed to be elevated, such as at Hirwaun junction. Additional lighting is proposed within Zone E3 to the west of Hirwaun junction and the elevated mainline through the junction is also proposed to be lit, making the lighting slightly more prominent than existing. However, the additional lighting would bridge a short gap in lighting between the Hirwaun Industrial Estate and the built up area in Hirwaun and would not be out of keeping with the general character of the night sky in this area. Additional lighting is also proposed at Prince Charles Hospital junction within Zone E3 in the eastern part of the Study Area. There would be existing influence of lighting within Zones E3. Magnitude of impact on the night skies: minor adverse. Significance of effect on the night skies: **slight adverse**.	Operation summer year 15 Proposed woodland mitigation planting would reduce glare from headlights along parts of the proposed scheme and would provide some screening for additional lighting to the west of Hirwaun junction and at Prince Charles Hospital junction, and more prominent lighting at Hirwaun junction. Magnitude of impact on the night skies: negligible adverse. Residual significance of effect on the night skies: **neutral**.

Appendix 10K – Indicative Plant Schedule

Table 10K.1: Indicative plant schedule

Category	Percentage	Species – common name	Species – latin name	EMP reference
Woodland				LE2.1
Trees	10	Alder	*Alnus glutinosa*	
	15	Rowan	*Sorbus aucuparia*	
	15	Oak	*Quercus petraea*	
	10	Downy birch	*Betula pubescens*	
Understorey	15	Hazel	*Corylus avellana*	
	25	Hawthorn	*Crataegus monogyna*	
	10	Dog rose	*Rosa canina*	
Woodland edge				LE2.2
Trees	5	Field maple	*Acer campestre*	
	15	Silver birch	*Betula pendula*	
	10	Birch cherry	*Prunus padus*	
	5	Pine	*Pinus sylvestris*	
	15	Rowan	*Sorbus aucuparia*	
Understorey	5	Crab apple	*Malus sylvestris*	
	5	Dog rose	*Rosa canina*	
	10	Goat willow	*Salix caprea*	
	30	Hawthorn	*Crataegus monogyna*	
Shrubs with intermittent trees				LE2.5
Trees	5	Alder	*Alnus glutinosa*	
	5	Cherry	*Prunus padus*	
	5	Field maple	*Acer campestre*	
	5	Pine	*Pinus sylvestirs*	
Shrubs	25	Blackthorn	*Prunus spinosa*	
	5	Dog rose	*Rosa canina*	
	5	Dogwood	*Cornus sanguinea*	
	10	Grey willow	*Salix cinerea*	
	35	Hawthorn	*Crataegus monogyna*	
Scrub				LE2.8

Category	Percentage	Species – common name	Species – latin name	EMP reference
	30	Blackthorn	*Prunus spinosa*	
	5	Dog rose	*Rosa canina*	
	15	Goat willow	*Salix caprea*	
	15	Grey willow	*Salix cinerea*	
	30	Hawthorn	*Crataegus monogyna*	
	5	Honeysuckle	*Lonicera periclymenum*	
Shrubs				LE2.6
		Dogwood	*Cornus sanguinea*	
		Dog rose	*Rosa canina*	
		Hawthorn	*Crataegus monogyna*	
		Hazel	*Corylus avellana*	
		Holly	*Ilex aquifolium*	
		Guelder rose	*Viburnum opulus*	
Native species hedgerow				LE4.3
	10	Field maple	*Acer campestre*	
	80	Hawthorn	*Crataegus monogyna*	
	10	Hazel	*Corylus avellana*	
Individual trees				LE5.1
		Hornbeam	*Carpinus betulus*	
		Lime	*Tilia cordata*	
		Pine	*Pinus nigra*	
		Oak	*Quercus petraea*	
		Rowan	*Sorbus aucuparia*	

Appendix 10L – Jacobs 2016 Tree Survey Report

See following page.

Page left intentionally blank.

Welsh Government

A465 Heads of the Valleys Dualling – Sections 5 and 6 - Dowlais Top to Hirwaun

BS5837:2012 Tree Survey Report

24 June 2016

Contents

1. Introduction 2
1.1 Client instruction 2
1.2 Documents provided 2
1.3 Documents produced 2
1.4 Scope of survey 2
1.5 Survey method 3
1.6 Limitations 3
2. Site Visit and Observations 4
2.1 Site visit 4
2.2 Site observations 4
3. Tree survey 5
3.1 Tree survey and constraints 5
3.2 Legal constraints 6
3.3 Root Protection Area 6
4. Arboricultural Impact Assessment (AIA) 7
4.1 AIA Results 7
4.2 Tree survey plans 8
4.3 Tree to be removed 8
4.4 Trees with encroachment into RPAs 8
4.5 Arboricultural Impact Assessment – General tree protection measures 8
5. Site Management and Supervision 10
5.1 Site management and supervision 10
6. Conclusions 11
6.1 Conclusions 11
7. Recommendations 12
7.1 Recommendations 12
8. References 13

1. Introduction

1.1 Client instruction

1.1.1 Jacobs UK Ltd was instructed by the Welsh Government to carry out a tree survey along sections 5 and 6 of the A465 in South Wales, in accordance with 'BS5837:2012 – Trees in Relation to Design, Demolition and Construction' and to provide a report.

1.1.2 The requirements of the survey were to:-

- Record information about the trees, hedges and woodlands that may be impacted upon by the proposed development within a 25 metre buffer zone either side of the proposed scheme.
- Assess the potential impact upon those trees likely to be affected by the development, including potential tree loss; and
- Provide a tree survey report with positioning and constraints of the features surveyed.

1.2 Documents provided

- General Arrangement Key Plan - Drawing title: A465 Heads of the Valleys Dualling – April 27th Scheme, Figure 1, Sheets 1-17 R0.

1.2.1 On-line aerial photography of the survey site was used during the tree survey and during a desktop study of the areas included in this report.

1.3 Documents produced

- Tree Survey and Protection Schedules – available on request
- Tree Constraints Plans (drawing no. B2191100/Sc5-6/TC01 Rev0, Sheets 1 to 64) – available on request
- Arboricultural Impact Assessment with reference to landscape designated areas – available on request
- Within Jacobs this scheme is supported by WebGIS, therefore the 'Tree Constraints Plans' are available to view as separate layer within the model.

1.4 Scope of survey

1.4.1 The survey relates to trees with a stem diameter of 75mm or more (measured at 1.5m above ground level) located within the area highlighted on the site plan. Trees, hedges and woodlands included in the survey included those in close proximity (within the defined buffer zone) and/or within the footprint of the proposed development.

1.4.2 Grouping of trees within high density tree cover areas has been used extensively during the survey however individual specimens have been recorded as such where a combination of their attributes, quality, location, protection status and relevance within the landscape were deemed to justify inclusion as such.

1.4.3 The tree survey has been completed independently of any specific proposals for development.

1.5 Survey method

1.5.1 Observations were conducted from ground level, using the 'Visual Tree Assessment' system (VTA by Mattheck, C & Breloer, H (1994) and The Body Language of Trees, Research for Amenity Trees No 4 Department of the Environment). No internal diagnostic equipment was used other than a sounding mallet and probe.

1.5.2 No internal investigations were carried out or tissue samples taken from the surveyed trees. Information was collected in accordance with the recommendations in subsections 4.4.2.5 and 4.4.2.6 of BS 5837:2012 and included species, height, diameter, branch spread, crown clearance, age class, physiological condition, structural condition and estimated remaining contribution. Stem diameters (DBH) of each tree were taken using a rounded down diameter tape in millimetres, at 1.5m above ground level, unless access was not possible due to issues with land access/ownership or safety concerns. All other dimensions were estimated. No soil samples were taken.

1.5.3 Tree species identification was based on a visual observation. The quality and value of the trees surveyed was categorised in accordance with ‘Table 1 Cascade chart for tree quality assessment’, in BS5837:2012 (a full copy extract is attached to the ‘Tree Survey and Protection Schedules’). The ‘Root Protection Area’ (RPA) of each tree was determined using the calculation methods detailed in BS 5837: 2012 and are shown in the ‘Tree Constraints Plans’. In this report, the radius given was measured from the centre of the main trunk for individual trees. For groups of trees and woodlands the radius of the largest diameter tree observed is then applied as an off-set distance from the edge of the canopy for the respective groups, to attain the RPA area, unless otherwise stated. Hedge RPAs, in the schedule, are also measured from the edge of the crown canopies unless otherwise stated.

1.6 Limitations

1.6.1 A topographical plan of the areas included in the tree survey was not available at the time of the survey therefore all the tree locations were hand plotted onto aerial photographic reproductions. As a result the positions of the arboricultural features recorded within the tree survey plans are approximate. Jacobs accepts no liability for the accuracy of the tree survey drawings.

1.6.2 Due to safety concerns regarding the proximity of the surveyors to the roads within the survey area, highway land was not accessed during the survey. Those trees located upon highway land were therefore assessed from a safe vantage point. DBH measurements for these trees were estimated and data recorded for structural and physiological condition was based upon a restricted view of the tree parts visible to the surveyors from the vantage point. The corresponding comments should not, therefore, be taken as a full and complete assessment of the condition of those trees affected.

1.6.3 Trees are living organisms whose health and condition can change rapidly and all trees, even healthy ones, are at risk from unpredictable climatic and man-made events. The assessment of risk for any tree is based upon factors evident at the time of the inspection and the interpretation of those factors by suitably qualified inspectors. The health, condition and safety of trees should be checked on a basis commensurate with the level of risk and preferably on an annual basis.

2. Site Visit and Observations

2.1 Site visit

2.1.1 Site visits were undertaken by trained arboriculturists from 18th to 22nd April, 2nd to 6th May and 9th to 11th May, 2016. These visits involved the surveying of trees located along the route of the proposed development and those within the 25 metre buffer zone, designated to be potentially affected by the scheme and associated works.

2.2 Site observations

2.2.1 The survey site lies along approximately 17km of the A465 (Head of the Valleys Road), between Hirwaun to the west and Dowlais Top to the east. The Breacon Beacons National Park extends south across the survey site adjacent to Cefn-coed-y-cymmer and also adjacent to the Nant-hir Reservoir. The national park lies to the north of the entire survey route.

2.2.2 Land use within the area included in the survey varies. There are several settlements through which the A465 passes and also farmland, public access routes, industrial areas, tree plantations and privately owned mining land.

2.2.3 The area surveyed for trees extends from the scheme footprint by approximately 25 metres (this varies in certain areas depending on the current design proposals) both north and south, following the main route of the development but also partially along subsidiary routes adjoining the A465.

2.2.4 Topography of the land is characterised by long undulating sections interspersed by occasional small valleys or gorges with exposed rocky substrate and dense tree cover. Other areas characterised by high levels of tree cover include several woodland remnants (some of which are classified as Ancient Woodlands), conifer plantation blocks and roadside embankments/verges containing trees planted for screening purposes.

2.2.5 Other relevant features of the site include numerous field boundary, stone ‘bund’ structures from which trees have grown and/or been planted upon. Large open areas were observed across the scheme which relate to farming practices, relatively recently reclaimed land following open cast mining operations and the recent clear felling of forestry plantation blocks.

2.2.6 The survey area contains a mixture of trees of varying age, species and quality as listed in the ‘Tree Survey and Protection Schedule’, which can be provided upon request.

3. Tree survey

3.1 Tree survey and constraints

3.1.1 The results of the tree survey are shown in the 'Tree Survey and Protection Schedule' and within the 'Tree Constraints Plans', (drawing no. B2191100/Sc5-6/TC01 Rev0, Sheets 1 to 64), both of which can be provided on request as a separate document due to the large file size required for the data.

3.1.2 A detailed assessment of the arboricultural impacts with respect to the areas of the tree survey which have special landscape designations, as referenced in subsection 3.2.1, can be produced upon request. This provides specific detail, separated out from the full Arboricultural Impact Assessment, in order to provide a focused assessment of these key areas.

3.1.3 The field data gathered for this survey was divided into two data sets, Northside and Southside. These correspond to the arboricultural features within the survey buffer situated to either the north or south of the current A465. Both sets have independent numbering distinguished by the prefix 'N-' (Northside) or 'S-' (Southside), which are used within the schedules and the 'Tree Constraints Plans'.

3.1.4 The survey identified **1328** arboricultural features which include trees, tree groups, hedges and woodlands. The amounts of each arboricultural feature attributed to the respective grading categories are given in **Table 1**.

Table 1 : Grading of arboricultural features

BS5837:2012 categories	Trees	Tree groups	Woodlands	Hedges
'A' grade	35	11	0	0
'B' grade	225	156	21	12
'C' grade	342	398	28	19
'U' grade	56	23	1	1
TOTALS	658	588	50	32

3.1.5 'A' grade trees are of high quality and value and should be retained. 'B' grade trees are of moderate quality and value and should be considered for retention where possible, although care should be taken to avoid misplaced retention. Any scheme should take into account the retention and protection of trees, but also the tree's future growth. The 'C' grade trees are of low quality and value and should not place a constraint on the proposals. From an arboricultural point of view, the 'U' grade trees cannot realistically be considered for retention as a living tree in the context of the current land use due to their low life expectancy of less than 10 years in their current poor condition. However within this report 'U' grade trees are shown as constraints as retention may be appropriate for other reasons e.g. habitat retention or short term amenity value.

3.2 Legal constraints

3.2.1 Information was provided giving the locations of all trees and groups of trees under the protection of Tree Preservation Orders (TPOs), Conservation Areas (CAs), Sites of Special Scientific Interest (SSSIs), Ancient Woodlands (AWs) and National Park (Beacon Beacons) within the surveyed areas. This information was up to date at the time of writing this report.

3.2.2 It is recommended that arboricultural advice is sought before carrying out any works to trees that are covered by the protection of any of the landscape designations that are found across the site.

3.3 Root Protection Area

3.3.1 The Root Protection Area (RPA) has been plotted as a circle which centres on the base of the stem (subsection 4.6.2 of British Standard 5837:2012).

3.3.2 Deviation in the RPA (subsection 4.6.3 of British Standard 5837:2012) from the original would have to take into account the following factors whilst still providing adequate protection for the root system.

- Morphology and disposition of the roots, when influenced by past or existing site conditions e.g. the presence of roads.
- Topography and drainage.
- The soil type and structure.
- The likely tolerance of the tree to root disturbance or damage, based on factors such as species, age, condition and past management.

3.3.3 No RPA deviation has been applied at this stage in the design process, however this may be necessary when further design details are provided.

4. Arboricultural Impact Assessment (AIA)

4.1 AIA Results

Table 2: Tree impacts table (AIA results)

BS5837:2012 Grading	Removals	Partial removals	Encroached	No impacts
Trees				
A	10	-	5	20
B	89	-	23	113
C	162	-	39	141
U	29	-	6	21
SUB TOTALS	290	-	73	295
Tree Groups				
A	2	5	0	4
B	42	46	23	45
C	133	117	32	116
U	4	7	3	9
SUB TOTALS	181	175	58	174
Woodlands				
A	0	0	0	0
B	2	16	2	1
C	2	16	2	8
U	0	1	0	0
SUB TOTALS	4	33	4	9
Hedges				
A	0	0	0	0
B	3	1	2	6
C	3	2	3	11
U	0	0	0	1
SUB TOTALS	6	3	5	18

4.2 Tree survey plans

4.2.1 The tree survey plans (i.e. 'The Tree Constraints Plans') can only be used in relation to the tree issues. The tree survey plans show the existing trees numbered (as per subsection 3.1.2) and categorised in accordance with BS 5837:2012. Below ground constraints are represented by the RPA. The above ground constraints arise from the current and ultimate height and spread of the trees. The plans are available on request due to the large file size.

4.2.2 The 'Tree Constraints Plan' shows the extent of the RPAs of the surveyed arboricultural features in relation to the design proposals. An assessment of these has determined the likely impact of the design proposals on the trees/hedges/woodlands and vice-versa.

4.3 Tree to be removed

4.3.1 An assessment of the' Tree Constraints Plans' indicates that those trees requiring removal (as highlighted for removal in the 'Tree Survey and Protection Schedule') will be unsustainably impacted upon by the scheme proposals. Those tree groups, hedges and woodlands that have been assessed to be partially impacted upon (therefore only some of the trees within those features are recommended for removal) are also highlighted. It is recommended that all partial removals of groups and woodlands are confirmed on site by the appointed arboriculturist to avoid issues such as wind throw.

4.3.2 The results are recorded within **Table 2** under the heading 'Removals' and 'Partial Removals', respectively.

4.4 Trees with encroachment into RPAs

4.4.1 The proposed scheme is likely to result in encroachment within the RPAs of the trees detailed in **Table 2**, under 'Encroached'. These trees are considered to be retainable post-construction but may need specific protection measures to be implemented in order to minimize the potential impacts of the design and/or construction activity, as it currently stands.

4.4.2 To mitigate any potential impact on the retained trees, a method statement should be provided by the contractor to demonstrate that all operations proposed within or near to the RPAs can be undertaken to ensure their safe protection and retention. The works should also be supervised by a competent arboriculturist and include adequate protection measures, as detailed in subsection 4.5 – 'General Tree Protection Measures', particularly where there is potentially a greater risk of root damage occurring to trees by virtue of their age/size and close proximity to the development. No roots over 25mm in diameter should be severed without consultation with a competent arboriculturist.

4.4.3 No drainage or other underground apparatus details were provided at the time of writing this report. Particular care should be given to positioning all underground apparatus outside the RPAs of all retained trees. If this is not possible, detailed plans showing the proposed routing will need to be provided for further assessment by a competent arboriculturist.

4.5 Arboricultural Impact Assessment – General tree protection measures

4.5.1 It is important that measures for protection are in place throughout the scheme and for as long as a risk of damage remains and also installed prior to work being conducted. Particular care and planning is necessary in the operation of excavators, lifting machinery and cranes to ensure all vehicle movements and lifting operations will not impact on retained trees.

4.5.2 Protective barriers, fit for purpose, should be placed around the retained trees, to provide a construction exclusion zone and prevent incursion within the RPAs where practicable.

4.5.3 The location for the compound and storage area has yet to be agreed. Consideration should be given to positioning the compounds and storage areas outside the RPAs of all retained trees.

4.5.4 Wherever possible, underground utility services should be routed outside the RPA. Where underground apparatus is to pass within the RPA, detailed plans showing the proposed routing should be drawn up in conjunction with a competent arboriculturist.

5. Site Management and Supervision

5.1 Site management and supervision

5.1.1 Consideration should be given to a competent arboriculturist visiting site and monitoring the works at an interval agreed at the pre-commencement site meeting. The interval should be sufficiently flexible to allow the supervision of key works as they occur. The arboriculturist's role is to monitor compliance with arboricultural conditions and advising on any tree problems that arise or modification that become necessary.

5.1.2 The key stages requiring supervision will be agreed at the pre-commencement site meeting, but will usually include:

- Tree pruning and felling operations
- Installation of tree protection barriers
- Installation of ground protection
- Regular monitoring of compliance

6. Conclusions

6.1 Conclusions

6.1.1 Consideration has been given to retaining all trees where appropriate depending upon their general condition and value. However, ultimately their removal is dependent on their proximity to the footprint of the proposed development.

6.1.2 The trees, groups of trees, hedges and woodlands listed in **Table 2** under 'Removals' and 'Partial Removal' are located within (either fully or partially) or directly adjacent to the proposed development footprint and will need to be removed. The loss of these trees can be mitigated by appropriate replacement tree planting as part of the scheme. Suitability of species selection should be made regarding their location, potential ultimate size, life span, shade tolerance and growth habits.

6.1.3 The scheme proposals are likely to result in encroachment within the RPAs of those trees listed in **Table 2** under 'Encroached'. Encroachment within the RPAs of these trees should be limited to only those works necessary to enable the construction of the required works and include all mitigation and protective measures (including the supervision of works by a competent arboriculturist), as recommended in subsection 4.5 - 'General Tree Protection Measures'. No other excavations or encroachment should be carried out within the RPA of the remaining retained trees, unless approved by a competent arboriculturist.

6.1.4 It is recommended that at final design stage a method statement is produced specifying the methodology to be used for all works within the RPAs, to ensure the safe protection and retention of these trees, prior to the commencement of works.

6.1.5 Particular care should be given to positioning all underground apparatus outside the RPAs of all retained trees. If this is not possible, detailed plans showing the proposed routing will need to be provided for further assessment by a competent arboriculturist. Adequate allowance for and the planning of site access arrangements and the provision of a compound and storage area should be made to avoid encroachment with the RPAs of, or prevent direct contact with, all retained trees on site (see subsection 4.5 'General Tree Protection Measures').

6.1.6 Prior to the removal of the trees listed in **Table 2**, it is essential that the trees are assessed for the presence of nesting birds and protected species such as bats. The disturbance or destruction of nesting sites is an offence under the Wildlife and Countryside Act 1981 and the Countryside and Rights of Way Act 2000. Further advice on bats can be obtained from the Bat Conservation Trust (tel: 0845 1300 2280 / www.bats.org.uk). Advice on nesting birds can be obtained from Natural England (tel: 08456003078 / www.naturalengland.org.uk) or The Royal Society for the Protection of Birds (tel: 01767 693690 / www.rspb.org.uk).

7. Recommendations

7.1 Recommendations

7.1.1 It is recommended that;

a) the contents of this arboricultural report are incorporated within the final scheme proposals;

b) further arboricultural input is requested as and when design details relating to the scheme (i.e. any design change altering the impacts upon adjacent trees) and associated works (e.g. haulage routes, site compounds, drainage placement) have been produced;

c) an Arboricultural Method Statement is prepared and approved before any works commence on site;

d) a Tree Protection Plan is produced following an agreed final scheme design, relating to the recommended special protection measures for those trees which are to be retained post-construction.

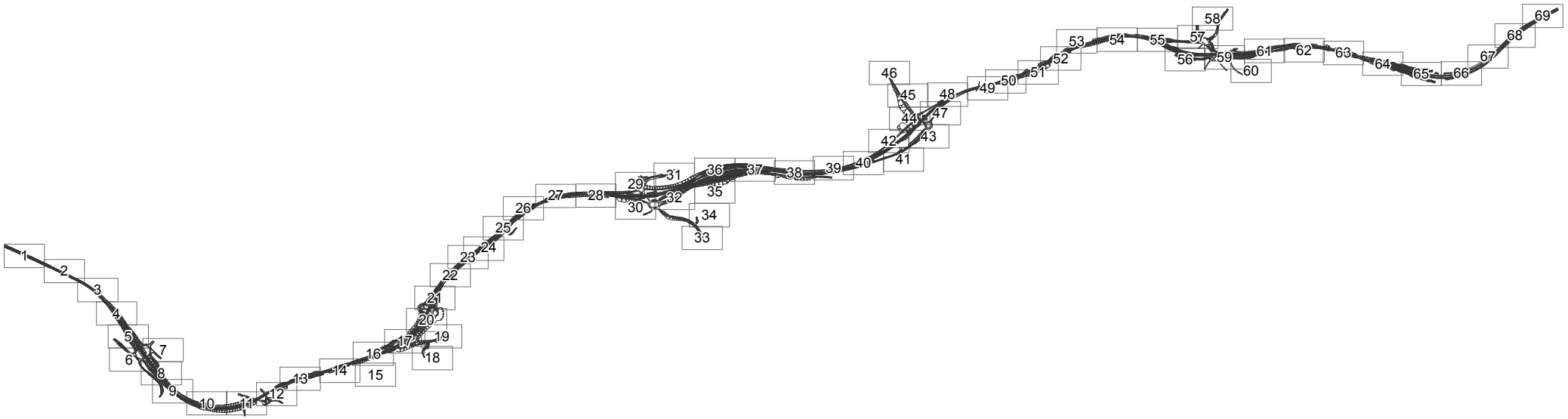
8. References

"The Body Language of Trees" by Claus Mattheck & Helge Breloer

"Principles of Tree Hazard Assessment & Management" by David Lonsdale

British Standard 5837: 2012 "Trees in Relation to Construction"

British Standard BS3998: 2010 Tree Work - Recommendations



0 1,000 2,000 Meters

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

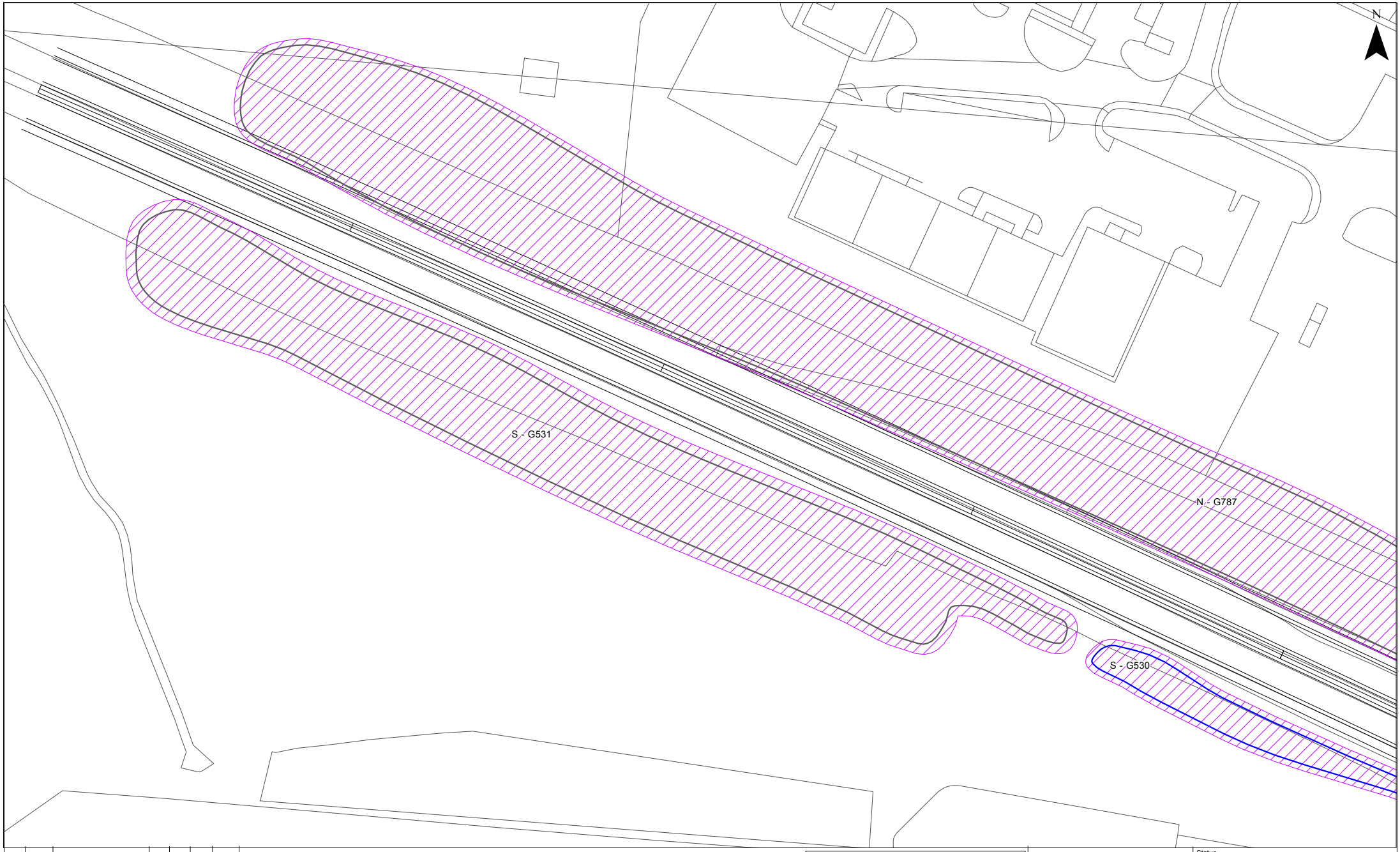
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET LAYOUT
Scale	1:40,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/SL01
Revision	R0



0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

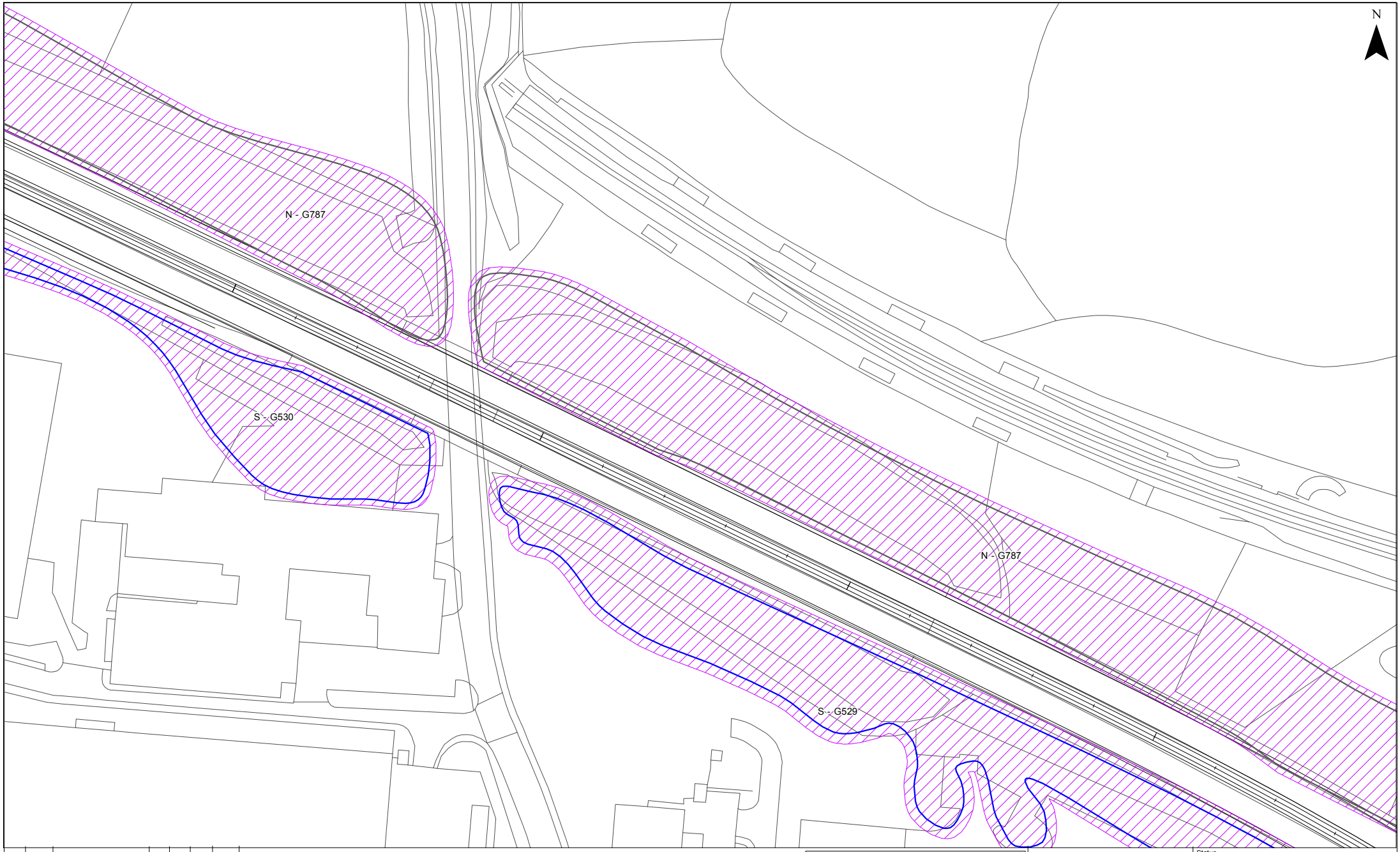
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 1 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

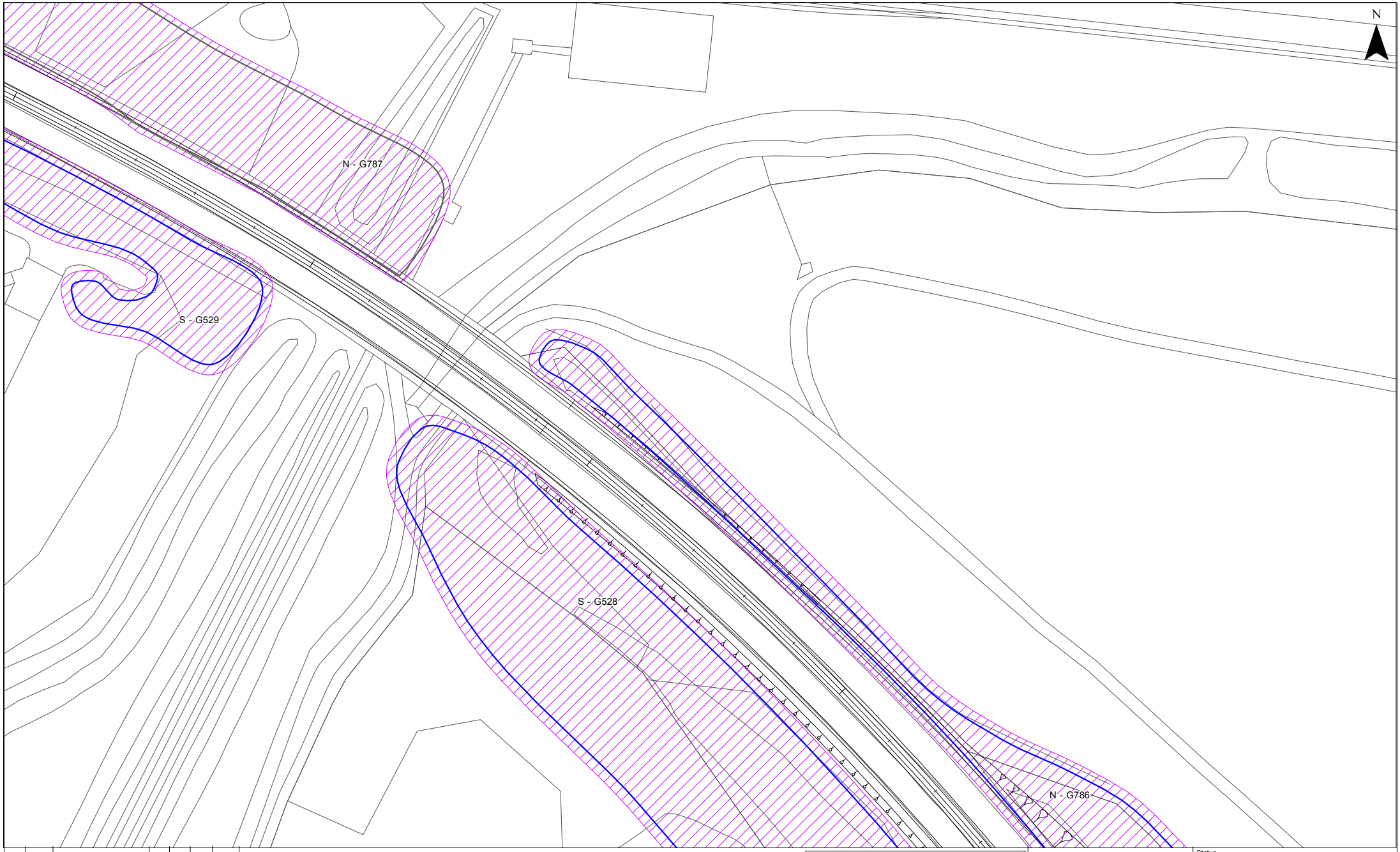
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 2 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

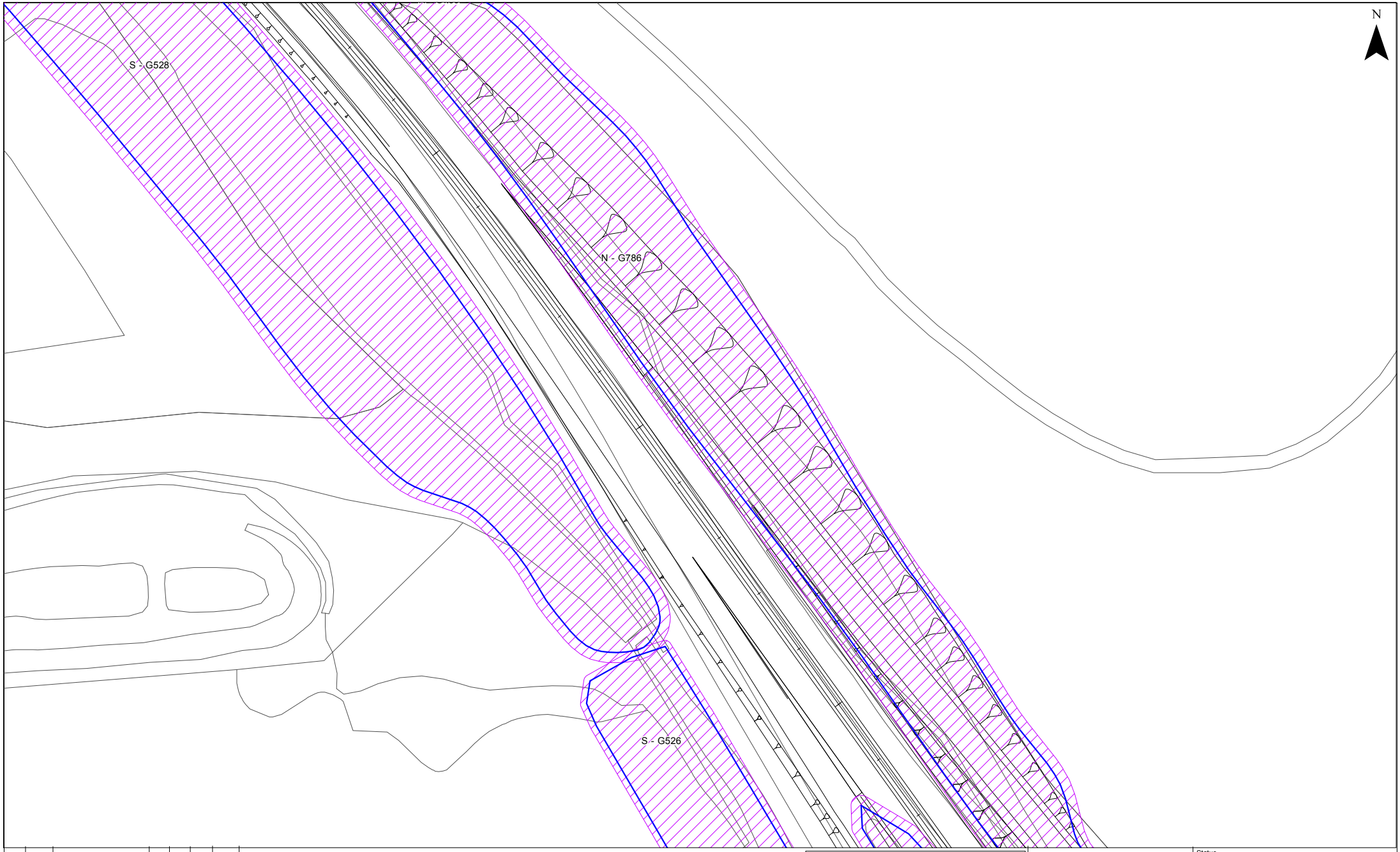
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 3 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status: FINAL

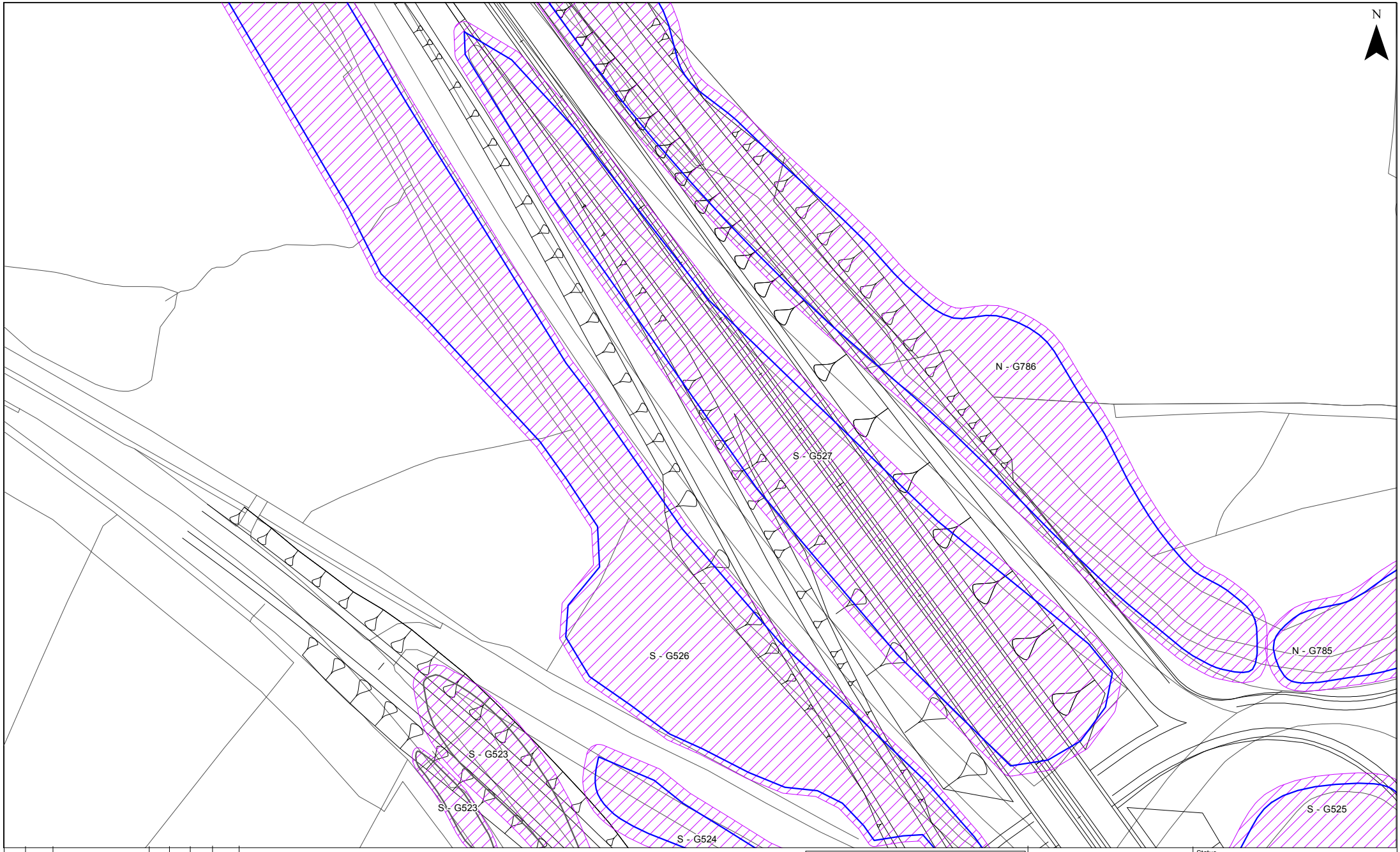
Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 4 OF 69

Scale: 1:1,000 @A3 DO NOT SCALE

Drawing No.: B2191100/Sc5-6/TC01

Revision: R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status: FINAL

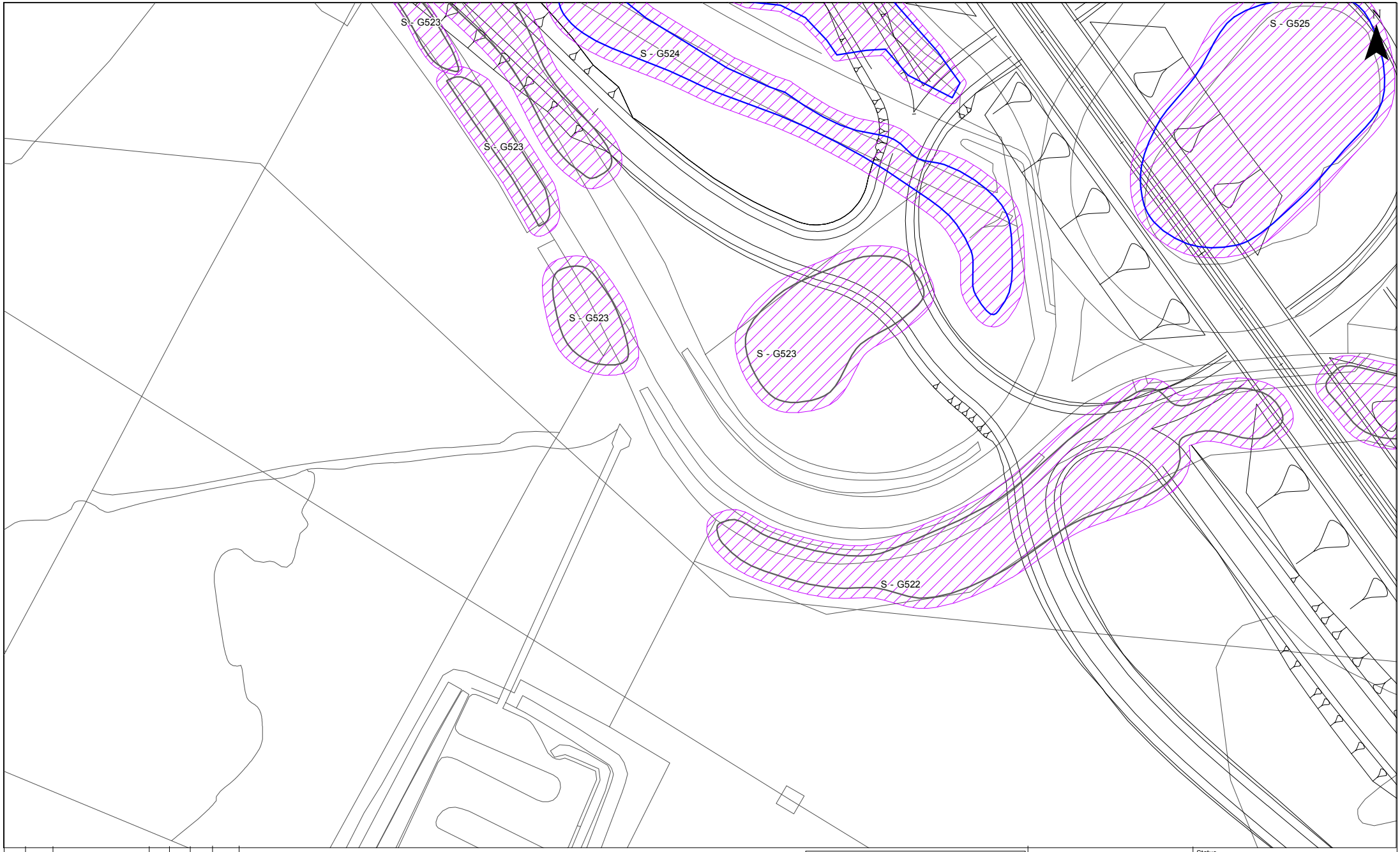
Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 5 OF 69

Scale: 1:1,000 @A3 DO NOT SCALE

Drawing No.: B2191100/Sc5-6/TC01

Revision: R0



0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 6 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

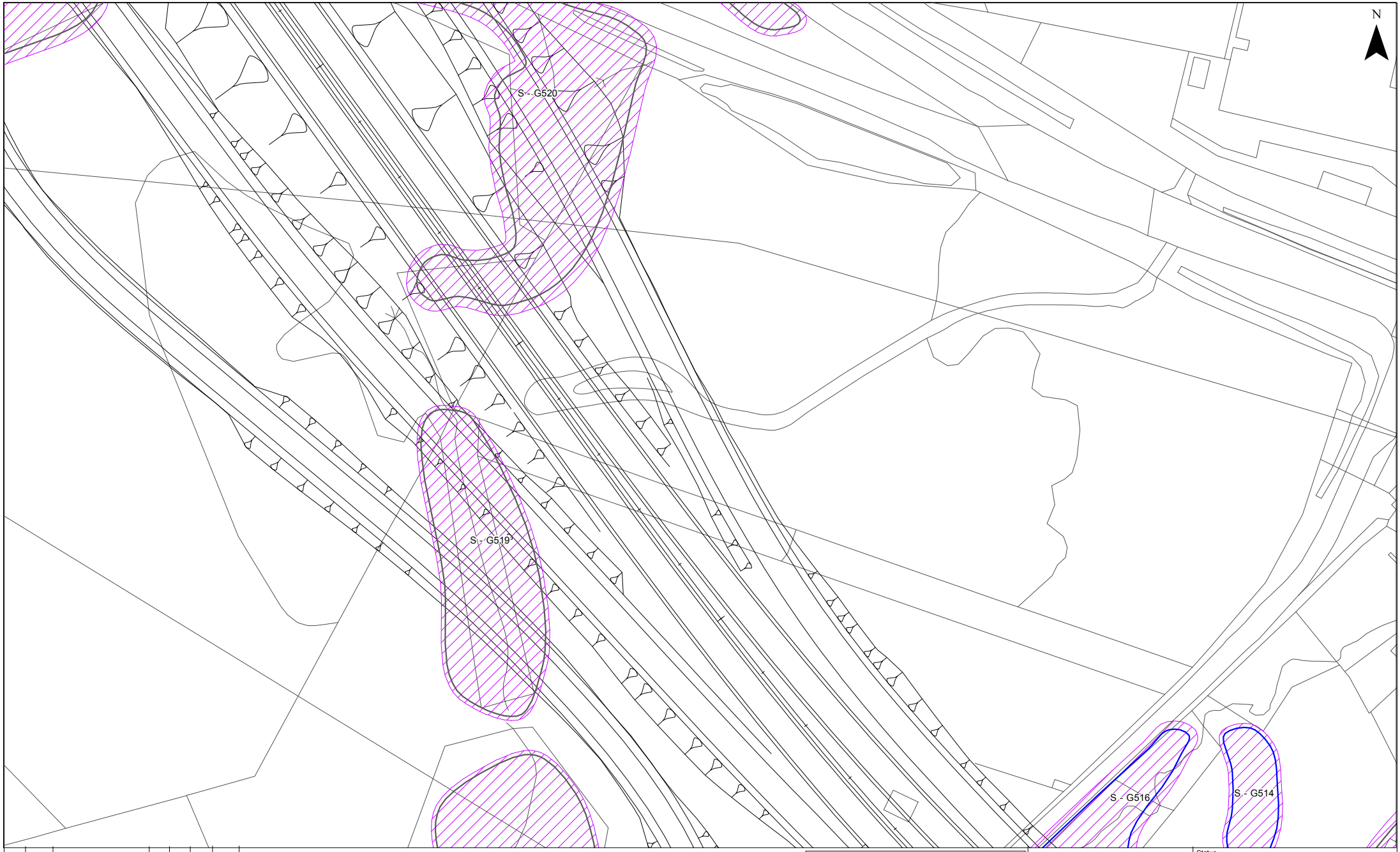
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 7 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

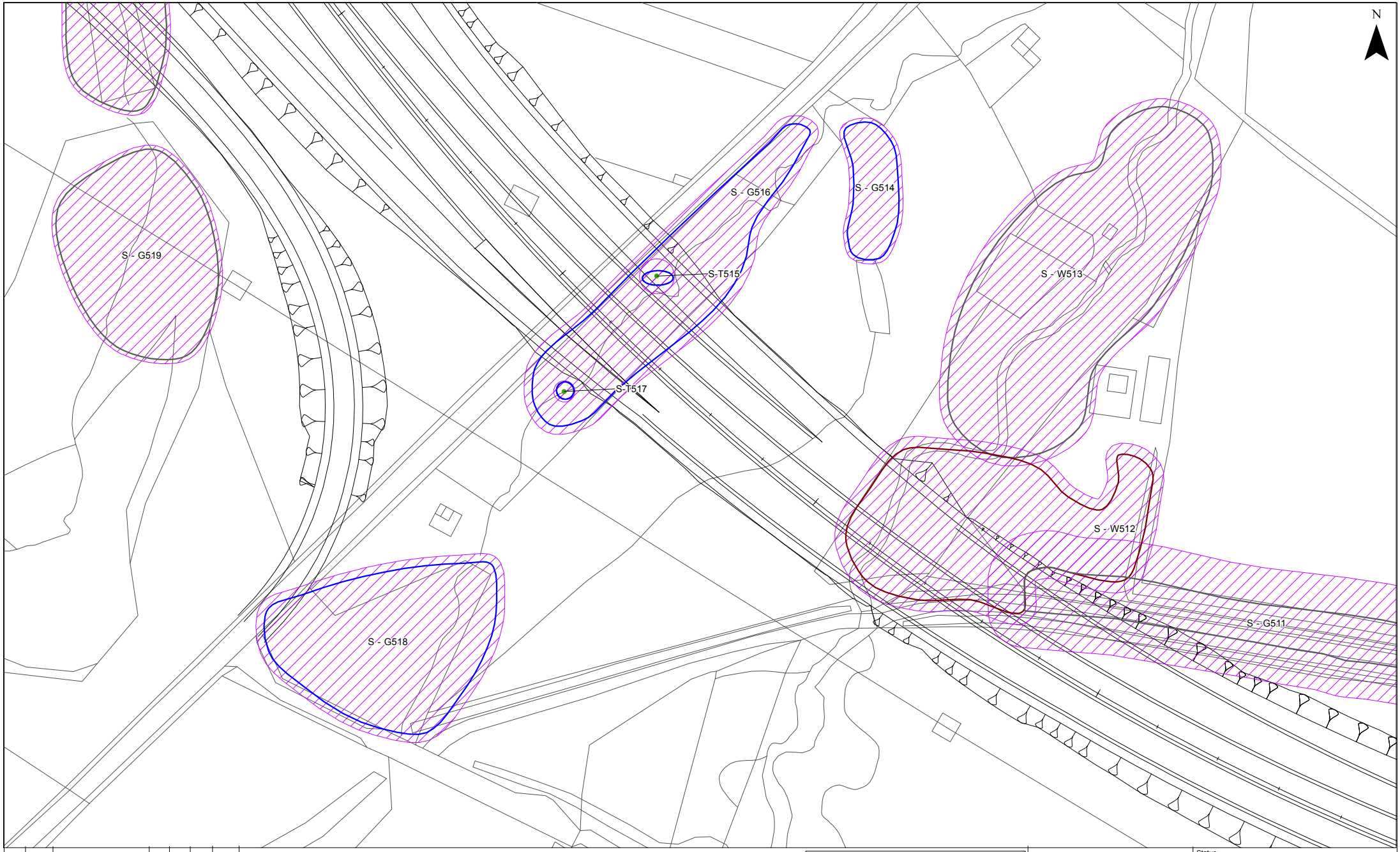
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 8 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

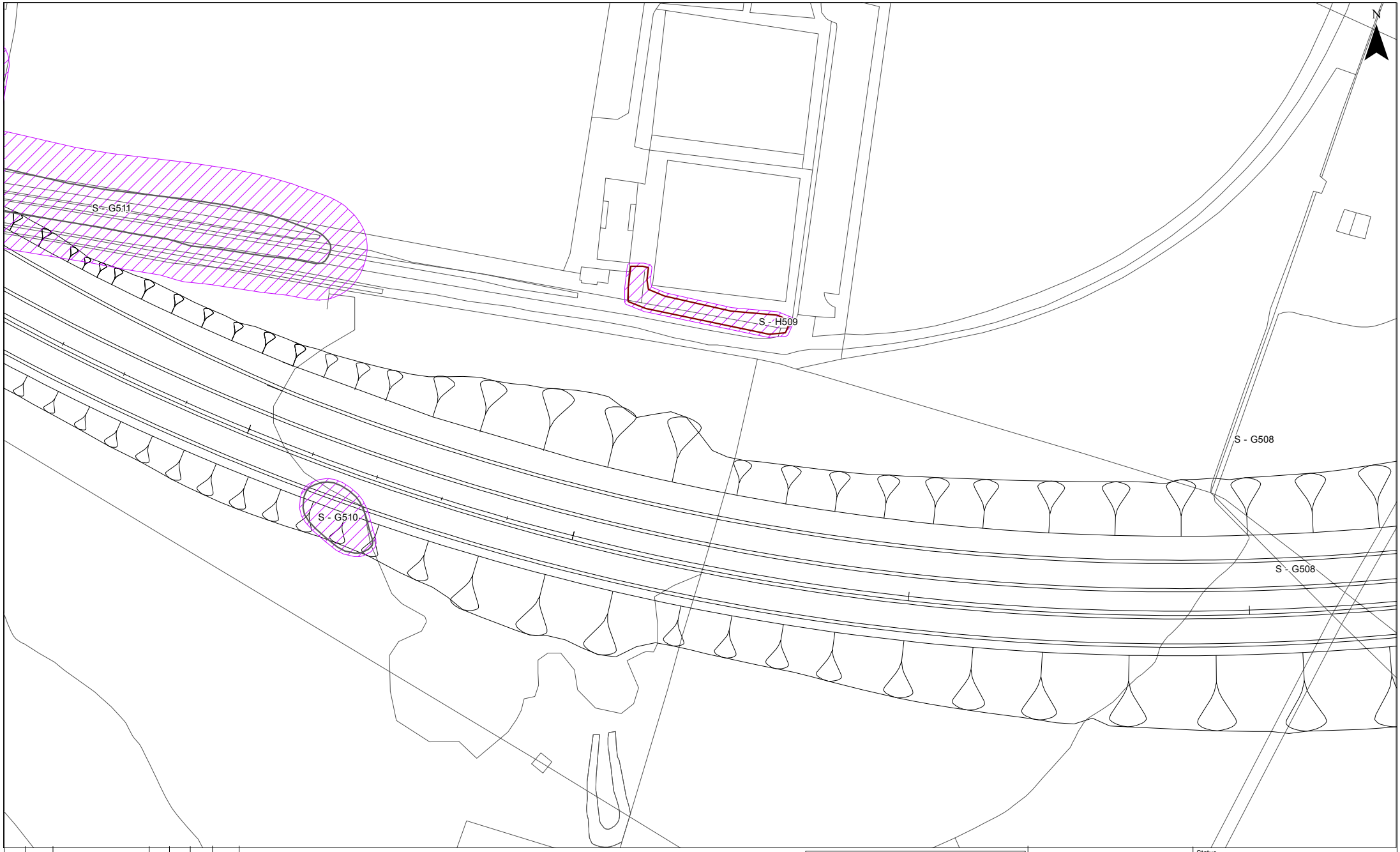
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 9 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

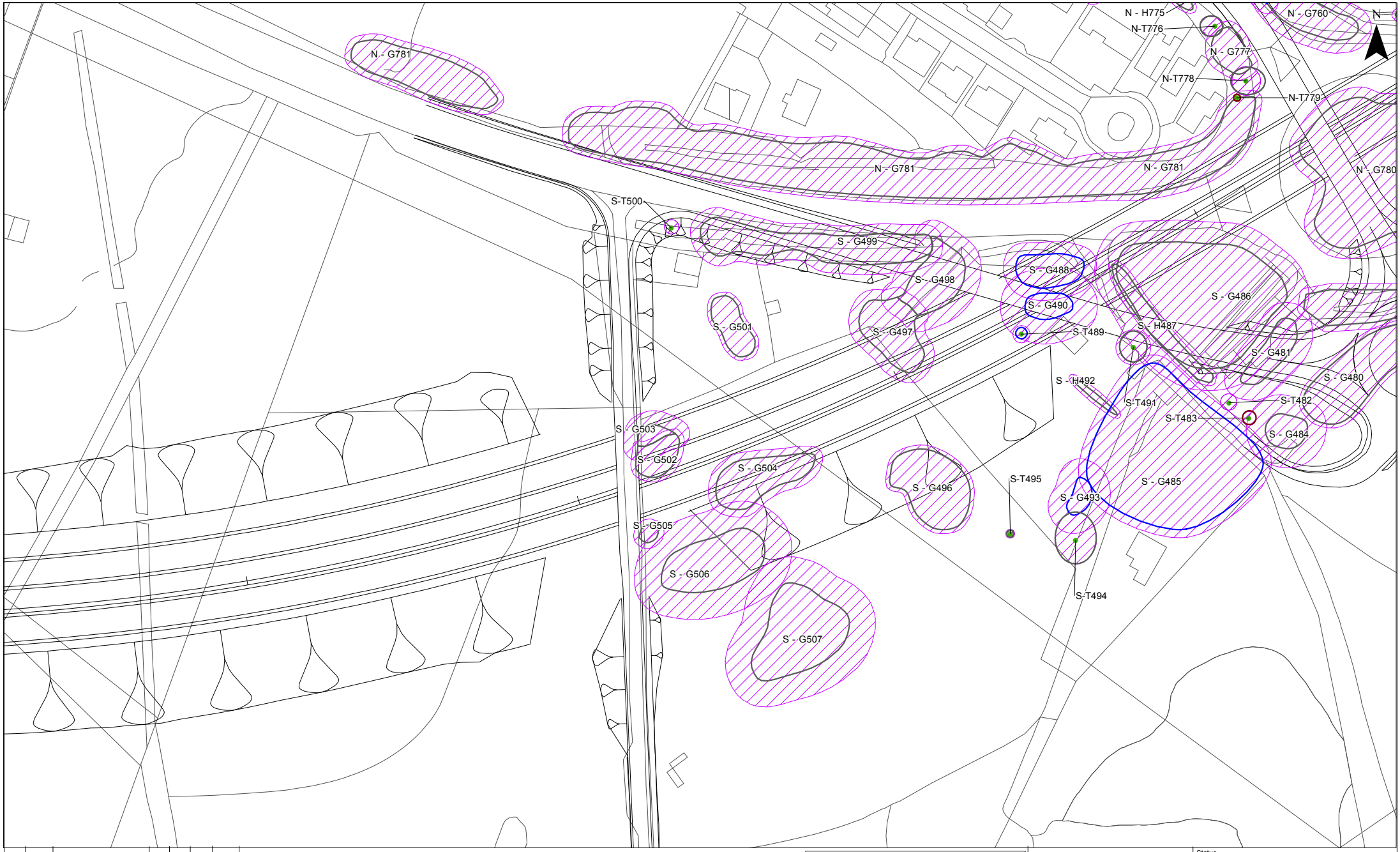
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 10 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

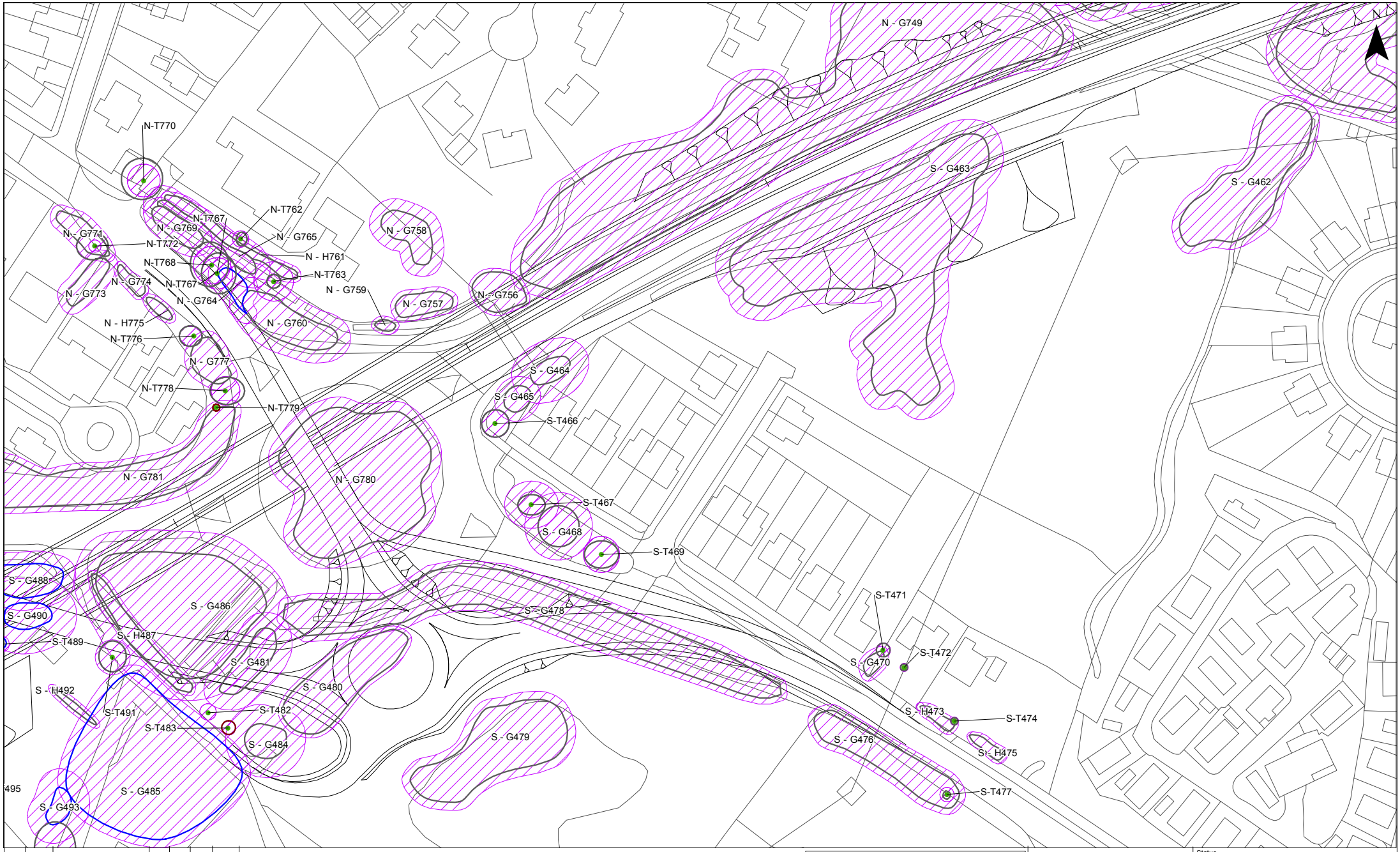
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 11 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

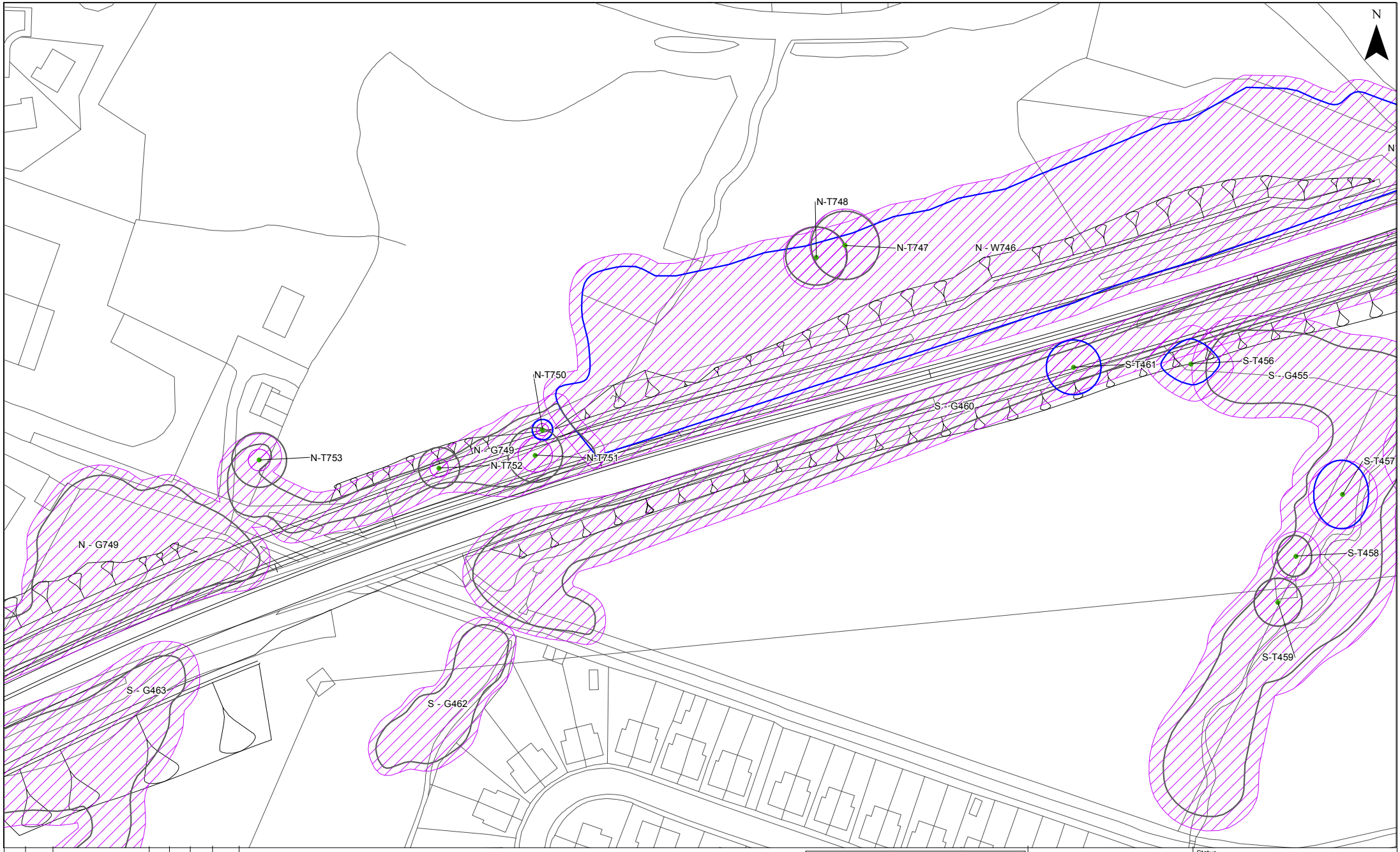
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 12 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0	JUN16	FINAL	EW	SF	PS	MW
Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

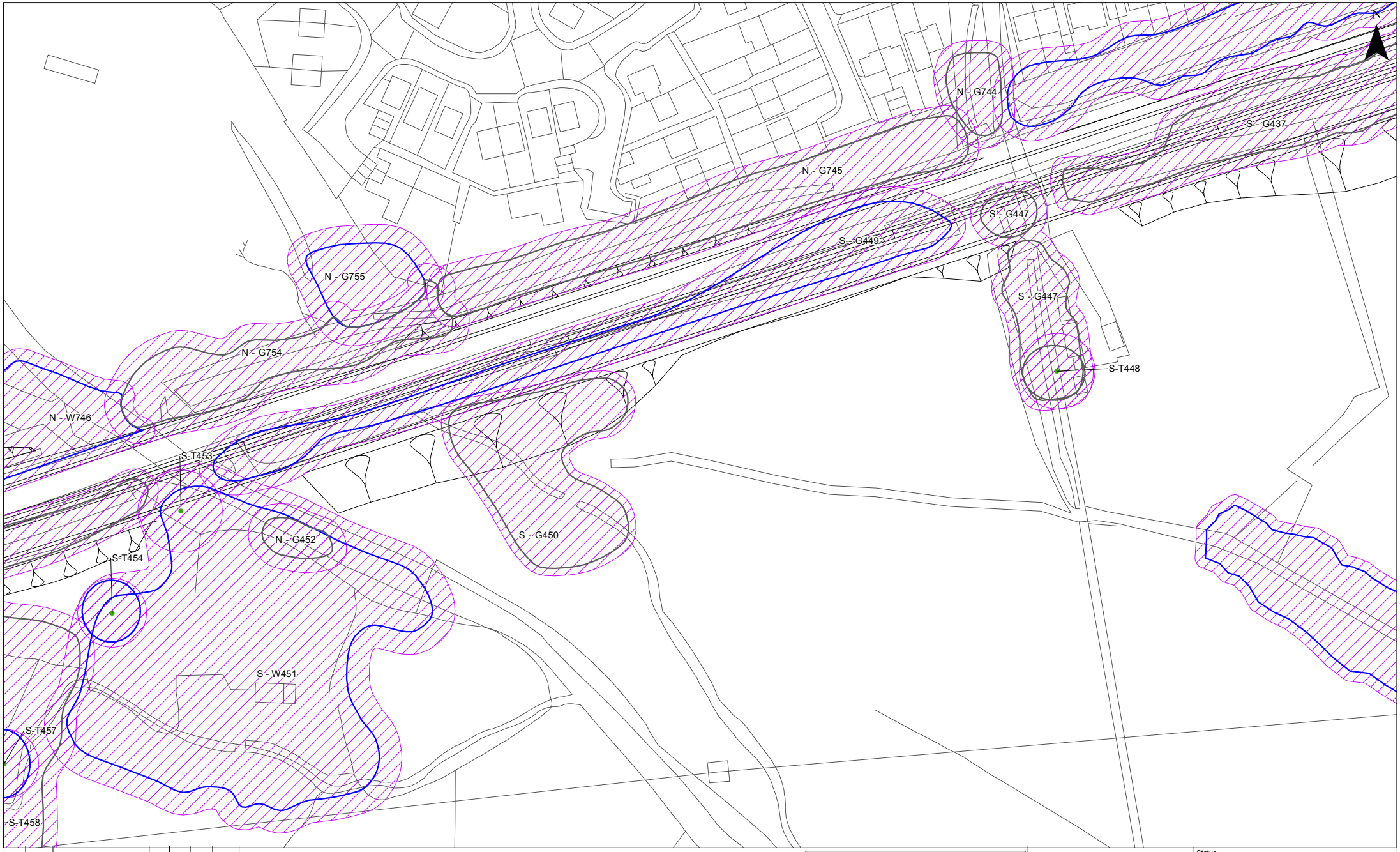
N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS
2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 13 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

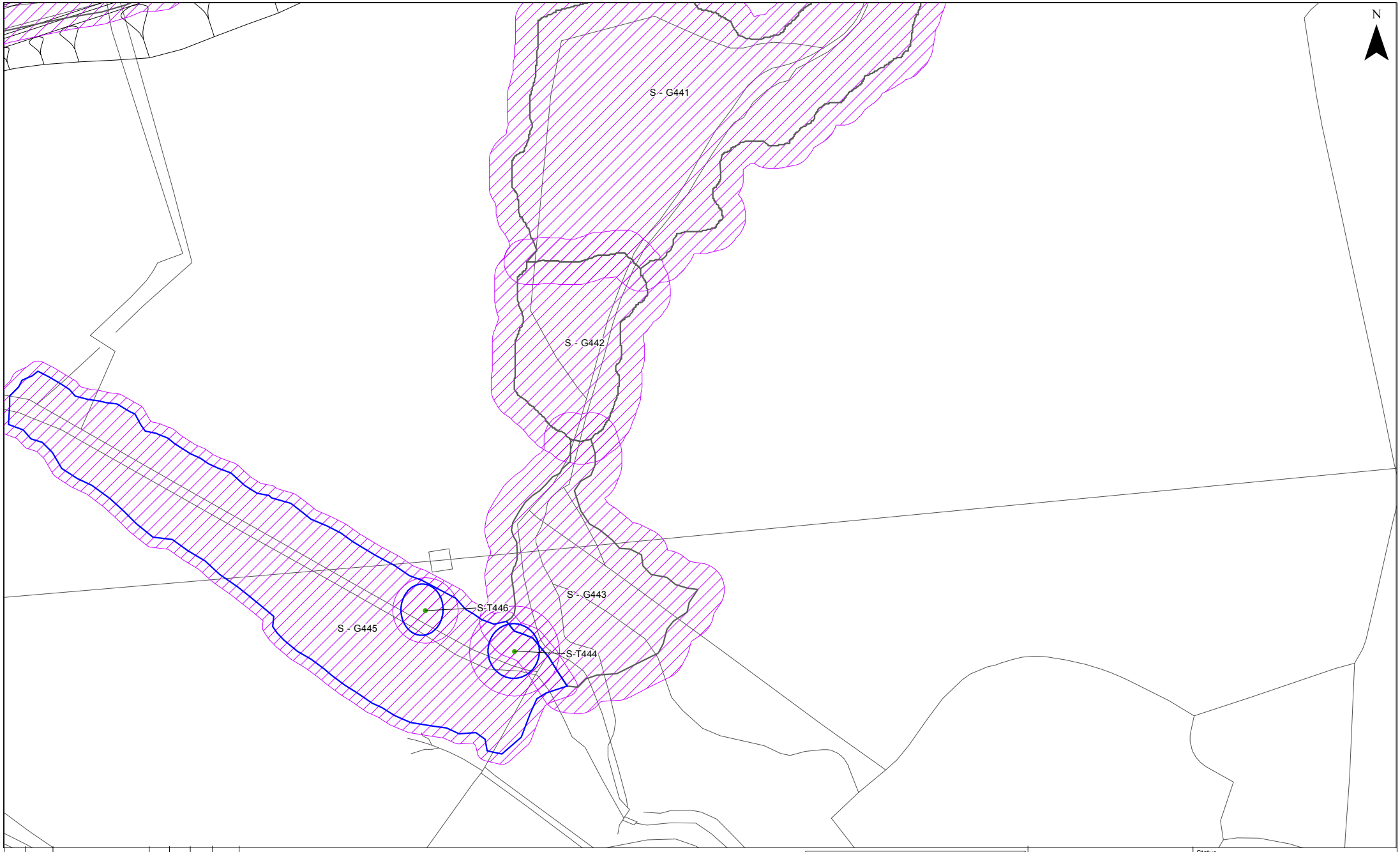
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 14 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

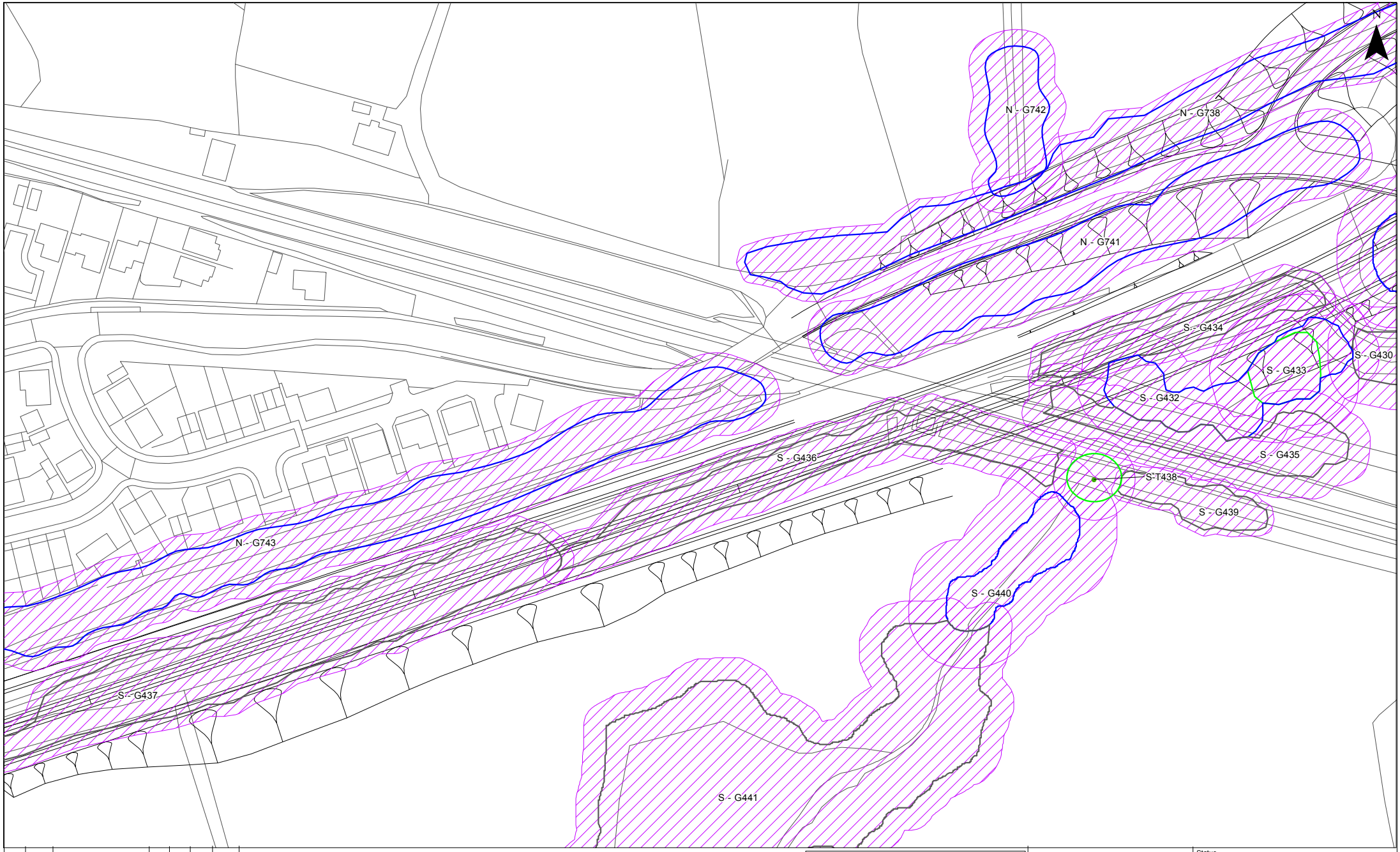
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 15 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

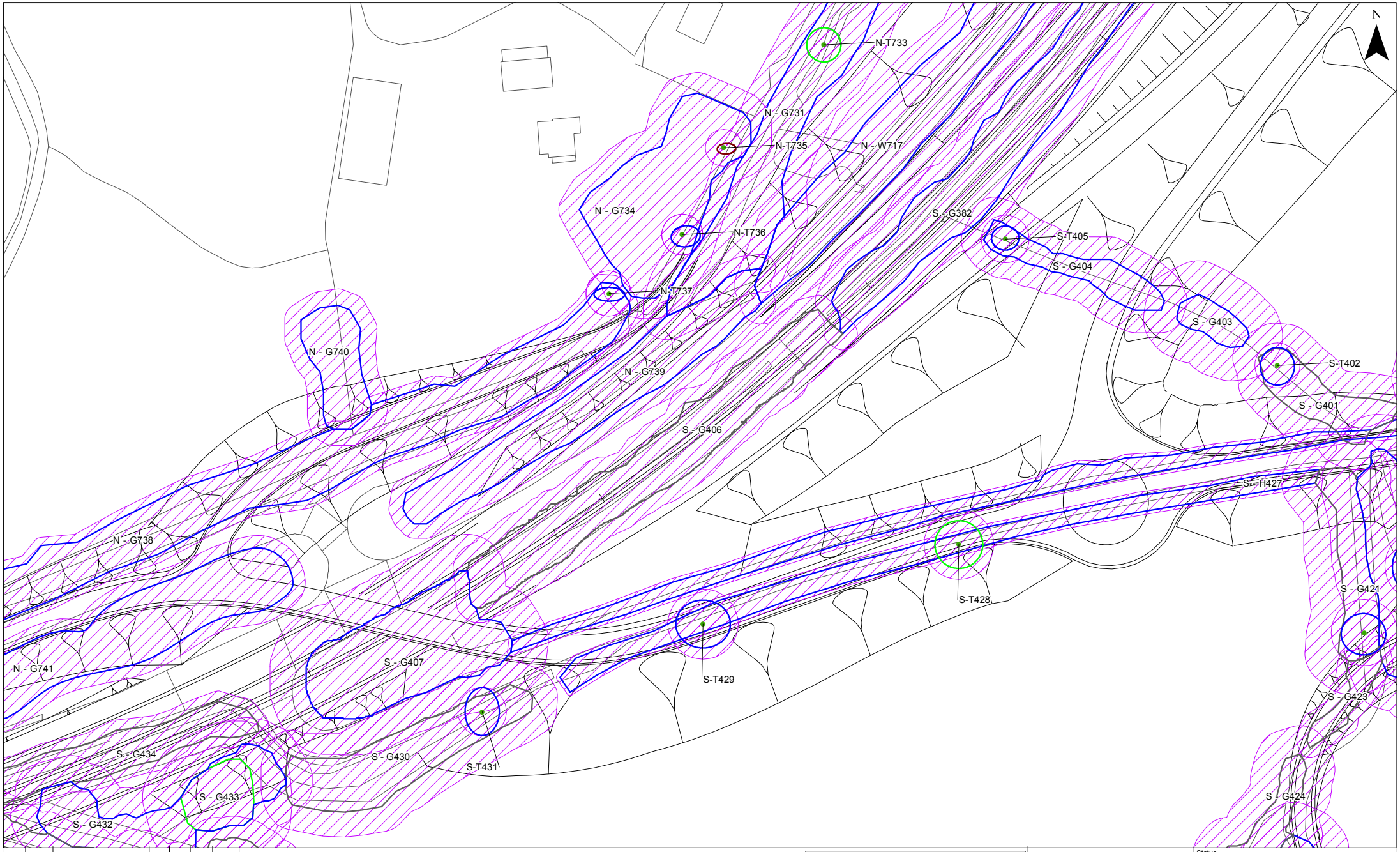
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 16 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 17 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

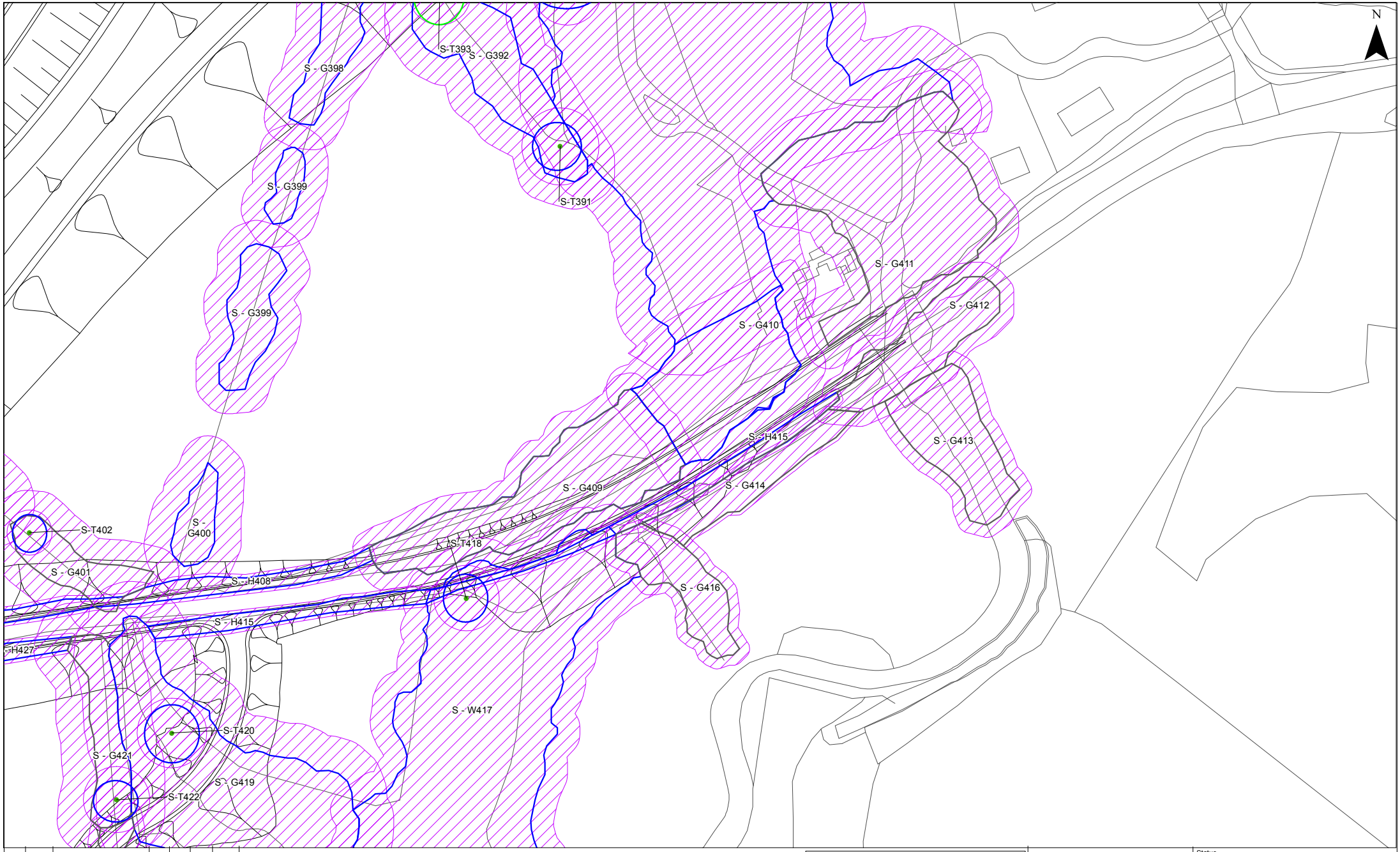
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 18 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

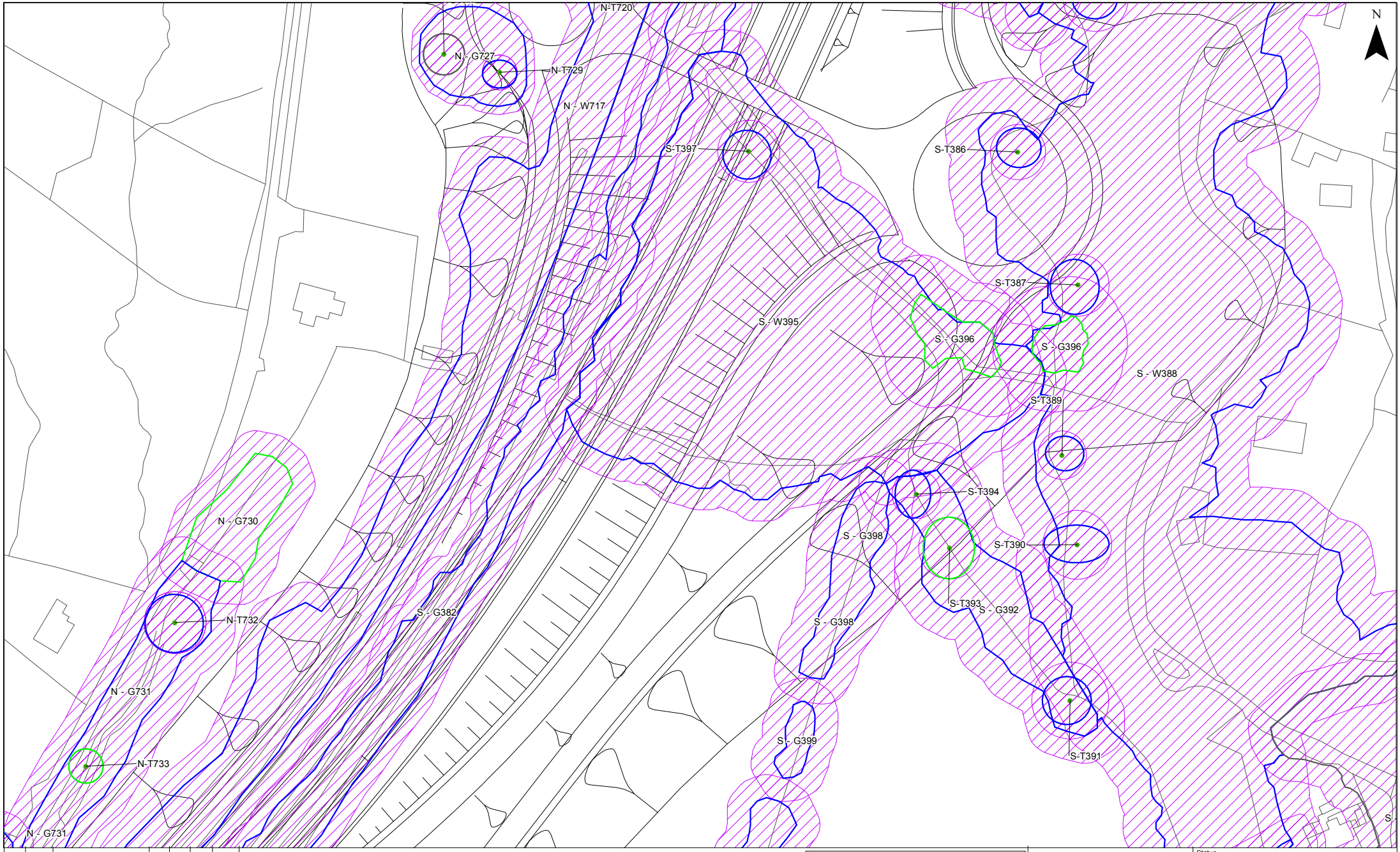
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 19 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0	JUN16	FINAL	EW	SF	PS	MW
Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status: FINAL

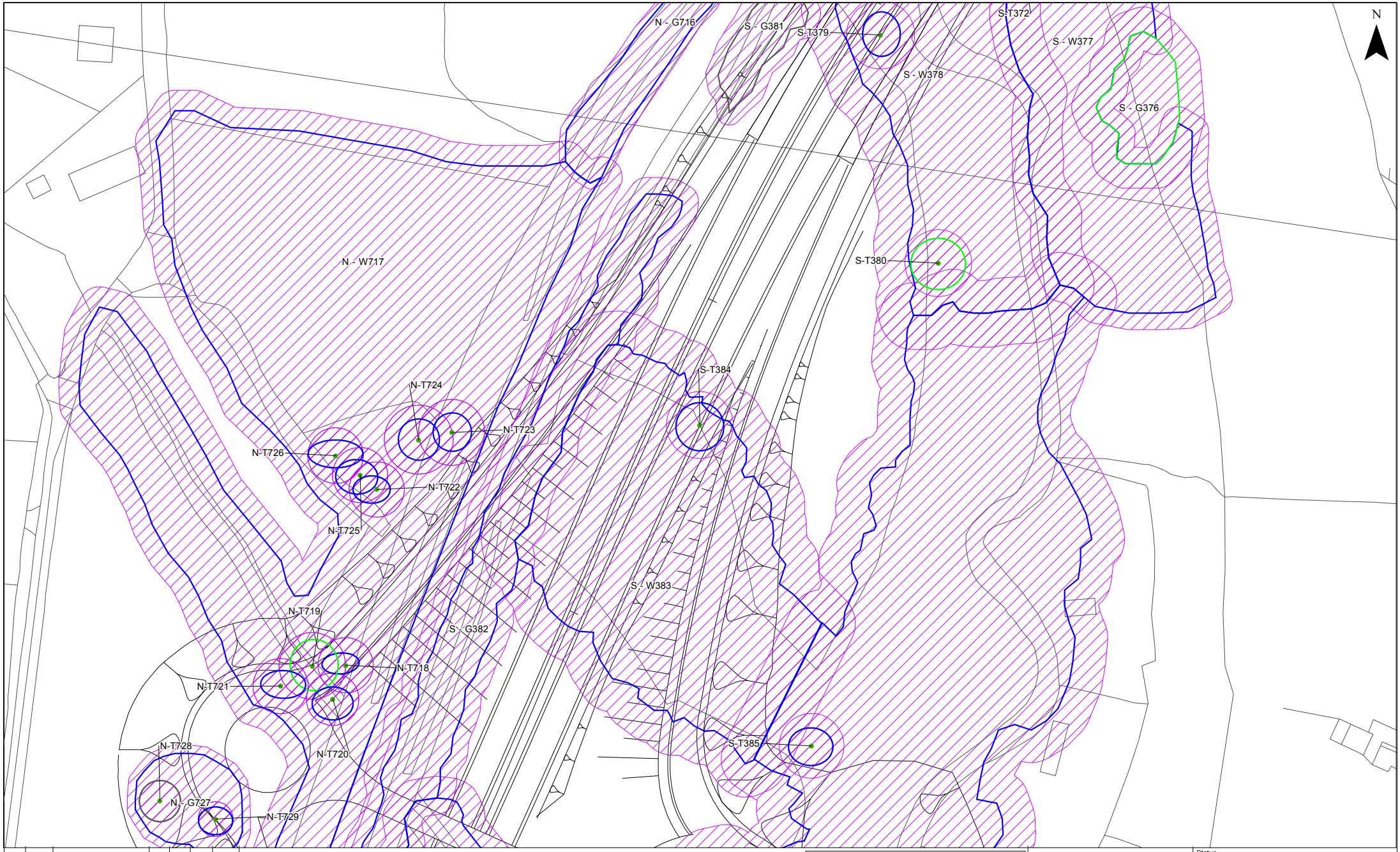
Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 20 OF 69

Scale: 1:1,000 @A3 DO NOT SCALE

Drawing No.: B2191100/Sc5-6/TC01

Revision: R0



0 25 50 Metres

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

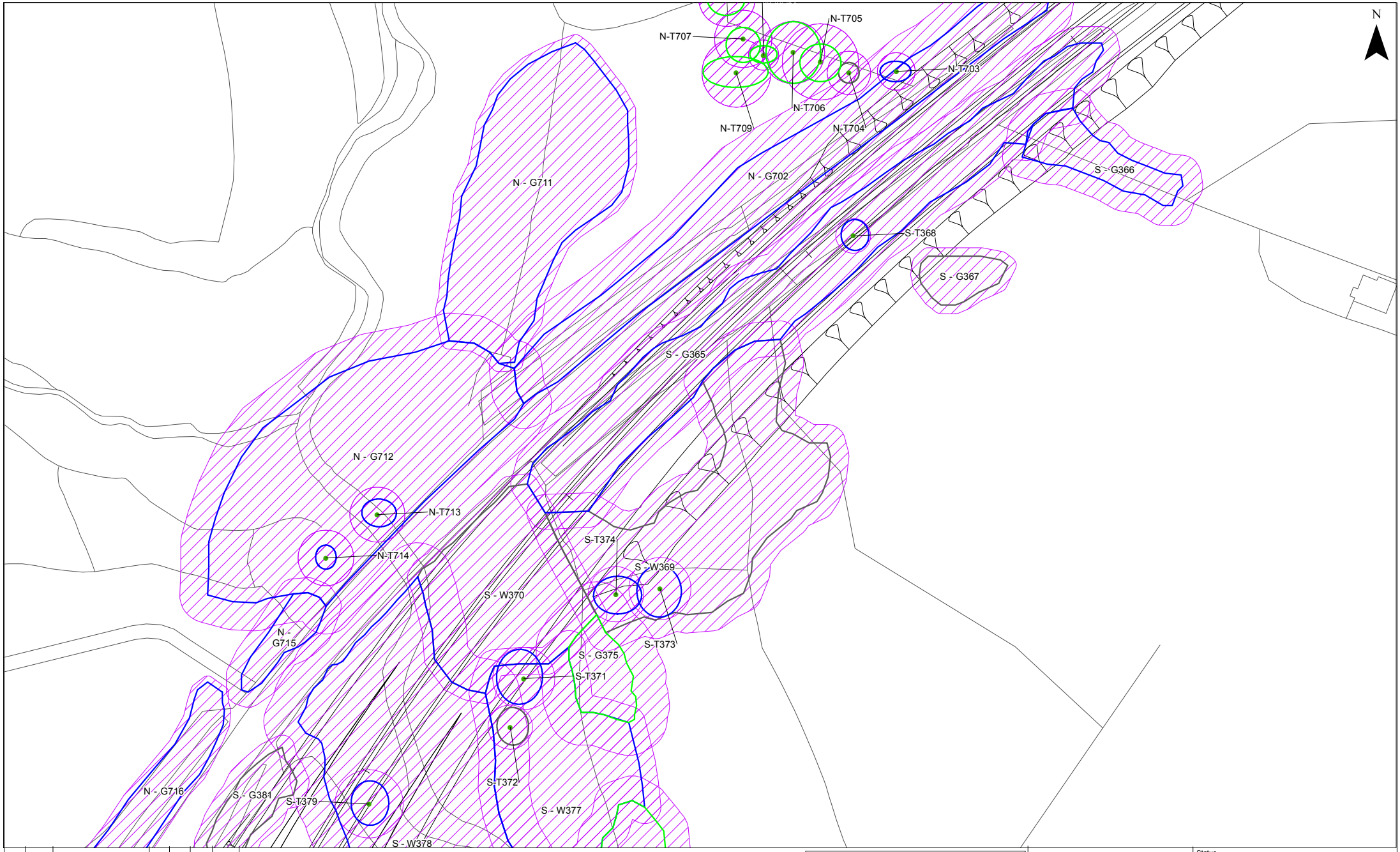
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 21 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 22 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

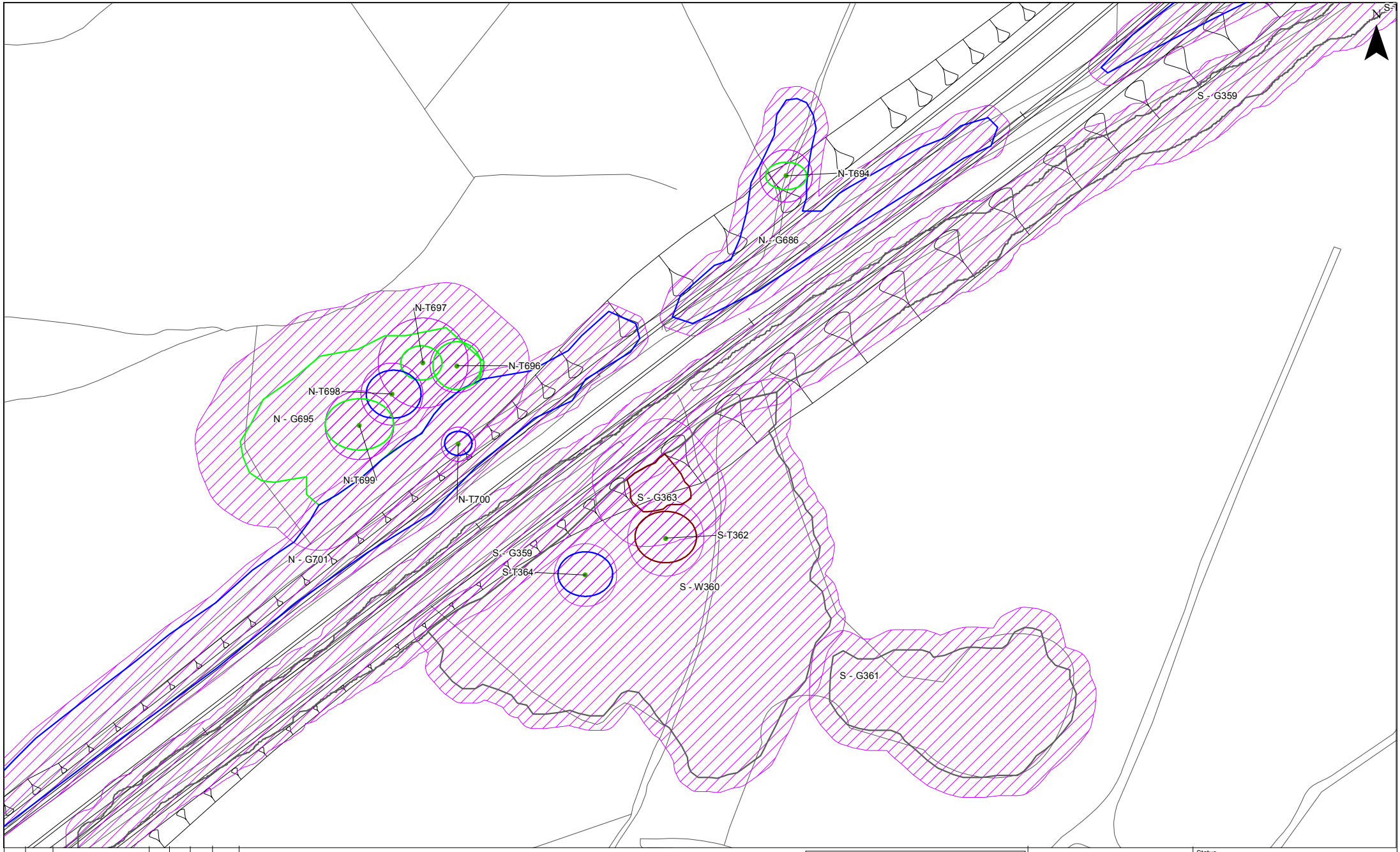
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 23 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

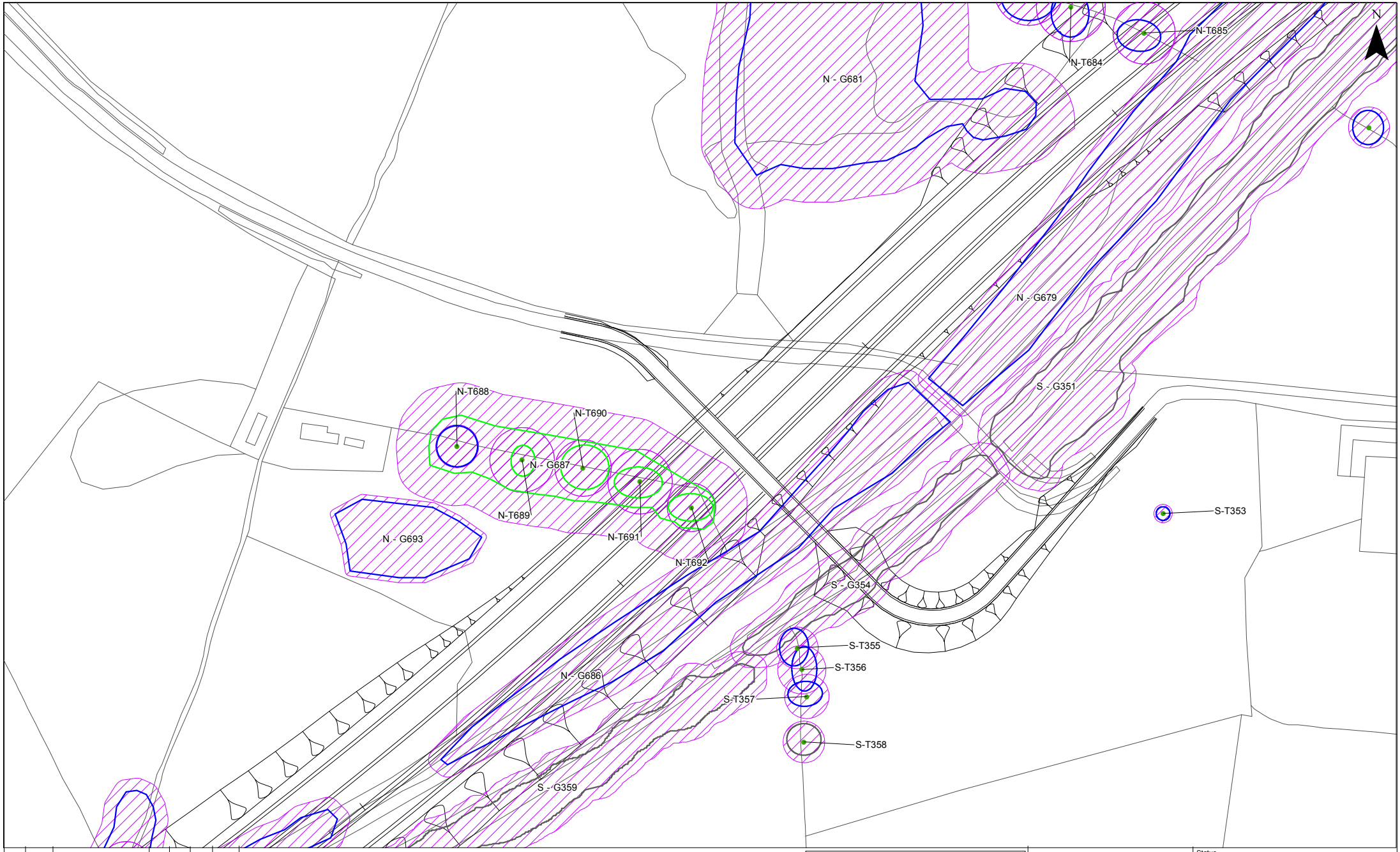
Status: FINAL

Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 24 OF 69

Scale: 1:1,000 @A3 | DO NOT SCALE

Drawing No.: B2191100/Sc5-6/TC01 | Revision: R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

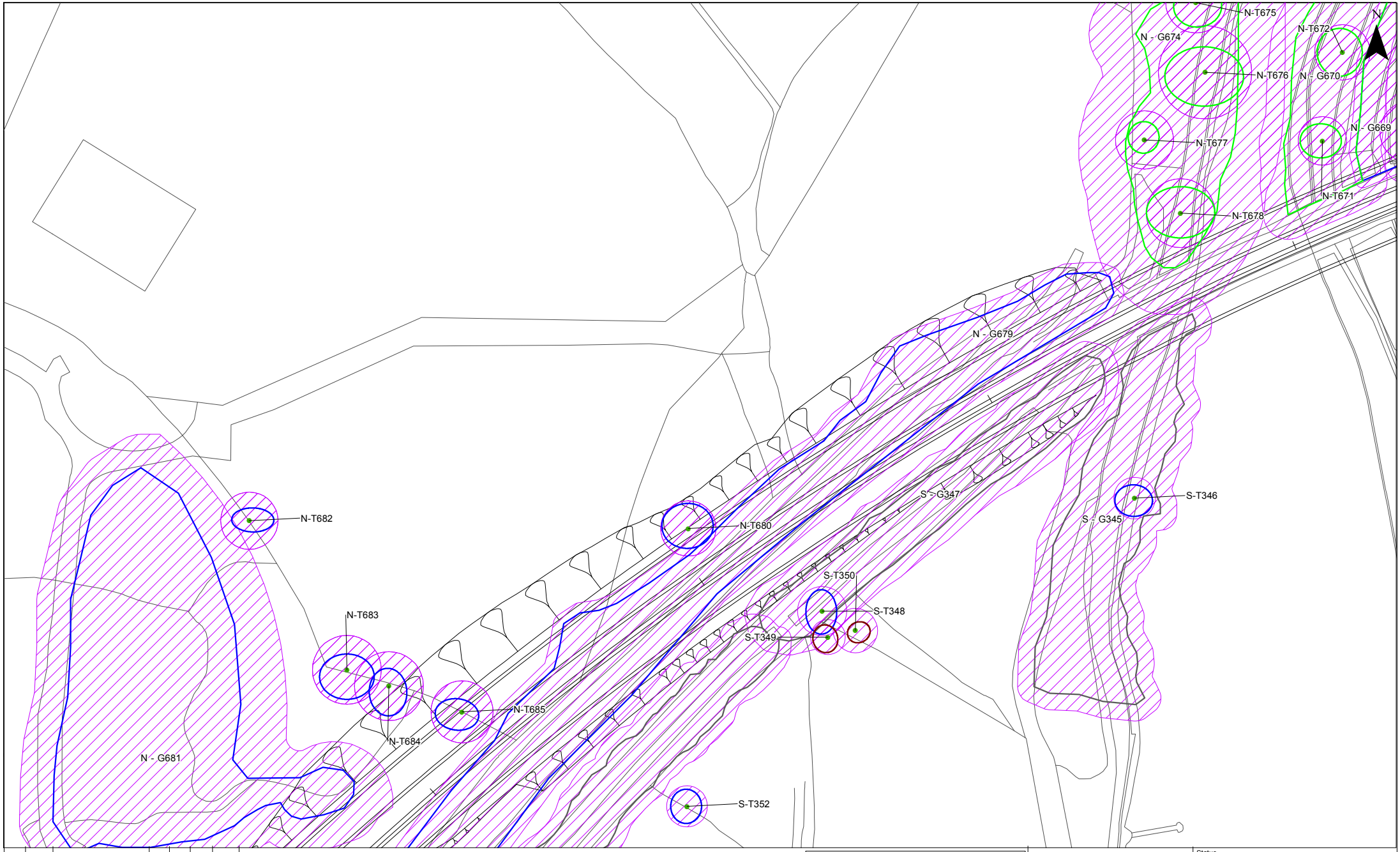
N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS
2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 25 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

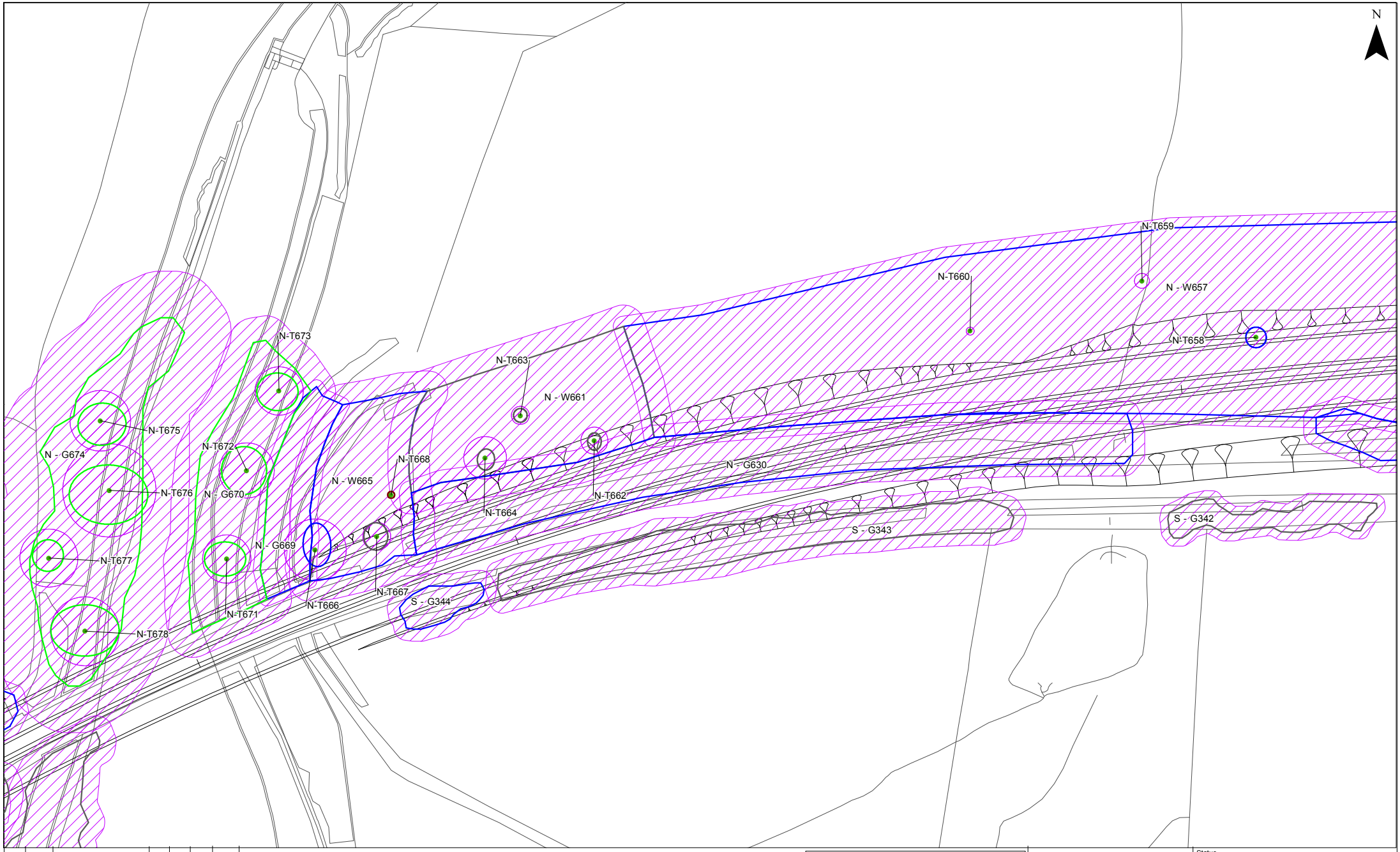
2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status: FINAL

Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 26 OF 69

Scale	1:1,000 @A3	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01	Revision R0



0	JUN16	FINAL	EW	SF	PS	MW
Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

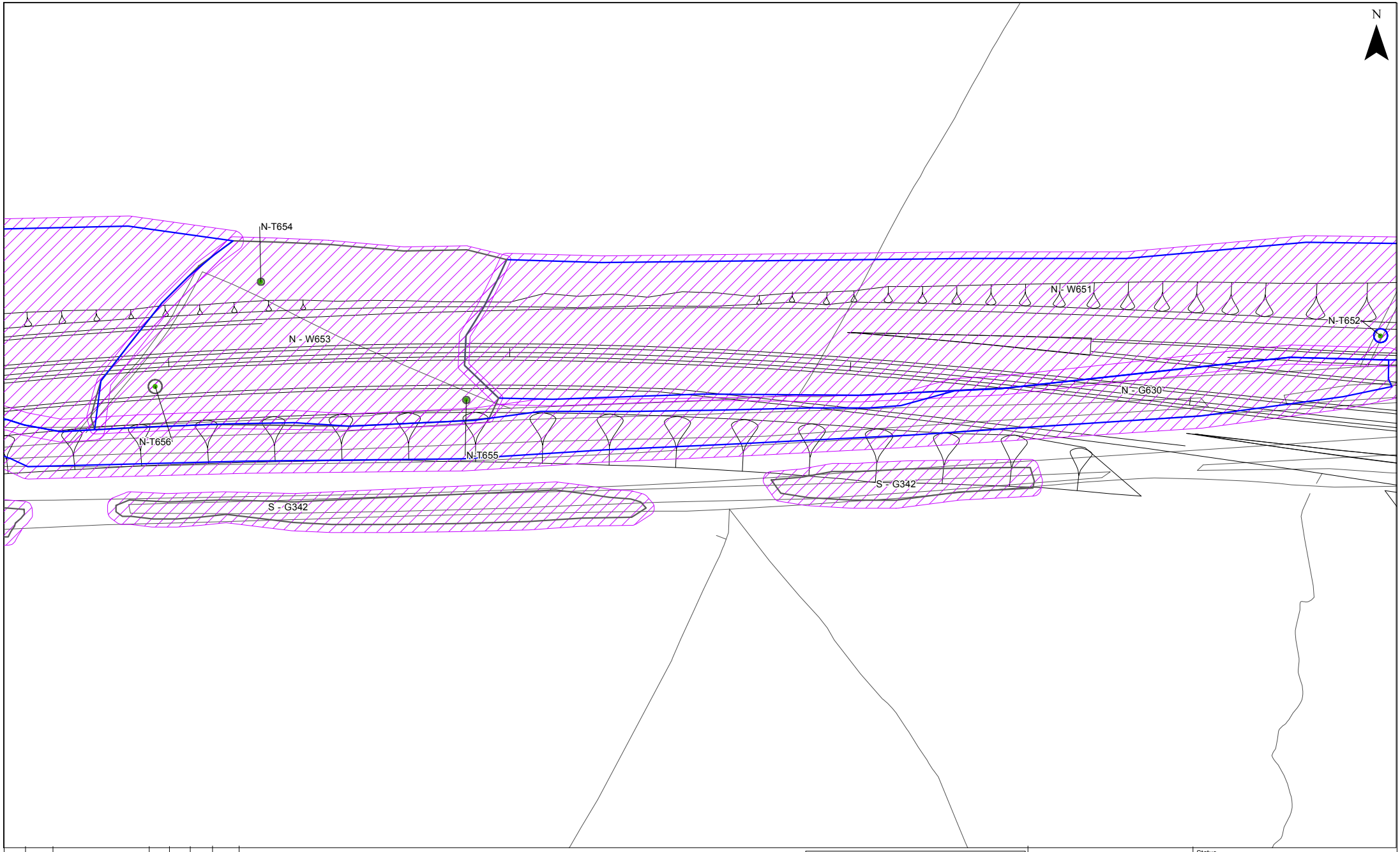
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 27 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

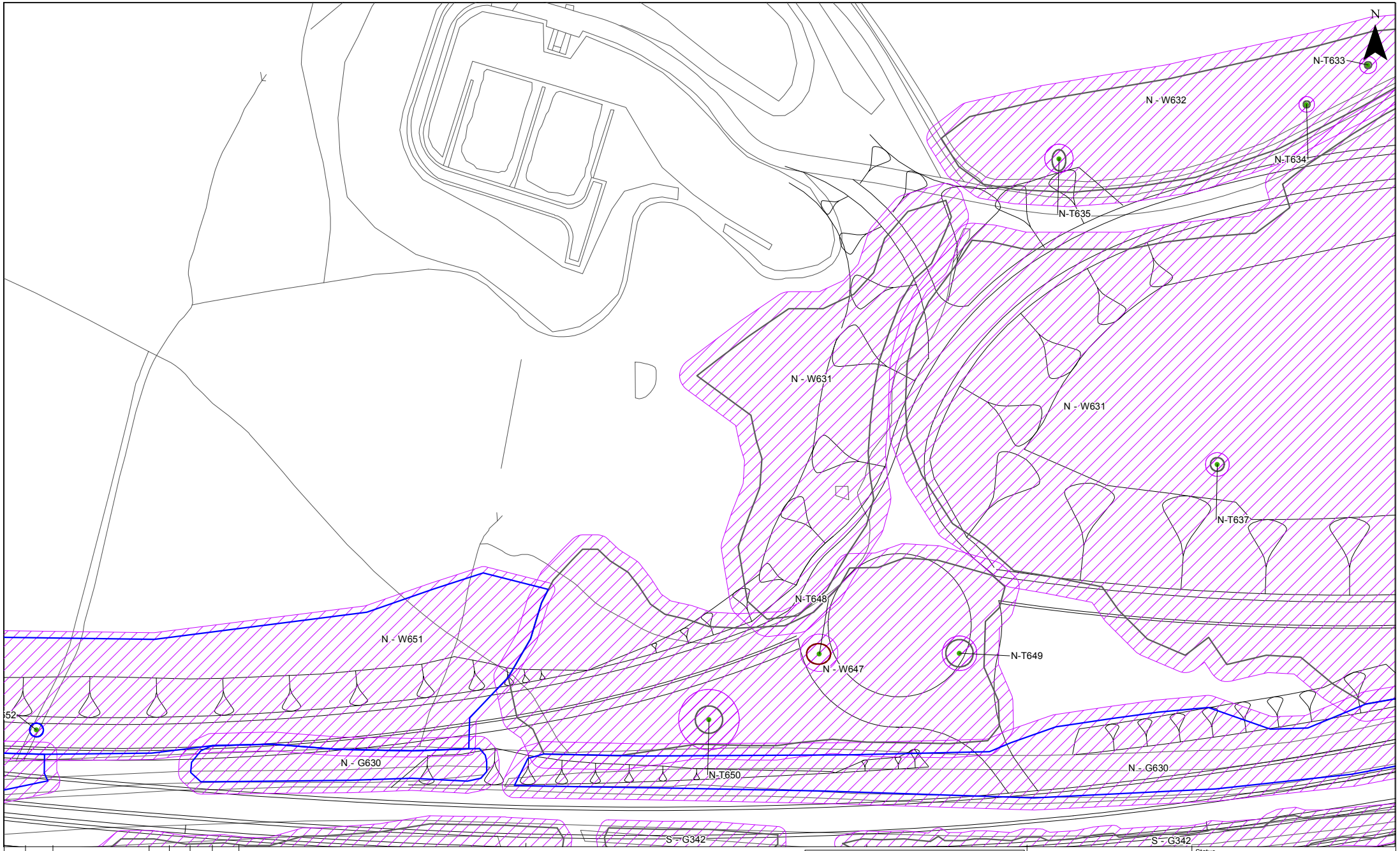
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 28 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

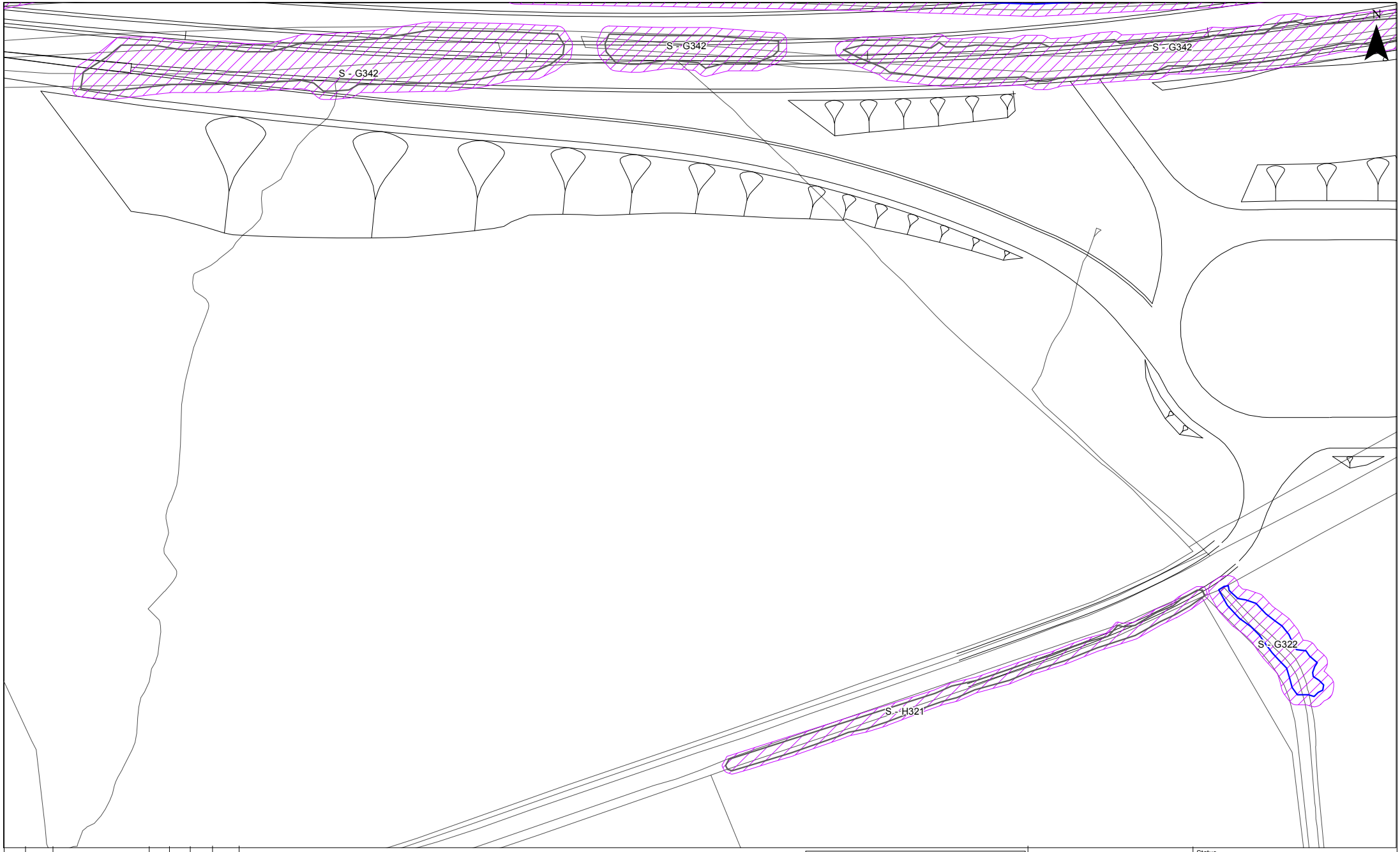
2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status: FINAL

Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 29 OF 69

Scale	1:1,000 @A3	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01	Revision R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

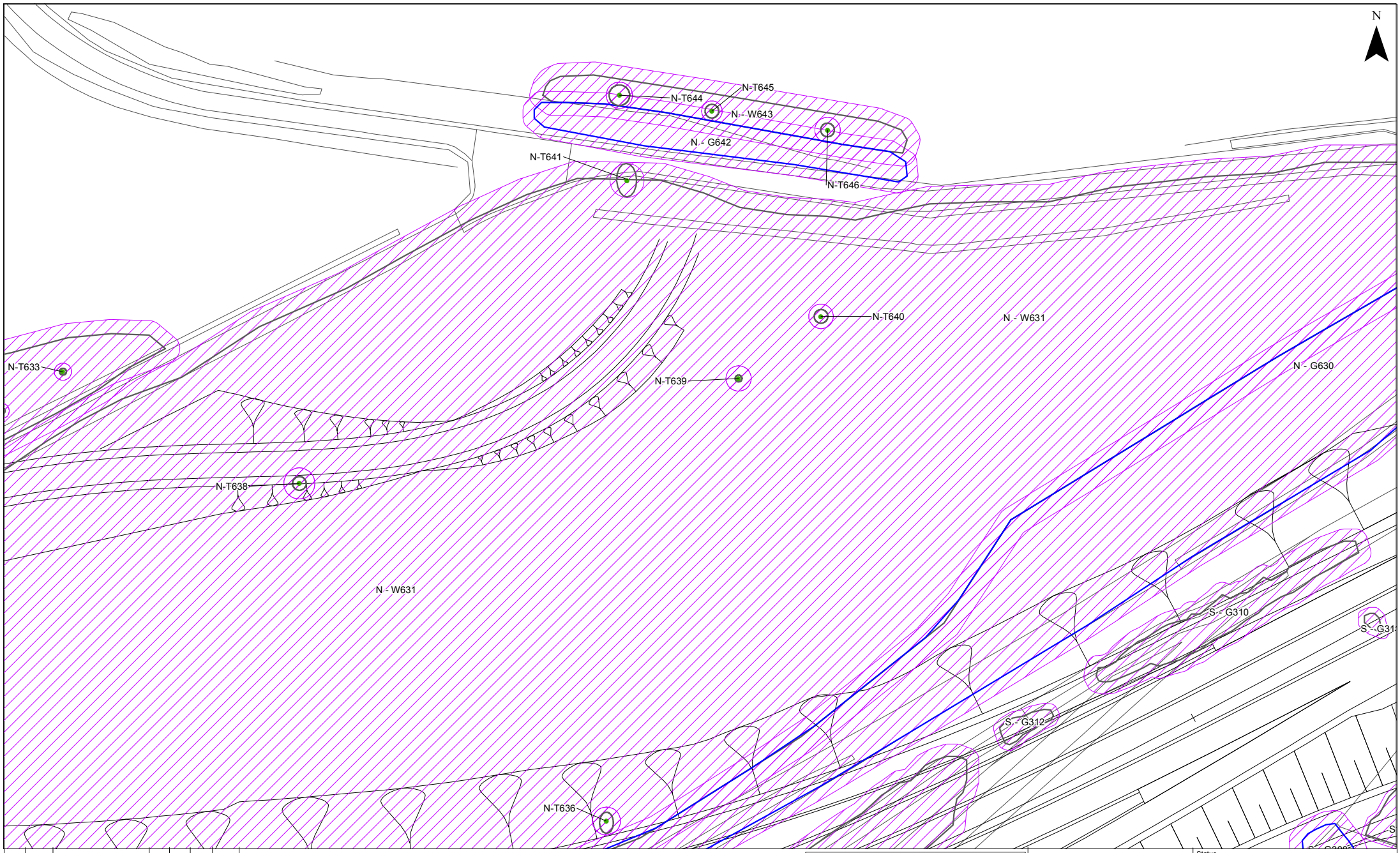
Status: FINAL

Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 30 OF 69

Scale: 1:1,000 @A3 | DO NOT SCALE

Drawing No.: B2191100/Sc5-6/TC01 | Revision: R0



0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

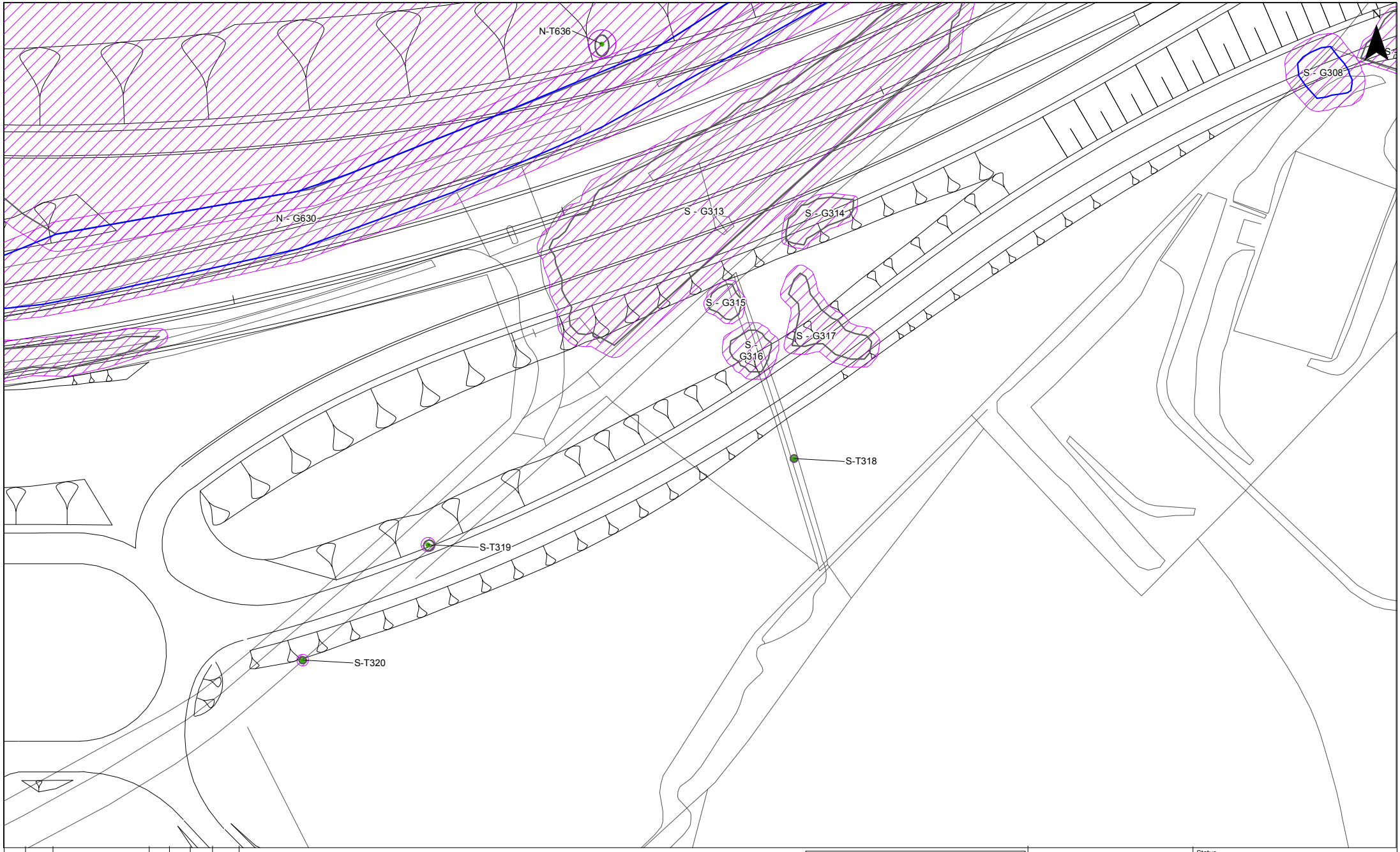
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 31 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 32 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

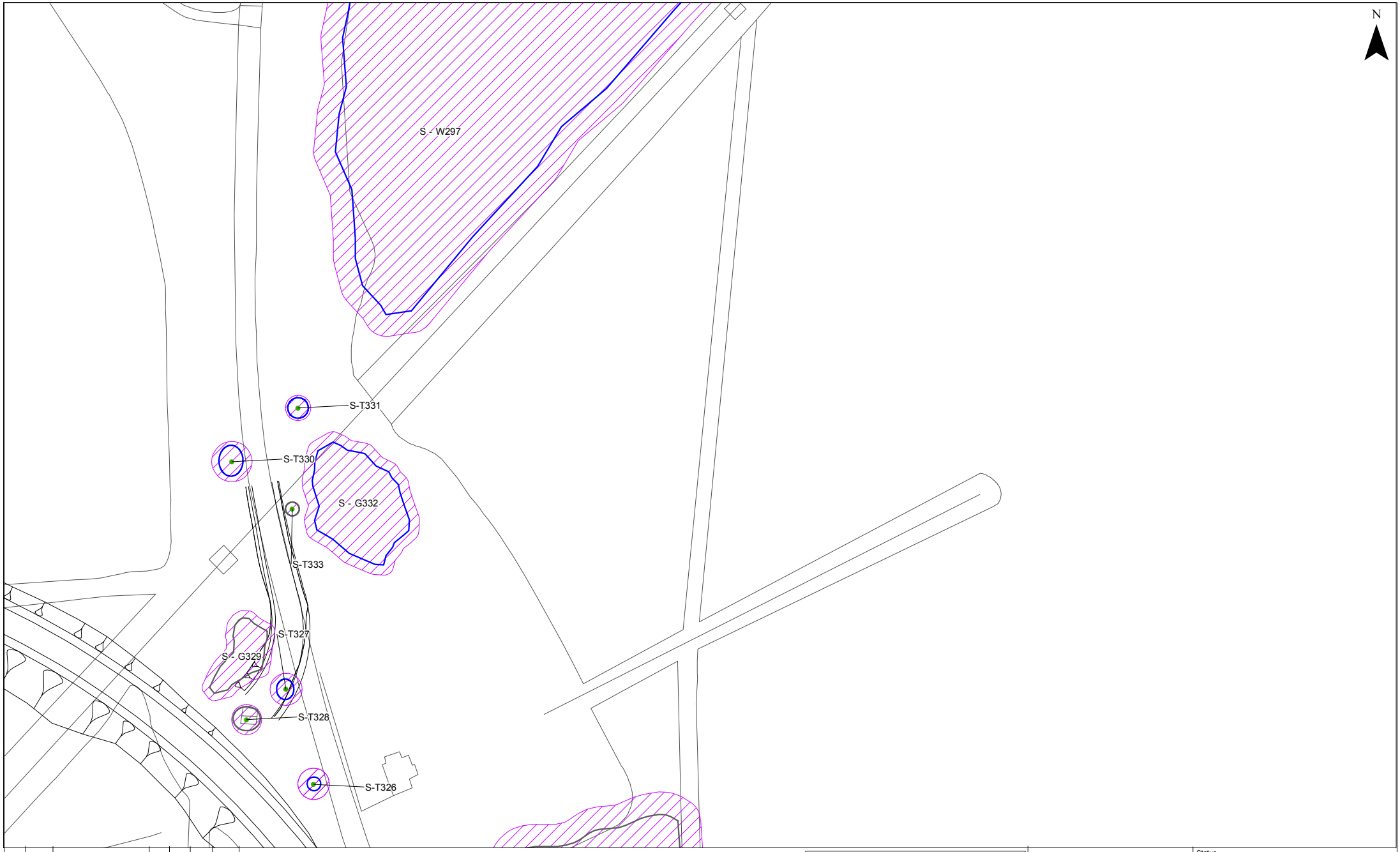
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 33 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

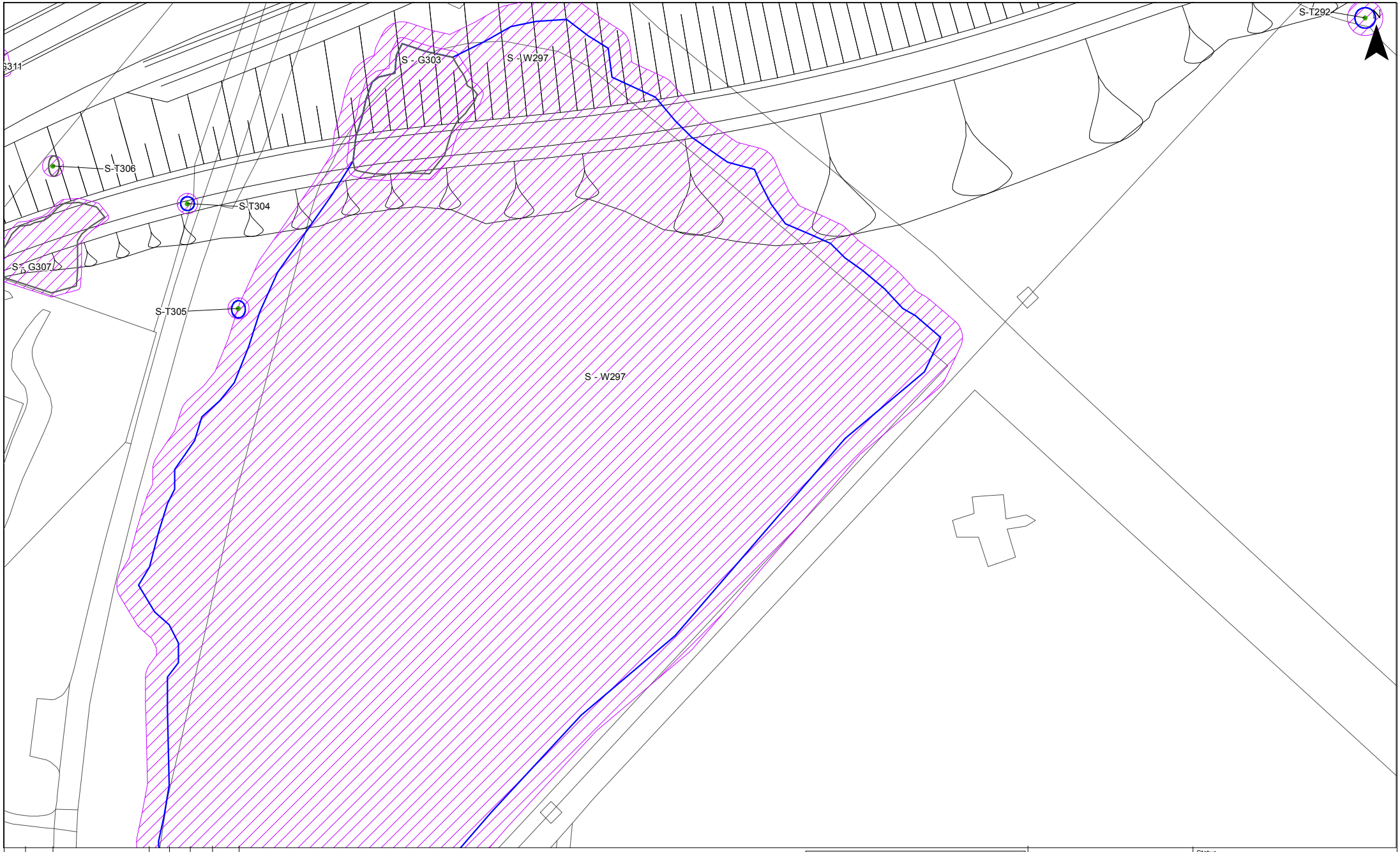
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 34 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

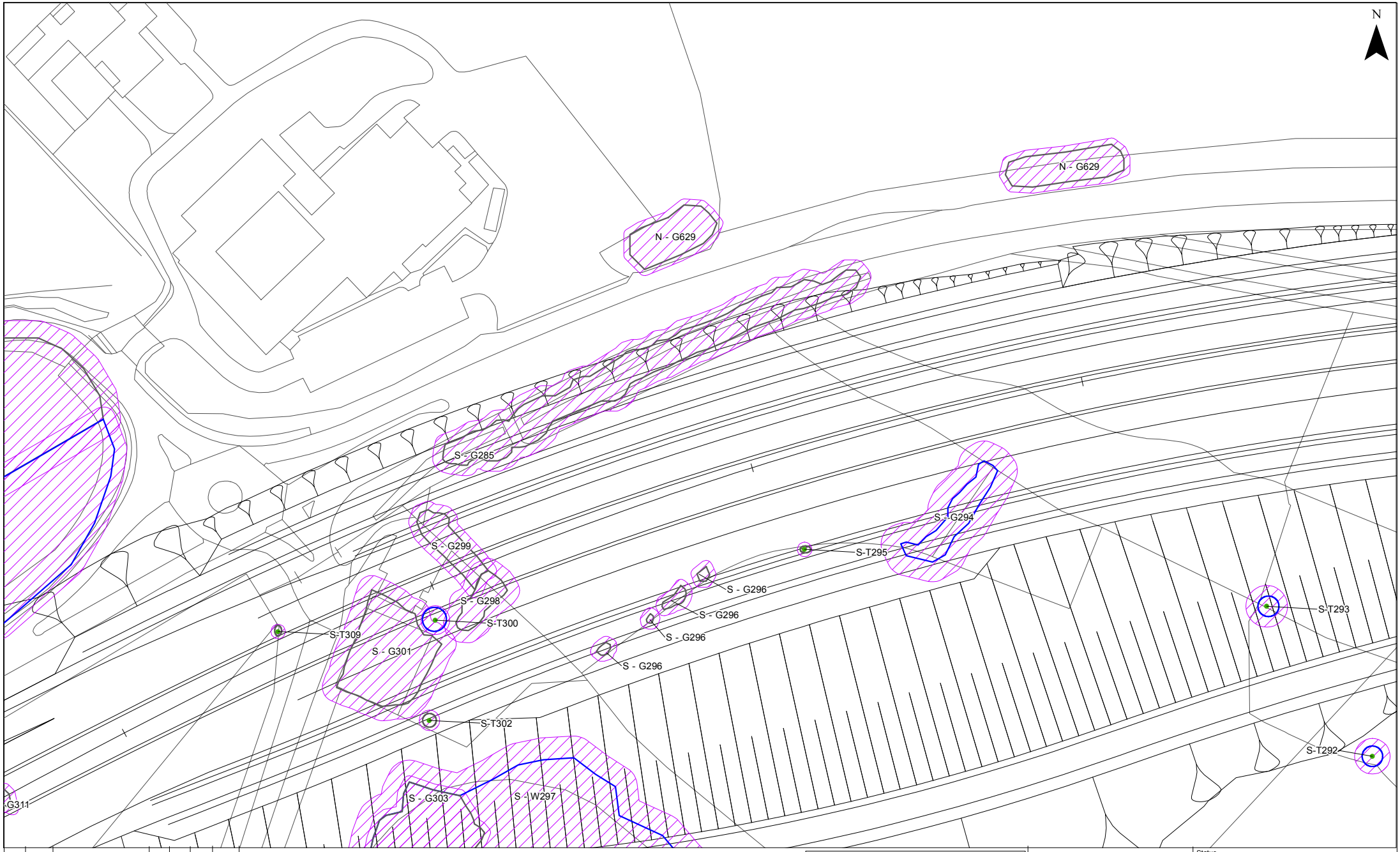
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 35 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status: FINAL

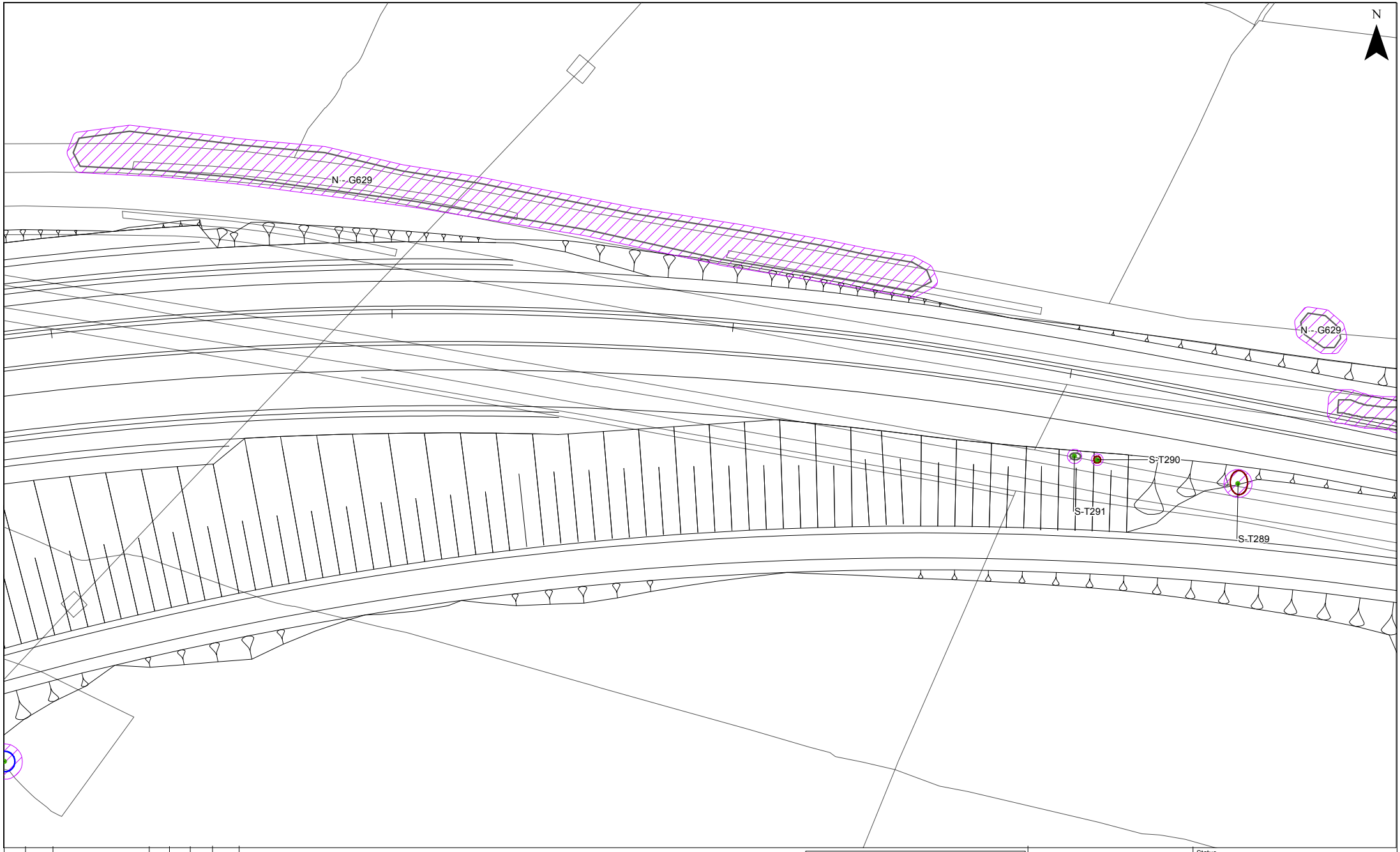
Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 36 OF 69

Scale: 1:1,000 @A3 | DO NOT SCALE

Drawing No.: B2191100/Sc5-6/TC01

Revision: R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status: FINAL

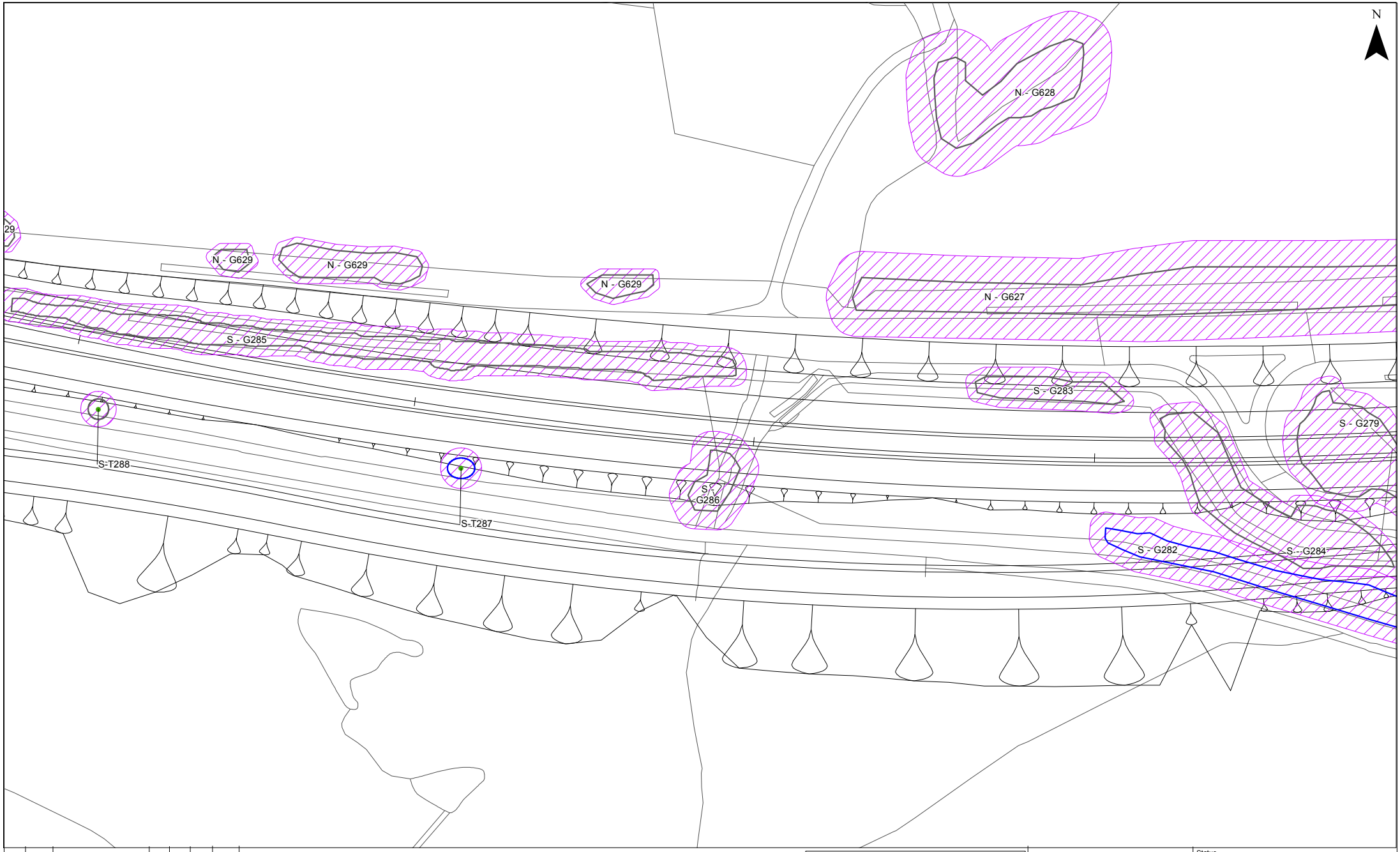
Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 37 OF 69

Scale: 1:1,000 @A3 DO NOT SCALE

Drawing No.: B2191100/Sc5-6/TC01

Revision: R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

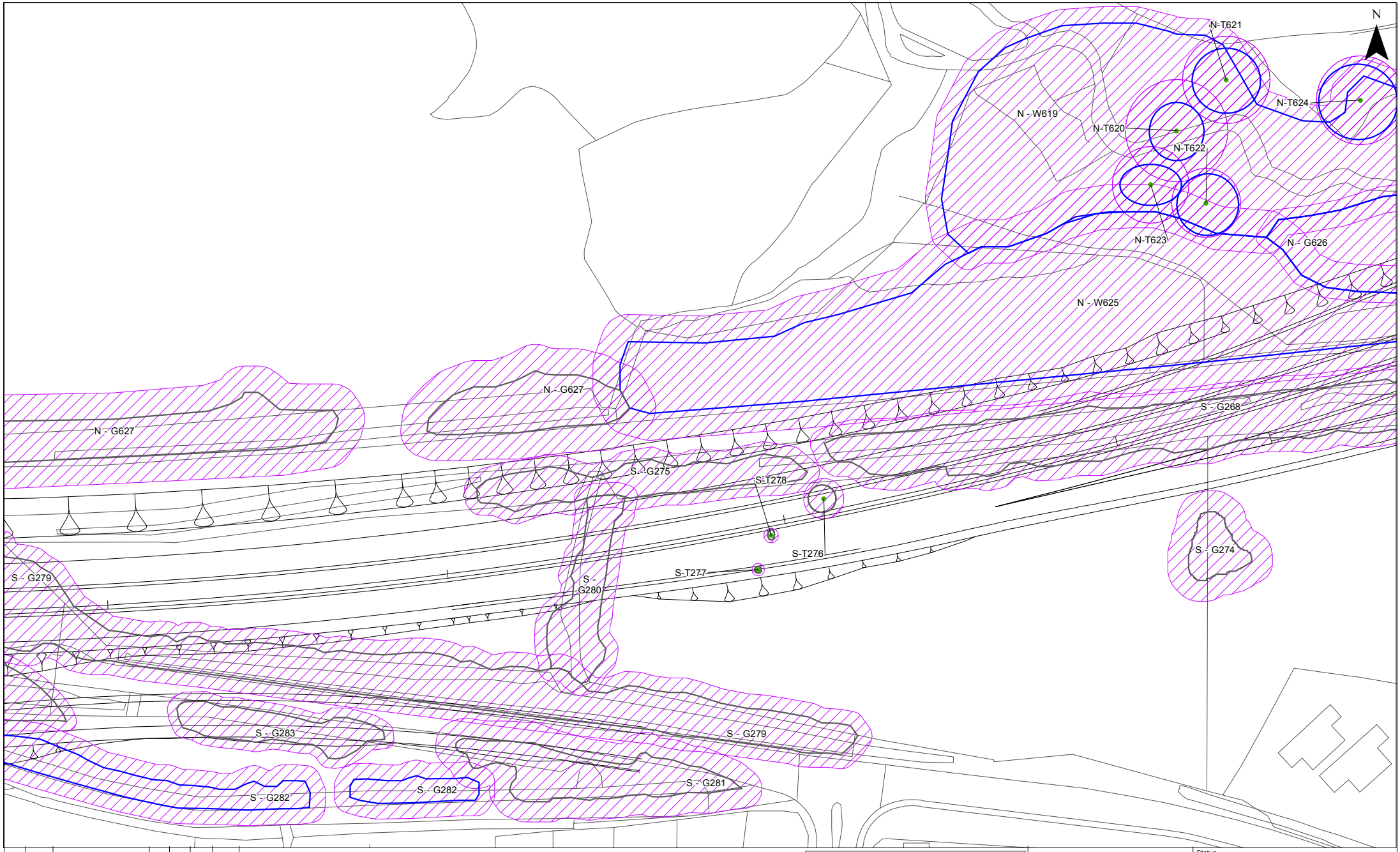
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 38 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0	JUN16	FINAL	EW	SF	PS	MW
Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

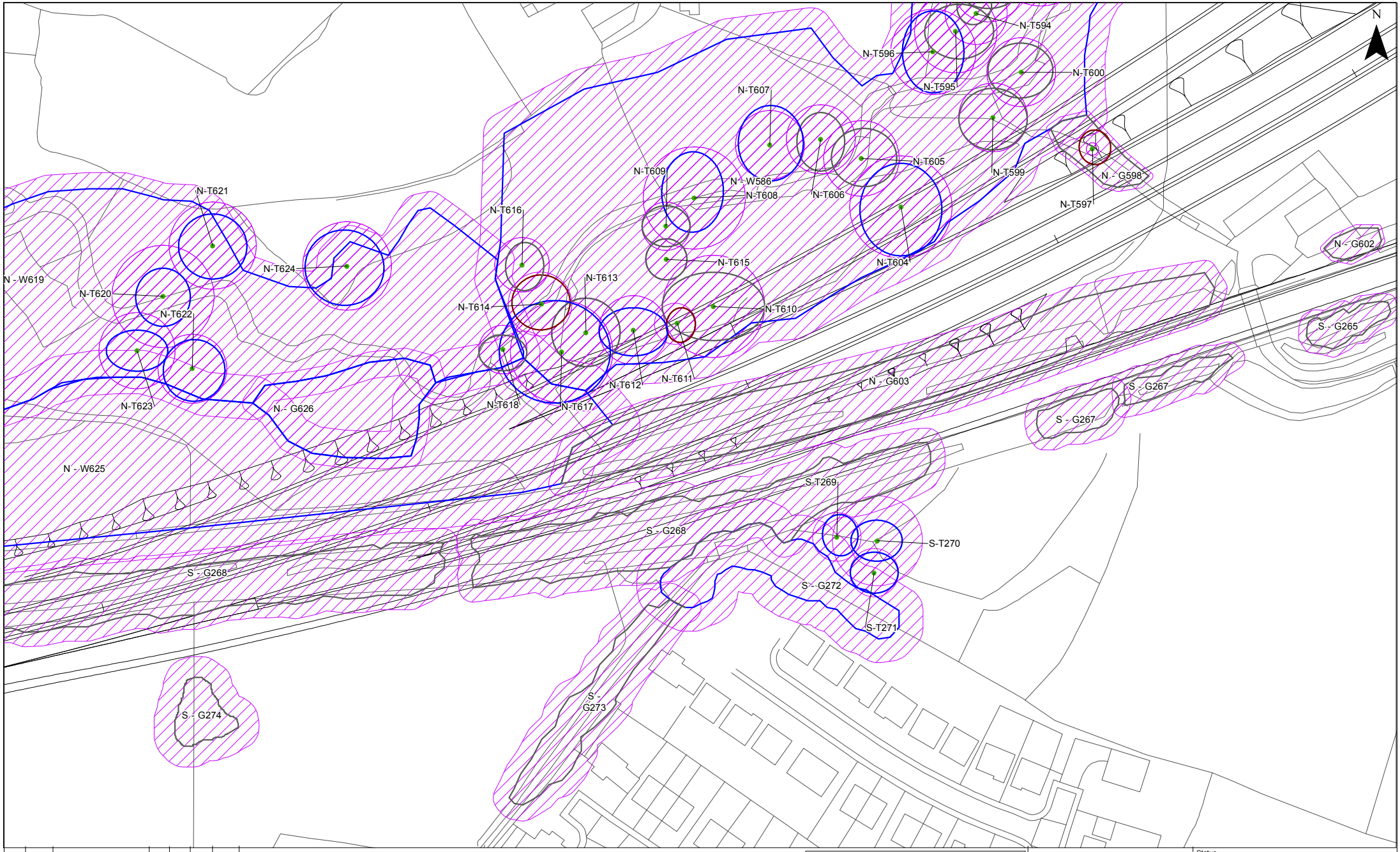
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 39 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0	JUN16	FINAL	EW	SF	PS	MW
Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

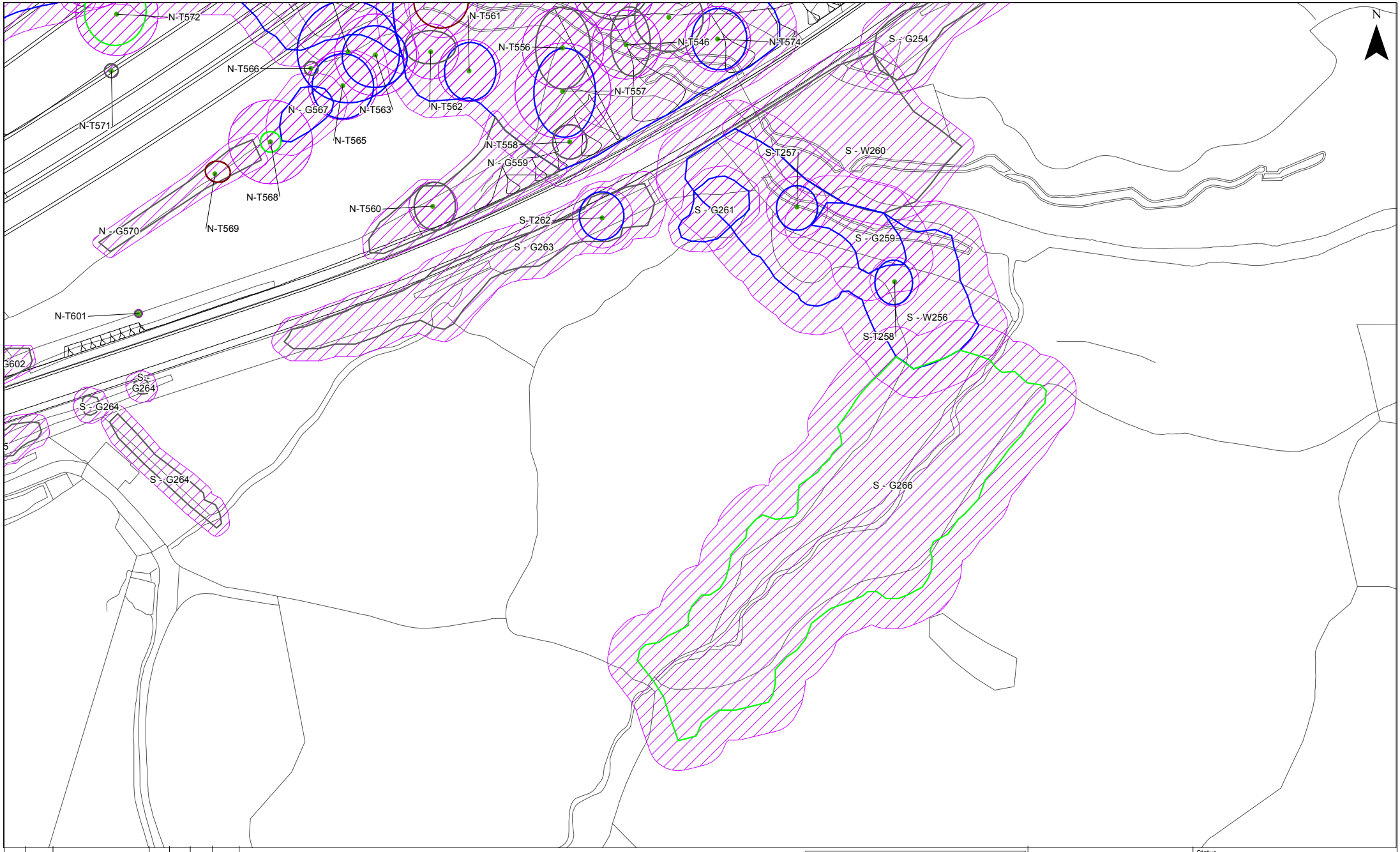
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 40 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

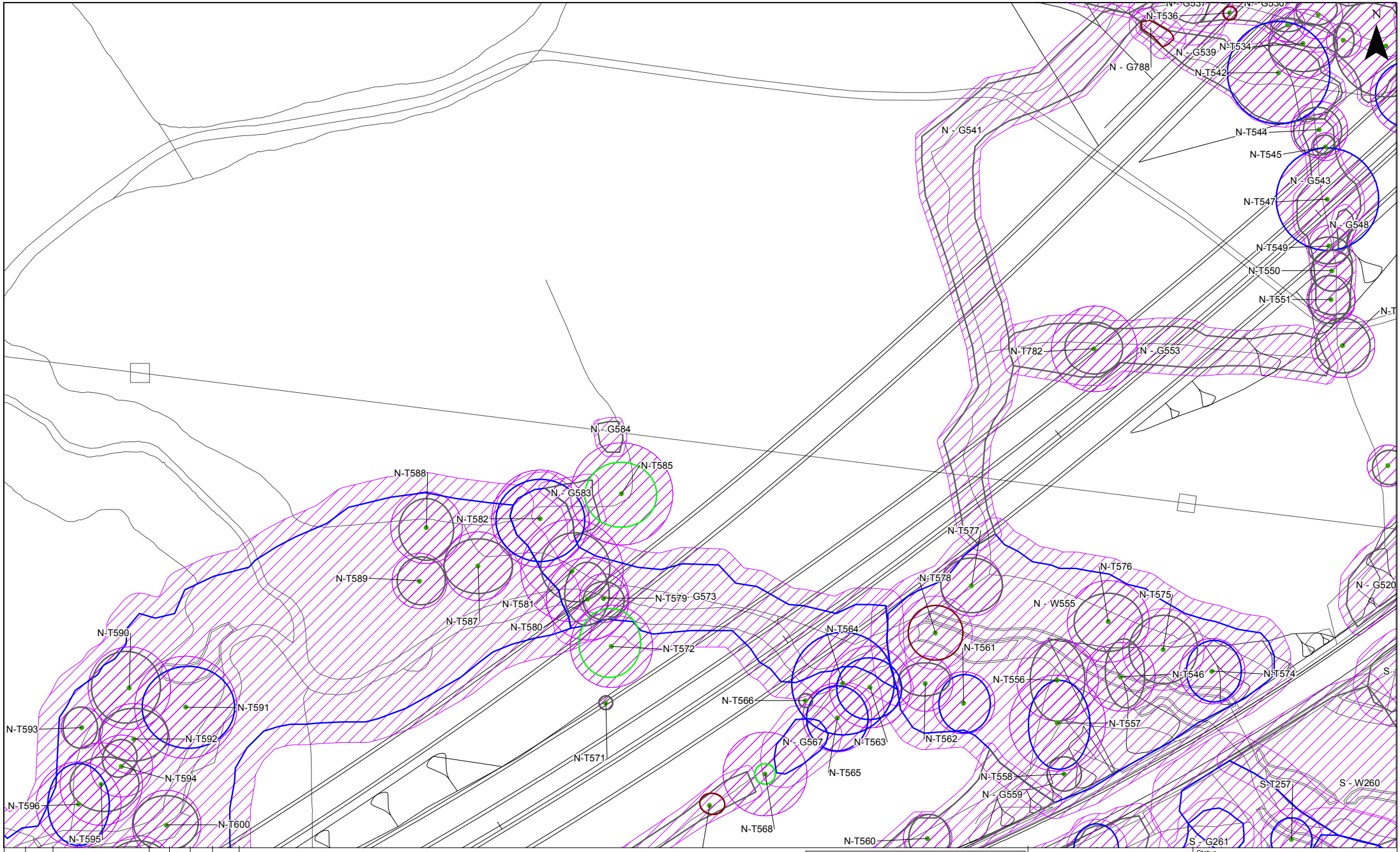
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 41 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status: FINAL

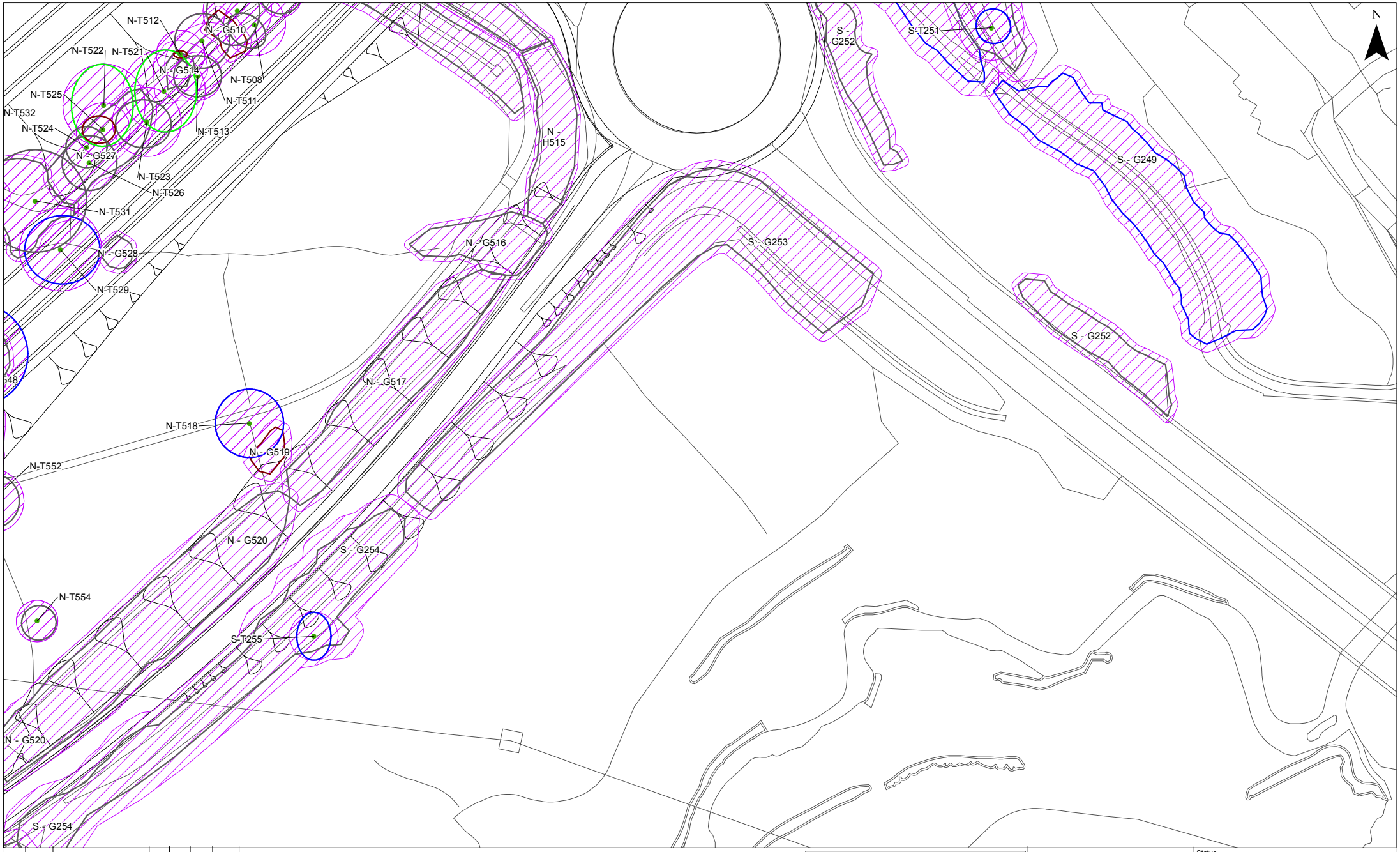
Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 42 OF 69

Scale: 1:1,000 @A3 — DO NOT SCALE

Drawing No.: B2191100/Sc5-6/TC01

Revision: R0



0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

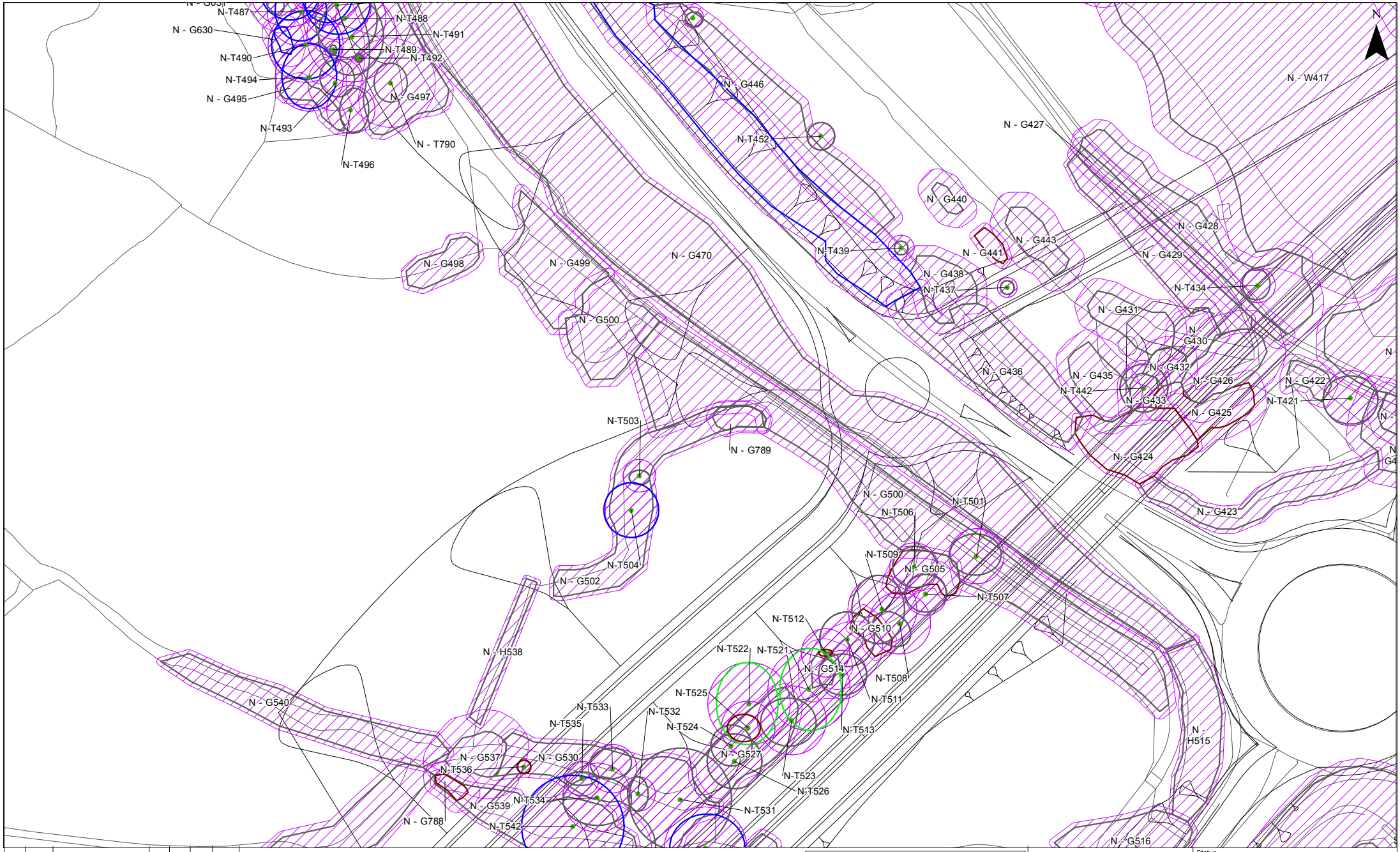
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 43 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

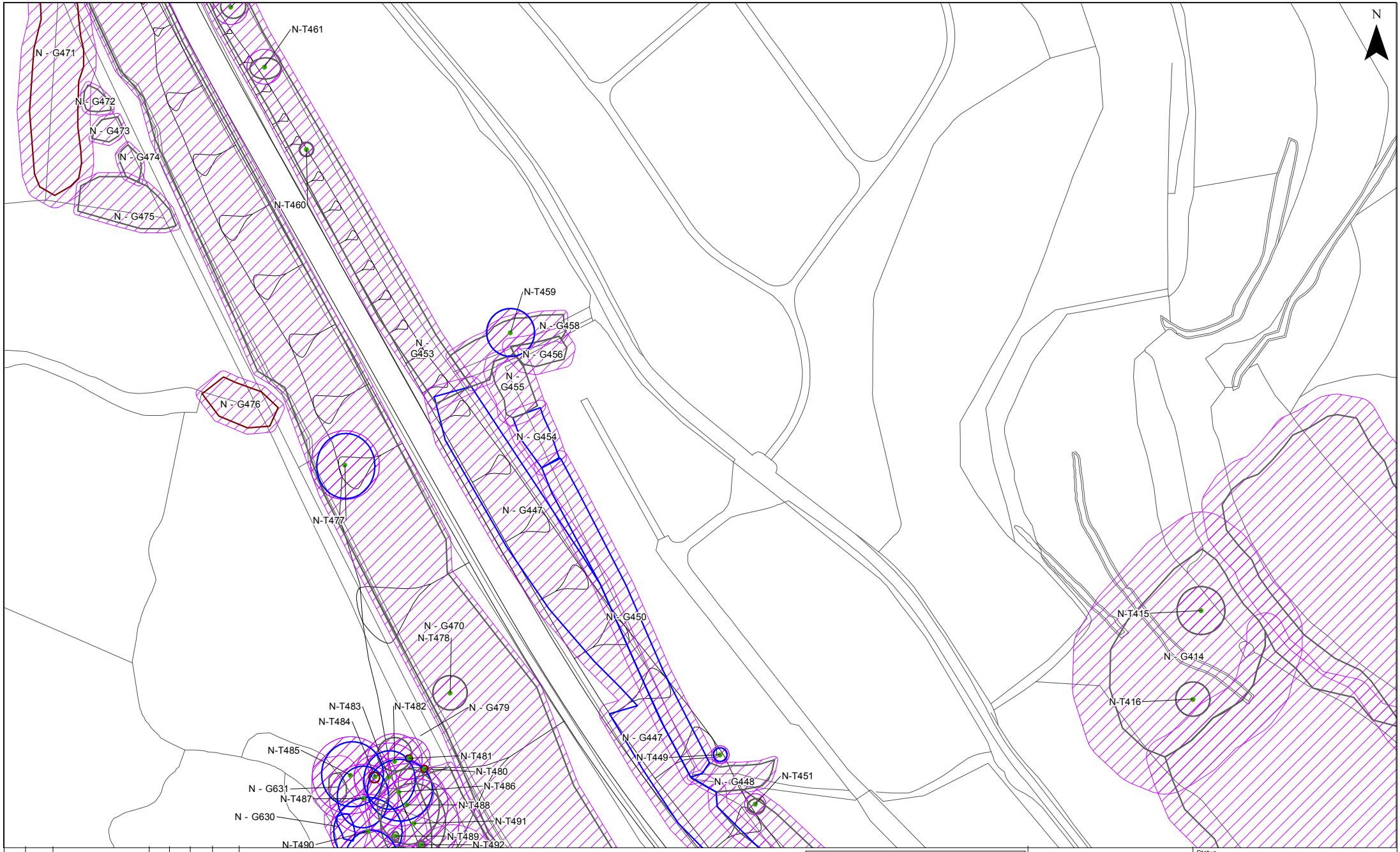
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 44 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

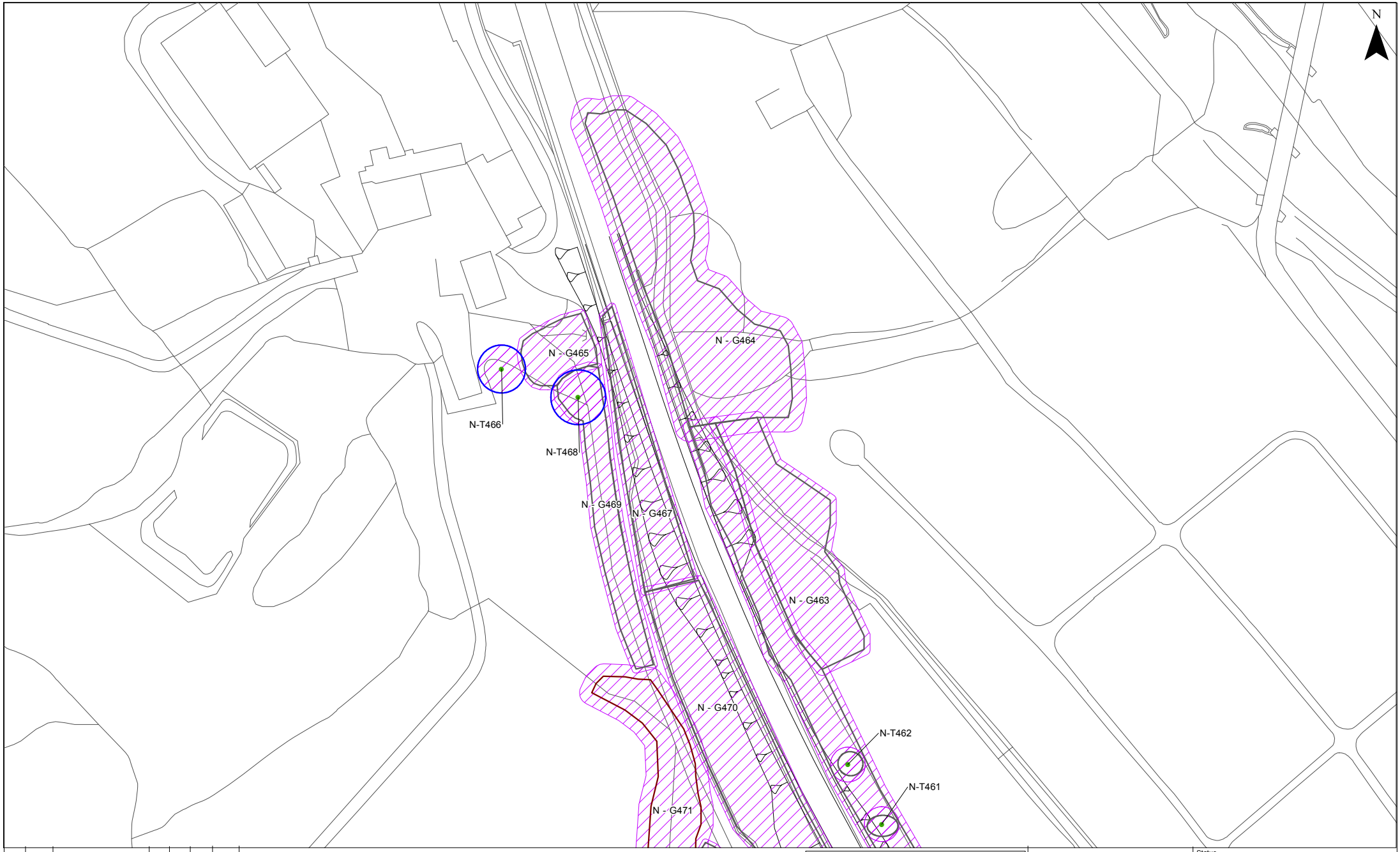
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 45 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status: FINAL

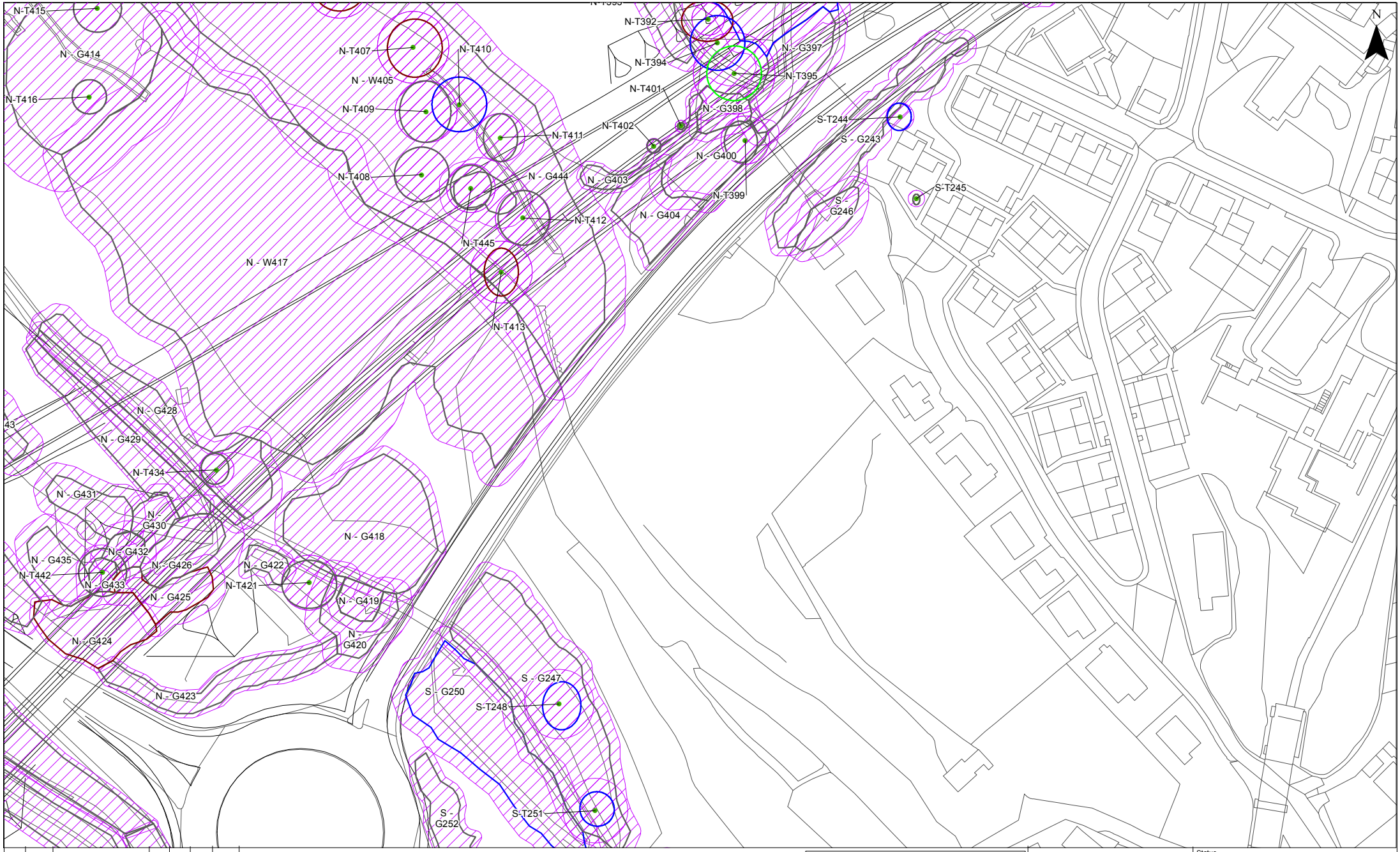
Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 46 OF 69

Scale: 1:1,000 @A3 | DO NOT SCALE

Drawing No.: B2191100/Sc5-6/TC01

Revision: R0



0	JUN16	FINAL	EW	SF	PS	MW
Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

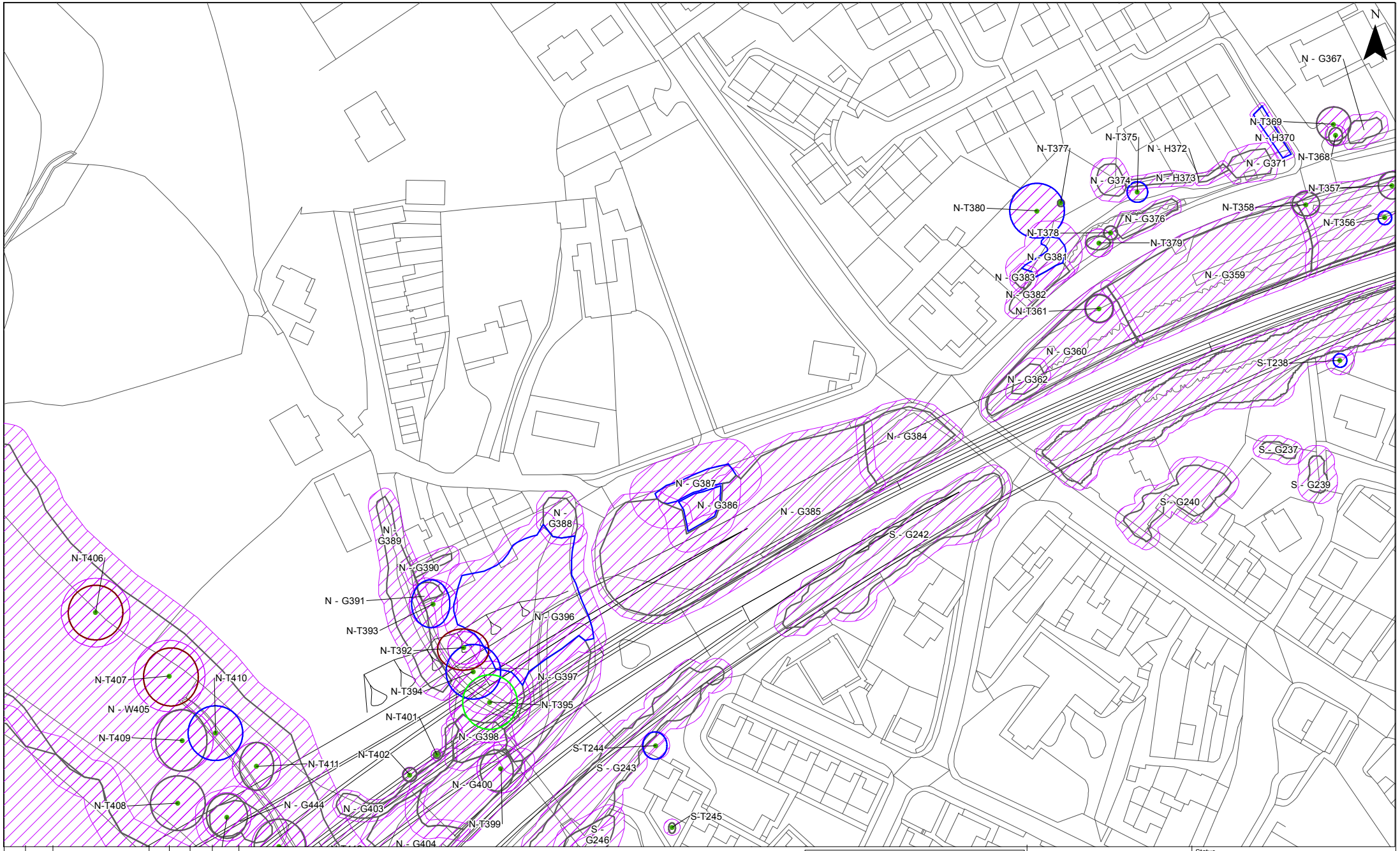
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 47 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

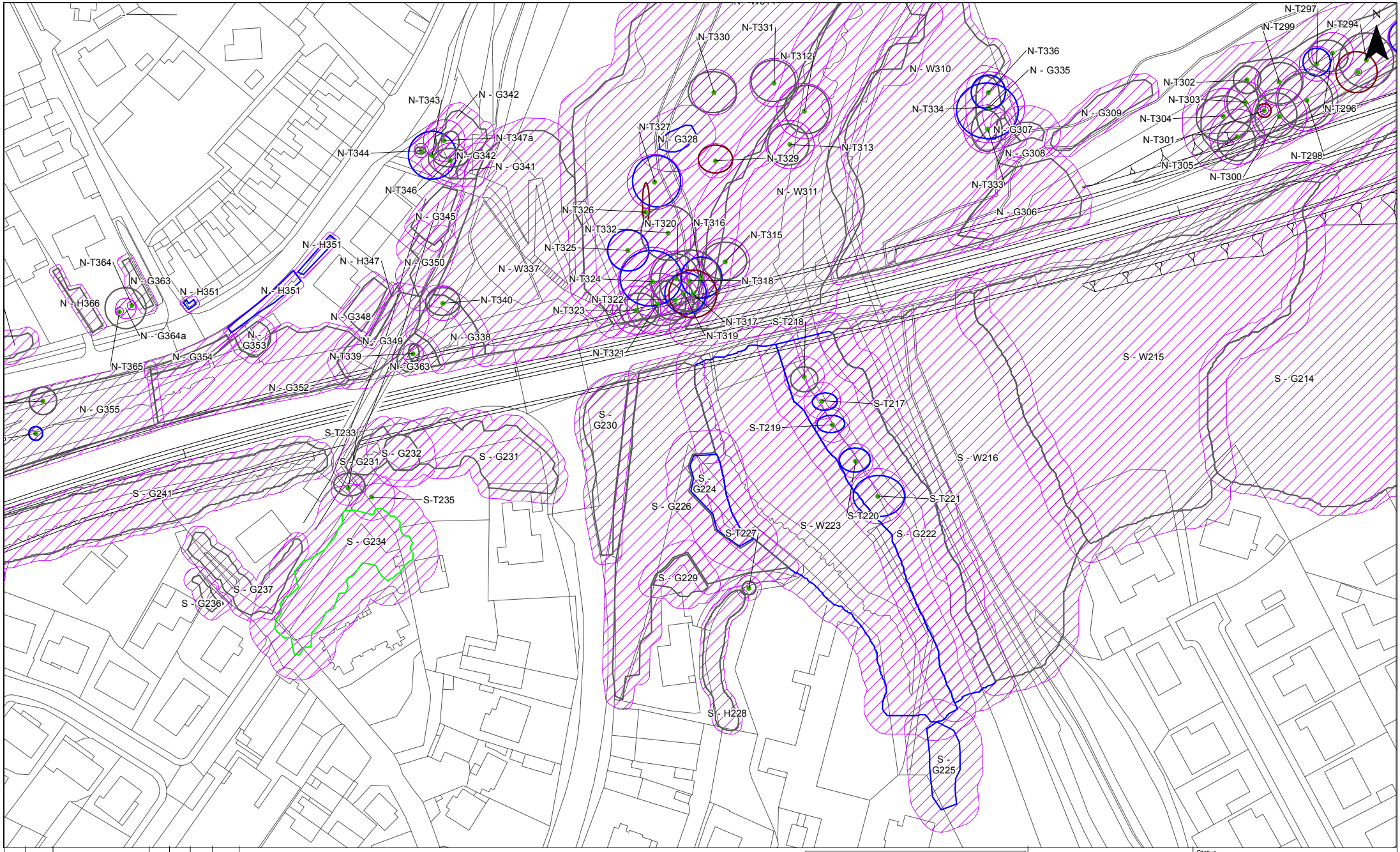
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 48 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0	JUN16	FINAL	EW	SF	PS	MW
Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

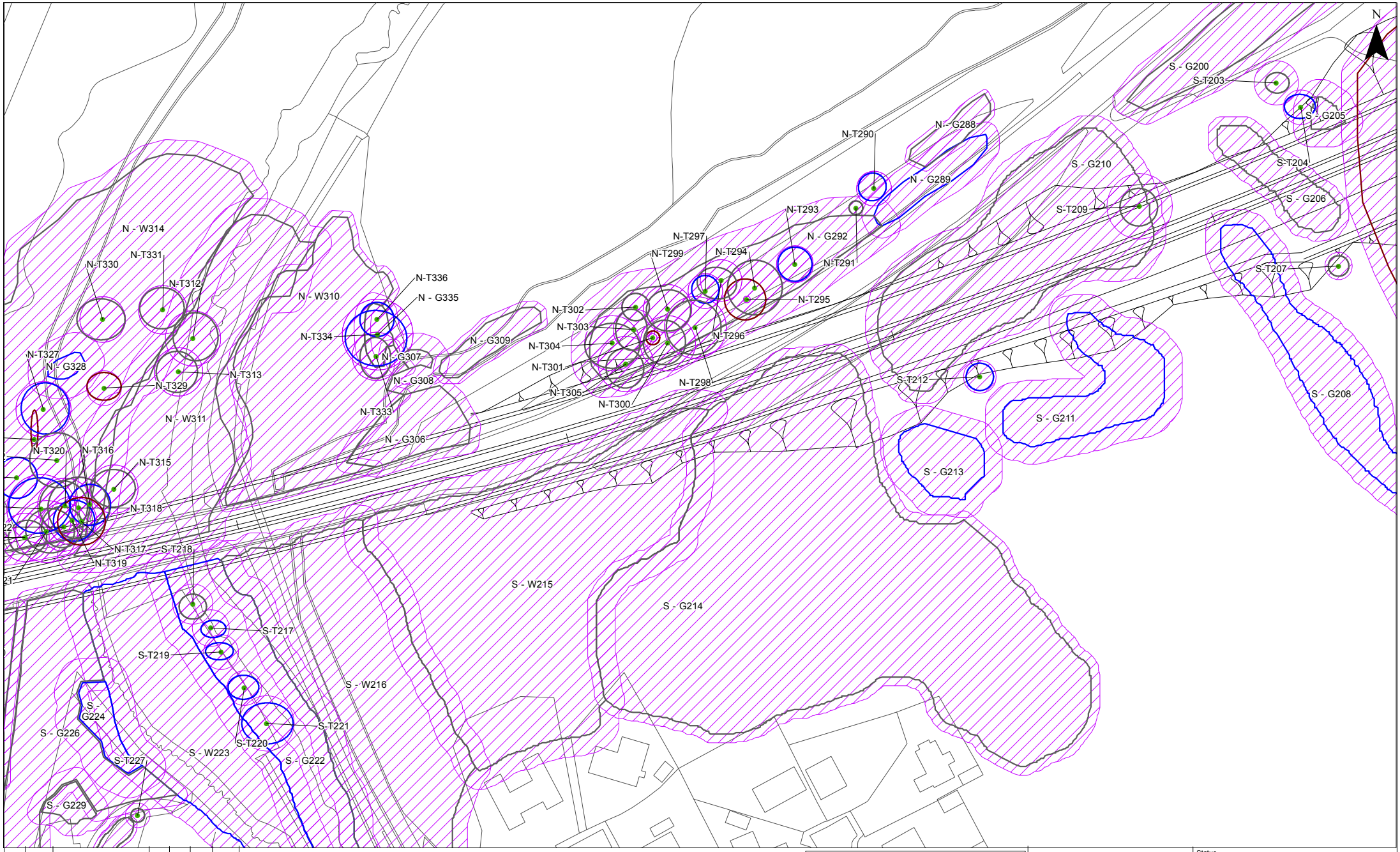
N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS
2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 49 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

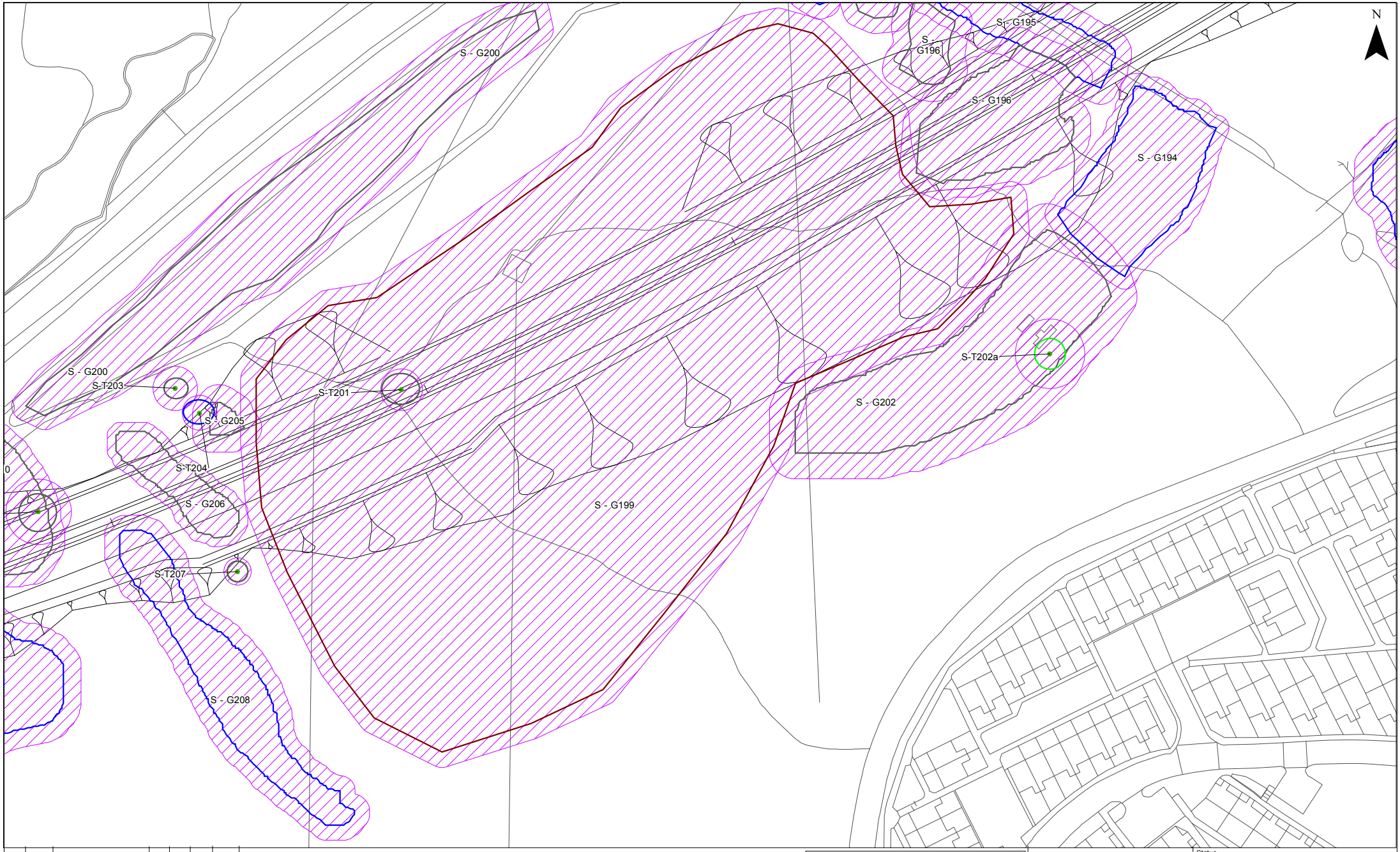
Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS
2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 50 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

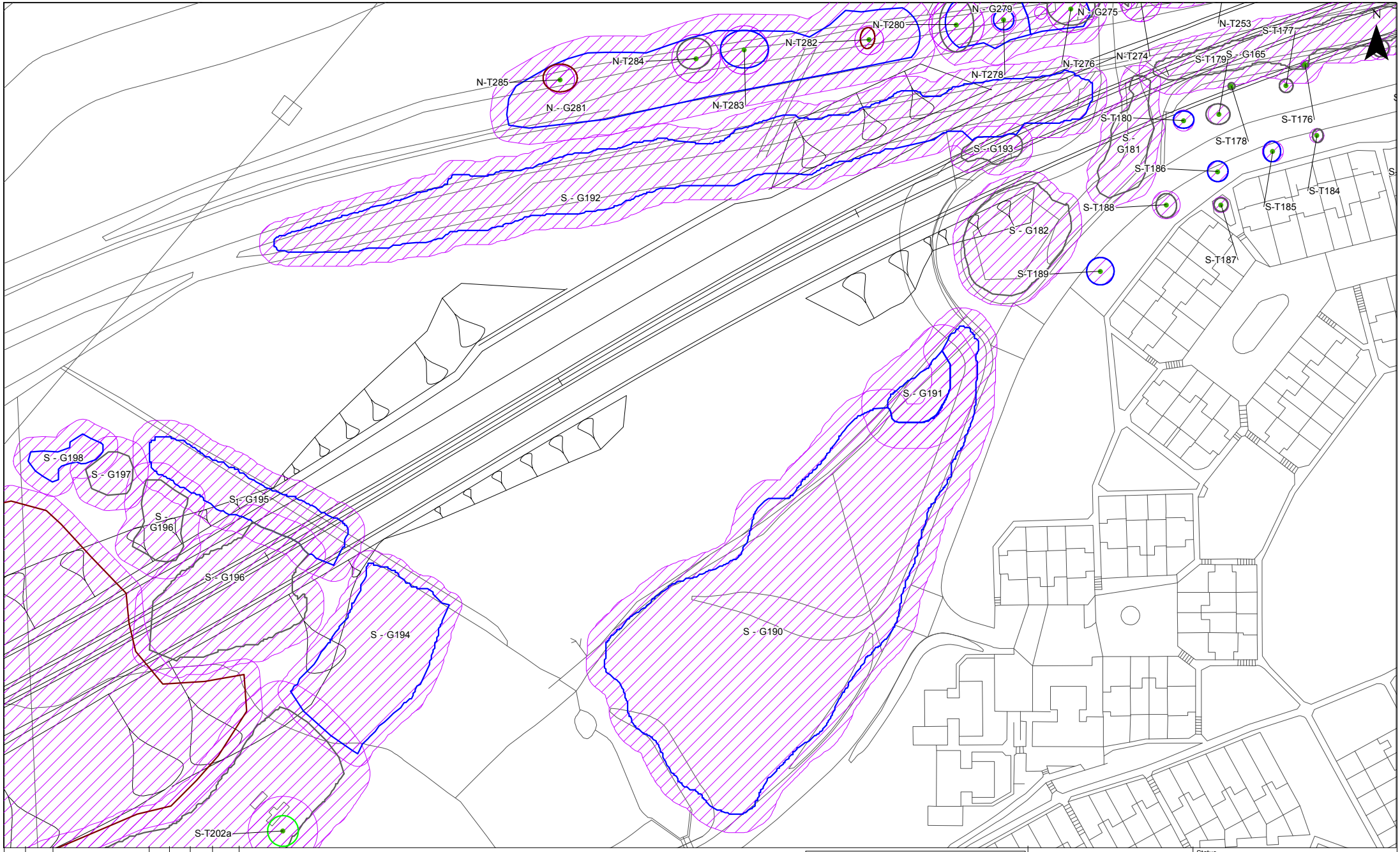
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 51 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

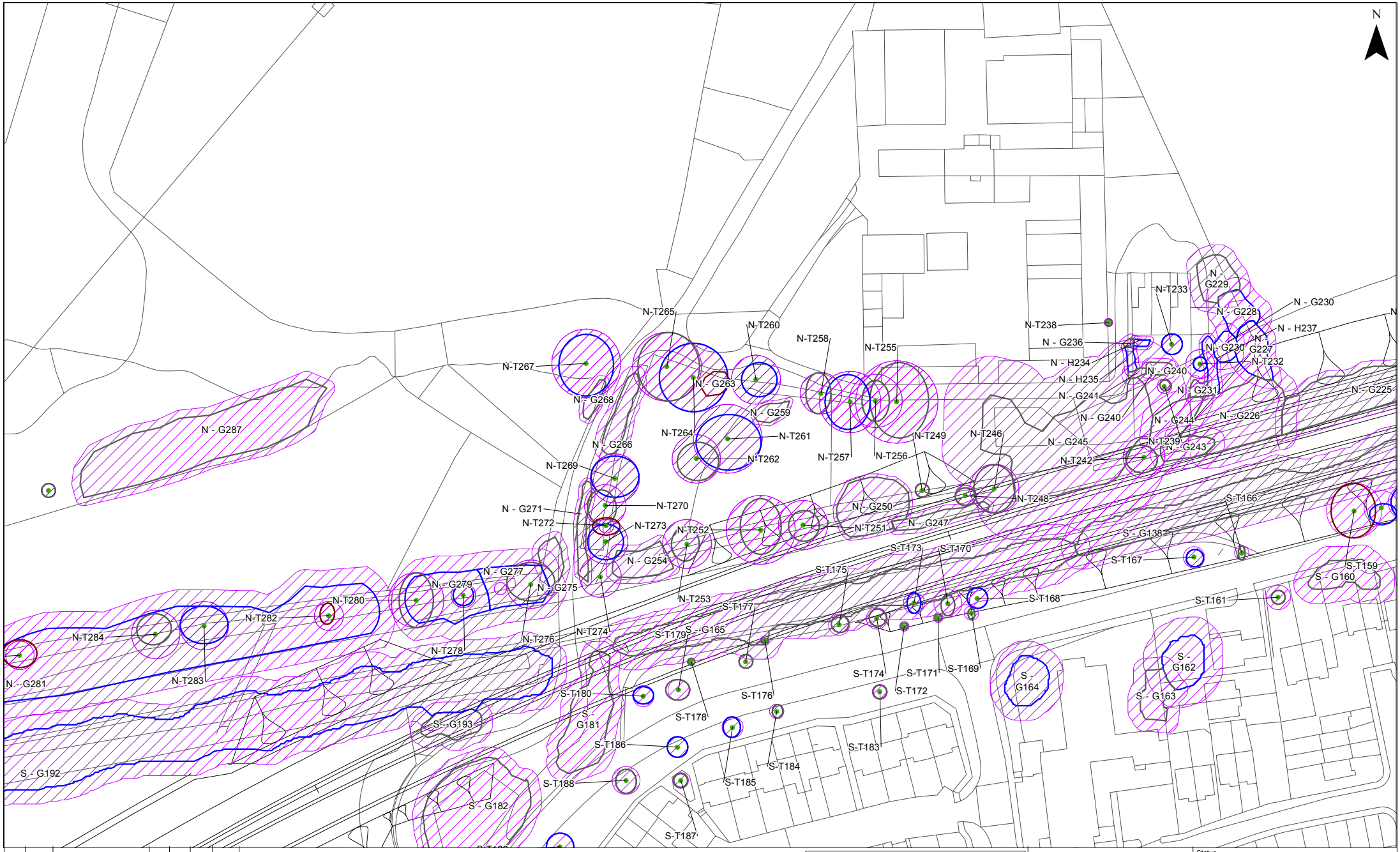
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 52 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0	JUN16	FINAL	EW	SF	PS	MW
Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

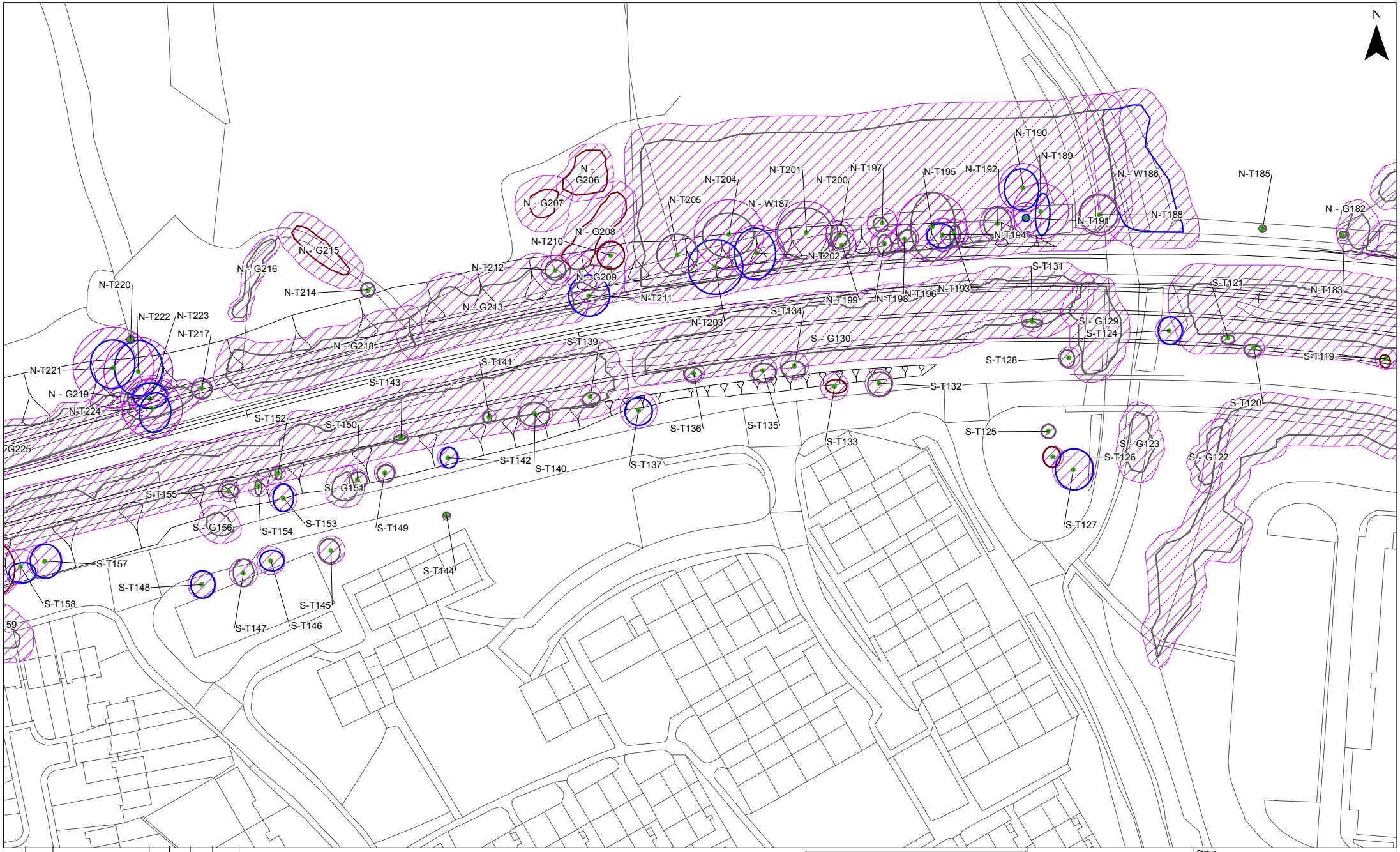
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 53 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0	JUN16	FINAL	EW	SF	PS	MW
Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

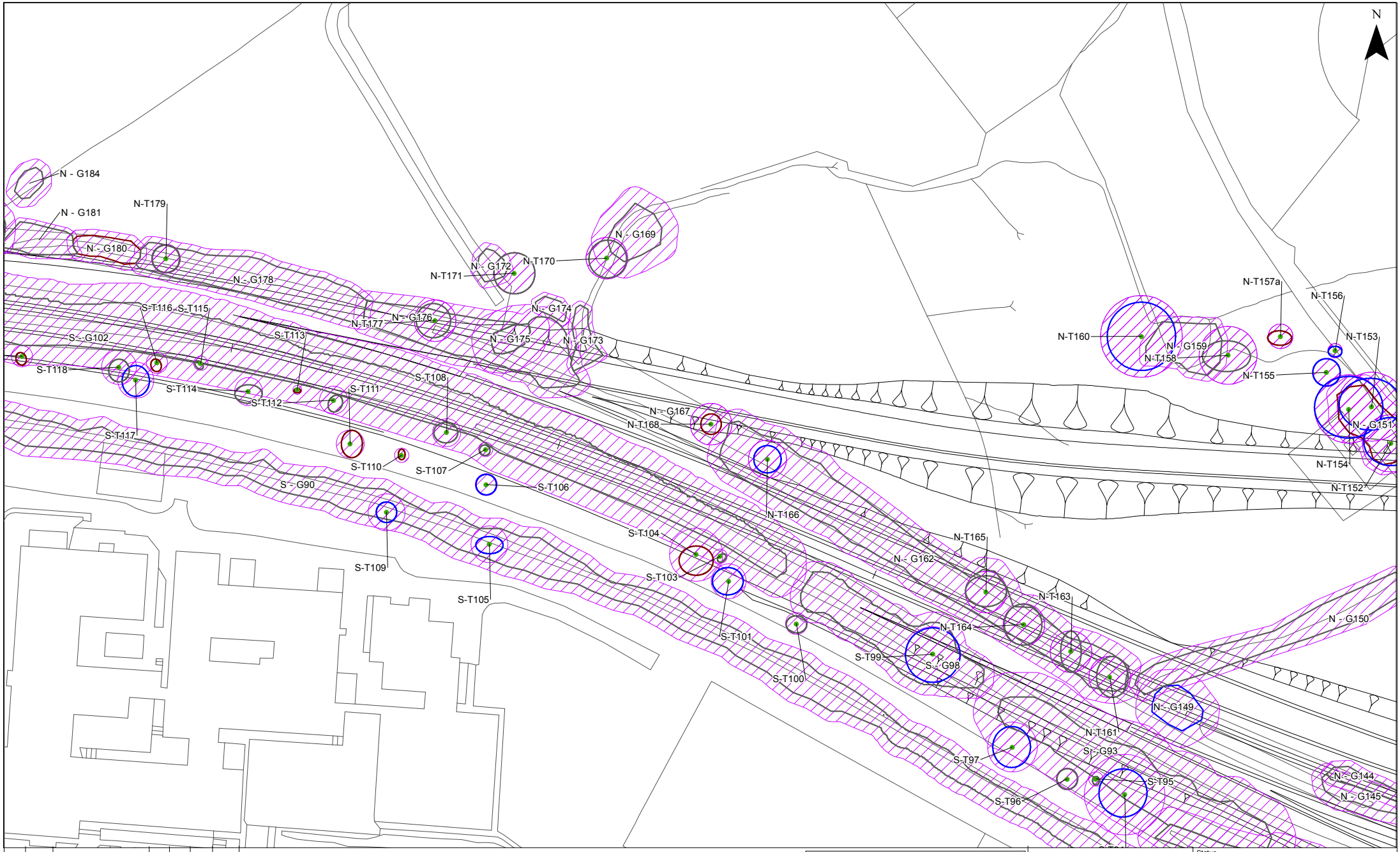
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 54 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

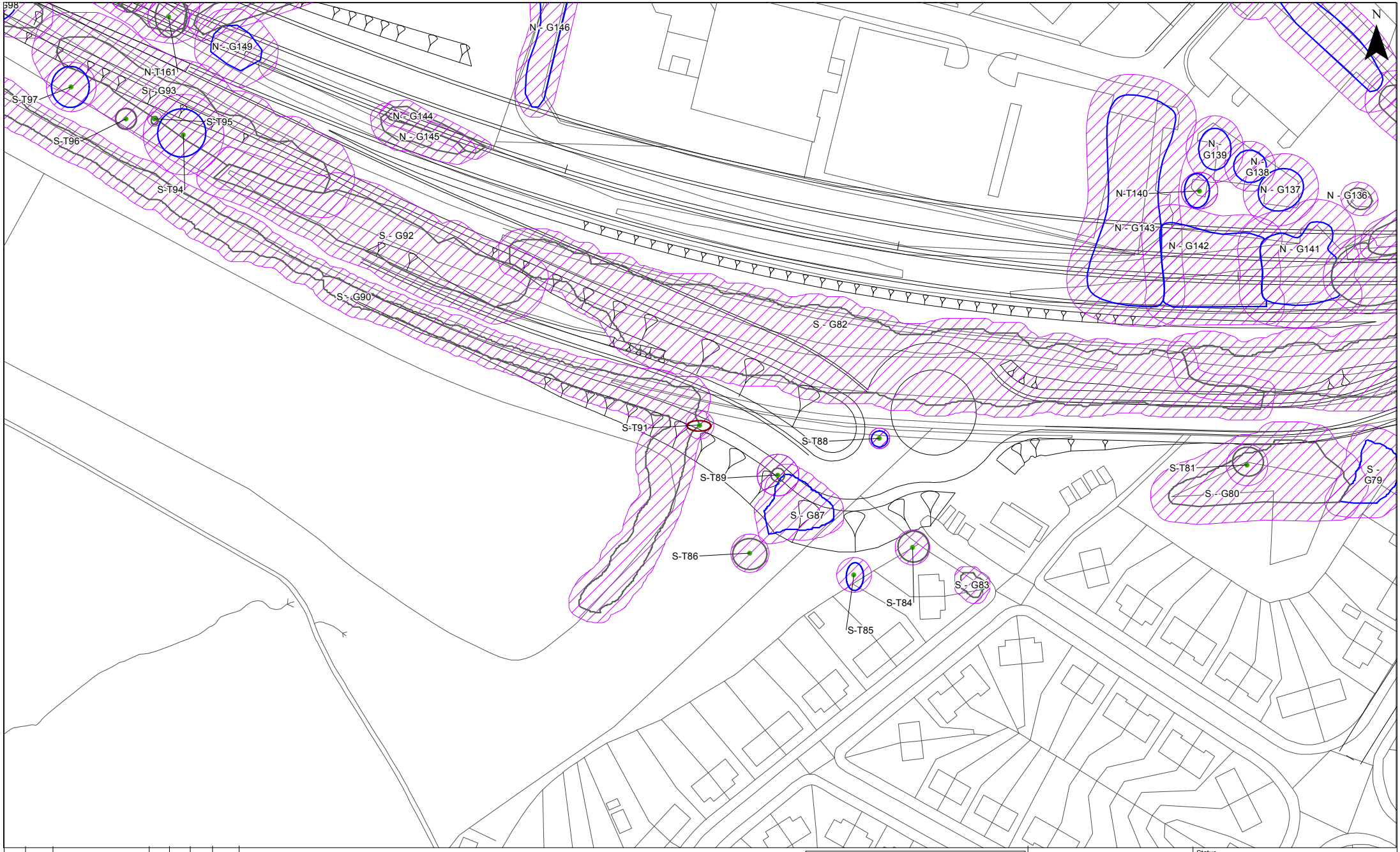
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 55 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0	JUN16	FINAL	EW	SF	PS	MW
Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

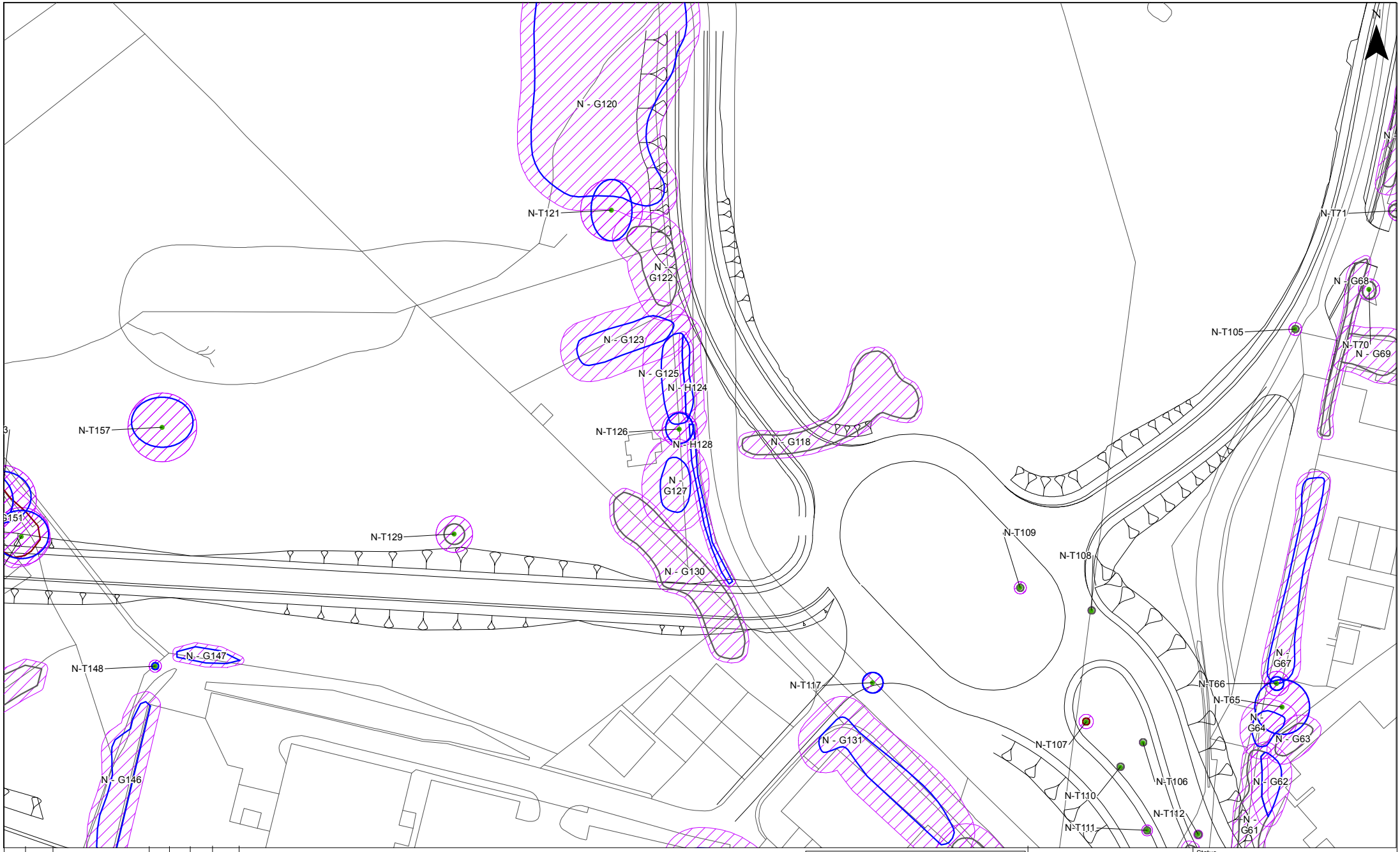
N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS
2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 56 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status: FINAL

Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 57 OF 69

Scale: 1:1,000 @A3 — DO NOT SCALE

Drawing No.: B2191100/Sc5-6/TC01

Revision: R0

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

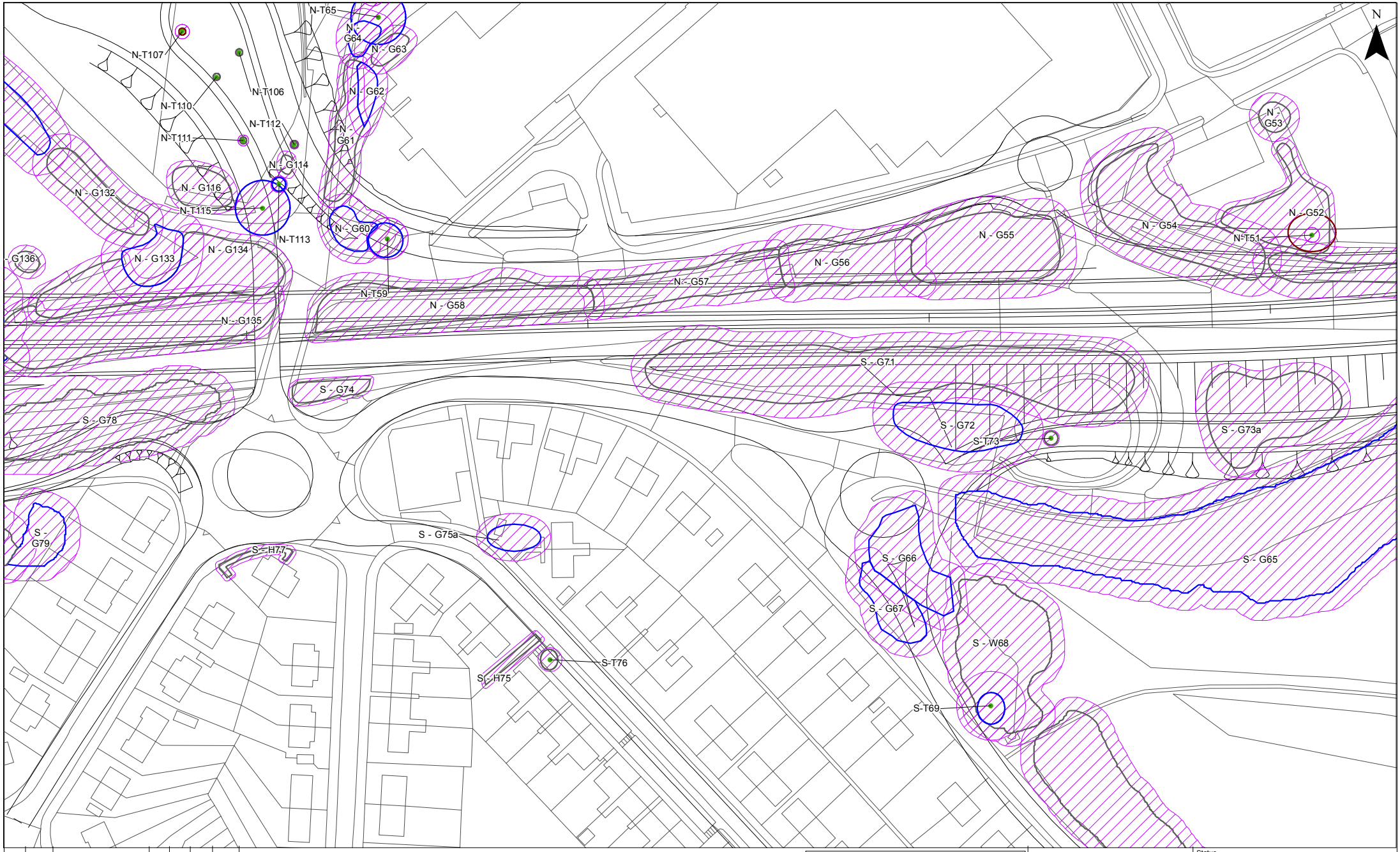
N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS
2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 58 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

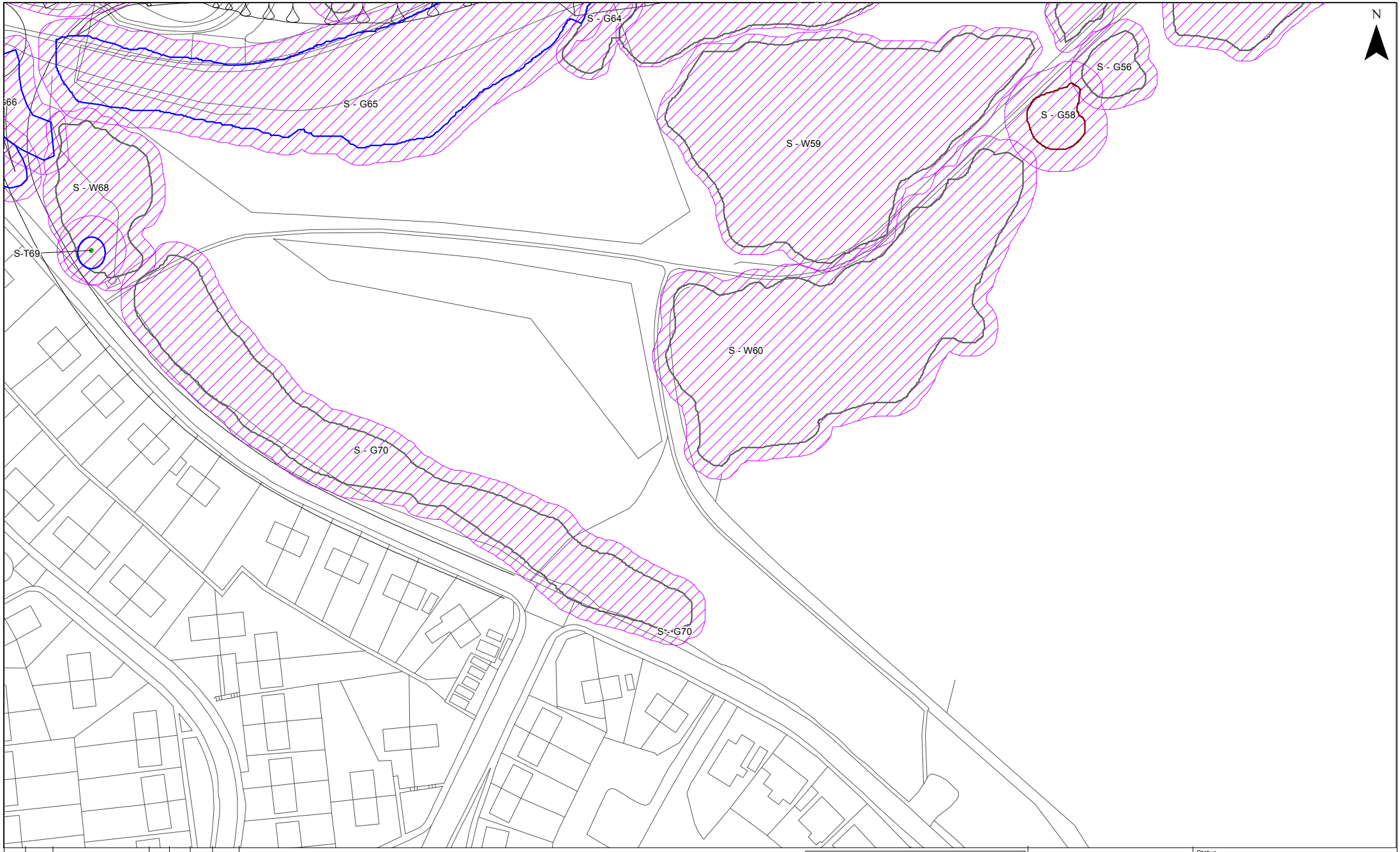
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 59 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

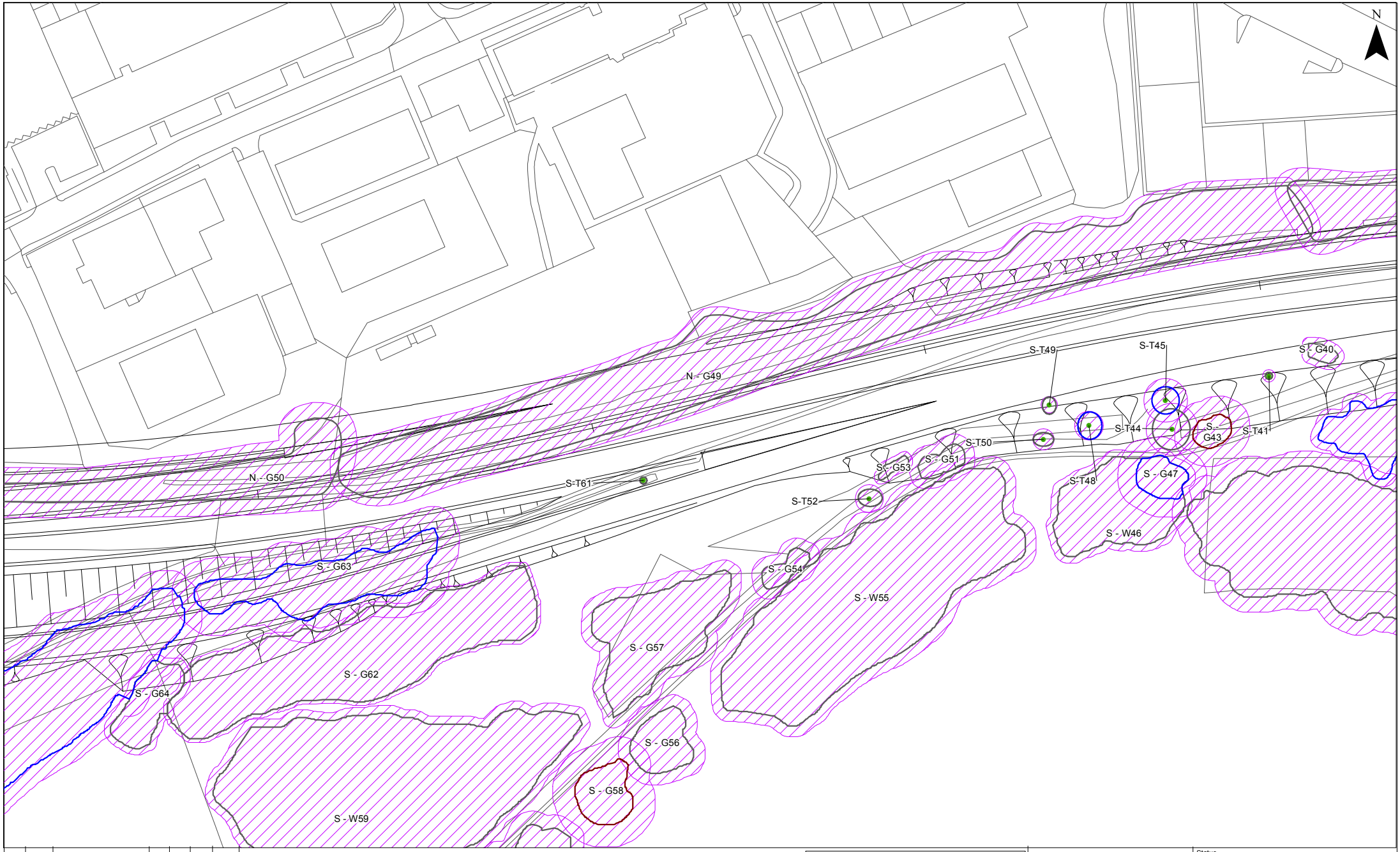
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 60 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0	JUN16	FINAL	EW	SF	PS	MW
Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS
2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 61 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0

0 25 50 Metres

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree / Category A group/woodland/hedge
- Category B tree / Category B group/woodland/hedge
- Category C tree / Category C group/woodland/hedge
- Category U tree / Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS
2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status: FINAL

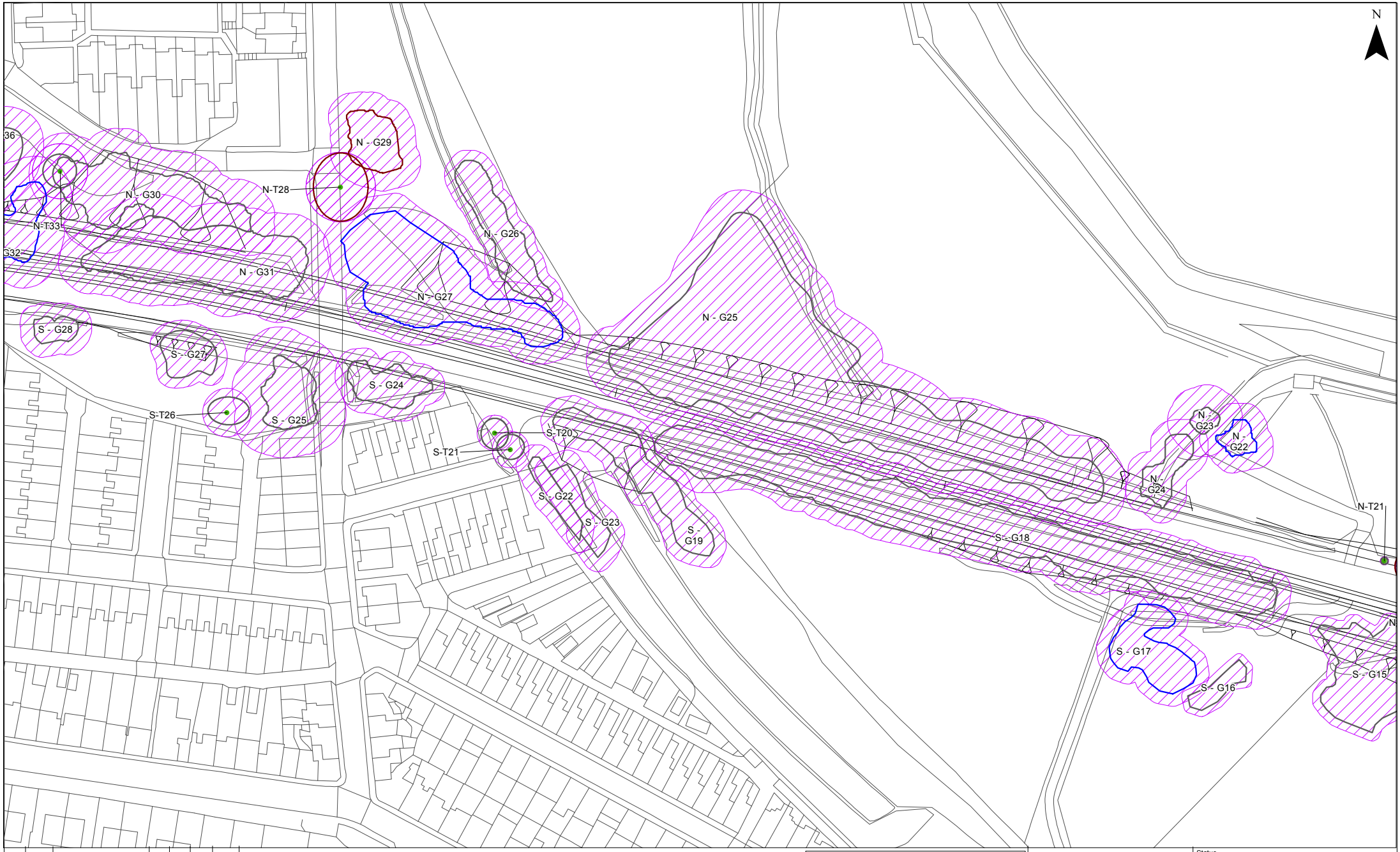
Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 62 OF 69

Scale: 1:1,000 @A3 DO NOT SCALE

Drawing No.: B2191100/Sc5-6/TC01

Revision: R0



0 25 50 Metres

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

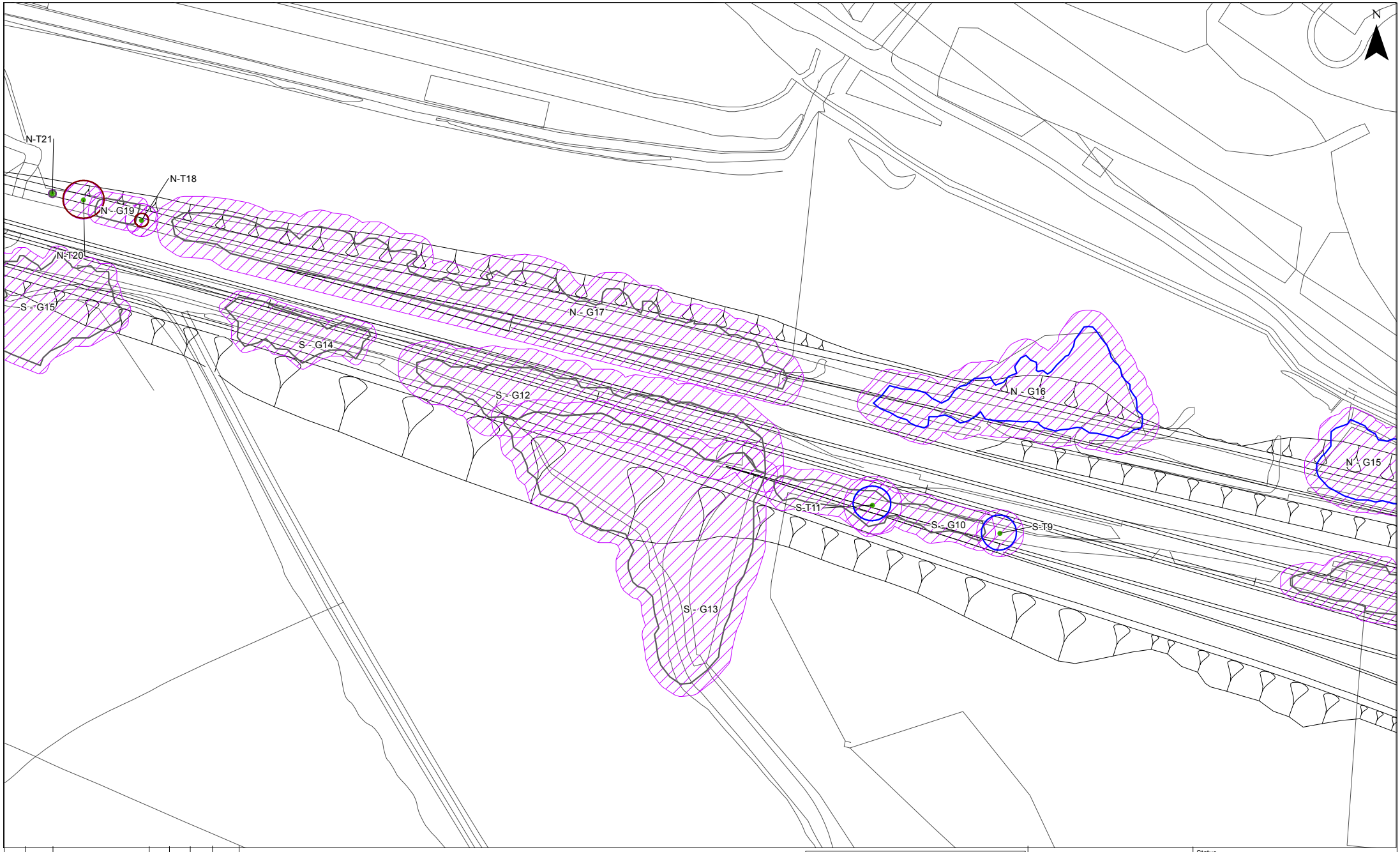
Status: FINAL

Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 63 OF 69

Scale: 1:1,000 @A3 | DO NOT SCALE

Drawing No.: B2191100/Sc5-6/TC01 | Revision: R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

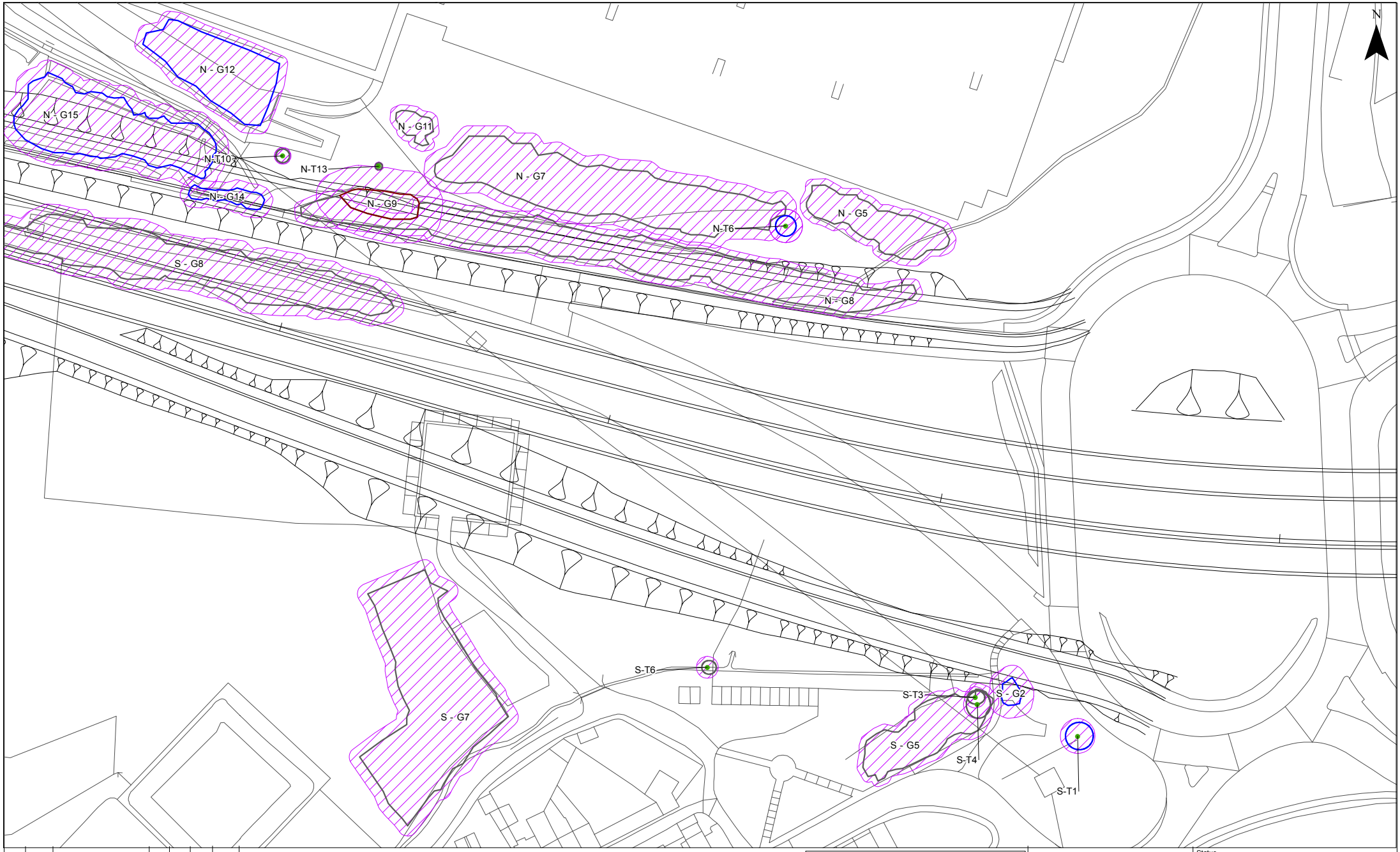
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121 237 4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 64 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0	JUN16	FINAL	EW	SF	PS	MW
Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

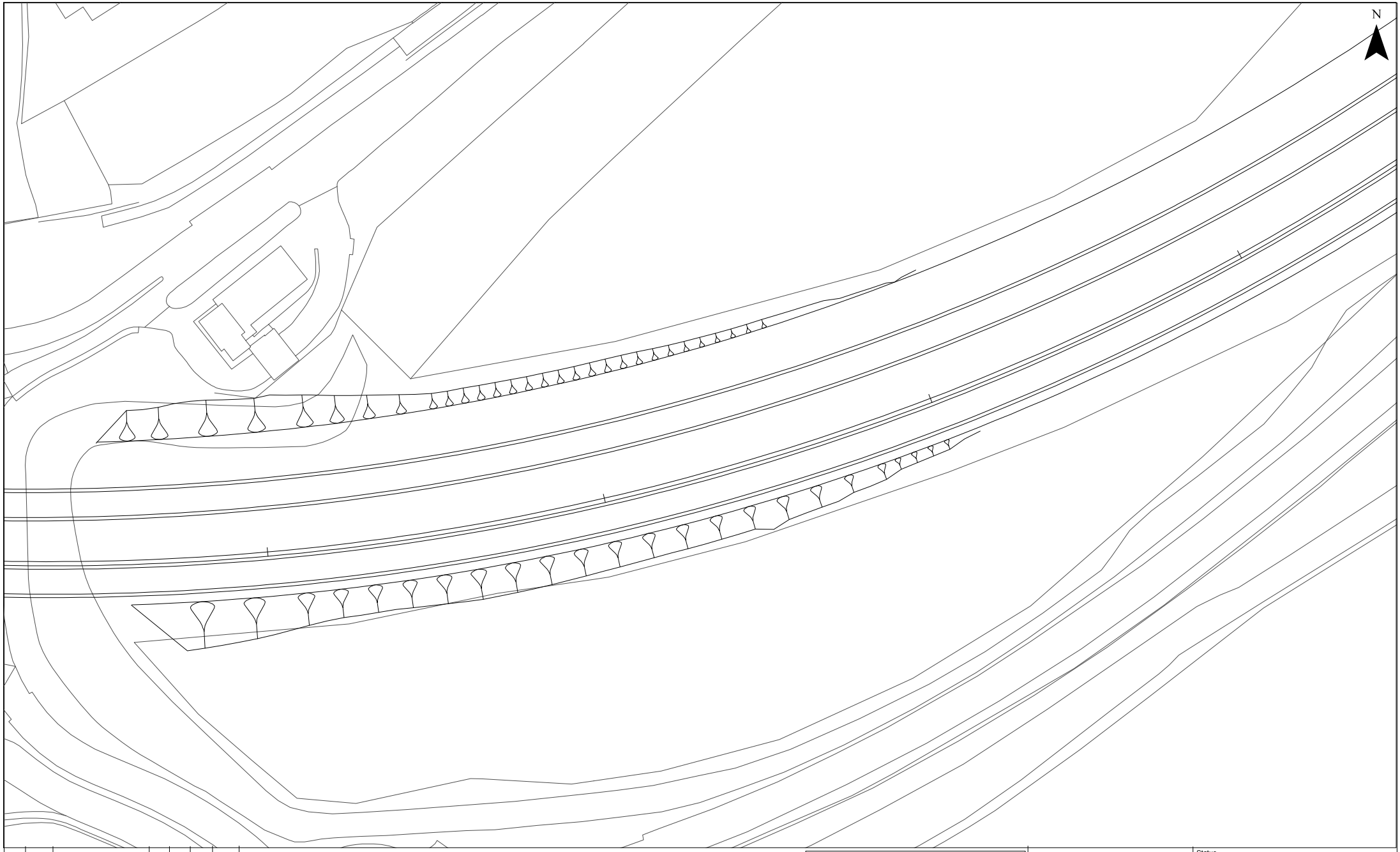
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 65 OF 69
Scale	1:1,000 @A3
	DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

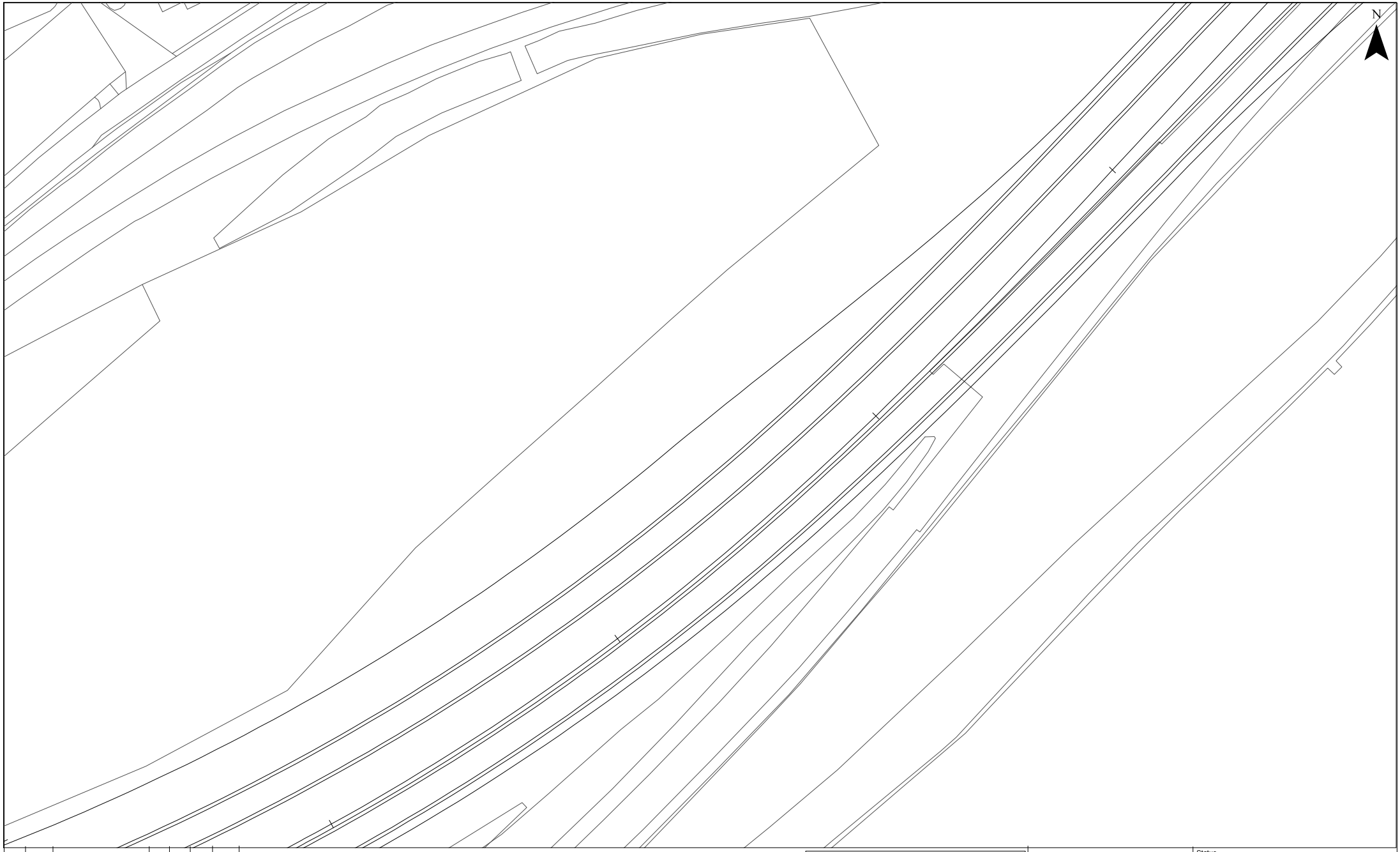
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 66 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS
2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

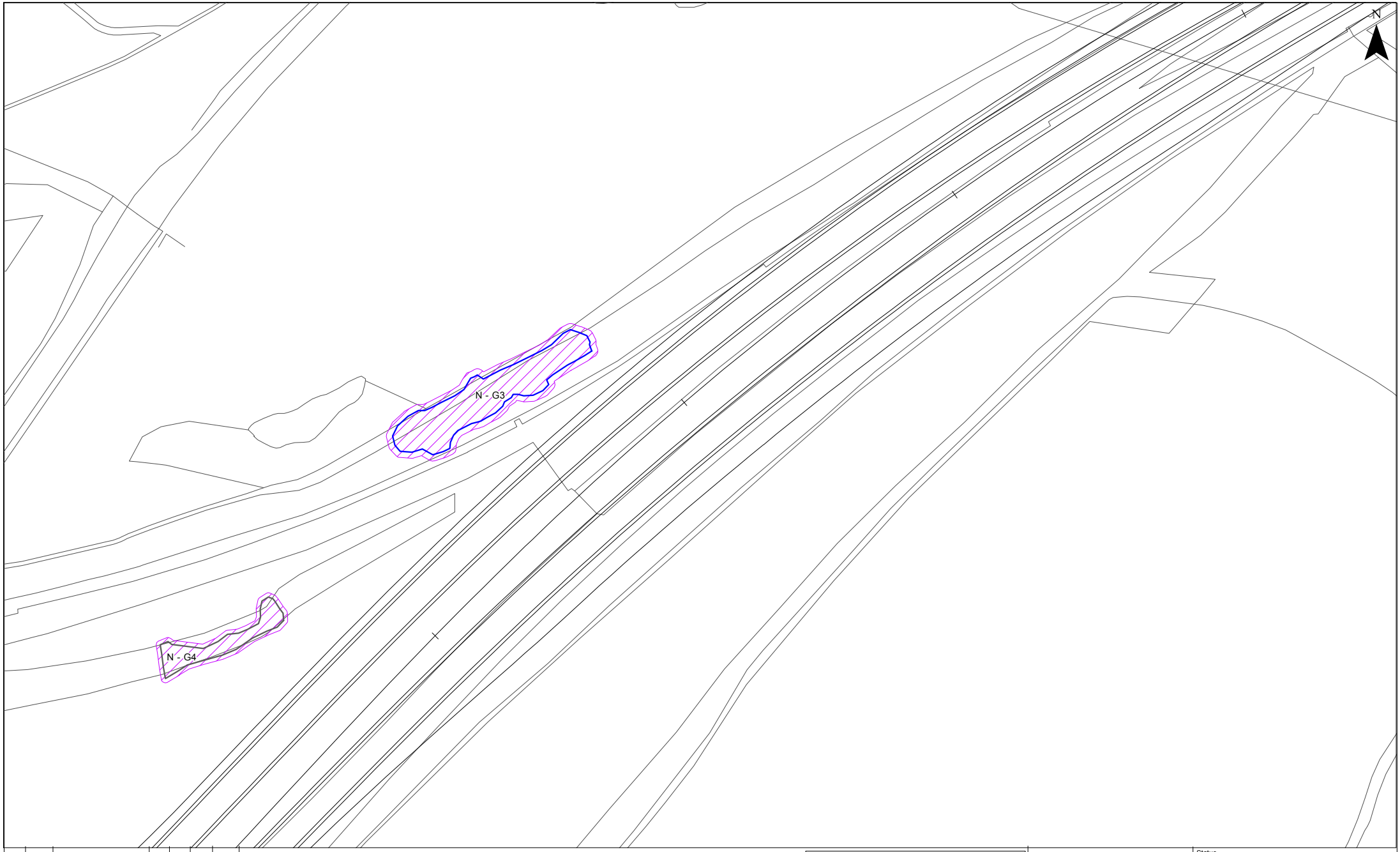
Status: FINAL

Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 67 OF 69

Scale: 1:1,000 @A3 | DO NOT SCALE

Drawing No.: B2191100/Sc5-6/TC01 | Revision: R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

0 25 50 Metres

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

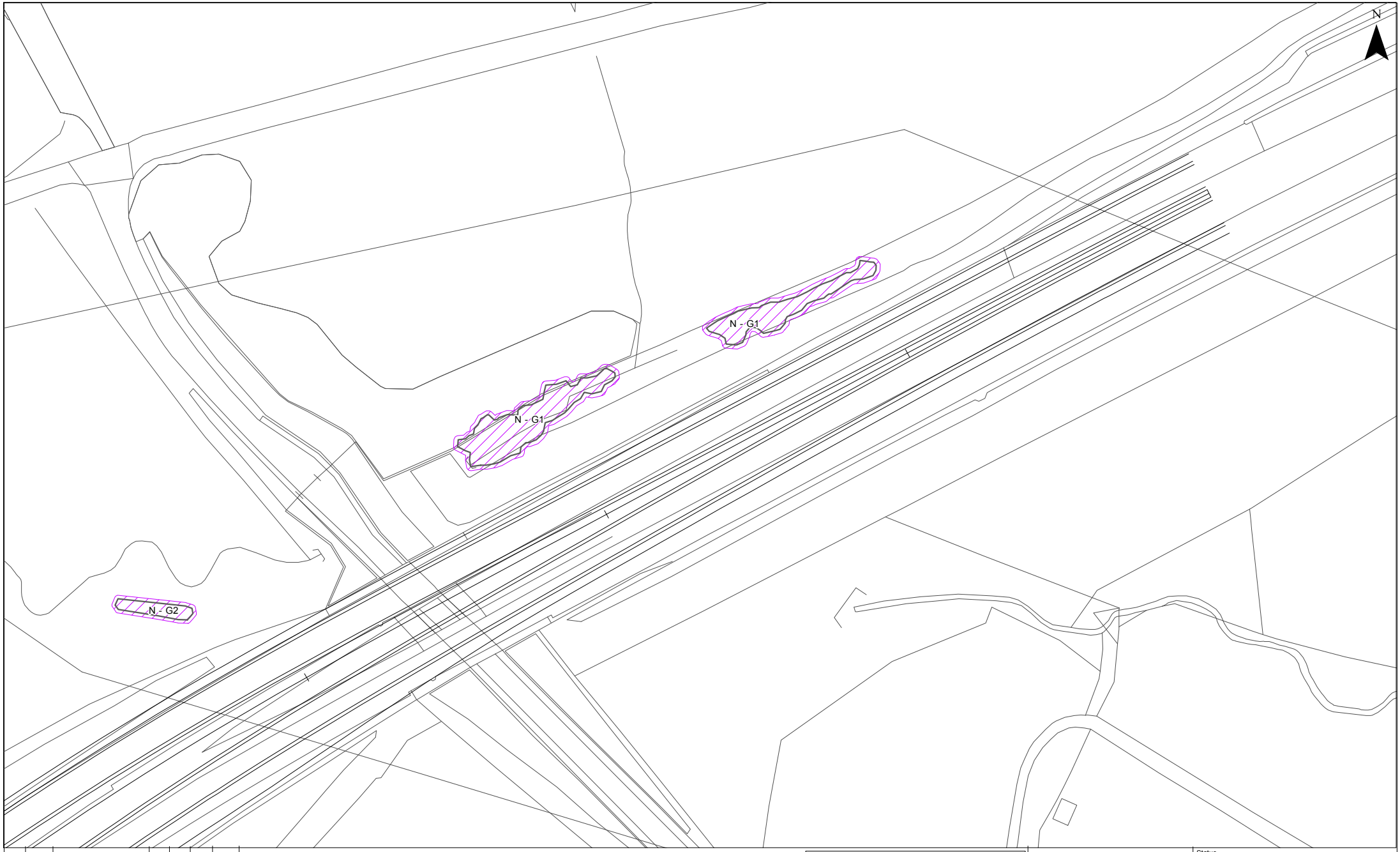
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44.(0)121.237.4001
www.jacobs.com

Status	FINAL
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	TREE CONSTRAINTS - SHEET 68 OF 69
Scale	1:1,000 @A3 DO NOT SCALE
Drawing No.	B2191100/Sc5-6/TC01
Revision	R0



0 25 50 Metres

© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Legend

- Preliminary scheme design 2016
- Root protection area
- Category A tree
- Category B tree
- Category C tree
- Category U tree
- Category A group/woodland/hedge
- Category B group/woodland/hedge
- Category C group/woodland/hedge
- Category U group/woodland/hedge

N - Feature to the north side of the existing A465
S - Feature to the south side of the existing A465
T - Tree
G - Tree group
W - Woodland
H - Hedge

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	JUN16	FINAL	EW	SF	PS	MW

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS

2 Colmore Square, 38 Colmore Circus, Queensway, Birmingham, B4 6BN
Tel: +44 (0)121 237 4000 Fax: +44 (0)121.237.4001
www.jacobs.com

Status: FINAL

Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: TREE CONSTRAINTS - SHEET 69 OF 69

Scale: 1:1,000 @A3 | DO NOT SCALE

Drawing No.: B2191100/Sc5-6/TC01

Revision: R0

Welsh Government

A465 Heads of the Valleys Dualling - Sections 5 and 6 - Dowlais Top to Hirwaun

Appendix 11A - Site of Special Scientific Interest Legislative Compliance Report

Rev 0

July 2017

Final

Contents

1. Introduction 1
2. Legislative Requirements 2
3. Tests of Compliance 3
4. Assessment of Implications for SSSIs 4
4.1 Consultation 4
4.2 Baseline 4
4.3 Design Mitigation 5
4.4 Potentially Damaging Operations 6
5. Mitigation 11
5.1 Tir Mawr a Dderi Hir, Llwydcoed SSSI 11
5.2 Cwm Taf Fechan Woodlands SSSI 12
6. Assessment of Compliance 13
6.1 Reasonable steps have been taken to further the conservation and enhancement of SSSIs 13
6.2 Notice has been given to NRW before carrying out operations likely to damage SSSIs 13
6.3 Operations have been and would be carried out in such a way as to give rise to as little damage as is reasonably practicable to SSSIs 13
6.4 The site is restored to its former condition, so far as is reasonably practical, if any damage occurs 14
6.5 Account has been taken of advice from NRW in development of the proposed scheme. 14
6.6 Summary 14
7. References 15

1. Introduction

This technical report describes the consideration of the compliance with the legislative duties of the proponent (Welsh Government – (WG)) of the proposed scheme, with regard to Sites of Special Scientific Interest (SSSIs).

The report sets out the legislative requirements and the compliance tests; followed by an assessment of implications from the proposed scheme for SSSIs. Mitigation and offsetting for SSSIs is then outlined, followed by a conclusion on compliance with the legislative duties.

2. Legislative Requirements

SSSIs are legally protected under the Wildlife and Countryside Act 1981 (as amended). Each SSSI is protected by law from damage through development, unsuitable management or other activities. They are also protected through working partnerships and agreements with owners and others who manage the sites.

WG, as a statutory undertaker, has a number of duties under the Wildlife and Countryside Act 1981 (as amended) in respect of SSSIs which are outlined below and which form the basis of this report.

28G Statutory undertakers, etcetera: general duty.

(2)The duty is to take reasonable steps, consistent with the proper exercise of the authority's functions, to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which the site is of special scientific interest.

28H Statutory undertakers, etcetera: duty in relation to carrying out operations.

(1)A section 28G authority shall give notice to Natural Resources Wales (NRW) before carrying out, in the exercise of its functions, operations likely to damage any of the flora, fauna or geological or physiographical features by reason of which a site of special scientific interest is of special interest.

(2)Subsection (1) applies even if the operations would not take place on land included in a site of special scientific interest.

(6)The requirements are:

(a) that the authority carry out the operations in such a way as to give rise to as little damage as is reasonably practicable in all the circumstances to the flora, fauna or geological or physiographical features by reason of which the site is of special interest (taking account, in particular, of any such advice as is referred to in subsection (5)(b)); and

(b) that the authority restore the site to its former condition, so far as is reasonably practicable, if any such damage does occur.

3. Tests of Compliance

The objective of this report is to consider if the proposed scheme would comply with the legislation outlined in Section 2 and thus the duty of the proponent, WG, in respect of the Wildlife and Countryside Act 1981 (as amended). The report reviews the information available with regards to potential impacts on SSSIs collated as part of the Environmental Statement (ES) and considers this in respect of the following tests of compliance, based on the Wildlife and Countryside Act 1981 (as amended) Sections 28G and 28H:

- reasonable steps have been taken to further the conservation and enhancement of the features of SSSIs;
- notice has been given to NRW before carrying out operations likely to damage the features of SSSIs;
- operations have been, and would be, carried out in such a way as to give rise to as little damage as is reasonably practicable to the features of SSSIs;
- SSSIs would be restored to their former condition, so far as is reasonably practical, if any damage occurs; and
- account has been taken of advice from Natural Resources Wales (NRW) in development of the proposed scheme.

4. Assessment of Implications for SSSIs

4.1 Consultation

Consultation has been undertaken with NRW, and other statutory consultees, during the development of the proposed scheme design and preparation of the ES. The details of this are provided in Chapter 6: Consultations during Scheme Development of the ES and summarised in Section 11.5 of the Chapter 11: Nature Conservation. NRW have been involved in a number of technical working groups with regard to nature conservation, and their advice has been incorporated into the development of the proposed scheme design, mitigation and offsetting. For example, NRW have expressed a preference for larger ecological mitigation and offsetting areas with dual purposes and easy access for ongoing management over multiple smaller mitigation and offsetting areas, even if this results in lower quality habitat being selected as mitigation or offsetting areas. NRW have also been consulted as a statutory consultee on this report and the ES.

4.2 Baseline

The desk study identified eleven SSSIs located within a 4 km wide corridor centred on the proposed scheme. These sites are listed in Table 4.1 and are presented in order of proximity from the proposed scheme. The location of each site is shown in Volume 3 of the ES - Figure 11.1. Citation sheets describing reasons for designation are provided in Volume 2 of the ES - Appendix 11J.

Note that all figures referred to in this report are provided in Volume 3 of the ES. The Environmental Masterplan is provided in Volume 4.

Table 4.1 : SSSIs located within a 4 km wide corridor centred on the proposed scheme

Site name	Area (ha)	Approximate distance (km) and relative location from proposed scheme	Designated for:
Cwm Taf Fechan Woodlands	60.9	0 km north and south	Mixed deciduous woodlands cover steep slopes and spoil from quarries with one of the few Glamorgan stations for the limestone fern *Gymnocarpium robertianum*.
Tir Mawr a Dderi Hir, Llwydcoed	49.85	0 km south-east	Species-rich neutral grassland and for its marshy grassland, some of which is heathy fen-meadow.
Cors Bryn-y-Gaer (part of Blaen Cynon Special Area of Conservation (SAC))	52.1	0.05 km north	Lowland bog and for areas of soligenous flush, marshy grassland, dry neutral grassland and lowland acid grassland. Also of special interest for the marsh fritillary *Euphydryas aurinia*.
Bryncarnau Grasslands, Llwydcoed	24.8	0.08 km south	Gradation from lowland mesotrophic grassland to pasture of a more upland character.
Woodland Park and Pontpren (part of Blaen Cynon SAC)	14.5	0.82 km north	Marsh fritillary butterfly and provided by its mixture of habitat types, including marshy grassland, dry acid and neutral grassland, heathland and woodland.
Nant Glais Caves	15.7	1.55 km north	Limestone gorge of the Nant Glais and two vadose cave systems which lie parallel to it and under each bank. The caves are also important for their unusually large populations of white trout *Salmo trutta*.

Site name	Area (ha)	Approximate distance (km) and relative location from proposed scheme	Designated for:
Penmoelallt	8.0	0.29 km west	A mixed woodland of ash *Fraxinus excelsior*, oak *Quercus* species, wych elm *Ulmus glabra* and small-leaved lime *Tilia cordata* overlying Carboniferous Limestone. The rare Ley's whitebeam *Sorbus leyana* grows on a small escarpment within the wood.
Dyffrynoedd Nedd a Mellte a Moel Penderyn	420.5	1.23 km west	Extensive and diverse semi-natural woodland, important populations of several flowering plants and supporting outstanding assemblages of mosses, liverworts and lichens.
Daren Fach	8.0	0.64 km north	Concentration of *Sorbus* species. On the southern end of the Darren Fach crags. This is the type locality for the rare Ley's whitebeam.
Cwm Glo a Glyndyrys	181.3	1.70 km south	Extensive areas of marshy grassland, species-rich neutral grassland and acid grassland, and for the association of these habitats with others including woodland and heath.
Lower House Stream Section	0.11	1.64 km north	This site yields the most diverse *Gastrioceras cancellatum* Marine Band fauna known in southern Britain, including goniatites, brachiopods, bivalves and crinoids. It is a horizon of considerable stratigraphical importance, since it is used to locate the boundary between the Marsdenian and Yeadonian stages of the Namurian."

4.3 Design Mitigation

A hierarchical process has been adopted to avoid, reduce, mitigate and offset ecological impacts of the proposed scheme. The impact assessment in the ES (Chapter 11: Nature Conservation) takes into account design mitigation that is integral to the proposed scheme and mitigation that is committed to in the proposed scheme design (see ES Chapter 5: Scheme Description and Appendix 11M). Avoidance was a key feature of the proposed scheme design ensuring as far as practicable the proposed scheme has been designed to avoid impacts on ecological receptors.

The ES also takes into account mitigation incorporated into the proposed scheme to avoid offences under protected species legislation (as described in the Compliance with Protected and Controlled Species Legislation Report, ES - Appendix 11B).

WG would require its main contractors to have an Environmental Management System certified to BS EN ISO14001. Integral to this compliance, would be the Construction Environment Management Plan (CEMP). The CEMP would include roles and responsibilities, together with appropriate control measures, training and briefing procedures, risk assessments and monitoring systems to be employed during planning and constructing the proposed scheme for all relevant topic areas. Standard construction practices for avoiding; mitigating and offsetting environmental effects would be implemented. An indicative CEMP has been compiled and is available on request.

Likely significant effects on and specific measures to avoid or reduce impacts identified on SSSIs are detailed in the ES and are summarised in Sections 4.4 and 5 of this report for ease of reference.

4.4 Potentially Damaging Operations

4.4.1 SSSIs with no likely significant effect

No feasible source-pathway-receptor links were identified between the proposed scheme and the following SSSIs located within of the 4 km wide corridor centred on the proposed scheme:

- Woodland Park and Pontpren (part of Blaen Cynon SAC) SSSI;
- Dyffrynoedd Nedd a Mellte a Moel Penderyn SSSI;
- Nant Glais Caves SSSI;
- Penmoelallt SSSI;
- Daren Fach SSSI; and
- Lower House Stream Section SSSI.

4.4.2 Habitat loss

There would be direct land take (habitat loss) from Tir Mawr a Dderi Hir, Llwydcoed SSSI and Cwm Taf Fechan Woodlands SSSI. There would be a loss of approximately 2.07 ha within the Tir Mawr a Dderi Hir, Llwydcoed SSSI boundary which lies immediately south of the proposed scheme between approximate chainages (ch.) 5475 and 6225. There would be a loss of approximately 0.44 ha within the Cwm Taf Fechan Woodland SSSI boundary between approximately ch. 11525 and 11575 to the north east of the proposed scheme. The breakdown of habitat types lost within each SSSI is presented in Table 4.2.

Table 4.2 : Approximate SSSI habitat loss ('Other' refers to habitats of limited ecological value: amenity grassland, scrub, bracken and hard standing)

Site	Approximate total area of habitat loss (ha)	Habitat types lost (ha)
Tir Mawr a Dderi Hir, Llwydcoed SSSI	2.07	Neutral grassland - semi-improved: 1.07 Broadleaved woodland - semi-natural: 0.45 Wet heath / acid grassland mosaic: 0.44 Marshy grassland: 0.11
Cwm Taf Fechan Woodlands SSSI and LNR	0.44	Broadleaved woodland - semi-natural: 0.26 Other: 0.18

4.4.3 Habitat degradation - air quality impacts

SSSIs within a 400 m wide corridor centred on the proposed scheme are considered sensitive to air quality impacts. Impacts are possible in the construction phase due to dust deposition and the operational phase due to increased vehicle emissions generating increased levels of nitrogen oxides (NOx) and acid and nitrogen deposition(as per Design Manual for Roads and Bridges (DMRB), Vol 11, Section 3, Part 1, HA 207/07, Air Quality). Any SSSIs more than 200 m from the proposed scheme (i.e. outside of the 400 m wide corridor) are not considered likely to be impacted by this pathway.

Potential effects on habitats impacted by a reduction in air quality could include:

- changes in species composition, especially in nutrient poor ecosystems with a shift towards species associated with higher nitrogen availability (e.g. dominance of tall grasses);
- reduction in species richness;
- increases in plant production; and / or

- a decrease in or loss of sensitive lichens and bryophytes.

Please note that the 400 m wide corridor for the operational effects of the proposed scheme extends from all 'affected roads' (please refer to ES Chapter 8: Air Quality) which also considers traffic changes on the surrounding roads around the proposed scheme. Please refer to Figure 11.1, specifically 'Air Quality Study Area'.

Four SSSIs lie within a 400 m wide corridor centred on the proposed scheme:

- Cors Bryn-y-Gaer SSSI;
- Tir Mawr a Dderi Hir, Llwydcoed SSSI;
- Bryncarnau Grassland, Llwydcoed SSSI; and
- Cwm Taf Fechan Woodlands SSSI.

The Cwm Glo a Glyndyrs SSSI is also located within the 400 m wide corridor centred on the 'affected roads'.

4.4.3.1 Construction phase impacts

Impact on SSSIs as a result of construction dust would be temporary and would be mitigated via standard best practice (see ES Chapters 5: Scheme Description and 8: Air Quality). As such, no likely significant effects are anticipated on SSSIs as a result of dust emissions during the construction phase. A qualitative assessment for potential impact on SSSIs from construction traffic was undertaken and detailed in Chapter 8: Air Quality. No potential impact on SSSIs was identified.

4.4.3.2 Operational phase impacts

Nitrogen oxides

None of the SSSIs within the 'affected roads' study area would experience an estimated annual average NOx concentration of over 30 µg/m³, the threshold as specified by HA 207/07 (Highways Agency, 2007) whereby vegetation would be significantly affected. Therefore, as per Interim Advice Notice 174/13 – Evaluation of Significant Local Air Quality Effects (Highways Agency, 2013), the modelled NOx concentrations (critical level) for the proposed scheme during its operation are unlikely to cause a likely significant effect on the SSSIs.

Acid and nitrogen deposition

Further detailed assessment of potential acid and nitrogen deposition (critical loads) modelled from proposed vehicle emissions using predicted traffic data was undertaken in Chapter 8: Air Quality, specifically Appendix 8E in relation to Designated Sites.

- An additional detailed assessment using predicted traffic data for the proposed scheme was used to model the 'process contribution' of acid and nitrogen deposition on SSSIs with the proposed scheme in operation. This was undertaken as reported in ES Chapter 8: Air Quality, specifically Appendix 8E. The significance of the predicted long-term deposition at SSSIs was determined in line with guidance provided by the Environment Agency (Environment Agency, 2016); "*Where the process contribution (PC) is less than 1% of the relevant critical level or critical load, the emission is not likely to have a significant effect alone or in combination irrespective of the existing concentrations or deposition rates*". Table 4.3 and Table 4.4 below detail the modelled deposition rates of acid and nitrogen for SSSIs.

The modelled process contribution of the proposed scheme was less than 1% of the relevant critical load for all SSSIs modelled, except for Tir Mawr a Dderi Hir, Llwydcoed SSSI. Therefore no significant adverse effect on the habitats of SSSIs due to acid or nitrogen deposition is considered likely, except for Tir Mawr a Dderi Hir, Llwydcoed SSSI.

The acid and nitrogen deposition due to operation vehicular emissions is modelled to increase at Tir Mawr a Dderi Hir, Llwydcoed SSSI at 3.07% and 4.8% of their respective critical loads. Using the transect modelling data in the Air Quality assessment, it is considered that this has the potential to result in habitat degradation for

a distance of up to 50 m from the road edge into the SSSI (a strip of habitat totalling an approximate 4.5 ha). Possible effects on the habitats could include competition from more vigorous species over the key marshy and acidic grassland species in this part of the SSSI.

Table 4.3 : Modelled air quality impact – operational phase – acid deposition

SSSI	Priority habitat	Critical Load (CL) CLMaxN	Estimated acid deposition (kEqH+/ha-year)		
			Existing Deposition (ED)	Process Contribution (PC)	PC / CL (%)
Cors Bryn-y-Gaer	Acid grassland	2.28	1.81	-0.00014	-0.01%
Tir Mawr a Dderi Hir, Llwydcoed	Acid grassland	1.77	1.81	0.068	**3.07%**
Bryncarnau Grassland, Llwydcoed	Acid grassland	1.21	1.82	0.003	0.29%
Cwm Glo a Glyndyrys	Acid grassland	1.77	1.82	0.0002	0.02%
Cwm Taf Fechan Woodlands	Woodland	2.43	2.53	0.002	0.1%

Table 4.4 : Modelled air quality impact – operational phase – nitrogen deposition

SSSI	Priority habitat	Critical Load (CL) minimum	Critical Load (CL) maximum	Estimated nutrient N deposition (kgN/ha-year)			
				Existing Deposition (ED)	Process Contribution (PC)	PC / CL (min) (%)	PC / CL (max) (%)
Cors Bryn-y-Gaer	Acid grassland	20	25	25.3	-0.002	-0.02%	-
Tir Mawr a Dderi Hir, Llwydcoed	Acid grassland	20	25	25.3	1.0	**4.8%**	**3.8%**
Bryncarnau Grassland, Llwydcoed	Acid grassland	10	25	25.5	0.05	0.5%	-
Cwm Glo a Glyndyrys	Acid grassland	20	25	25.5	0.002	0.02%	-
Cwm Taf Fechan Woodlands	Woodland	10	20	35.4	0.034	0.34%	-

It should be noted that the existing deposition rate at the SSSI (and all other relevant SSSIs in this assessment) already exceed habitat specific critical load ranges for nitrogen deposition. As such, the area of SSSI potentially affected may have undergone some habitat degradation already meaning any additional impact may not be proportionally as significant.

It is also considered that the habitat quality at the Tir Mawr a Dderi Hir, Llwydcoed SSSI is more likely to reflect the current management regime rather than any effects from nitrogen or acid deposition associated with vehicle emissions. As such, air quality is unlikely to be a limiting factor in habitat quality at this SSSI. However, it is not

possible to be confident that no degradation would occur within the SSSI due to changes in air quality and there is potential that this could be considered significant.

4.4.4 Water pollution

Potential pollution pathways were identified with the following SSSIs:

- Tir Mawr a Dderi Hir, Llwydcoed SSSI;
- Cwm Taf Fechan Woodlands SSSI;
- Cors Bryn-y-Gaer SSSI; and
- Bryncarnau Grassland, Llwydcoed SSSI.

4.4.4.1 Construction phase impacts

During construction of the proposed scheme there could be a potential risk via changes in environmental conditions if local water quality was affected by pollution from suspended solids and other pollution sources, including metals and hydrocarbons.

Construction related impacts on water quality would be temporary and would be mitigated by implementing best practice measures included in the proposed scheme design mitigation (Charles & Edwards, 2015) (Masters-Williams, *et al.,* 2001). See ES Chapter 5: Scheme Description, Chapter 17: Road Drainage and Water Environment (Volume 1 of ES) and Appendix 11M: Design mitigation (Volume 2 of ES) for further details. In summary, these would include:

- a construction commitment to comply with best practice guidelines on environmental protection, for example CIRIA C741 - Environmental Good Practice on Site (4th Edition) (CIRIA, 2015), CIRIA C532 - Control of Water Pollution from Construction Sites (CIRIA, 2001) and CIRIA C648 - Control of water pollution from linear construction projects (CIRIA, 2006);
- a commitment to work in accordance with: GPP2: Above ground oil storage tanks; GPP5: Works and maintenance in or near water; and GPP13: Vehicle washing and cleaning.

These guidelines specifically detail techniques to remove potential water pollution pathways during construction.

No likely significant effects are therefore anticipated on SSSIs as a result of water pollution during the construction phase of the proposed scheme.

4.4.4.2 Operational phase impacts

Discharge of water from the proposed scheme during its operational phase would be appropriately attenuated and discharged at greenfield rate. This is in comparison to the existing road drainage on the existing A465 where there is no defined drainage strategy. The implementation of water attenuation and pollution prevention controls to current best practice standards would be a significant improvement in local water quality with potential improvements to any SSSIs that currently experience uncontrolled receipt of surface waters from road drainage. Water discharges would either be entirely prevented or be at a level where no adverse effects would be anticipated. This and the improvement quality of discharged water would be a beneficial impact of the proposed scheme on SSSIs and the wider environment.

4.4.5 Hydrology

No abstraction or discharge to ground water is required as part of the proposed scheme construction or operation. The design mitigation would minimise changes to hydrology sufficiently that either there is no pathway to affect or if a feasible connection were possible, no likely significant effects would occur. See ES Chapter 5: Scheme Description and Chapter 17: Road Drainage and Water Environment for further details.

4.4.6 Summary

No feasible source-pathway-receptor links were identified between the proposed scheme and the following SSSIs located within the 4 km wide corridor centred on the proposed scheme:

- Woodland Park and Pontpren (part of Blaen Cynon SAC) SSSI;
- Dyffrynoedd Nedd a Mellte a Moel Penderyn SSSI;
- Nant Glais Caves SSSI;
- Penmoelallt SSSI;
- Daren Fach SSSI; and
- Lower House Stream Section SSSI.

Feasible source-pathway-receptor links were identified for the following SSSIs but were scoped out as having no likely significant effects when embedded design measures and specific air quality assessment were undertaken:

- Cors Bryn-y-Gaer SSSI;
- Cwm Glo a Glyndyrys SSSI; and
- Bryncarnau Grassland, Llwydcoed SSSI.

Taking into account the design mitigation outlined above, the following impacts on SSSIs would be anticipated as a result of the proposed scheme. These impacts are summarised in Table 4.5.

Table 4.5 : Summary of potential impacts on SSSIs as a result of the proposed scheme

Site name	Approximate distance from proposed scheme	Potential impacts (taking into account design mitigation and offsetting)
Cwm Taf Fechan Woodlands SSSI (also a LNR)	0 km north and south	• Direct loss of approximately 0.44 ha of habitat during construction.
Tir Mawr a Dderi Hir, Llwydcoed SSSI	0 km south-east	• Direct loss of approximately 2.07 ha of grassland habitat during construction; • Potential habitat degradation of up to 4.5 ha of habitat within the SSSI along the northern boundary, adjacent the proposed A465.

5. Mitigation

Additional mitigation is proposed, in addition to the embedded design mitigation, to mitigate the losses of habitat at Tir Mawr a Dderi Hir, Llwydcoed SSSI and at Cwm Taf Fechan Woodlands SSSI. Mitigation at each site is discussed separately in the sections below. In accordance with the Wildlife and Countryside Act 1981 (as amended) Sections 28G and 28H, specifically that 'reasonable steps have been taken to further the *conservation* and *enhancement* of the features of SSSIs', the mitigation features below are separated into distinct *conservation* and *enhancement* sections.

5.1 Tir Mawr a Dderi Hir, Llwydcoed SSSI

5.1.1 Conservation

The direct loss of approximately 2.07 ha of habitat within the SSSI would be mitigated as follows:

- Reinstatement of the new soft estate within the SSSI boundary. Existing topsoil[1] from within the SSSI would be salvaged during vegetation clearance and reinstated on the new soft estate as soon as possible (between approximate ch. 5475 and ch. 6225, south side); and
- Where necessary, enhancement of the new soft estate habitat within the existing SSSI boundary involving supplementary seeding using seed harvested from the adjacent SSSI unaffected by construction works.

These mitigation measures would result in minor net loss from the Tir Mawr a Dderi Hir SSSI of approximately 0.24 ha. Approximate 0.14 ha of existing SSSI habitat would be permanently lost under the widened A465 and a further approximate 0.1 ha would be lost under the proposed attenuation pond access track.

However, proposed habitat enhancement of an additional approximate 0.34 ha in the proposed soft estate immediately adjacent to the SSSI to the north-east (approximate ch. 6250 – 6350, see Figure 11.15 and Environmental Masterplan in ES Volume 4) by planting trees (replacing those lost in the SSSI) and enhancing the proposed grassland area using soil salvage and seed harvest from the SSSI would mitigate this loss.

A Habitat Management Plan (HMP) for these locations within the wider soft estate would be implemented with the aim to bring this land up to SSSI quality. The plan would also include a management prescriptions post construction and a monitoring programme. The plan would have annual review to allow for amendments to both management and monitoring.

5.1.2 Enhancement

Provision of a solid highway fence around the northern boundary Tir Mawr a Dderi Hir, Llwydcoed SSSI to avoid cattle escaping onto the A465 is proposed as the existing highway fence is regularly vandalised. The provision of suitable fencing would enable grazing of the SSSI (at agreed levels for nature conservation benefit) which is currently intermittent due to the poor condition and intermittent nature of the existing barrier. This would allow grazing to be undertaken in a manner more compatible with the desired management of grassland within the SSSI and thus act as an enhancement.

In addition to increasing the overall area of high quality grassland habitat in the soft estate, the proposed area of marsh fritillary habitat creation at Llwydcoed Slopes (approximately 14.4 ha) would be the receptor site for grassland turfs lost from the Tir Mawr a Dderi Hir, Llwydcoed SSSI. With appropriate management, the Llwydcoed Slopes site would increase the distribution of SSSI quality habitat in the local area and potential to create a new link in the landscape between the Tir Mawr a Dderi Hir, Llwydcoed SSSI and the Bryncarnau Grassland, Llwydcoed SSSI (to the south east, see ES, Volume 3, Figure 11.15). The Llwydcoed Slopes mitigation site would create a protected and appropriately managed wildlife dispersal corridor. The mitigation site would also provide a buffer between other land use pressures and the SSSIs, thereby furthering the

[1] Although the term 'top soil' is referenced throughout this report, it is possible that a mixture of top soil stripping, top soil inversion or top soil mixing would be used to reduce soil fertility and allow the valuable seed bank that is contained deeper in the soil profile to become established. A method statement for soil management and habitat restoration would be developed in consultation with NRW during the detailed design stage of the proposed scheme.

conservation of the Tir Mawr a Dderi Hir, Llwydcoed SSSI itself but also Bryncarnau Grasslands, Llwydcoed SSSI, enhancing the SSSI network in the region as a whole.

In Environmental Liaison Group (ELG) meetings (Minutes contained within ES Volume 2 - Appendix 6A) it was suggested that Butterfly Conservation, local authorities and PONT (Pori Natur a Threftadaeth / Grazing, Nature and Heritage) have active grazing programmes in the local area. Opportunities potentially exist to develop collaborative management plans such as the 'Flexigraze' partnership operated by Northumbrian Wildlife Trust whereby grazing management across a number of different sites with differing requirement can be co-ordinated by a single enterprise without the need for specific organisations to invest in their own stock ownership. A commitment has be added to the Register of Environmental Actions and Commitments (REAC) specifying that the Contractor / Special Purpose Vehicle for the proposed scheme will co-ordinate with these groups when finalising the HMP. Again, this further enhances not only the specific SSSI impacted by the proposed scheme but has a synergistic beneficial impact on the wider network of local sites managed in the area by facilitating more integrated and appropriate management options.

5.2 Cwm Taf Fechan Woodlands SSSI

5.2.1 Conservation

The loss of approximately 0.26 ha of woodland habitat within the Cwm Taf Fechan Woodlands SSSI would be mitigated via the reinstatement and creation of woodland habitat within the proposed landscape planting scheme. The loss of approximately 0.18 ha of habitat types of low ecological value is not mitigated for.

Woodland habitat loss immediately north of the Taf Fechan structure and east of the Taf Fechan watercourse would be reinstated with woodland planting post construction. Minor permanent loss where the new structural supports are located (approximately 0.02 ha) would remain. An additional 0.01 ha would be lost under the proposed attenuation pond access track.

Top soil salvage and coppiced trees and shrubs from cleared habitats within the SSSI at the proposed attenuation ponds access track (ch. 12250 – 12500) would be used for reinstatement on the proposed soft estate at two woodland mitigation blocks (see Figure 11.15) adjacent the SSSI on the new soft estate. Together, these plots would create a new woodland area of approximately 0.31 ha, a marginal net gain.

5.2.2 Enhancement

In addition to the site specific mitigation above, woodland habitat would be planted as part of the proposed landscape planting across the proposed soft estate, totalling approximately 43.2 ha. Some of this would be contiguous with the SSSI, providing an ecological enhancement of the botanical features for which the SSSI is designated. This would be just one component of a more continuous, connective and high quality soft estate nature conservation resource across the entire proposed scheme. These areas are shown on the Environmental Masterplan (ES Volume 4).

A new access to the SSSI for recreational users and land managers (including pony grazing) would be provided at approximately ch. 12250. This new access would permit safe and continued access to and into the SSSI allowing conservation management options previously unavailable to the site, further aiding continued conservation and enhancement.

.

6. Assessment of Compliance

6.1 Reasonable steps have been taken to further the conservation and enhancement of SSSIs

WG (the proponent) is, within its wider remit, responsible for:

- constructing new roads and improving existing ones;
- renewing roads, bridges and other structures; and
- the day-to-day maintenance, including winter maintenance.

Whilst providing this duty the WG must also take 'reasonable steps' to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which a site is of special scientific interest.

For the proposed scheme, in addition to design mitigation to avoid and mitigate for likely significant effects on ecological features, specific mitigation is proposed to take into account impacts of habitat loss at Tir Mawr a Dderi Hir, Llwydcoed SSSI and Cwm Taf Fechan Woodlands SSSI, where impacts would be unavoidable. The proposed mitigation is beyond simply replacing what is lost by providing high quality, comparable habitats. The proposed mitigation would further the conservation and enhancement of the features for which these SSSIs were designated both by extending the areas of comparable habitats, would provide a buffer between the impacted SSSI and other land uses and also would create new wildlife corridors / habitat connections.

6.2 Notice has been given to NRW before carrying out operations likely to damage SSSIs

For the proposed scheme, notice has been (and will continue to be) given to NRW via the planning process (in this case the Highways Act 1980 (as amended) Orders process), through the statutory and non-statutory consultation undertaken as part of the scheme development (see ES Chapter 6: Consultations during Proposed Scheme Development) and approval of the proposed scheme through the planning process. This is relevant to all those potentially damaging operations covered in the ES and in this report. The inclusion of statutory consultation on a planning process negates the requirement to complete a notification / consent form.

Where any additional potentially damaging operations may be required subsequent to the publishing of Draft Orders and the ES as part of the development of the proposed scheme (for example, ground investigation works as part of the detailed design and pre-construction surveys) notification would be made via the relevant 'Section 28H notice of works likely to damage the special interest of an SSSI form[2].

6.3 Operations have been and would be carried out in such a way as to give rise to as little damage as is reasonably practicable to SSSIs

The ES outlines the hierarchical process that has been adopted to avoid, reduce and mitigate the ecological impacts of the proposed scheme. A comprehensive list of mitigation actions and commitments has been provided in the Register of Environmental Actions and Commitments (REAC), which would be implemented via contractual documents with the WG's main contractors. Specific mitigation is proposed to take into account impacts of habitat loss at Tir Mawr a Dderi Hir, Llwydcoed SSSI and Cwm Taf Fechan Woodlands SSSI where impacts were unavoidable. Thus operations have been and would be carried out in such a way as to give rise to as little damage as is reasonably practicable to SSSIs.

[2] Available at: https://naturalresources.wales/conservation-biodiversity-and-wildlife/find-protected-areas-of-land-and-seas/guidance-to-site-of-special-scientific-interest-sssi-land-owners-and-occupiers/?lang=en

6.4 The site is restored to its former condition, so far as is reasonably practical, if any damage occurs

Two SSSIs have been identified as being impacted by the proposed scheme: Tir Mawr a Dderi Hir, Llwydcoed SSSI; and Cwm Taf Fechan Woodlands SSSI.

Any areas impacted temporarily by construction would be restored, for example via turf storage and soil salvage. Habitat loss at Cwm Taf Fechan Woodlands SSSI and Tir Mawr a Dderi Hir, Llwydcoed SSSI; would be mitigated by the creation of new habitats contiguous with the SSSI effected or by creating a landscape scale link. Topsoil salvage will occur along the habitat corridor directly lost to the proposed scheme and reinstated within new soft estate that will be within the SSSI boundary, meaning no net loss of habitats within the designated site boundaries.

6.5 Account has been taken of advice from NRW in development of the proposed scheme.

There has been statutory and non-statutory consultation with NRW, and other consultees, throughout the process of developing the proposed scheme design and preparing the ES. Details are provided in ES Chapter 6: Consultations during Proposed Scheme Development.

6.6 Summary

A hierarchical process has been adopted to avoid, reduce and mitigate the impacts of the proposed scheme on SSSIs, in consultation with NRW. This would ensure that operations would be carried out in such a way as to give rise to as little damage as is reasonably practicable to the features of SSSIs. Design mitigation for avoiding and mitigating environmental effects would be implemented along with mitigation related to protected species. Where residual impacts would remain following avoidance and implementation of proposed scheme design mitigation, additional mitigation is proposed to mitigate habitat lost and further enhance the conservation value of the features of SSSIs.

7. References

Charles, P. & Edwards, P., 2015. *Environmental good practice on site guide (C741D).* 4th Edn ed. s.l.:CIRIA.

CIRIA (2001) *Control of Water Pollution from Construction Sites, C532.*

CIRIA (2006) *Control of water pollution from linear construction projects, C648*

CIRIA (2015) *Environmental Good Practice on Site (4th Edition), C741*. Available at: http://www.ciria.org/CMDownload.aspx?ContentKey=8111b3dd-d2a6-4acc-adc4-3ea7b326f5b3&ContentItemKey=d7af8453-e4d8-4204-a05d-8167aeebd6e7. (Accessed June 2017).

Highways Agency (2013) *Interim Advice Note 174/13: Updated air quality advice for evaluating significant local air quality effects for users of DMRB Volume 11, Section 3, Part 1 Air Quality'*. Available at: http://www.standardsforhighways.co.uk/ians/pdfs/ian174.pdf. (Accessed and confirmed link June 2017).

Highways Agency (2007) *Design Manual for Roads and Bridges: Air Quality. Volume 11: Section 3: Part 1 (HA207/07).* Available at: http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section3/ha20707.pdf (Accessed June 2017).

Jacobs, 2017. *A465 Heads of the Valleys Dualling Section 5 & 6 - Statement to Inform Appropriate Assessment,* s.l.: Unpublished Consultancy Report to Welsh Government.

Masters-Williams, H. et al., 2001. *Control of water pollution from construction sites. Guiidance for consultants and contractors. (C532).* s.l.:CIRIA.

Page left intentionally blank.

Welsh Government

A465 Heads of the Valleys Dualling - Sections 5 and 6 - Dowlais Top to Hirwaun

Appendix 11B - Compliance with Protected and Controlled Species Legislation Report

PUBLIC VERSION – Sensitive Records of Protected Species Removed

Rev 0

July 2017

Final

Contents

1. Introduction 1
1.1 Summary 1
2. Methodology 2
3. Scope 3
4. European protected species derogation licence tests 8
5. Relevant species 9
6. Marsh fritillary 10
6.1 Relevant legislation 10
6.2 Baseline information 10
6.3 Potential for an offence 10
6.4 Proposed approach 11
6.5 Conclusion 12
7. Bats 13
7.1 Relevant legislation 13
7.2 Baseline information 13
7.3 Potential for an offence 16
7.4 Proposed approach 22
8. Otter 25
8.1 Relevant legislation 25
8.2 Baseline information 25
8.3 Potential for an offence 25
8.4 Proposed approach 28
8.5 Conclusion 29
9. Great Crested Newt 30
9.1 Relevant legislation 30
9.2 Baseline information 30
9.3 Potential for an offence 30
9.4 Proposed approach 32
9.5 Conclusion 35
10. Badger 36
10.1 Relevant legislation 36
10.2 Baseline information 36
10.3 Potential for an offence 36
10.4 Proposed approach 36
10.5 Conclusion 38
11. Reptiles 39
11.1 Relevant legislation 39
11.2 Baseline information 39
11.3 Potential for an offence 39
11.4 Proposed approach 40
11.5 Conclusion 41

12. Birds 42
12.1 Relevant legislation 42
12.2 Baseline Information 42
12.3 Potential for an offence 42
12.4 Proposed approach 43
12.5 Conclusion 45
13. Freshwater fish 46
13.1 Relevant legislation 46
13.2 Baseline information 46
13.3 Potential for an offence 46
13.4 Proposed approach 47
13.5 Conclusion 48
14. Controlled Species 49
14.1 Relevant legislation 49
14.3 Potential for an offence 49
14.4 Proposed approach 51
14.5 Conclusion 51
15. Summary and conclusions 52
16. References 53

Annex A. NRW response letter – marsh fritillary

Annex B. Great crested newt fencing specification

1. Introduction

This technical report describes the likely risks of the construction and operation of the proposed scheme to contravene the following legislation:

- Conservation of Habitats and Species Regulations 2010 (as amended);
- Wildlife and Countryside Act 1981 (as amended);
- Protection of Badgers Act 1992;
- The Eels (England and Wales) Regulations 2009 (as amended);
- Salmon and Freshwater Fisheries Act 1975 (as amended by the Marine and Coastal Access Act (2009); and
- Environmental Protection Act 1990.

This report provides a summary of the protected and controlled species present in the vicinity of the proposed scheme and reviews the legal offences that the proposed scheme is at risk of breaching. It also sets out the steps (proposed approach) that would be taken when implementing the proposed scheme in order to avoid offences under the legislation.

The mitigation measures that are included with the proposed approach which are in addition to those outlined in the Environment Statement (ES) to minimise likely significant effects on nature conservation, would be included within the Register of Environmental Actions and Commitments (REAC).

This report considers species that are protected or controlled by UK law, but it does not constitute legal advice.

As a publically issued report, any sensitive species records have been redacted. For further information, please contact Welsh Government.

1.1 Summary

There is potential for activities associated with the construction phase of the proposed scheme to commit potential offences related to a number of protected species. However, careful design and best practice would ensure that appropriate working practices would avoid contravention of relevant wildlife legislation. Primarily this would be via avoidance of impact and subsequently the use of European Protected Species (EPS) derogation licences and / or suitable method statements.

2. Methodology

The legislation under which species are protected or controlled has been reviewed to identify the potential for the proposed scheme to cause offences.

The protected and controlled species that are relevant to the proposed scheme have been determined through the ecological baseline information collated for the proposed scheme.

The ecological baseline information was derived from desk-based study and ecological field survey. The desk study included consultation with:

- Natural Resources Wales (NRW);
- South East Wales Biodiversity Records Centre (SEWBReC);
- Biodiversity Information Service (BIS) for Powys and the Brecon Beacons National Park; and
- Brecon Beacons National Park Authority (BBNPA).

A summary of baseline information is provided within this report and full details are provided in the relevant factual survey reports:

- Jacobs Winter 2015 Ecology Survey Results (ES – Appendix 11E);
- Jacobs Summer 2015 Ecology Survey Results (ES – Appendix 11F);
- Jacobs 2016 Ecology Survey Results (ES – Appendix 11G); and
- Jacobs Bat Survey Results 2016 (ES – Appendix 11H).

All Figures referred to are included in Volume 3 of the ES.

The proposed approach to avoid offences (or required to secure a derogation licence) over and above the measures proposed to mitigate likely significant effects (as detailed in Chapter 5: Scheme Description and Chapter 11: Nature Conservation of the ES) are then described. Where indicative dates are provided this assumes a construction start date of November 2019.

3. Scope

Offences considered in this report are only those that could occur as a result of the proposed scheme. Offences relating to cruelty, possession, transport, sale and certain methods for capturing / taking and killing have not been considered as such activities are not required for the implementation of the proposals and, therefore, any such offence committed would be the personal liability of the individual concerned and not the proponent of the proposed scheme (Welsh Government).

Table 3.1 sets out the relevant legislation and potential offences that could occur as a result of the proposed scheme.

The Hedgerow Regulations, 1997 do not apply as the proposed scheme would only be taken forward if Orders under the Highways Act 1980 (as amended) are made, meaning any hedgerow removal would be considered to be permitted work under regulation 6(1)(h) of the Hedgerow Regulations.

All wild plants are protected under the Wildlife and Countryside Act 1981 (as amended) from unauthorised removal. As vegetation clearance for the proposed scheme would be a lawful operation, authorised by the proponent and land owner these offences would not apply.

In relation to the offence of introducing new species to the wild under the Wildlife and Countryside Act 1981 (as amended), the disposal of waste containing controlled species such as Japanese knotweed *Fallopia japonica* falls under the Environmental Protection Act 1990.

For species protected under Schedule 5 of the Wildlife and Countryside Act, 1981 (as amended), there are no provisions for derogation and no licence can, therefore, be issued (as can be with species protected by the Conservation of Habitats and Species Regulations 2010 (as amended)).

Table 3.1 : Potential offences under UK protected species legislation

General descriptor	Conservation of Habitats and Species Regulations, 2010 (as amended)	Wildlife and Countryside Act, 1981 (as amended)	Protection of Badgers Act, 1992	The Eels (England and Wales) Regulations, 2009 (as amended)	Salmon and Freshwater Fisheries Act, 1975 (as amended)
Capturing, killing, and injuring.	To deliberately capture, injure or kill any wild animal of a European Protected Species (EPS) (Reg 41(1)(a)).	To intentionally kill, injure or take any wild bird (s1(1)). To intentionally kill, injure or take any wild animal included in Schedule 5 (s9(1)).	To wilfully kill, injure or take, or attempt to kill, injure or take a badger (s1(1)).	-	-
Disturbing (affecting ability to survive, breed or rear young).	To deliberately disturb wild animals of a EPS [note wherever they are occurring] (Reg41(1)(b)) Reg 41(2)(a)(i) For the purposes of Reg 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young.	-	-	-	-
Disturbing (impairing ability to migrate or hibernate).	To deliberately disturb wild animals of an EPS [note wherever they are occurring] (Reg41(1)(b)) Reg 41(2)(a)(ii) For the purposes of Reg 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to impair their ability, in the case of animals of a hibernating or migratory species, to hibernate or migrate.	-	-	To construct, alter or maintain a dam or structure and fail to notify the Environment Agency first (Part 4, 12 (1), (2).(4)).	-

General descriptor	Conservation of Habitats and Species Regulations, 2010 (as amended)	Wildlife and Countryside Act, 1981 (as amended)	Protection of Badgers Act, 1992	The Eels (England and Wales) Regulations, 2009 (as amended)	Salmon and Freshwater Fisheries Act, 1975 (as amended)
Disturbing (affecting local distribution or abundance).	To deliberately disturb wild animals of an EPS [note wherever they are occurring] (Reg41(1)(b)) Reg 41(2)(b) For the purposes of Reg 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong.	-	-	-	-
Disturbing (whilst occupying a structure or place used for shelter or protection).	-	To intentionally or recklessly disturb any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or disturbs dependent young of such a bird (s1(5)). To intentionally or recklessly disturb any wild Schedule 5 animal while it is occupying a structure or place which it uses for shelter or protection (s9(4)(b)).	To disturb a badger when it is occupying a badger sett (s3(e)).	-	-
Taking eggs.	To deliberately take or destroy the eggs of such a EPS (Reg 41(1)(c).	To intentionally take or destroy an egg of any wild bird (s(1)(c).	-	-	-

General descriptor	Conservation of Habitats and Species Regulations, 2010 (as amended)	Wildlife and Countryside Act, 1981 (as amended)	Protection of Badgers Act, 1992	The Eels (England and Wales) Regulations, 2009 (as amended)	Salmon and Freshwater Fisheries Act, 1975 (as amended)
Obstructing access.	-	To intentionally or recklessly obstruct access to any structure or place which any Schedule 5 animal uses for shelter or protection (s9(4)(c)).	To - obstruct access to, or any entrance of, a badger sett (s3(c)).	-	-
Damage or destruction of a breeding site or resting place.	To damage or destroy a breeding site or resting place of a EPS (Reg 41(1)(d)).	To intentionally take, damage or destroy the nest of a wild bird included in Schedule 1 (s1(1)(aa)). To intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built (s1(1)(b)). To intentionally or recklessly damage or destroy any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection (s(4)(a)).	To damage a badger sett or any part of it or to destroy a badger sett (s3(a)(b)).	-	Knowingly permits to flow, or puts or knowingly permits to be put, into any waters containing fish or into any tributaries of waters containing fish, any liquid or solid matter to such an extent as to cause the waters to be poisonous or injurious to fish or the spawning grounds, spawn or food of fish, shall be guilty of an offence (Part I, 4 (1)).

General descriptor	Conservation of Habitats and Species Regulations, 2010 (as amended)	Wildlife and Countryside Act, 1981 (as amended)	Protection of Badgers Act, 1992	The Eels (England and Wales) Regulations, 2009 (as amended)	Salmon and Freshwater Fisheries Act, 1975 (as amended)
Introducing new species.	-	To plant or otherwise cause to grow in the wild any plant which is included in Part II of Schedule 9 (s14 (2)). Waste produced from management of some species would be “controlled waste” and managed accordingly under the Environmental Protection Act (s33 (1a) and (1b)).	-	-	-
Picking, cutting etc. plants.		An unauthorised person, intentionally or recklessly uproots any wild plant (s13(1)(b)).	-	-	-

4. European protected species derogation licence tests

A European Protected Species (EPS) derogation licence can only be granted by NRW if the following three tests can be met:

i. the purpose of the work meets one of those listed (see below) in the Conservation of Habitats and Species Regulations 2010 (as amended);

ii. that there is no satisfactory alternative; and

iii. that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status (FCS) in their natural range.

The specific set of purposes includes:

- preserving public health or public safety or other imperative reasons of over-riding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;
- scientific and educational purposes;
- ringing or marking;
- conserving wild animals or wild plants;
- protecting any zoological or botanical collection;
- preventing the spread of disease; and / or
- preventing serious damage.

Test One: The purpose of the proposed scheme relates to 'preserving public health or public safety or other imperative reasons of over-riding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment'.

Test Two: There is no satisfactory alternative to the proposed scheme. The requirement for the proposed scheme is discussed in ES Chapter 3: The Need for the Proposed Scheme and the staged and iterative design development is discussed in ES Chapter 4: Scheme Design Development and Alternatives Considered.

Test Three: This test would be met via the various measures discussed in the individual chapters relating to EPS so that species concerned would be maintained at a FCS in their natural range.

5. Relevant species

The baseline data collection has recorded evidence of the following taxa for which the legislation listed in Table 3.1 applies:

- protected species:
  - marsh fritillary *Euphydryas aurinia*;
  - bats;
  - otter *Lutra lutra*;
  - great crested newt (GCN) *Triturus cristatus*;
  - badger *Meles meles*;
  - reptiles;
  - birds; and
  - freshwater fish.
- controlled species:
  - Japanese knotweed;
  - Himalayan balsam *Impatiens glandulifera*;
  - wall cotoneaster *Cotoneaster horizontalis*; and
  - Japanese rose *Rosa rugose.*

Protected species for which habitats within the study area may be suitable including dormouse *Muscardinus avellanarius* and white-clawed crayfish *Austropotamobius pallipes* are not considered within this compliance report. These species have been previously scoped out as it is considered that they are unlikely to be present, and therefore there is considered to be no scope to contravene the relevant legislation.

There is the possibility that the presence of some protected species that are rare and / or difficult to survey effectively (for example red squirrel *Sciurus vulgaris*, pine marten *Martes martes* and certain invertebrates) may have been overlooked. As these species are generally associated with rarer and more diverse habitats, it is considered that the mitigation implemented, including minimising the loss of and damage to such habitats, would constitute a reasonable effort to avoid offences.

No plants on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) were recorded and therefore no offence with regard to these species would occur.

6. Marsh fritillary

6.1 Relevant legislation

- Wildlife and Countryside Act, 1981 (as amended), Schedule 5.

6.2 Baseline information

6.2.1 Desk study

During the desk study records of marsh fritillary were found within a 1 km wide corridor centred on the proposed scheme, mainly to the west in Section 6 of the proposed scheme. The location of these records can be seen in Figure 11.5.

6.2.2 Field survey

Since 2008, ten sites within a 1 km wide corridor centred on Section 6 of the proposed scheme have been surveyed by Jacobs on an annual basis for marsh fritillary. Natural Resources Wales survey the Blaen Cynon SAC. The locations of the monitoring sites and results from the latest monitoring survey report (ES - Appendix 11I) are presented in Figure 11.6.

Larval webs were recorded on four sites in 2016 (2, 2a, 4 and 6). Sites 2 and 4 both supported high numbers of webs, with webs recorded for only the second time on site 6 since monitoring began in 2009. Site 6a had no webs recorded in 2016 for the first time since 2009 due to excessive grazing by ponies on the site.

Adult marsh fritillary (butterflies) was recorded on three sites in 2016 (2, 4 and 7a). High numbers were recorded on Sites 2 and 4 in comparison to other sites, although numbers are lower than those recorded in 2015. No marsh fritillaries have been recorded on Site 5 since monitoring began in 2008. A maximum count of 433 adults was counted at Site 4 in 2015.

Further habitat assessment for marsh fritillary suitability, out with the long term monitoring sites, was undertaken in 2016 and full details are provided in ES - Appendix 11G. The accumulated survey results for marsh fritillary habitat types recorded during all three of the marsh fritillary surveys can be seen in Figure 11.6.

6.3 Potential for an offence

Site clearance could potentially kill, injure or disturb marsh fritillary in their larval (caterpillar life stage) and / or damage habitats of the larval and adult life stages of the species. Table 6.1 sets out the likely risks of contravening the legislation relating to marsh fritillary.

Table 6.1 : Marsh fritillary– relevant legislation and potential for an offence

Wildlife and Countryside Act, 1981 (as amended)	Offence likely (in absence of mitigation)	Location
To intentionally kill, injure or take any wild animal included in Schedule 5 (s9(1)).	Yes – the larval life stage (caterpillar) could be killed or injured during site clearance and the take offence could be considered to apply to the translocation works.	Suitable marsh fritillary habitat under the proposed scheme footprint at: ch. 2750 – 2950 north and south ch. 3150 – 3300 south ch. 3600 – 3800 south ch. 5500 – 6500 south ch. 7900 – 8100 south ch. 8250 – 8300 south ch. 9500 – 9800 south
To intentionally or recklessly disturbs any wild animal listed in Schedule 5 while it is occupying a structure or place which it uses for shelter or protection (s9(4)(b)).	No – the larval stages and adults are not considered sensitive to disturbance.	N/A
To intentionally or recklessly obstruct access to any structure or place which any animal listed on Schedule 5 uses for shelter or protection (s9(4)(c)).	No – access retained marsh fritillary habitat would not be obstructed.	N/A
Intentionally or recklessly damages or destroys any structure or place which any wild animal listed in Schedule 5 uses for shelter or protection (s(4)(a)).	Yes – removal of devils bit scabious during site clearance.	Suitable marsh fritillary habitat under the proposed scheme footprint at: ch. 2750 – 2950 north and south ch. 3150 – 3300 south ch. 3600 – 3800 south ch. 5500 – 6500 south ch. 7900 – 8100 south ch. 8250 – 8300 south ch. 9500 – 9800 south ch. 2750 – 2950

6.4 Proposed approach

The following paragraphs set out the steps that would be taken prior to construction to ensure the legislation protecting marsh fritillary would not be contravened.

NRW provided guidance to the project team, dated 12 May 2016 (See Annex A) with regard to the legal protection of marsh fritillary. NRW reiterated that the only way to avoid potentially committing offences under this act was by avoidance and that:

"The Act says that, if it can be shown that the potentially unlawful act was the incidental result of a lawful operation and could not reasonably have been avoided, no offence will have been committed. To this end a method statement should be prepared and agreed with NRW prior to the commencement of works. Whilst this is not the same as derogation it might be used as part of a defence".

6.4.1 Preconstruction survey

All areas identified as suitable for marsh fritillary under the footprint of the proposed scheme would be inspected for larval webs in late summer 2019 prior to the start of works.

6.4.2 Translocation

It is proposed that larval webs, the devil's-bit scabious plant upon which the larvae feed and their immediate turf is translocated from the proposed scheme footprint to a suitable and prepared receptor site (Llwydcoed Slopes Land Acquired for Ecological Mitigation (ch. 6750 – 7750 south side) see Figure 11.15). Translocation of larval webs would occur in November 2019 when the caterpillars are caterpillars are minimally active in the grassland turfs and can be easily relocated. These activities would be undertaken in accordance with a detailed method statement agreed with NRW as it considered the translocation proposal whilst avoiding killing or injuring could be considered to contravene the 'taking' offence.

6.4.3 Provision of construction phase method statement

A method statement would be developed to ensure the protection of marsh fritillary during site clearance and fencing, which would specify the actions necessary to demonstrate all reasonable efforts had been made to avoid an offence taking place. The method statement would be prepared and agreed with NRW prior to the commencement of any works. The method statement would include detail on appropriately timed vegetation clearance and fencing works in marsh fritillary habitats and a larval web translocation programme.

6.4.4 Reporting

A memo report detailing the numbers and locations of translocated of larval webs would be provided to the proponent, NRW and the Rhondda Cynon Taf (RCT) local authority ecologist within two months of the translocation (anticipated date – Winter 2019/20.

Report on the establishment and management activities of mitigation areas would be provided to the proponent, NRW, and RCT ecologist through the construction phase at six month intervals. Annual reports would be provided during the five year post construction phase.

Monitoring activities on habitat condition and adult marsh fritillary and larval web counts would be incorporated into the factual annual reports which include the long-term monitoring sites.

ELG meetings between the proponent, Jacobs, NRW and the RTC ecologist would be organised after issue of each six monthly report during construction. These would occur annually during the five year post construction phase to discuss the mitigation area and its translocation / establishment success.

6.5 Conclusion

The approach detailed above would avoid the offences listed being committed during the vegetation clearance and fencing stages that are usually the critical early stages of construction which would be the key period of impact.

7. Bats

7.1 Relevant legislation

- Wildlife and Countryside Act 1981 (as amended), Schedule 5; and
- Conservation of Habitats and Species Regulations 2010 (as amended), Schedule 2.

7.2 Baseline information

7.2.1 Desk study

Records of several British bat species have been historically recorded in surrounding 4 km wide corridor centred on the proposed scheme. Species including lesser horseshoe bat *Rhinolophus hipposideros*, noctule bat *Nyctalus noctula,* Daubenton's bat *Myotis daubentonii*, Natterer's bat *Myotis nattere*ri, common pipistrelle *Pipistrellus pipistrellus,* soprano pipistrelle *Pipistrellus pygmaeus* and brown long-eared bat *Plecotus auritus* have been historically recorded within a 1 km wide corridor centred on the proposed scheme. These are shown in Figure 11.8.

Confirmed bat roosts of note within a 1 km wide corridor centred on the proposed scheme are:

[redacted]

- [redacted]

7.2.2 Field Survey

7.2.2.1 Cave roosts

Seventeen of the 30 caves surveyed in March and September 2016 were confirmed bat roosts (see Figure 11.9) and included:

[redacted]

A number of additional unknown caves and roosting features in the Taf Fechan and Taf Fawr gorges are likely to be present due to the fractured and fissured nature of the limestone cliffs.

7.2.2.2 Structure roosts

The results of the ground based assessment of the existing road structures within the proposed scheme footprint, for roosting bats is shown in Table 7.1 below and the structures surveyed can be seen in Figure 11.9.

Table 7.1 : Bat roost assessment in structures – ground assessment

Existing road structure	Grade of potential roost features suitable to support lesser horseshoe bats	Grade of potential roost features suitable to support other species of bats	Result of further inspections where applicable
Rhigos Halt Road Underpass	Negligible	Negligible	N/A
Fifth Avenue Underpass	None	None	N/A
Hirwaun Industrial Estate	None	Moderate	N/A
Nant y Bwlch Culvert	None	None	N/A
Trewaun Subway	None	Negligible	N/A
Afon Cynon Bridge	None	East Abutment - Moderate	N/A
Vale Neath Railway	No access	No access	N/A
Nant Melyn Mainline Viaduct	None	High	N/A
Nant Hir (North) Viaduct	None	East abutment - Moderate	N/A
Nant Ffrwd Viaduct	None	East abutment - Moderate West abutment - Low	N/A
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
Vaynor Road retaining wall	None	None	N/A
Taf Fechan viaduct	None	West Abutment – Moderate East Cliff face - High	N/A
Gurnos Culvert	None	None	N/A

7.2.2.3 Building roosts

A total of 1780 individual buildings were externally assessed for the potential to contain bat roosts within the study area. 311 buildings were identified as having some potential and were categorised as:

- Known roost – 6 (see desk study above);
- High potential – 112;
- Moderate potential – 61; and
- Low potential – 132.

Dusk emergence and pre-dawn return to roost surveys were undertaken at 15 buildings and bat roosts were confirmed within 11 of the buildings surveyed (see Figure 11.10). A further seven bat roosts were located during the backtracking surveys (see Figure 11.10). A summary of the confirmed bat roosts in buildings are listed in Table 7.2 below.

Table 7.2 : Bat roosts in buildings (*identified during Jacobs back tracking survey)

Roost type	Bat species	Building address	Approximate distance from proposed scheme (m)	Maximum number of bats counted
Maternity	Common pipistrelle	[redacted]	43 m	Approximately 10 seen re-entering roost (up to 50 previously seen emerging)
		[redacted]	218 m	Approximately 12
		[redacted]	40 m	Approximately 55
Maternity	Soprano pipistrelle	[redacted]	18 m	Approximately 33
		[redacted]	111 m	150+
Maternity roost	Pipistrelle species	[redacted]	180 m	22
Summer day	Common pipistrelle	[redacted]	17 m	3
		[redacted]	35 m	3
		[redacted]	39 m	1
		[redacted]	0 m	Approximately 8 from barn and 2 from farmhouse
		[redacted]	61 m	3
		[redacted]	290 m	Approximately 3
		[redacted]	244 m	3
		[redacted]	28 m	1
		[redacted]	45 m	1
Summer day	Soprano pipistrelle	[redacted]	3 m	1
		[redacted]	4 m	3
Summer day	Pipistrelle species	[redacted]	183 m	1
Summer day	Brown long-eared	[redacted]	61 m	1
		[redacted]	4 m	1
		[redacted]	17 m	3

7.2.2.4 Tree roosts

Ground assessment and climbing surveys identified a total of 125 trees within a 20 m wide corridor centred on the proposed scheme. Of these, 121 trees were climbed to inspect features located at height or were inspected with an endoscope from ground level, the number of trees within each category was determined as follows:

- Confirmed roost: 0;
- grade 1* (high value): 11
- grade 1 (moderate value): 31
- grade 2 (low value): 32
- grade 3 (negligible value): 51

Of the four trees that were not climbed or assessed with an endoscope from ground level during the surveys, the number of trees within each category was determined as follows:

- confirmed roost: 0;
- grade 1* (high value): 0
- grade 1 (moderate value): 3
- grade 2 (low value): 1
- grade 3 (negligible value): 0

The locations of the trees are presented in Figure 11.10. No evidence of roosting bats in trees was identified during the surveys.

7.3 Potential for an offence

Construction works which directly impact caves, buildings, structures or trees that have been identified as bat roosts have the potential to contravene the legislation relating to bats. Table 7.3 sets out the likely risks of contravening the legislation in relation to bats. Table 7.4 lists the buildings proposed for demolition and their bat roost status.

Table 7.3 : Bats – relevant legislation and potential for committing an offence

Conservation of Habitats and Species Regulations, 2010 (as amended)	Wildlife and Countryside Act, 1981 (as amended)	Offence likely (in absence of mitigation)	Location
To deliberately capture, injure or kill any wild animal of an EPS (Reg 41(1)(a)).	Intentionally kills, injures or takes any wild animal included in Schedule 5 (s9(1)).	If bats are present within; buildings and structures which require demolition; underground sites which may be impacted during geological survey or construction; and trees within the site clearance footprint.	• Cave to be damaged / demolished with known bat roost - Knuckleduster West (Figure 11.9) and any unidentified roosting features in the proposed scheme footprint. • Buildings to be demolished with confirmed bat roosts (to be confirmed with pre-construction survey) (see Table 7.4 below). • Tree roosts with roosting bats (to be confirmed by pre-construction survey) (Figure11.10).
To deliberately disturb wild animals of a EPS [note wherever they are occurring] (Reg 41(1)(b)). Reg 41(2)(a)(i) For the purposes of Reg 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young.	-	If bats are present within buildings, structures, trees or underground sites lost to or impacted by the proposed scheme. The noise assessment (ES Chapter 14) has confirmed that there would be no significant noise change predicted at identified maternity roosts during the construction or operational phases (extrapolated from adjacent property data).	<u>Loss of roosts at:</u> • Cave to be damaged / demolished with known bat roost - Knuckleduster West (Figure 11.9) and unidentified roosting features in the proposed scheme footprint. • Buildings to be demolished with confirmed bat roosts (to be confirmed with pre-construction survey) (see Table 7.4 below). • Tree roosts with roosting bats (to be confirmed with pre-construction survey) (Figure 11.10). <u>Disturbance of retained roosts:</u> • Caves with bat roosts within 250 m of proposed works at Taf Fawr and Taf Fechan (see Figure 11.9). • Structures with confirmed roosts (to be confirmed with pre-construction survey) (Figure 11.9).

Conservation of Habitats and Species Regulations, 2010 (as amended)	Wildlife and Countryside Act, 1981 (as amended)	Offence likely (in absence of mitigation)	Location
To deliberately disturb wild animals of a EPS [note wherever they are occurring] (Reg 41(1)(b)). Reg 41(2)(a)(ii) For the purposes of Reg 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to impair their ability, in the case of animals of a hibernating or migratory species, to hibernate or migrate.	-	If hibernating bats are present within structures, trees or underground sites within the proposed scheme footprint.	<u>Loss of roosts at:</u> • Cave to be damaged / demolished with known bat hibernation roost - Knuckleduster West (Figure 11.9) and unidentified roosting features in the proposed scheme footprint at Taf Fechan. <u>Disturbance of retained roosts:</u> • Caves with bat hibernation roosts within 250 m of proposed works at Taf Fawr and Taf Fechan (see Figure 11.9).
To deliberately disturb wild animals of a EPS [note wherever they are occurring] (Reg 41(1)(b)). Reg 41(2)(b) For the purposes of Reg 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong.	-	If bat maternity roosts or hibernacula present within structures or underground within the site clearance footprint. The noise assessment (ES Chapter 14) has confirmed that there would be no significant noise change predicted at identified maternity roosts during the construction or operational phases (extrapolated from adjacent property data).	• Caves with bat hibernation roosts within 250 m of proposed works at Taf Fawr and Taf Fechan (see Figure 11.9).

Conservation of Habitats and Species Regulations, 2010 (as amended)	Wildlife and Countryside Act, 1981 (as amended)	Offence likely (in absence of mitigation)	Location
-	To intentionally or recklessly disturb any wild Schedule 5 animal while it is occupying a structure or place which it uses for shelter or protection (s9(4)(b)).	If bats are present within buildings, structures or underground requiring demolition, or trees likely to be felled or underground sites which may be impacted where significant noise change predicted. The noise assessment (ES Chapter 14) has confirmed that there would be no significant noise change predicted at identified maternity roosts during the construction or operational phases (extrapolated from adjacent property data).	<u>Loss of roosts at:</u> • Cave to be damaged / demolished with known bat roost - Knuckleduster West (Figure 11.9) and unidentified roosting features in the proposed scheme footprint. • Buildings to be demolished with confirmed bat roosts (to be confirmed) (Table 7.4). • Tree roosts with roosting bats (to be confirmed) (Figure 11.10). <u>Disturbance of retained roosts:</u> • Caves with bat roosts within 250 m of proposed works at Taf Fawr and Taf Fechan (see Figure 11.9). • Structures with confirmed roosts (to be confirmed by pre-construction surveys) (Figure 11.9). • No disturbance is considered likely of roosts in buildings or trees.
-	To intentionally or recklessly obstruct access to any structure or place which any Schedule 5 animal uses for shelter or protection (s9(4)(c)).	Lighting may act as a barrier and obstruct access to roosts.	N/A No night time working during construction and the proposed lighting strategy minimises lighting which is located at junctions only.

Conservation of Habitats and Species Regulations, 2010 (as amended)	Wildlife and Countryside Act, 1981 (as amended)	Offence likely (in absence of mitigation)	Location
To damage or destroy a breeding site or resting place of a wild animal of a EPS (Reg 41(1)(d).	Intentionally or recklessly damages or destroys any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection (s(4)(a)).	If bats are present within buildings and structures due to be demolished, and trees likely to be felled.	<u>Loss of roosts at:</u> • Cave to be damaged / demolished with known bat roost - Knuckleduster West (Figure 11.9) and unidentified roosting features in the proposed scheme footprint. • Buildings to be demolished with confirmed bat roosts (to be confirmed) (Table 7.4). • Tree roosts with roosting bats (to be confirmed) (Figure 11.10).

Table 7.4 : Buildings to be demolished

Building	Location (chainage)	Bat roosting potential
Field shelter	2180 (under footprint)	Bat roost potential unknown. No roost surveys to date. Pre-construction surveys to be undertaken.
Stable	2990 South	Bat roost potential unknown. No roost surveys to date. Pre-construction surveys to be undertaken.
Stable	3030 South	Bat roost potential unknown. No roost surveys to date. Pre-construction surveys to be undertaken.
Stable	3050 North	Bat roost potential unknown. No roost surveys to date. Pre-construction surveys to be undertaken.
Field shelter	3070 North	Low potential (external assessment). No roost surveys to date. Pre-construction surveys to be undertaken.
Lyndhurst (Welsh Ministers owned)	3150 South	High potential (external assessment). No roost surveys to date. Pre-construction surveys to be undertaken.
8 Johnson Park (Welsh Ministers owned)	3180 North	High potential (external assessment). No surveys to date. Pre-construction surveys to be undertaken.
12 Johnson Park (Welsh Ministers owned)	3220 North	High potential (external assessment). No surveys to date. Pre-construction surveys to be undertaken.
13 Johnson Park (Welsh Ministers owned)	3220 North	High potential (external assessment). No surveys to date. Pre-construction surveys to be undertaken.
Parc-Hensol	3880 South	Bat roost potential unknown. No roost surveys to date. Pre-construction surveys to be undertaken.
Garage at Lynwood	5010 South	Moderate potential (external assessment). No surveys to date. Pre-construction surveys to be undertaken.
Greenhouse at Lynwood	5030 South	Negligible potential (external assessment). No surveys to date. Pre-construction surveys to be undertaken.
Barn at Coed Meurig Farm	10150 to 10190 (under footprint)	[redacted]
Garage at 2 Pearce's Court	11120 South	Bat roost potential unknown. No roost surveys to date. Pre-construction surveys to be undertaken.
Garage at Tynycoed	11190 South	High potential (external assessment). No surveys to date. Pre-construction surveys to be undertaken.
Garage at Aloha	11280 South	High potential (external assessment). No roost surveys to date. Pre-construction surveys to be undertaken (Survey on an adjacent property had soprano pipistrelle roost).
Garage at Valbonne	11360	High potential (external assessment).

Building	Location (chainage)	Bat roosting potential
	South	No surveys to date. Pre-construction surveys to be undertaken.
Trade Centre Wales	13530 to 13710 North	Low potential (external assessment). No surveys to date. Pre-construction surveys to be undertaken.
Stables at Lower Reservoir	15580 South	Bat roost potential unknown. No roost surveys to date. Pre-construction surveys to be undertaken.
Dowlais Stables and Kennels	15890 to 15930 South	High potential (external assessment). No roost surveys to date. Pre-construction surveys to be undertaken.

7.4 Proposed approach

The following section sets out the steps that would be taken prior to the construction of the proposed scheme to ensure the legislation protecting bats was not contravened. In summary the process would be:

- pre-construction surveys;
- application to NRW for a derogation licence for confirmed bat roosts; and
- method statement for the licence would include measures such as; capture and exclusion techniques, habitat mitigation proposals, and avoidance of Schedule 5 offences.

7.4.1 Pre-construction survey

All trees that require felling would be surveyed prior to felling to ascertain whether or not are being used or likely to have been used by bats for roosting. All buildings and known caves would be surveyed prior to demolition / start of construction and all existing road structures (bridges and viaducts) surveyed prior to construction works. These surveys would be carried out, at the latest, 12 weeks prior to the site clearance and fencing phase to allow sufficient time for an EPS licence to be sought if required.

A full geological investigation of the proposed construction footprint would be undertaken in the Taf Fawr and Taf Fechan gorges which would subsequently identify any additional roosting features and caves where bats could roost. These would also then be surveyed for roosting bats. A Karst protocol (a document detailing the necessary survey of geological features and process if unknown caves or geological features are unwittingly disturbed during the construction phase) would be developed in consultation with NRW to minimise effects on limestone features and define responses to unexpected findings during construction.

7.4.2 Derogation licence

The caves and buildings with confirmed bat roosts for demolition and any trees to be felled that have evidence of use by bats would require a derogation licence application and licence to derogate the offences listed in Table 7.3.

Derogation licence applications would be accompanied by method statements which would outline how the work would be undertaken and these would be adhered to in order to safeguard any bats on site during the works. If applicable, the method for capture and exclusion of bats from the roost(s) prior to destruction would be detailed in the bat licence method statement and would include timings and weather conditions during which exclusion work would be carried out; effort and methods of exclusion such as use of one-way excluders, disturbance by noise or lights, or destructive search by soft demolition and equipment to be used (endoscope).

A bio-security risk assessment would be undertaken in advance of the work and would outline the following:

- all personnel involved with the licensable bat work would be wearing gloves, and the supervising ecologist has been vaccinated against rabies;

- any equipment used for housing bats captured during the works (plastic tanks) would be disinfected and rinsed thoroughly before and after use; and
- the supervising ecologist would adhere to the Bat Conservation Trust's advice (Collins, 2016) concerning White-nose syndrome in bats and report any incidences of the disease to BCT as required.

The application would be likely to include the following methods to avoid killing and injuring bats and mitigating for the damage and destruction of roosts.

7.4.3 Avoiding killing or injuring of bats

7.4.3.1 Capture and exclusion

Bats would be excluded from roosts prior to destruction of the roost. Methods would follow best practice (Mitchell-Jones, 2004) and (Collins, 2016) as defined within the method statement of the EPS development licence. This would also define timeframes for the specific proposed works.

The method for capturing and excluding bats would include a contingency plan for dealing with injured bats and / or those found unexpectedly during the works.

7.4.3.2 Tree felling techniques

Sympathetic tree felling techniques (soft felling) would be employed at those trees where there is a risk of bats being present. The areas where this technique would be employed would be agreed in advance of the works between the contractor and licenced bat ecologist. Where possible the tree felling would be timed to take place between the end of September and mid-November. An Ecological Clerk of Works (EcCoW) would be present on site to supervise this work.

7.4.4 Avoiding disturbance of bats

EPS licensing would define specific timeframes in which destruction of roosts could occur, avoiding times of bat presence / activity, reducing unnecessary disturbance to bats. Works at Taf Fechan would not be permitted to occur during the hibernation period i.e. 15 December to 31 March. Working method statements would also require construction works to cease during the hours of darkness and the periods of associated dusk and dawn (approximately 1 hour before sunset and 1 hour after sunrise).

The provision of, or enhancement of, culverts at certain points along the proposed scheme would permit safe passage for bats under the road. Vegetation planting around the culvert entrances would be enhanced so that bats are encouraged towards and directed to the culvert entrances. A full culvert schedule is provided in ES Chapter 11: Nature Conservation, Table 11.33.

7.4.5 Minimising and mitigating for habitat damage

7.4.5.1 Protection of retained and mitigation habitats

Areas of retained vegetation and areas of mitigation habitat would be clearly demarcated to ensure no accidental incursion by construction works.

7.4.5.2 Mitigation habitat

Alternative roosting opportunities would be provided for cave dwelling bat species, particularly lesser horseshoe bat, in the form of pipe roosts. These would be embedded in the abutments of the proposed structures throughout the proposed scheme, including those mainly associated with watercourses. A total of 12 pipe roosts are proposed, as listed below and shown in the EMP (Volume 4).

- Afon Cynon - western abutment (1 pipe) at ch.3875
- Nant Melyn – eastern abutment (1 pipe) at ch. 5450

- Nant Hir - eastern and western abutments of new structure (2 pipes) at ch.6850-6700
- Nant Ffwrd – eastern and western abutment of both structures (4 pipes) at ch.10300-10375
- In north side of retaining wall (1 pipe) at ch.9900-10050
- Taf Fawr – eastern abutment (1 pipe) at ch.10900
- Taf Fechan - Eastern and western abutments (2 pipes) at ch.11500

Internal features to the bat pipes would be added to provide roosting features for other bat species, in addition to lesser horseshoe bat. The addition of breeze blocks, rough sawn wooden baffles and other perching options would increase roosting opportunities for a crevice dwelling (pipistrelle bat) and roof-void dwelling species of bats (such as Daubenton's and Serotine).

Loss of roosts in buildings would be addressed individually in the licence application. Prior to clearance of habitats, bat boxes would be provided throughout retained woodland and trees within the proposed scheme to offset the loss of potential roost features in the short-term. A minimum of three bat boxes would be provided for every 'high' category tree to be lost. At present 11 such trees have been identified. This would require a minimum of 33 bat boxes. Indicative locations for proposed bat boxes would be at ch.2300, ch.3900, ch.5050, ch.5525 and ch.7400. Bat boxes would cover a range of designs including maternity boxes, hibernation boxes and boxes designed for crevice dwelling species.

The landscaping design for the proposed scheme includes approximately 43.2 ha of woodland planting which in the long-term would provide replacement roosting opportunities for bats.

7.4.5.3 Habitat management and monitoring

It is proposed that the bat boxes and replacement planting would be monitored by the contractor following completion of the proposed scheme. A monitoring scheme would be devised as part of the derogation licence application to scrutinise the development of the habitat mitigation with the aim of informing management practices. Such a scheme would include regular surveillance of; vegetation (trees and shrubs) cover; bat box roost functionality (state of repair / vegetation cover etc.); and bat numbers.

7.4.6 Avoiding Schedule 5 offences

The measures set out in the preceding paragraphs would result in the Schedule 5 offences, disturbance and obstruction, being avoided.

7.4.7 Conclusions

The proposed scheme is likely to result in the contravention of the legislation with respect to bats. There is a risk that the offences of killing or injuring bats, disturbing bats, and damage or destroy a resting place as a result of the proposed scheme. The strategy set out would result in these offences being avoided or derogated under licence.

8. Otter

8.1 Relevant legislation

- Wildlife and Countryside Act, 1981 (as amended), Schedule 5; and
- Conservation of Habitats and Species Regulations, 2010 (as amended), Schedule 2.

8.2 Baseline information

8.2.1 Desk study

Consultation was undertaken with SEWBReC and BIS for recent records (since 2004) of otter. Three records of otter were confirmed within 500 m of the proposed scheme; [redacted] The locations of these results are shown in Figure 11.12.

8.2.2 Field survey

The otter field survey focused on the major watercourses in the survey area with additional watercourses where access permissions allowed and the following evidence was recorded:

[redacted]

- [redacted].

The exact location of these is shown in Figure 11.12.

8.3 Potential for an offence

Major watercourses that are crossed by the proposed scheme would have buffer areas where no works were permitted. The construction of the proposed scheme is likely to involve some vegetation clearance along the minor watercourses that currently pass under the road where culverting is required. All major watercourses would be crossed by clear span bridges.

Site fencing and clearance, works near watercourses and works associated with structures may have an effect on otter holts or hovers. Such activities could also cause disturbance to otters.

Table 8.1 below shows the relevant legislation and potential for committing an offence with regard to otter.

Table 8.1 : Otter – relevant legislation and potential for an offence

Conservation of Habitats and Species Regulations, 2010 (as amended)	Wildlife and Countryside Act, 1981 (as amended)	Offence likely (in absence of mitigation)	Location
To deliberately capture, injure or kill any wild animal of an EPS (Reg 41(1)(a)).	To intentionally kill, injure or take any wild animal included in Schedule 5 (s9(1)).	No. No holts or resting places recorded in the proposed scheme footprint.	N/A
To deliberately disturb wild animals of an EPS [note wherever they are occurring] (Reg 41(1)(b)). Reg 41(2)(a)(i) For the purposes of Reg 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young.	-	Possible –during site clearance and main construction if an active otter holt or couch is encountered within the footprint of the proposed scheme.	All major watercourses crossed by the proposed scheme. Taf Fechan and Taf Fawr during construction (due to temporary rock cutting activities).
To deliberately disturb wild animals of an EPS [note wherever they are occurring] (Reg 41(1)(b)). Reg 41(2)(a)(ii) For the purposes of Reg 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to impair their ability, in the case of animals of a hibernating or migratory species, to hibernate or migrate.	-	No.	N/A
To deliberately disturb wild animals of an EPS [note wherever they are occurring] (Reg 41(1)(b)). Reg 41(2)(b) For the purposes of Reg 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong.	-	No.	N/A
-	To intentionally or recklessly disturb any wild animal listed on Schedule 5 while it is occupying a structure or place which it uses for shelter or protection (s9(4)(b)).	Possible –during site clearance and main construction if an active otter holt or couch is encountered within the footprint of the proposed scheme.	Taf Fechan and Taf Fawr during construction (due to rock cutting activities).

Conservation of Habitats and Species Regulations, 2010 (as amended)	Wildlife and Countryside Act, 1981 (as amended)	Offence likely (in absence of mitigation)	Location
-	To intentionally or recklessly obstruct access to any structure or place which any animal listed on Schedule 5 uses for shelter or protection (s9(4)(c).	Possible –during site clearance and main construction if an active otter holt or couch is encountered within the footprint of the proposed scheme.	All major watercourses crossed by the proposed scheme.
To damage or destroy a breeding site or resting place of a wild animal of a EPS (Reg 41(1)(d).	To intentionally or recklessly damage or destroy any structure or place which any wild animal listed on Schedule 5 uses for shelter or protection (S9(4)(a)).	Possible –during site clearance and main construction if an active otter holt or couch is encountered within the footprint of the proposed scheme.	All major watercourses crossed by the proposed scheme.

8.4 Proposed approach

The following paragraphs set out the steps that would be taken prior to the construction of the proposed scheme to ensure the legislation protecting otter was not contravened. **To date, no otter holts or couches have been identified within the footprint of the proposed scheme**. In summary it would take the following form:

- pre-construction survey.
- application for a derogation licence, if required.
- construction method statements for proposed works near watercourses and, if required, for the derogation licence which would include exclusion techniques, habitat mitigation proposals and avoidance of Schedule 5 offences.

8.4.1 Pre-construction survey

Otter surveys would be carried out in advance of any site clearance works. All proposed crossing points and any proposed flood alleviation areas would be searched for holts and lying-up sites. If any such features are discovered within the footprint of proposed works, they would be assessed to consider whether they would need to be closed under licence from the NRW. In order to minimise risks to the construction programme the surveys and any subsequent work would be scheduled at least 12 weeks in advance of works to enable an EPS development licence to be secured, if required.

8.4.2 Avoiding killing or injuring

No otter holts or couches have been identified within the footprint of the proposed footprint to date. However, if otter hovers or holts are encountered within the footprint of the proposed scheme prior to or during construction, a derogation licence would need to be secured. The methods would follow best practice and would be defined within the method statement that would form part of the licence.

8.4.3 Avoiding disturbance

Working protocols during construction, detailed in the Construction Environmental Management Plan (CEMP), would ensure that construction lighting and disruptive activities would not occur at night (including the hours of dusk and dawn) and all watercourses and adjacent riparian habitat would maintain an undisturbed route of passage. Best practice site construction processes (Charles & Edwards, 2015) and working near watercourses (Masters-Williams, *et al*., 2001) would also be followed.

An emergency response protocol to set out the appropriate course of action in the unlikely event should a water pollution incident occur would be part of the CEMP.

8.4.4 Minimising and mitigating for habitat damage

8.4.4.1 Protection of retained habitats

Structures crossing major watercourses are clear span and no works are required within the watercourses themselves. Watercourses, areas of retained vegetation and areas of retained habitat would be clearly fenced and demarcated to ensure no accidental incursion by construction works.

8.4.4.2 Mitigation habitat

The provision of new, or enhancement of existing, culverts along the proposed scheme would permit safe passage for otters under the proposed scheme. The ledge or bank available for mammal passage would be designed to remain dry in a 1 in 10 year flood. Planting around the culvert entrances would be enhanced so that otters are encouraged towards and directed to the culvert entrances. Culverts with mammal ledges would be located at the following approximate mainline locations: ch.1955; ch.4491; (at Croesbychan junction - ch. 4800, 4850 & 4900); ch.4824; ch.5021; ch.5969; ch.7448; south of Baverstock junction at ch.7775; and ch.9303.

8.4.4.3 Habitat management and monitoring

Watercourses would be regularly monitored during the construction phase by the EcCoW. Otter activity would also be monitored as part of the working near watercourses construction method statement / CEMP.

Otter would be additionally monitored in line with any derogation licence conditions. A derogation licence return would be submitted to NRW following completion of the works, including results of any during construction or post-construction monitoring conditioned by the licence.

8.4.5 Avoiding Schedule 5 offences

The measures set out in the preceding paragraphs will result in the Schedule 5 offences, disturbance and obstruction, being avoided.

8.5 Conclusion

Although no holts or lying up areas have been identified in surveys to date, otters are present on many of the watercourses crossed by the proposed scheme. There is currently a low risk that the legislation protecting otter would be contravened. The proposed strategy provides measures to ensure that the risks are managed through construction of the proposed scheme to minimise the risk of contravening the legislation.

9. Great crested newt

9.1 Relevant legislation

- Wildlife and Countryside Act, 1981 (as amended), Schedule 5; and
- Conservation of Habitats and Species Regulations, 2010 (as amended) Schedule 2.

9.2 Baseline information

9.2.1 Desk study

Consultation was undertaken with SEWBReC and BIS and six recent records (since 2004) of GCN were recorded within a 1 km wide corridor centred on the proposed scheme; mainly associated with Winchfawr West SINC and Bryniau SINC with an additional single record located to the east of Dowlais Top. The locations of these records are shown on Figure 11.11.

9.2.2 Field Surveys

Eighty-four waterbodies were identified within a 1 km wide corridor centred on the proposed scheme and were subject to a Habitat Suitability Index assessment (HSI) for great crested newt. Additional waterbodies were identified in the survey area but were found to be not suitable for GCN (dry or identified as flowing waterbodies such as streams and rivers).

Environmental DNA (eDNA) samples were taken from 31 waterbodies (where sampling allowed) with a HSI score of above 0.59 and, therefore, a predicted presence of GCN described as 'average' or above (ARGUK, 2010). The eDNA results indicated probable GCN absence in all samples (Biggs, *et al*., 2014). The locations of surveyed ponds are shown in Figure 11.11. Full survey methodology and results can be found in Appendix 11F - Summer 2015 Ecology Survey Results.

Ponds within the Winchfawr West SINC and Bryniau SINC were surveyed in 2016 using standard presence / absence methodology (Langton, *et al*., 2001) (due to the presence of recent desk study records). A peak count of 12 great crested newts (10 male, two female) was recorded in pond 2254. One great crested newt (1 male) was recorded in pond 2256 (See Figure 11.11) in the Winch Fawr West SINC. Seven other ponds exist within 250 m from these ponds as shown in Figure 11.11. No GCN were recorded in the Bryniau SINC.

9.3 Potential for an offence

Loss of standing waterbodies would be limited to a partial infill of a reservoir west of Dowlais Top and infill of a small natural pond on the off-line section at Hirwaun. No evidence of GCN presence has been recorded within 250 m of either of these locations during Jacobs' surveys or the desk study. No potential for offence is considered likely at these locations.

Approximately 4 ha of suitable terrestrial habitat for GCN would be lost within 250 m, either side, of the waterbodies with confirmed GCN presence at the Winchfawr West SINC (approximate ch. 8800-9450), see Figure 11.11. Vegetation clearance activities within this suitable terrestrial habitat for GCN could potentially kill, injure or disturb GCN and / or damage habitats that they use which would be an offence under the Conservation of Habitats and Species Regulations, 2010 (as amended) and the Wildlife and Countryside Act 1981 (as amended).

The potential offences in the area of Winchfawr West SINC and along the length of the proposed scheme in relation to GCN is outlined below in Table 9.1.

Table 9.1 : GCN – relevant legislation and potential for an offence

Conservation of Habitats and Species Regulations, 2010 (as amended)	Wildlife and Countryside Act, 1981 (as amended)	Offence likely (in absence of mitigation)	Location
To deliberately capture, injure or kill any wild animal of an EPS (Reg 41(1)(a)).	To intentionally kill, injure or take any wild animal included in Schedule 5 (s9(1)).	Yes – during site clearance; but only if breeding in ponds within 250 m of the site clearance footprint.	In terrestrial habitat within 250 m of ponds with confirmed GCN presence: Between ch.8950 – 9450 (south).
To deliberately disturb wild animals of an EPS [note wherever they are occurring] (Reg 41(1)(b)). Reg 41(2)(a)(i) For the purposes of Reg 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young.	-	Yes – during construction; but only if breeding in ponds within 250 m of the site clearance footprint.	In terrestrial habitat within 250 m of ponds with confirmed GCN presence: Between ch.8950 – 9450 (south).
To deliberately disturb wild animals of an EPS [note wherever they are occurring] (Reg 41(1)(b)). Reg 41(2)(a)(ii) For the purposes of Reg 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to impair their ability, in the case of animals of a hibernating or migratory species, to hibernate or migrate.	-	Yes – during construction; but only if breeding in ponds within 250 m of the site clearance footprint.	In terrestrial habitat within 250 m of ponds with confirmed GCN presence: Between ch.8950 – 9450 (south).
To deliberately disturb wild animals of an EPS [note wherever they are occurring] (Reg41(1)(b)). Reg 41(2)(b) For the purposes of Reg 41(1)(b), disturbance of animals includes in particular any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong.	-	No.	N/A
-	To intentionally or recklessly disturb any wild schedule 5 animal while it is occupying a structure or place which it uses for shelter or protection (s9(4)(b)).	Yes – during construction; but only if breeding in ponds within 250 m of the site clearance footprint.	In terrestrial habitat within 250 m of ponds with confirmed GCN presence: Between ch.8950 – 9450 (south).

Conservation of Habitats and Species Regulations, 2010 (as amended)	Wildlife and Countryside Act, 1981 (as amended)	Offence likely (in absence of mitigation)	Location
-	To intentionally or recklessly obstruct access to any structure or place which any Schedule 5 animal uses for shelter or protection (s9(4)(c)).	Yes – during construction; but only if breeding in ponds within 250 m of the site clearance footprint.	In terrestrial habitat within 250 m of ponds with confirmed GCN presence: Between ch.8950 – 9450 (south).
To damage or destroy a breeding site or resting place of a wild animal of a EPS (Reg 41(1)(d)).	To intentionally or recklessly damage or destroy any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection (s(4)(a)).	Yes – during construction; but only if breeding in ponds within 250 m of the site clearance footprint.	In terrestrial habitat within 250 m of ponds with confirmed GCN presence: Between ch.8950 – 9450 (south).

9.4 Proposed approach

The following paragraphs set out the steps that would be taken prior to the construction of the proposed scheme to ensure the legislation protecting GCN was not contravened. In summary it would take the following form:

- pre-construction surveys;
- application for a derogation licence; and
- method statement for the licence to include measures such as avoidance of Schedule 5 offences, trap and translocation techniques and habitat mitigation proposals.

9.4.1 Pre-construction survey

GCN surveys would be carried out in the appropriate survey period prior to construction (March to June 2019) on all ponds within a 1 km wide corridor centred on the proposed scheme with a HSI score of above 0.59 and, therefore, a predicted presence of GCN described as 'average' or above (ARGUK, 2010). The methods to be used include bottle trapping, egg searching, netting and torching, as per the guidelines set out in the Great Crested Newt Conservation Handbook (Langton, *et al.*, 2001). This would allow the full assessment of presence or absence of the species in the area, and if presence is confirmed, allow a population size class assessment to be carried out.

9.4.2 Derogation licence

A derogation licence from NRW would be required prior to the construction phase of the proposed scheme.

The method statement accompanying the licence application is likely to include measures to avoid killing and injuring GCN, minimising damage to terrestrial habitat, avoiding disturbance of individual GCN and obstruction of access to GCN habitat. Examples of the types of measure that are likely to form part of this method statement are set out in the following paragraphs.

9.4.3 Avoiding killing or injuring

9.4.3.1 Exclusion fencing

Durable Temporary Amphibian Fencing (TAF) would be installed between the construction area at Winchfawr West SINC and the receptor site to prevent great crested newt mortality. An example of the proposed specification for the TAF can be found in Annex B. This would be installed along the length of the boundary of the Winchfawr West SINC and the proposed works area.

The area proposed for durable TAF would be fingertip searched and cleared of great crested newts by a suitably skilled, experienced and licenced ecologist prior to installation. All installation works would also be supervised. Any vegetation would then be cut back ready for setting up.

Any GCN that are trapped during capture and exclusion works would be relocated into the receptor site. When the proposed scheme is complete, and the soft estate has matured, the TAF would be removed and the GCN would be allowed to recolonize the newly created habitat on the road verges.

This fencing would be extended to other appropriate locations if GCN were identified in additional ponds during pre-construction surveys.

9.4.3.2 Trapping, translocation and exclusion

Translocation of GCN, from habitat that would be impacted by the proposed scheme to the receptor site, would be carried out prior to any works commencing by a suitably qualified, experienced and licenced ecologist.

The receptor site would be located directly south of the works in the Winchfawr West SINC. A 2.5 m wide strip of land to the south of the TAF, for its entire length, would be created into which the captured newts will be released. The 2.5 m wide strip of land will be demarcated with durable TAF fencing between the construction works and the receptor area (along north boundary) and a permeable fence to the south to allow the translocated GCN to move back into the Winchfawr West SINC.

Pitfall traps and carpet tiles would be installed every 5 m along the TAF on the side of the proposed scheme. The traps would be fitted flush to the TAF with the tops just below ground level. This would take place during the appropriate seasonal window prior to construction works, presently estimated to be between February and October 2019. Pitfall traps would not be installed until the evening before the translocation is to commence. Drift fencing would be used to divide the areas into smaller compartments (potentially allowing smaller areas to be considered ‘clear’ after the minimum number of nights trapping).

Capture of great crested newts can occur throughout the active season (February to October inclusive). It is generally considered unacceptable when they have gone into hibernation (November to January inclusive). The pitfall traps would be checked daily before 11:00 am, or earlier after periods of heavy rainfall or dry weather. All captures would be recorded with notes on location, species, sex and life-stage. All amphibians (i.e. including species in addition to GCN) captured would be moved in buckets to the receptor area and released into the refuges or hibernaculum as soon as possible.

The process would be continuously reviewed and if low capture rates were recorded, additional methods to increase capture rates would be considered. During the GCN presence / absence surveys carried out on ponds within 250 m of the proposed scheme in the Winchfawr West SINC, a peak count of 12 individuals was recorded (See Appendix 11G – 2016 Ecology Survey Results). Table 9.2 below shows the minimum trap density and number of nights trapping according to population size class assessment (Natural England, 2001). Pit fall traps would be removed immediately after the completion of the translocation to avoid mortality.

Table 9.2 : GCN trapping effort required according to population size class assessment (Langton, *et al*., 2001)

Population size class assessment	Minimum trap density (traps / ha)	Minimum number of nights trapping
Small (maximum counts up to 10)	50	30
Medium (maximum counts between 11-100)	**80**	**60**
Large (maximum counts over 100)	100	90

9.4.3.3 Supervision of soil stripping

After trapping and translocation, a finger-tip search would be carried out by the EcCoW as a precautionary measure before the top soil were stripped. The EcCoW would also be present on site during the soil strip and vegetation clearance works in these areas.

Where areas of potential hibernaculum are identified during site clearance and these cannot be avoided they would be dismantled by hand by the EcCoW under suitable weather conditions. The EcCoW would advise on a suitable area for which the hibernaculum can be re-installed. If any GCN are found all works would cease until the GCN had been translocated.

9.4.3.4 Construction site management

A CEMP would be created and implemented by the contractor and would include measures such as those listed below to reduce the risk of killing or injuring GCN within the construction site.

- No equipment or soil would be stored / stockpiled within 250 m of any waterbody known to be used by GCN.
- There would be a clear demarcation of construction and retained vegetation areas.

9.4.4 Minimising and compensating for habitat damage

9.4.4.1 Protection of retained habitats

Areas of habitat important for GCN and the receptor area for translocated individuals would be clearly demarcated to ensure no accidental incursion by construction works. Durable temporary amphibian exclusion fencing would be installed between the 'working area' and the receptor sites to prevent newt mortality. Any great crested newts that are trapped during capture and exclusion works would be relocated into the receptor site. When the proposed scheme is complete the TAF would be removed and the great crested newts would be allowed to recolonise the newly created land which forms the road verges as well as the rest of the proposed scheme.

9.4.4.2 Mitigation strategy

The overall mitigation strategy for GCN across the entire proposed scheme would include the following measures:

- creation of high quality connective habitat throughout the soft estate along the length of the proposed scheme;
- attenuation ponds would be enhanced for biodiversity and GCN with marginal vegetation planting at locations where GCN species are known to be present or historically present – approximate ch. 2275 (1 pond), ch. 3650-3900 (3 ponds), ch. 6750-7100 (2 ponds),ch.7700 (1 pond); ch.9400 (1 pond), ch.13250 - 13400 (2 ponds), ch. 13700 (1 pond); and
- hibernacula suitable for use by terrestrial GCN would be provided within the soft estate along the length of the proposed scheme (approximate ch. 1225, 3750, 4250, 4775, 6025, 6875, 7700, 9150, 9500, 10300, 11900, 12350, 13300, 13750 and 14225).

In addition, an approximate 2.5 m wide strip of land, directly south of the area of proposed works within the Winchfawr West SINC, would be temporarily obtained (hereinafter referred to as the receptor site). This receptor site would be enhanced with the installation of hibernacula to receive any translocated individuals. This work would be ideally carried out sufficiently in advance of site clearance and any species translocation work to allow time for the maturation of hibernaculum and the receptor sites.

A box culvert with dry ledge is proposed be between the Winchfawr West SINC and the land to the north of the proposed scheme to permit safe passage for terrestrial GCN under the proposed scheme at approximate ch. 9303.

9.4.4.3 Habitat management and monitoring

A monitoring scheme would be devised as part of the derogation licence application to scrutinise the development of the habitat mitigation with the aim of informing management practices.

An EPS development licence return would be submitted to NRW following completion of the works, including results of any monitoring. Monitoring would continue for a minimum of five years post-completion of the proposed scheme in any areas found to have GCN presence during pre-construction surveys. The monitoring targets and success criteria would be defined prior to construction but could include regular surveillance of vegetation (trees and shrubs) cover; fish presence; and GCN numbers.

9.4.5 Avoiding Schedule 5 offences

The measures set out in the preceding paragraphs would result in the Schedule 5 offences, disturbance and obstruction, being avoided.

9.5 Conclusion

The proposed scheme is likely to result in the contravention of the legislation with respect to GCN. There is a risk that the offences of killing or injuring GCN, damage or destroy a resting place, disturbance whilst in a place of shelter / protection and obstruction to a place of shelter / protection would occur as a result of the proposed scheme. The strategy set out would result in these offences being avoided or derogated under licence.

10. Badger

10.1 Relevant legislation

- The Protection of Badgers Act, 1992.

10.2 Baseline information

10.2.1 Desk study

Consultation was undertaken with SEWBReC and BIS and recent records (since 2004) of badgers were found to exist within a 1 km wide corridor centred on the proposed scheme. Six records of badger were found: records of a live badger and spraint in the Hirwaun area; records of a sett and field signs in the Taf Fechan gorge area; and dead specimens near the Croesbychan and Gurnos areas. These records are shown in Appendix 11E and Appendix 11G.

10.2.2 Field surveys

Badger surveys were carried out in 2015 and 2016. The objective of the surveys was to provide baseline information on presence or absence and distribution in the study area. The survey area comprised a 200 m wide corridor centred on the proposed scheme. Habitats suitable for foraging badgers exist on site, including good quality grassland and woodland suitable for badger setts.

No evidence of the presence of badger was observed in the survey area during the field surveys. However, a dead badger was noted in 2016 site visit on the main A465 eastbound carriageway near the central reservation between Nant Hir Viaduct and the turn off for the Crematorium. This suggests that badgers are present in the wider area. Badger footprints were also found in mud outside Ogof Trefechan in the Taf Fechan gorge during the 2016 cave surveys for bats. These records are shown and discussed in ES – Appendix 11G: 2016 Ecology Survey Results.

10.3 Potential for an offence

Latest field survey suggests that no setts would be lost, damaged or disturbed. A very low level of badger activity has been identified. As such, no offence would be committed.

Table 10.1 below shows the relevant legislation and potential for committing an offence with regard to badger.

Table 10.1 : Badgers – relevant legislation and potential for committing an offence

Protection of Badgers Act 1992	Offence likely (in absence of mitigation)	Location
To wilfully kill, injure or take, or attempt to kill, injure or take a badger (s1(1)).	Yes – if active sett entrances present within 30 m of site clearance footprint.	N/A
To disturb a badger when it is occupying a badger sett (s3(e)).	Yes – if active sett entrances present within 30 m of site clearance footprint.	N/A
To obstruct access to, or any entrance of, a badger sett (s3(c)).	Yes – if active sett entrances present within 30 m of site clearance footprint.	N/A
To damage a badger sett or any part of it or to destroy a badger sett (s3(a)(b)).	Yes – if active sett entrances present within 30 m of earthworks.	N/A

10.4 Proposed approach

The following paragraphs set out the steps that would be taken prior to the construction of the proposed scheme to ensure the legislation protecting badgers was not contravened. In summary it would take the following form.

- Pre-construction surveys.
- Application to NRW for a licence.
- Minimising disturbance / damage.
- Sett closure.

10.4.1 Pre-construction survey

A pre-construction survey within a 100 m wide corridor centred on the proposed scheme footprint would be carried out prior to the start of site clearance and fencing activities in order to identify whether new badger setts have been dug in the area. Site clearance for the proposed scheme would commence in November 2019. Therefore a pre-construction badger survey would be carried out in in July 2019, at the latest, to give sufficient time to prepare and implement suitable mitigation, if required.

Any active sett identified in pre-construction surveys, or during construction would be assessed as to whether it is within 30 m of works (English Nature, 2002) requiring the use of machinery or groundworks. Any works within 30 m of an active sett would then be assessed as potentially causing an offence and mitigation and / or licensing would be implemented.

10.4.2 Licencing

If an active badger sett is discovered within 30 m of an area that is required for construction during the pre-construction survey or construction period, construction work would not proceed or would cease in that area until a licence has been obtained from NRW to permit sett exclusion (Protection of Badgers Act, 1992).

Badger licences are normally only granted for exclusions between July and November, which would be incorporated into work scheduling. However, depending on the exact nature of the work required and proximity and type of sett it may be possible to alter working methods to minimise disturbance to badgers or avoiding damage to a sett. Sometimes, for linear infrastructure projects, it is appropriate to temporarily close outlier setts, under licence, for the duration of construction activities but to make them available again once the construction phase, and risk of killing or injury by construction plan movements, is removed.

An example methodology for both avoiding damage / disturbance and sett exclusion is set out in the following paragraphs.

10.4.3 Avoiding damage and disturbance

If an active sett is recorded in close proximity to the construction works and does not need to be destroyed it may be possible to alter working methods such as reducing machinery sizes or work with hand tools to ensure that disturbance and damage is minimised or avoided.

10.4.4 Sett exclusion

No sett exclusions are currently planned as no active setts were identified during the surveys.

The following method would be followed if a badger sett is subsequently established within 30 m of the area required for construction prior to the start of works:

- all active sett entrances would be fitted with badger gates, using the designs shown in Design Manual for Roads and Bridges (DMRB) (Highways Agency, 2007) as well as wire mesh across the surrounding area to prevent digging;
- the fitted badger gates would initially be set to swing freely for a period of seven days in order to accustom any animals to the gate and allow them to leave. After this period the gates would be set in a one-way position to effect the exclusion;
- the exclusion would be carried out over a minimum period of 21 days. The sett and gate would be monitored a minimum of every three days to determine if badgers are still active in the sett (Natural

England, 2011). This would be achieved by using either small sticks in front of the one way gates at the sett entrance to monitor activity or by sand smoothed out over the entrance to reveal badger footprints;

- the monitoring would also confirm that the gates are still functioning properly by manually testing them and to ensure that they are still intact. If at any point the gates or wire mesh is breached, these are repaired and a further 21 day period observed before works begin;
- once it has been ascertained that all animals have been excluded, the gate would be set in a permanent closed position which would not allow any badgers access in or out; and
- the sett would then be excavated under the supervision of the licenced ecologist. The excavation would be conducted to avoid collapsing any chambers within the sett because of the possibility of badgers remaining undetected. If any badgers were disturbed, all work would cease to allow any badgers to leave the area without interference.

Any active sett identified would be monitored throughout the exclusion process and considered empty only when the one way gates are in place and there have no indications of badger activity within the fence for two weeks.

Given the risk of a main sett needing to be closed is extremely low, a replacement sett is unlikely to be required. However, in the unlikely event of a replacement sett being required, sufficient land would be acquired for mitigation such that an appropriate area for artificial sett construction could be provided.

10.4.5 Mitigation habitat

The provision of, or enhancement of, culverts along the proposed scheme would permit safe passage for badgers under the road. The ledge or bank available for mammal passage would be designed to remain dry in a 1 in 10 year flood. Vegetation planting around the culvert entrances would be enhanced so that animals are encouraged towards and directed to the culvert entrances. Culvert with mammal ledges are proposed at the following approximate locations: ch.1955; ch.4491; ch.4824; ch.5021; ch.8850; ch.4825; ch.5969; ch.7448; ch.7775; and ch.9303.

10.4.6 Monitoring

Any active sett identified would be monitored throughout the exclusion process and considered abandoned only when the one way gates are in place and there are no indications of badger activity for two weeks. Reporting would be in accordance with licencing requirements.

10.5 Conclusion

There is a low risk that the proposed scheme would result in any contravention of the legislation with regard to badger. This is primarily because of the limited evidence of badger presence in the area. However, in the unlikely event of the proposed scheme resulting in the damage, destruction or disturbance of a badger sett then the proposed strategy would be to firstly avoid an offence but if required exclude and close the sett under NRW licence.

11. Reptiles

11.1 Relevant legislation

- Wildlife and Countryside Act 1981 (as amended) only part of sub-section 9(1) (killing & injuring).

11.2 Baseline information

11.2.1 Desk study

Local record centre data (since 2004) within a 1 km wide corridor centred on the proposed scheme provided 16 records of slow worm *Anguis fragilis* and 20 records of common lizard *Zootoca vivipara;* the majority located in the Taf Fechan Gorge. The exact location of these records is shown in Appendix 11F.

11.2.2 Field surveys

An assessment of the value of habitats for supporting reptiles was undertaken using the methods in the Reptile Management Handbook (Edgar, *et al.,* 2010). Full methodology and results can be found in Appendix 11F: Summer 2015 Ecology Survey results. Habitats were assessed as being of low, moderate or high value to reptiles depending on the variety of features of value to reptiles recorded. The areas within the proposed scheme where reptiles are most likely to occur are areas of scrub, rough grassland, unmanaged road verges and boundary features (walls and hedgerows).

Common and widespread reptile species in Wales are assumed to be present throughout the proposed scheme.

11.3 Potential for an offence

It is likely that reptiles, particularly slow worms, would be present in the existing verge and scrub along most of the route corridor. Site clearance may, therefore, kill or injure reptiles, resulting in an offence being committed.

Table 11.1 below shows the relevant legislation and potential for committing an offence with regard to reptiles.

Table 11.1 : Reptiles – relevant legislation and potential for an offence

Wildlife and Countryside Act 1981	Offence likely without mitigation	Location
To intentionally kill, injure or take any wild animal included in Schedule 5 (s9(1)).	Yes – during site clearance and fencing phase.	High potential for reptile presence: • ch.900-1700; • ch. 8400-9800; and • ch. 11650-12200. Moderate potential for reptile presence: • ch. 950-1850; • ch. 1850-2100; • ch. 2300-3000; • ch. 3350-3800; • ch. 4500-4600; • ch. 5450-5850; • ch. 5950-6600; • ch. 13660-13800; • ch. 14100-14600; and

Wildlife and Countryside Act 1981	Offence likely without mitigation	Location
		• ch. 16050-17700.

11.4 Proposed approach

The following paragraphs set out the steps that would be taken prior to the construction of the proposed scheme to ensure the legislation protecting reptiles was not contravened. In summary the process would take the following form.

- Measures to avoid killing and injuring by:
  - habitat manipulation; and
  - trapping and translocation of individuals.

11.4.1 Avoiding killing or injury

11.4.1.1 Protection of retained habitats

Receptor sites and retained habitat suitable for reptiles would be fenced with protective fencing to avoid entry by construction machinery where they are contiguous with the proposed scheme.

11.4.1.2 Habitat manipulation

A method statement for vegetation clearance would be developed to ensure the protection of reptiles and to specify the actions necessary to avoid killing or injuring them.

The primary approach to reptile mitigation would be displacement. This approach is appropriate at locations where retained suitable habitat for reptiles exists adjacent to an area that is to be cleared (within suitable seasonal constraints i.e. high risk areas would not be cleared in winter when reptiles cannot respond to displacement activities as they would be in torpor / hibernation). Habitat manipulation would be utilised to displace reptiles from an area subject to clearance into an adjacent undisturbed area in order to protect animals from mortality. This is achieved by cutting and clearance of vegetation in stages towards the direction of the receptor area.

Vegetation to be cleared would first be cut with hand tools (for example using strimmers / brush cutters and chain saws), with cut material removed from the site and the remaining habitat would be cleared with machinery.

Where potential refugia / hibernacula are identified within the construction footprint and their destruction cannot be avoided, these would be dismantled by hand by the EcCoW under suitable weather conditions. Destructive searches would then proceed in areas of potential for reptiles where displacement from vegetation clearance is insufficient to guarantee dispersal of reptiles. Destructive searches would commence and finish before the end of autumn, due to the potential of reptiles entering into hibernation over winter. During the final stage of the destructive search potential refugia such as tree stumps, concrete waste and other debris on site would be removed. The supervising EcCoW would undertake a finger-tip search of these features before the contractors remove them. Any reptiles found would be allowed to relocate naturally or, if necessary, captured and relocated to a 2.5 m strip area (previously described in Section 10).

11.4.1.3 Trapping, translocation and exclusion

Where a displacement strategy is not appropriate due to the lack of retained adjacent suitable habitat to receive displaced individuals, trapping and translocation to a prescribed receptor area would be considered. This receptor area would be ready prior to any translocation. The use of reptile fencing would be minimised but may be needed where receptor sites are directly adjacent to high quality reptile habitat. Artificial Cover Objects (ACOs) would be installed and be checked by an ecologist during appropriate weather conditions.

ACOs would be checked on a daily basis for a recommended 26 days, followed by five days of no reptile capture or observations. If the capture programme cannot start until a suboptimal period (for example late June) then extra effort should planned (extra 10 days). (Natural England, 2011) Any reptiles captured would be placed in buckets and released into the receptor areas as soon as possible.

Where potential refugia / hibernacula were identified within the proposed scheme footprint and cannot be avoided, these would be dismantled by hand by the on-site ecologist under suitable weather conditions and translocated to nearby retained habitat.

11.4.2 Habitat enhancement

The habitat enhancement strategy for reptile species across the proposed scheme would include the following measures:

- creation of high quality connective habitat throughout the new soft estate throughout the proposed scheme; and
- hibernacula suitable for use by reptiles, such as log piles and artificial hibernacula provided within the proposed soft estate at the following indicative locations: (approximate ch.1225, ch.3750, ch.4250, ch.4775, ch.6025, ch.6875, ch.7700, ch.9150, ch.9500, ch.10300, ch.11900, ch.12350, ch.13300, ch.13750 and ch.14225).

11.5 Conclusion

The proposed scheme is likely to result in the contravention of the legislation with respect to reptiles. There is a risk that the offence of killing or injuring reptiles would occur as a result of the proposed scheme. The strategy set out would result in this offence being avoided.

12. Birds

12.1 Relevant legislation

- Wildlife and Countryside Act, 1981 (as amended).

12.2 Baseline Information

12.2.1 Desk study

Records of ten Schedule 1 (Wildlife and Countryside Act, 1981) bird species were found to exist within a 4 km wide corridor centred on the proposed scheme, including [redacted] Twenty-two bird species listed on Section 7 of the Environment (Wales) Act 2016 were found to exist within a 4 km wide corridor centred on the proposed scheme including [redacted].

Over 100 records of lapwing exist within a 4 km wide corridor centred on the proposed scheme (in the breeding season i.e. March to August, inclusive). Of these, [redacted].

12.2.2 Field survey

12.2.2.1 Breeding bird habitat assessment

Habitat suitable for supporting breeding birds was identified in woodland, hedgerows, scrub and on ephemeral grassland on former hard standing (suitable for ground nesting birds).

Four records of barn owl were made by Jacobs' ecologists during other ecological surveys within a 4 km wide corridor centred on the proposed scheme. [redacted].

12.2.2.2 Lapwing

2016 surveys recorded a peak count of 37 individual lapwing at the breeding colony [redacted].

12.2.2.3 Schedule 1 species Taf Fechan

No breeding Schedule 1 species were recorded during the surveys.

12.3 Potential for an offence

The site clearance and fencing works would incorporate the approximate loss of approximately 48.99 ha of semi-natural broadleaved woodland (of which approximately 4.52 ha is ancient woodland), approximately 11.69 ha of plantation coniferous woodland, approximately 23.08 ha of marsh / marshy grassland, approximately 6.25 ha of ephemeral / short perennial disturbed land – ephemeral and approximately 10.37 ha of wet heath / acid grassland. All habitats subject to clearance are likely to support breeding birds.

Table 12.1 below shows the relevant legislation and potential for committing an offence with regard to birds.

Table 12.1 : Breeding birds – relevant legislation and potential for committing an offence

Wildlife and Countryside Act, 1981 (as amended)	Offence likely (in absence of mitigation)	Location
To intentionally kill, injure or take any wild bird (s1(1)).	No	N/A
To intentionally or recklessly disturb any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or disturbs dependent young of such a bird (s1(5)(a)(b)).	Yes - Potential for Schedule 1 birds to be present within zone of influence during site clearance.	[redacted]
To take or destroy an egg of any wild bird (s1(1)(c)).	Yes - during site clearance if undertaken within main breeding season (considered to be March to August inclusive), or with species that can breed outside of main breeding season.	Across the proposed scheme footprint where suitable habitat is to be cleared.
To intentionally take, damage or destroy the nest of a wild bird included in Schedule ZA1.	No – these species are highly unlikely to be nesting in the vicinity of the proposed scheme.	N/A
To intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built.	Yes - during site clearance if undertaken within main breeding season (considered to be March to August inclusive), or with species that can breed outside of main breeding season.	Across the proposed scheme footprint where suitable habitat is to be cleared.

12.4 Proposed approach

The following paragraphs set out the steps that would be taken prior to the construction of the proposed scheme to ensure the legislation protecting birds was not contravened. In summary the process would take the following form:

- pre-construction survey;
- provision and implementation of a construction method statement; and
- a method statement that would include measures such as; protection of habitats and features and supervision of works.

12.4.1 Pre-construction surveys

Due to the potential for certain Schedule 1 species (barn owl, common crossbill, goshawk, hobby, kingfisher, merlin, peregrine and red kite) to breed in or adjacent to the footprint of the site clearance and fencing works, and subsequent construction activities, detailed surveys for these species would be undertaken prior to construction to identify any nest sites that could be susceptible to disturbance.

The potential breeding season of Schedule 1 species and the distances at which they can be disturbed whilst nesting is shown in Table 12.2 below. As such, any preconstruction surveys would be undertaken to ensure that any active nests are identified within these months. The species displayed in bold are those that can breed

during months outside of the main breeding season (March to August, inclusive). The months shown in brackets are those in which breeding has been recorded but it is not considered to be within that species' regular season.

The minimum and maximum disturbance distances shown in Table 12.2 relate to the nesting stage of that species. Birds are generally less tolerant of human activities whilst nest building and, therefore, can be subject to disturbance at greater distance than later on in the breeding period, such as at the chick rearing stage. These distances would be used to inform the pre-construction survey area for each species. Species for which no disturbance distances have been published are labelled 'N/A'.

The need for pre-construction surveys of birds, and any required ongoing surveys by the EcCoW during construction, would be detailed within the CEMP.

Table 12.2 : Breeding season and disturbance distances of Schedule 1 species potentially present

Species	Breeding season (Currie, 1997) (Cramp, 2004) (Joys, 2004)		Disturbance distance (m) (Currie, 1997) (Ruddock, 2007)	
	Start	Finish	Nest building	Chick rearing
Barn owl	April **(February)**	**October (December)**	250	100
Common crossbill	**February (January)**	May **(December)**	150	50
Goshawk	April (March)	July (August)	500	250
Hobby	June (May)	August **(September)**	200	500
Kingfisher	May (April)	**September (October)**	N/A	N/A
Merlin	May (April)	July (August)	400	200
Peregrine	April (March)	August	750	600
Red kite	May (April)	July **(September)**	600	300

12.4.2 Provision and implementation of method statements

A site clearance method statement would be produced to identify / demonstrate how damage or disturbance to bird nests would be avoided.

Lapwing

No construction work would occur in or near the current breeding colony [redacted] and the lapwing mitigation area during the lapwing breeding season (March – July inclusive).

The proposed mitigation area ([redacted]) would be prepared and ready prior to any works in the area where lapwing are known to be breeding.

Measures to prevent occupancy of areas within the construction footprint by breeding pairs would be implemented ahead of the breeding season (i.e. during the months of January and February inclusive) where necessary to reduce the risks of delays in construction. The use of deterrents (such as scarers (visual), repeller ribbons, water jet sprays, netting (on ground habitats) and human activity), would be employed to prevent nesting in areas due to be topsoil stripped, earthworked or otherwise disturbed, once the absence of active nests had been confirmed.

12.4.3 Avoiding damage or destruction of eggs and nests

12.4.3.1 Habitat management

Measures to prevent occupancy by breeding birds would be implemented where necessary, subject to consultation with NRW, to reduce the risks of delays in construction.

Deterrents would be employed to prevent nesting in areas due to be cleared, once the absence of active nests has been confirmed. This would include maintaining short grass throughout the nesting period to deter ground nesting birds such as skylark *Alauda arvensis* and meadow pipit *Anthus pratensis*. Cleared areas would be kept unsuitable for re-colonisation by species that nest on short vegetation or bare earth, such as lapwing. Potential methods of deterrent employed would be agreed on site and could include scarers (visual), repeller ribbons, water jet sprays, netting (on ground habitats) and human disturbance.

Bare, vertical earth banks would not be created in areas in which further works have been proposed, particularly during February and March in order to prevent species such as kingfisher and sand martin *Riparia riparia* from using this type of habitat as a breeding site.

12.4.3.2 Supervision of vegetation clearance

The areas of vegetation and structures scheduled to be cleared each day would be walked by a suitably qualified and experienced ecologist or EcCoW prior to the arrival on site of clearance contractors to avoid the risk of disturbance to birds from excessive movement of vehicles / people or through the noise of the hand tools used in the clearance works. This would also include times outside the main breeding season in habitats that support species that can breed before and / or after this period, such as corvids and pigeons, and Schedule 1 species including barn owl, crossbill and kingfisher.

The EcCoW would look for signs of nesting activity within the areas to be cleared: males singing; individuals carrying nesting material into these areas; and agitated behaviour during the walkover. Should any signs be identified, an immediate detailed inspection of the vegetation would be undertaken in an effort to locate any active nest(s) present.

Should a nest be identified, works in the vicinity would stop and the EcCoW present would determine a suitable buffer zone around the nest within which no further clearance or other works would occur. This would be dependent on the type and density of vegetation surrounding the nest and the species present. A minimum buffer zone would be 5 m from a nest but may be extended on advice from the EcCoW. The buffer zone would be clearly marked using demarcation tape or fencing to ensure no works take place within that area. These would also be marked on an Environmental Constraints map and displayed in the site office as well as being issued to all contractors on site.

The EcCoW would monitor activity at each nest to determine when it is no longer active and works can continue. Should there be no sign of birds nesting in an area the clearance contractor would undertake vegetation clearance. The EcCoW would be available on site should any further input / assistance be required.

12.4.4 Protection of retained vegetation

Retained habitats would be fenced to prevent accidental incursion or clearance.

12.5 Conclusion

The proposed scheme is likely to result in the contravention of the legislation with respect to birds. There is a risk that the offences of destroying eggs and damaging or destroying nests as a result of the proposed scheme. The strategy set out would result in these offences being avoided.

13. Freshwater fish

13.1 Relevant legislation

- The Eels (England and Wales) Regulations, 2009 (as amended); and
- Salmon and Freshwater Fisheries Act, 1975 (as amended).

13.2 Baseline information

13.2.1 Desk study

Consultation was undertaken with the SEWBReC, BIS and NRW to obtain records of protected species within a 4 km wide corridor centred on the proposed scheme. These records and their location (NGR) can be found in the ES Appendix 11G: 2016 Ecology Survey Results.

Fifty six watercourses are crossed by or are located within a 100 m wide corridor of the proposed scheme, falling within seven Water Framework Directive (WFD) water body catchments across two River Basin Management Plans; Western Wales and River Severn.

13.3 Potential for an offence

The ground clearance works, construction and operation of the proposed scheme would not result in the permanent loss of aquatic habitat within running water and would not construct or amend any in water barriers to fish migration. As all major watercourses are proposed to be crossed by clear span bridges, potential impacts would be upon minor drainage channels with limited potential to support fish species.

Release of solids and liquids into waters would be mitigated through embedded design mitigation which are addressed separately in Chapter 17 (Road Drainage and the Water Environment) and Appendix 11M of the ES and not discussed further here. There are therefore no activities potentially causing an offence with regard to fish.

Table 13.1 below shows the relevant legislation and potential for committing an offence with regard to freshwater fish.

Table 13.1 : Freshwater fish – relevant legislation and potential for an offence

The Eels (England and Wales) Regulations, 2009 (as amended)	Salmon and Freshwater Fisheries Act, 1975 (as amended)	Offence likely (in absence of mitigation)	Location
To construct, alter or maintain a dam or structure and failing to notify the Environment Agency first would be guilty of an offence (Part 4, 12 (1), (2),(4)).	-	Yes – in areas where culverts are required to cross watercourses.	Proposed new and modified existing culverts (no. 41).

The Eels (England and Wales) Regulations, 2009 (as amended)	Salmon and Freshwater Fisheries Act, 1975 (as amended)	Offence likely (in absence of mitigation)	Location
-	To cause or knowingly permit to flow, or put or knowingly permits to be put, into any waters containing fish or into any tributaries of waters containing fish, any liquid or solid matter to such an extent as to cause the waters to be poisonous or injurious to fish or the spawning grounds, spawn or food of fish, shall be guilty of an offence (Part I, 4 (1)).	Yes – risk of sediment and pollutant run off from the construction works or road drainage.	Across the proposed scheme where it intersects with watercourses.

13.4 Proposed approach

The following paragraphs set out the steps that would be taken prior to the construction of the proposed scheme to ensure the legislation concerning freshwater fish was not contravened. In summary the process would take the following form:

- appropriate engineering design;
- NRW permitting; and
- provision and implementation of a construction method statement.

13.4.1 Engineering design

The design of the proposed scheme included embedded mitigation which addresses any potential contravention of the specified legislation in Table 13.1. This is as follows:

- drainage design and attenuation of water before discharge;
- new outfalls would be designed and sited to minimise the impact of increased discharge on the downstream waterbody;
- Sustainable Drainage Systems (SuDS) would be used in the design of the project to reduce and control velocities and volume for runoff to resemble pre-existing flow conditions within the water courses (PPG 5);
- best practice guidance would be adhered to when working within salmonid watercourses. Reasonable precautions would be undertaken to avoid / reduce in-channel works and translocation of channel substrate; and
- construction works to create new culverts, or to extend or upgrade existing culverts would abide by the relevant guidelines and would take into consideration the CIRIA Culvert Design and Operation Guide (C689) (Balkham, *et al.,* 2010) and The River Restoration Centre Manual of Techniques (River Restoration Centre, 2013). Where new culverts are required, their length would be kept to a practical minimum. Where practicable, the insertion of each culvert would not alter the gradients markedly from existing conditions. Altered flow regimes resulting from the use of culvert extensions or channel realignments would be avoided. Culverts would be oversized to allow natural bed and bank profiles to remain, where practicable, and would help to reduce the risk of erosion through increased velocities and heightened flood risk.

13.4.2 NRW permitting

The appropriate consents from NRW for water discharges required during the proposed construction works would be obtained ahead of the start of works and all relevant activities would operate in accordance with this. The necessary consents for working in proximity to watercourses would be obtained and all NRW water

abstraction licence conditions would be complied with. NRW would be notified of any action that is likely to impact on the migration of eels, either temporarily or permanently, and work toward resolution by sensitive design and implementation of construction and operational works.

13.4.3 Avoiding pollutants reaching watercourses

A construction method statement could include the following measures to avoid pollutants accidentally reaching watercourses.

- Maintenance of vegetation buffer strips where practicable.
- Works compounds, storage sites, access roads and construction work would be located / carried out at an agreed minimum distance from water features as advised by the EcCoW. Temporary fencing and signage would be installed to prevent encroachment by vehicles, machinery and personnel into sensitive areas such as banks of rivers and ponds.
- Adoption of good working practices during construction:
  - CIRIA C532 Control of water pollution from construction sites; and
  - CIRIA C648 Control of water pollution from linear construction projects – technical guidance.
- Targeted sediment control and erosion considerations (to meet the requirement in HD45/09) as detailed in the CEMP.
- Details within the CEMP:
  - construction drainage strategy;
  - sediment management strategy;
  - works to watercourses;
  - management of historic contamination;
  - materials inventory;
  - material storage and handling requirements;
  - construction monitoring requirements; and
  - pollution response plan.

More detail on each is provided in ES Chapter 17 (Road Drainage and the Water Environment); Appendix 17H: Good construction practice.

13.5 Conclusion

The proposed scheme has demonstrated that the commitments and actions undertaken would result in no offence being committed with regard to freshwater fish.

14. Controlled species

14.1 Relevant legislation

- Wildlife and Countryside Act, 1981 (as amended); and
- Environmental Protection Act, 1990.

14.2 Baseline information

14.2.1 Desk study

Consultation was undertaken with SEWBReC and BIS to obtain recent records (since 2004) of controlled species present within the footprint of the proposed scheme. The full results can be found in the A465 Section 5 and 6 Environmental Scoping Report (Jacobs, 2016b). In summary, both Himalayan balsam and Japanese knotweed have been recorded on waterbodies up and downstream of the existing A465. New Zealand pigmy weed *Crassula helmsii* and curly water weed *Lagarosiphon major* have also been recorded within a 1 km wide corridor centred on the proposed scheme.

14.2.2 Field surveys

A controlled species survey was undertaken concurrently with the extended Phase 1 habitat survey during July and August 2015. Controlled plant species, including Japanese knotweed and Himalayan balsam were recorded within the study area, often in association with watercourses and road corridors. The locations of these species are shown in ES Vol 3, Figure 11.3.

14.3 Potential for an offence

Site clearance and / or inappropriate disposal could lead to the spread of invasive species in contravention of legislation detailed in Table 14.1

Invasive species could also be imported from other sites into the proposed scheme footprint. Table 14.1 below shows the relevant legislation and potential for committing an offence with regard to controlled species.

Table 14.1 : Controlled species – relevant legislation and potential for an offence

Wildlife and Countryside Act, 1981 (as amended)	Environmental Protection Act, 1990	Offence likely (in absence of mitigation)	Location
To plant or otherwise cause to grow in the wild any plant which is included in Part II of Schedule 9 (s14 (2)).	-	Yes, by spread of existing plants in footprint or importation of plants from outside proposed scheme.	Within proposed construction footprint at : ch.1650 south ch.3900 north ch.4850 south ch.6975 north ch.10750 south ch.11150 north ch.16050 south plus any additional locations identified in pre-construction surveys. Across proposed soft estate where landscape planting is proposed.
Section 33 (1a) and (1b). These create offences to do with the deposit, treating, keeping or disposing of controlled waste without a permit. Section 33 (1)(c) makes it an offence to keep, treat or dispose of controlled waste in a manner likely to cause pollution of the environment.	(a) To deposit controlled waste or extractive waste, or knowingly cause or knowingly permit controlled waste or extractive waste to be deposited in or on any land unless an environmental permit authorising the deposit is in force and the deposit is in accordance with the licence (b) submit controlled waste, or knowingly cause or knowingly permit controlled waste to be submitted, to any listed operation (other than an operation within subsection (1)(a)) that - (i) is carried out in or on any land, or by means of any mobile plant, and (ii) is not carried out under and in accordance with an environmental permit. (c) treat, keep or dispose of controlled waste or extractive waste in a manner likely to cause pollution of the environment or harm to human health.	Yes, by management and disposal of existing plants cleared from site.	Within proposed construction footprint at: ch.1650 south ch.3900 north ch.4850 south ch.6975 north ch.10750 south ch.11150 north ch.16050 south plus any additional locations identified in pre-construction surveys.

14.4 Proposed approach

The following paragraphs set out the steps that would be taken prior to the construction of the proposed scheme to ensure the legislation relating to schedule 9 species was not contravened. In summary the process would take the following form.

- pre-construction surveys;
- provision and implementation of a construction method statement; and
- environmental permit from NRW, if required.

14.4.1 Pre-construction survey

Pre-construction surveys would be undertaken to record the location and extent of controlled species within the footprint of the proposed scheme immediately prior to the start of works. An assessment of control measures required, including waste disposal, would then be made.

14.4.2 Provision and implementation of a construction method statement

A method statement detailing control and eradication methods of the invasive species present would be produced, using best practice guidance publications for example 'Managing Japanese Knotweed on Development Sites: the Knotweed Code of Practice, (Environment Agency, 2013) and Managing Invasive Non-native Plants (Environment Agency, 2010).

Other measures to avoid accidental incursion in to invasive species areas could include:

- Invasive species areas would be fenced and / or clearly marked with hazard warning tape. In the case of Japanese knotweed this would be to a width of at least 7 m from the outermost plant and no tracked excavators would enter the 7 m exclusion zone.
- Haulage routes in areas of invasive species would be clearly demarcated and strictly adhered to. If haulage routes are required to pass through exclusion zones appropriate methods to prevent contact with the soil would be implemented.

14.4.3 Environmental permit

A waste licence would be secured to remove any soil contaminated with Japanese knotweed or Himalayan balsam. Disposal of the soil would only be permitted at landfill sites that are licensed to receive controlled waste of this type. Alternatively, it may be possible to bury the material on site under a method statement agreed with NRW.

14.4.4 Monitoring

An EcCoW would be employed to ensure that the implementation of the appropriate control measures is undertaken during construction. Post construction monitoring would be undertaken to confirm that non-native invasive species have not re-established or spread as a result of the proposed scheme.

14.5 Conclusion

The proposed scheme has demonstrated that actions and commitments would ensure no offence is committed with regard to invasive species.

15. Summary and conclusions

There is potential for the proposed scheme to have significant effects on a number of protected species, primarily during the construction phase. However, careful design and best practice would ensure that appropriate working practices would reduce impacts and avoid contravention of wildlife legislation.

16. References

ARGUK, 2010. *Great Crested Newt Habitat Suitability Index - Advice Note 5.* [Online]
[Accessed December 2016].

Balkham, M., Fosbeary, C., Kitchen, A. & Rikard, C., 2010. *Culvert design and operation guide (C689).* s.l.:CIRIA.

Biggs, J. *et al*., 2014. *Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA.,* Oxford: Freshwater Habitats Trust.

Charles, P. & Edwards, P., 2015. *Environmental good practice on site guide (C741D).* 4th Edn ed. s.l.:CIRIA.

Collins, J., 2016. *Bat Surveys for Professional Ecologists: Good Practice Guidelines.* 3rd ed. London: Bat Conservation Trust.

Cramp, S. &. S. K. E. L., 2004. *BWPi: Birds of the Western Palearctic interactive. ,* s.l.: BirdGuides, London..

Currie, F. a. E. G., 1997. *Forests and Birds: A Guide to Managing Forests for Rare Birds.* s.l.:Forestry Authority, Cambridge and Royal Society for the Protection of Birds, Sandy, UK.

DMRB, 1997. *Design Manual for Roads and Bridges Volume 10 Section 4 HA 59/92 Mitigating Against Effects on Badgers.* [Online]
Available at: http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol10/section4/ha5992.pdf
[Accessed 7 April 2016].

Edgar, P., Foster, J. & Baker, J., 2010. *Reptile Habitat Management Handbook.* Bournemouth: Amphibian and Reptile Conservation.

English Nature, 2002. *Badgers and Development,* s.l.: s.n.

Environment Agency, 2010. *Managing Invasive Non-native Plants: managing invasive non-native plants in or near freshwater.* Bristol: Environment Agency.

Environment Agency, 2013. *Managing Japanese Knotweed on Development Sites: the Knotweed Code of Practice.* 3rd ed. s.l.:Environment Agency.

Jacobs, 2016b. *A465 Head of the Valleys Dualling Section 5 and 6 - Environmental Impact Assessment Scoping Report.,* s.l.: Consultancy Report to Welsh Government.

Joys, A. a. H. Q. P. C., 2004. *Breeding periods for selected bird species in England.,* s.l.: BTO Research Report No. 352. A report to JNCC..

Langton, T. E., Beckett, C. L. & Foster, J. P., 2001. *Great Crested Newt Conservation Handbook.* Halesworth: Froglife.

Masters-Williams, H. *et al.*, 2001. *Control of water pollution from construction sites. Guiidance for consultants and contractors. (C532).* s.l.:CIRIA.

Mitchell-Jones, A. M. A. E., 2004. *Bat Workers' Manual.* 3rd Edition ed. s.l.:JNCC.

Natural England, 2011. *Reptile Mitigation Guidelines - Technical Information Note TIN102.* [Online].

Natural England, 2011. *Using one-way gates on badger sett,* s.l.: Natural England Technical Information Note TIN025 .

Protection of Badgers Act, 1992. *c.51.* [Online]
Available at: http://www.legislation.gov.uk/ukpga/1992/51/contents
[Accessed 14 Sept 2016].

River Restoration Centre, 2013. *Manual of River Restoration Techniques.* [Online]
Available at: http://www.therrc.co.uk/manual-river-restoration-techniques

Ruddock, M. W. D., 2007. *A Review of Disturbance Distances in Selected Bird,* s.l.: A report from Natural Research (Projects) Ltd to Scottish Natural Heritage.

The Conservation of Habitats and Species Regulations, 2010 (as amended). *SI 2010/490.* [Online]
Available at: http://www.legislation.gov.uk/uksi/2010/490/contents/made
[Accessed 14 Sept 2016].

The Hedgerow Regulations, 1997. *SI 1997/1160.* [Online]
Available at: http://www.legislation.gov.uk/uksi/1997/1160/contents/made
[Accessed 30 Aug 2016].

Wildlife and Countryside Act, 1981. *c.69.* [Online]
Available at: http://www.legislation.gov.uk/ukpga/1981/69/contents
[Accessed 7 Sept 2016].

Annex A. NRW response letter – marsh fritillary

See following page.

Ein cyf/Our ref: CAS-15573-Y4F7
Eich cyf/Your ref: B2191100

Rivers House,
St Mellon Business Park,
Fortran Road,
Cardiff
CF3 0EY

Ebost/Email:
jackie.walters@naturalresourceswales.gov.uk
Ffon/Phone: 03000 65 3148

Gareth Protheroe
Project Manager
A465 Dualling Improvement Scheme
Section 5 and 6
Jacobs UK Ltd
Churchill House
Churchill Way
Cardiff.
CF10 2HH

Dyddiad/Date: 12 May 2016

Dear Mr Prothero

A465 DUALLING IMPROVEMENT SCHEME SECTION 5 AND 6
ASSESSMENT OF IMPLICATIONS ON EUROPEAN SITES: SCREENING.
MEETING ACTION 29 MARCH 2016

We refer to the meeting of 29 March 2016 where we were asked to provide advice in regard to the Wildlife and Countryside Act 1981 (as amended) and protected species. We advise as follows;

The Marsh Fritillary is protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This makes the following unlawful (in respect of all life stages):

a) Intentional killing, injuring, taking.
b) Possession or control (live or dead animal, part or derivative).
c) Damage to or destruction of any structure or place used by a scheduled animal for shelter or protection.
d) Disturbance of any animal occupying such a structure or place.
e) Obstructed access to any such structure or place.
f) Selling, offering for sale, possessing or transporting for the purpose of sale (live or dead animal, part or derivative). And,
g) Advertising for buying or selling live or dead animal, part or derivative.

There is no provision for derogation under the Act and so no licences can be issued. The only way to avoid potentially committing offences is by avoidance. The Act says that, if it can be shown that the potentially unlawful act was the incidental result of a *lawful operation* and could not *reasonably* have been *avoided, no offence will have been committed.* To this end a method statement should be prepared and agreed with NRW prior to the commencement of works. Whilst this is not the same as derogation it might be used as part of a defence.

The above comments represents NRW's understanding of the law. It should not be taken as a definitive interpretation of the Act and the advice of a legal professional should be sought before taking any action that might affect Marsh Fritillaries.

Yn ddiffuant / Yours sincerely

Mrs Jackie Walters
Senior Development Planning Advisor / Uwch Ymgynghorydd Cynllunio Datblygu
Cyfoeth Naturiol Cymru / Natural Resources Wales

Gwefan / Website: www.cyfoethnaturiolcymru.gov.uk / www.naturalresourceswales.gov.uk

Ein pwrpas yw sicrhau fod adnoddau naturiol Cymru yn cael eu cynnal, gwella a'u defnyddio yn gynaliadwy, yn awr ac i'r dyfodol / Our purpose is to ensure that the natural resources of Wales are sustainably maintained, enhanced and used, now and in the future.

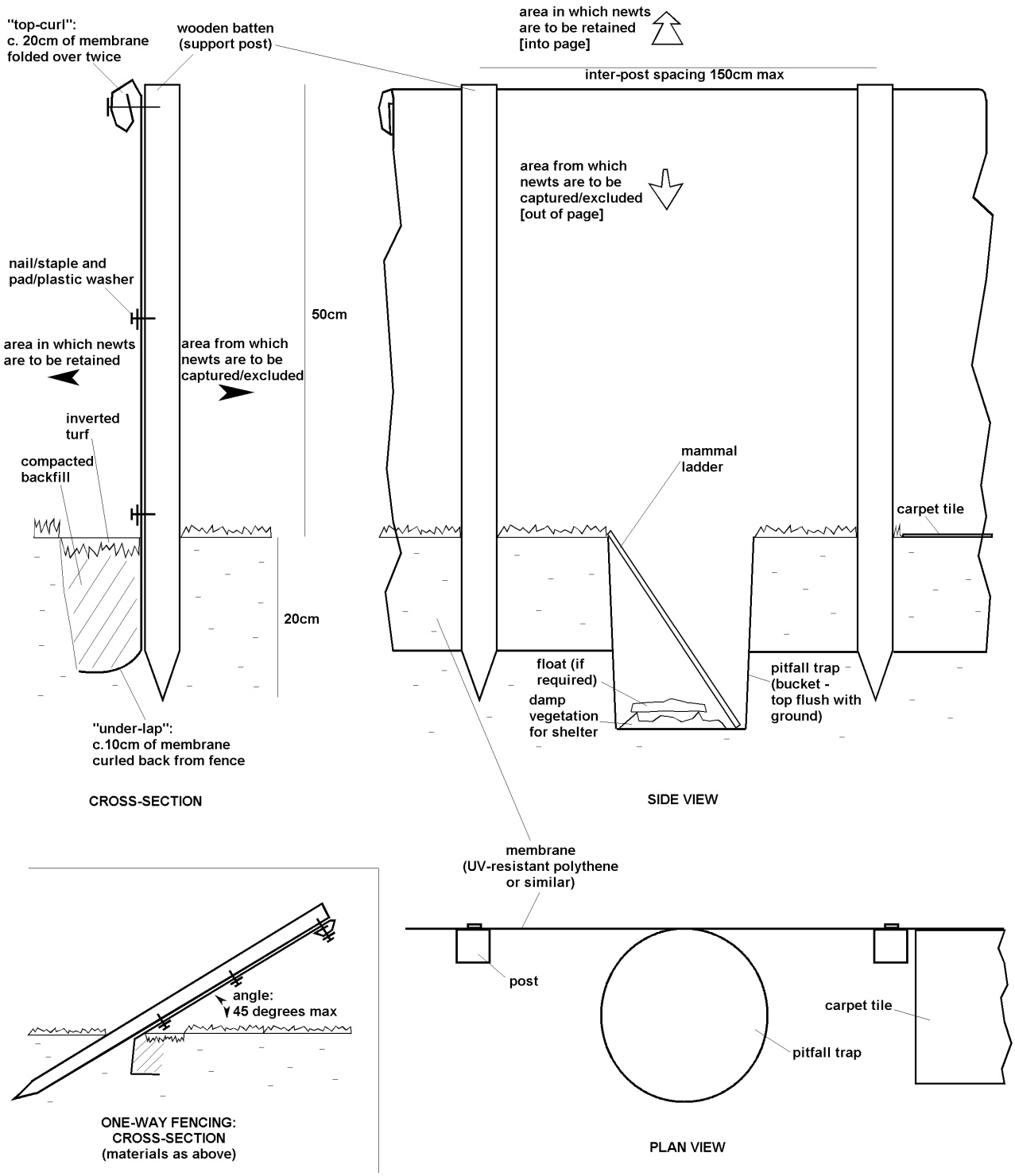
Annex B. Great crested newt fencing specification

See following page.

Page left intentionally blank.

Fence and pitfall trap design

Recommended design for exclusion fence (temporary amphibian fence), drift fence, and pitfall trap placement. This design can be used for a variety of capture and exclusion/retention purposes.



Page left intentionally blank.

Welsh Government

A465 Heads of the Valleys Dualling - Sections 5 and 6 - Dowlais Top to Hirwaun

Appendix 11C - Environment (Wales) Act - Section 7 Compliance Report

Rev 0

July 2017

Final

Contents

1. Introduction 1
2. Methodology 2
2.1 Establish Legislative Requirements 2
2.2 Establish the Baseline 2
2.3 Consideration of the Duties 2
3. Legislative requirements 4
4. Baseline 5
4.1 Principal habitats 5
4.2 Principal species 5
5. Measures Provided 10
6. Conclusions 12
7. References 13

1. Introduction

This technical report describes the consideration of the compliance with the legislative duties of the proponent (Welsh Government (WG)) with regard to the Environment (Wales) Act 2016, specifically Section 7 which relates to biodiversity. The report sets out the legislative duties followed by review of compliance with those duties.

Section 7 of the Environment (Wales) Act 2016 places a duty on the WG to prepare and publish a list, in consultation with Natural Resources Wales (NRW), of the living organisms and types of habitat of principal importance in Wales. This replaces the duty in Section 42 of the Natural Environment and Rural Communities (NERC) Act 2006 and the new duty came into force on 21 May 2016. It should be noted that the current interim Section 7 list of species and habitats is exactly the same as the previous list under Section 42 of the NERC Act 2006 and is under review with NRW.

This report identifies the habitats and species listed in the Section 7 list under the Environment (Wales) Act 2016, which could be present or have been recorded within a 1 km wide corridor centred on the proposed scheme and reviews the measures described in the Environmental Statement (ES) to demonstrate where these duties have been realised.

2. Methodology

This section outlines the approach that has been adopted to review the compliance of the proposed scheme with the Environment (Wales) Act 2016.

2.1 Establish Legislative Requirements

The sections of the Environment (Wales) Act 2016 relevant to the proposed scheme, in terms of the biodiversity duty and habitats and species of principal importance for the purpose of conserving biodiversity will be provided. These are detailed in Section 3 – Legislative Requirements.

2.2 Establish the Baseline

The desk study included a data search of species, including Section 7 species, and designated sites within a 4 km corridor centred on the proposed scheme. Field surveys comprised an extended Phase 1 habitat assessment of the area within a 1 km corridor centred on the proposed scheme and targeted surveys of protected species. No specific surveys for species solely listed in Section 7 have been undertaken as part of this assessment.

Surveys carried out from February 2015 to September 2016 are detailed in the following appendices: ES Appendix 11E: Winter 2015 Ecology Surveys Results; ES Appendix 11F: Summer 2016 Ecology Survey Results; ES Appendix 11G: 2016 Ecology Results; and ES Appendix 11H: Bat Survey Results 2016. In summary these surveys included:

- extended Phase 1 habitat survey;
- badger survey;
- bats survey – ground inspection for tree roosts and subsequent tree climbing; external building roost assessments and subsequent emergence / re-entry survey; bat activity transects; back tracking surveys; automated monitoring of road culverts for commuting bats; hibernation and summer survey of caves for roosts;
- breeding bird habitat assessment, lapwing survey at Dowlais Top and Schedule 1 species survey in Taf Fechan;
- great crested newt survey - Habitat Suitability Index (HSI), Environmental DNA (eDNA) and traditional techniques;
- reptile habitat assessment;
- marsh fritillary habitat survey, web and adult counts;
- otter survey; and
- aquatic ecology survey.

Section 7 species that were not recorded during the field survey work, but with potential to be present (i.e. were identified using the biological record centre data), were also included[1].

2.3 Consideration of the Duties

ES Chapter 11: Nature Conservation considers valuable ecological features on which the proposed scheme is considered likely to have a significant effect. Some Section 7 features were scoped into this assessment including purple moor-grass and rush pasture, lowland dry acid grassland, lowland heathland, hedgerows, wet woodland and species including great crested newt, otter, and bats.

[1] Species that have been recorded outside of the 1 km wide corridor centred on the proposed scheme but within a 4 km wide corridor centred on the proposed scheme since 2004 and where suitable habitat exists within a 1 km wide corridor centred on the proposed scheme.

The maintenance and enhancement of biodiversity is assessed through considering the mitigation described in the ES and which Section 7 habitats and species it could apply to, based on those considered likely to be present within a 1 km wide corridor centred on the proposed scheme.

3. Legislative requirements

The sections of the Environment (Wales) Act 2016 relevant to the proposed scheme, in terms of the biodiversity duty and habitats and species of principal importance for the purpose of conserving biodiversity, are outlined below.

Section 7 - Biodiversity lists and duty to take steps to maintain and enhance biodiversity.

1) The Welsh Ministers must prepare and publish a list of the living organisms and types of habitat which in their opinion are of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales.

2) Before publishing a list under this section the Welsh Ministers must consult the Natural Resources Body for Wales ("NRW") as to the living organisms or types of habitat to be included in the list.

3) Without prejudice to section 6, the Welsh Ministers must—

   a) take all reasonable steps to maintain and enhance the living organisms and types of habitat included in any list published under this section, and

   b) encourage others to take such steps.

4) The Welsh Ministers must, in consultation with NRW—

   a) keep under review any list published by them under this section,

   b) make such revisions of any such list as appear to them appropriate, and

   c) publish any list so revised as soon as is reasonably practicable after revising it.

5) In exercising their functions under this section, the Welsh Ministers must apply the principles of sustainable management of natural resources.

This report focuses on Section 7 part 1 and part 3 as listed above.

4. Baseline

4.1 Principal habitats

Section 7 habitats of principal importance in Wales known to be present within a 1 km wide corridor centred on the proposed scheme are listed in Table 4.1.

Table 4.1 : Section 7 habitats and principal habitats within a 1 km wide corridor centred on the proposed scheme

Phase 1 habitat type	Equivalent Section 7 principal habitats
Broadleaved woodland	Lowland mixed deciduous woodland
	Wet woodland
Boundary and linear features	Hedgerows
Neutral grassland	Lowland meadows
Acid grassland	Lowland dry acid grassland
Dwarf shrub heath	Lowland heathland
Fen, marsh (grassland) and swamp	Purple moor-grass and rush pasture
Rivers and streams	Rivers
Standing open waters and canals	Ponds
Inland rock	Inland rock outcrop and scree habitats

4.2 Principal species

Section 7 species of principal importance in Wales known to be present within a 1 km wide corridor centred on the proposed scheme are listed in Table 4.2.

In addition, the extended Phase 1 habitat survey results (ES Volume 2 - Appendix 11F) displayed in Figure 11.3 of the ES (Volume 3), suggest that the habitats present are likely to support a number of additional Section 7 species of principal importance in Wales, as follows:

- old stone walls are likely to provide a habitat for amphibians, reptiles and invertebrates;
- mature trees are likely to provide a habitat for birds, invertebrates and lower plants;
- ponds are likely to support a range of amphibians;
- brownfield habitat is likely to support terrestrial invertebrates and reptiles;
- inland river cliffs are likely to support assemblages of lower plants, lichens and roosting bats;
- grasslands are suitable for supporting assemblages of grassland fungi, and habitat for invertebrates, birds, amphibians, reptiles and mammals; and
- rivers and streams are likely to provide spawning, migration and feeding opportunities for fish.

Table 4.2 : Species of principal importance (Environment (Wales) Act 2016, Section 7) present within a 1 km wide corridor centred on the proposed scheme (■ = yes; - = no)

Taxonomic group	Species	Recorded within 1 km wide corridor centred on the proposed scheme		
		Jacobs field survey	Biological records	Listed in designated site citation
Terrestrial mammal	Brown hare *Lepus europaeus*	■	-	-
	Brown long-eared bat *Plecotus auritus*	■	■	■
	Common pipistrelle *Pipistrellus pipistrellus*	■	■	-
	European otter *Lutra lutra*	■	■	■
	European water vole *Arvicola amphibious*	-	-	-
	Greater horseshoe bat *Rhinolophus ferrumequinum*	■	-	-
	Hazel dormouse *Muscardinus avellanarius*	-	-	-
	Lesser horseshoe bat *Rhinolophus hipposideros*	■	■	■
	Noctule bat *Nyctalus noctula*	■	■	-
	Pine marten *Martes martes*	-	-	-
	Polecat *Mustela putorius*	-	-	-
	Soprano pipistrelle *Pipistrellus pygmaeus*	■	■	-
	European hedgehog *Erinaceus europaeus*	-	■	-
Bird	Bar-tailed godwit *Limosa lapponica*	-	-	-
	Black-headed gull *Chroicocephalus ridibundus*	-	■	-
	Common bullfinch *Pyrrhula pyrrhula*	-	■	-
	Common cuckoo *Cuculus canorus*	-	■	-
	Common grasshopper warbler *Locustella naevia*	-	■	-
	Common kestrel *Falco tinnunculus*	-	■	-

Taxonomic group	Species	Recorded within 1 km wide corridor centred on the proposed scheme		
		Jacobs field survey	Biological records	Listed in designated site citation
	Common linnet *Carduelis cannabina*	-	■	-
	Common starling *Sturnus vulgaris*	-	■	-
	Eurasian curlew *Numenius arquata*	-	■	-
	European golden plover *Pluvialis apricaria*	-	-	-
	European nightjar *Caprimulgus europaeus*	-	■	-
	Hawfinch *Coccothraustes coccothraustes*	-	-	-
	Hedge accentor *Prunella modularis*	-	■	-
	Hen harrier *Circus cyaneus*	-	■	-
	House sparrow *Passer domesticus*	■	■	-
	Lesser redpoll *Carduelis cabaret*	-	■	-
	Marsh tit *Poecile palustris*	-	-	-
	Northern lapwing *Vanellus vanellus*	■	■	-
	Pied flycatcher *Ficedula hypoleuca*	-	■	-
	Reed bunting *Emberiza schoeniclus*	-	■	-
	Ring ouzel *Turdus torquatus*	-	-	-
	Ringed plover *Charadrius hiaticula*	-	-	-
	Sky lark *Alauda arvensis*	■	■	-
	Song thrush *Turdus philomelos*	-	■	-
	Spotted flycatcher *Muscicapa striata*	-	-	-

Taxonomic group	Species	Recorded within 1 km wide corridor centred on the proposed scheme		
		Jacobs field survey	Biological records	Listed in designated site citation
	Tree pipit *Anthus trivialis*	-	-	-
	Willow ptarmigan *Lagopus lagopus*	-	-	-
	Willow tit *Poecile montanus*	-	■	-
	Wood warbler *Phylloscopus sibilatrix*	-	-	-
	Yellowhammer *Emberiza citrinella*	-	-	-
Fish	Brown trout *Salmo trutta*	-	-	-
	European eel *Anguilla Anguilla*	-	-	-
Amphibian	Common toad *Bufo bufo*	■	■	■
	Great crested newt *Triturus cristatus*	■	■	■
Reptile	Adder *Vipera berus*	-	-	-
	Common lizard *Zootoca vivipara*	■	■	-
	Grass snake *Natrix natrix*	-	-	-
	Slow-worm *Anguis fragilis*	-	■	-
Invertebrates	Cranefly *Lipsothrix errans*	-	-	-
	Dingy skipper *Erynnis tages*	-	■	-
	Freshwater crayfish *Austropotamobius pallipes*	-	-	-
	Goat moth *Coccus coccus*	-	-	-
	Grass rivulet *Perizoma albulata*	-	-	-
	Grayling *Hipparchia semele*	-	■	-

Taxonomic group	Species	Recorded within 1 km wide corridor centred on the proposed scheme		
		Jacobs field survey	Biological records	Listed in designated site citation
	High brown fritillary *Argynnis adippe*	-	-	-
	Marsh fritillary *Euphydryas aurinia*	■	■	■
	Narrow-bordered bee hawk-moth *Hemaris tityus*	-	■	-
	Small pearl-bordered fritillary *Boloria selene*	-	■	-
	White-letter hairstreak *Satyrium w-album*	-	-	-
Lichen	A lichen *Usnea florida*	-	■	-
Clubmoss	Stag's-horn Clubmoss *Lycopodium clavatum*	-	■	-

5. Measures Provided

The Environmental Impact Assessment (EIA) process aids the identification of measures required to identify and then maintain the habitats and species of principal importance in Wales and consequently highlight areas where measures could be considered to enhance biodiversity.

Measures described in the ES to avoid / mitigate likely significant effects on ecological features or avoid contravention of legislation for species would also be of benefit to other habitats and species of principal importance and include the following.

Construction working method

- Nocturnal and crepuscular species would benefit from the avoidance of night-time working, including the hours of dusk and dawn.
- Areas of vegetation clearance have been minimised. Bat foraging habitat would be created through the planting of trees and woodland to replace areas of woodland lost. This new habitat has consequential benefits for a range of species groups.
- Awareness building through toolbox talks during construction for bats, nesting birds, reptiles and amphibians. These would include mention of other species of principal importance that may be encountered. Construction would be supervised by Ecological Clerk of Works (ECoW) in sensitive areas. There would also be habitat management to deter nesting lapwing which would also apply to other nesting bird species.
- The proposed scheme is designed to avoid aquatic habitats. No major watercourses are to be realigned. Where culverting of small watercourses and ditches are required, appropriate river restoration techniques would be incorporated.

Habitat creation and management

- A variety of habitats would be created as set out in Table 5.1.
- Long term habitat management plans (5 year post construction with review for later years) for mitigation areas and the proposed soft estate are provided. These outline plans will be finalised with agreement from Natural Resources Wales at the detailed design stage. Outline management strategies for mitigation areas are provided:
  - Llwydcoed Slopes for marsh fritillary and SSSI botanical features – Appendix 11N;
  - Ancient woodland habitat – Appendix 11O; and
  - Blaencarno mitigation area for lapwing – Appendix 11P.
- These new habitats would provide increased diversity and quality of habitats that would contribute to the further creation and enhancement of habitats of principal importance in Wales (see Table 5.1) but also benefit additional, non-target, species of principal importance in Wales.
- Creation of hibernaculum and refugia for relocation of reptiles and great crested newt and enhanced verge habitats would benefit other non-target amphibian and reptile species including common toad (a species of principal importance in Wales).
- The proposed new soft estate would be would be left to recolonise naturally to benefit species already present in the area. Some supplementary wildflower seeding could be necessary with emphasis on food plants for insects, particularly marsh fritillary. Some of the new road verges would be south-facing, creating beneficial habitat for insects and reptiles. This would, in turn, provide a food source for bird species of principal importance.

Under road crossing points (bridges, culverts and underpasses)

- Existing culverts and underpasses would be retained and in some cases improved for bats, otters and other species by widening and adding mammal ledges. These culverts would remain open during

construction. New culverts are proposed at sufficient size to enable passage by animals and also have mammal ledges included. This would be of benefit to other species of principal importance in Wales, such as hedgehog and brown hare that would utilise the culverts as crossing points.

- Improvement measures include planting of suitable terrestrial habitat around the culvert entrances to connect to the wider landscape which would benefit bats and other terrestrial mammals. Planting would use native species with extra biodiversity benefits, for example plants with flowers / fruits.
- Mammal passage on banks of rivers under the proposed scheme would be maintained during works.

Table 5.1 : Proposed habitat creation

Habitats of principal importance observed during surveys	Habitat creation / enhancement measures (see Environmental Master Plan – ES, Volume 4)
Lowland mixed deciduous woodland	To mitigate woodland loss, approximately 43.2 ha of woodland would be created within the soft estate. An additional 7 ha of ancient woodland creation and enhancement is also proposed around Croesbychan junction.
Wet woodland	
Hedgerows	Removed species rich hedgerows would be translocated in to woodland planting areas. Additionally, planting of strips of trees as part of woodland mitigation would provide the same ecological function as hedgerows.
Lowland dry acid grassland	The creation of approximately 24.94 ha of acid grassland within the soft estate.
Lowland heathland	Mitigation involves the creation of approximately 8.19 ha of heathland within the soft estate and management / enhancement of an additional 14.4 ha area of multi-purpose mitigation where heathland is a component habitat.
Purple moor-grass and rush pasture	The proposed scheme design results in approximately 8.03 ha land take of species rich marshy grassland habitat. Mitigation for this includes enhancement of approximately 14.4 ha of grassland within at the Lwydcoed Slopes mitigation area which has marshy grassland, including purple moor-grass as a component habitat.
Rivers	The proposed scheme would not directly affect any major running features. Naturally occurring biodiversity enhancements would occur as a subsequence of improved water quality (result of proposed drainage system).
Ponds	The proposed scheme would result in approximately 0.51 ha land take of standing water at two locations (one pond and part of a reservoir). Twenty-six new water bodies (attenuation ponds) would be created within the soft estate creating a network of priority habitat elements across the proposed scheme. The attenuation ponds would be planted with marginal vegetation having subsequent beneficial effects for a range of species of principal importance in Wales.
Inland rock outcrop and scree habitats	An area of exposed rock would be created at Baverstock cutting within the soft estate.

6. Conclusions

It is concluded that the development and design of the proposed scheme has taken reasonable steps to maintain and enhance biodiversity and through the measures that have been identified during the EIA, and described in the ES.

Opportunities have been taken within the proposed scheme to enhance habitat by the provision of features that add diversity and distribution of habitats of principal importance in Wales. Connectivity of the habitats in the new soft estate, provide a greater number of niches for species to exploit.

7. References

Environment (Wales) Act , 2016. *anaw 3.* [Online]
Available at: http://www.legislation.gov.uk/anaw/2016/3/contents
[Accessed 2 Nov 2016].

Jacobs, 2017. *Environment (Wales) Act 2016 - Biodiveristy and Ecosystem Resilience Report,* s.l.: Consultancy Report to Welsh Government.

Page left intentionally blank.

Welsh Government

A465 Heads of the Valleys Dualling - Sections 5 and 6 - Dowlais Top to Hirwaun

Appendix 11D - Trunk Road Estate Biodiversity Action Plan (TREBAP) Compliance Report

Rev 0

July 2017

Final

Contents

1. Introduction 1
2. Policy Requirements 2
3. Compliance with TREBAP Specific Actions 3
4. Conclusion 37
5. References 38

1. Introduction

This technical report describes the consideration of the proposed A465 Section 5 and 6 scheme's compliance with the Trunk Road Estates Biodiversity Action Plan (TREBAP) (Welsh Assembly Government, 2004).

This report sets out the policy requirements of the TREBAP; followed by an assessment of the compliance of the proposed scheme with its objectives. Although the TREBAP is dated 2004 to 2014 the principles of this published report remain relevant in the absence of an updated edition (yet to be released).

The Environmental Statement (ES) for the proposed scheme considers likely significant effects on all ecological features, but not necessarily the fulfilment of TREBAP actions. This report considers TREBAP compliance regardless of whether or not likely significant effects have been identified on TREBAP features for the purposes of the Environmental Impact Assessment (EIA) Regulations. For the purpose of EIA, the regulations only require the identification and description of likely significant effects so that the decision maker can balance any such effects with the benefits of the proposals. This differs from delivering a Biodiversity Action Plan (BAP) which is a policy document.

2. Policy Requirements

Welsh Government (WG) has a responsibility to limit the impact of the proposed scheme on biodiversity and take into account the presence of habitats and species of biodiversity interest when considering new proposals (Welsh Assembly Government, 2004). Guidance on this is provided in Section 4, Volume 10 of the Design Manual for Roads and Bridges (DMRB) (2001) and the Welsh Trunk Road Maintenance Manual (WTRMM) (1999). The TREBAP sets out actions to encourage the use of best practice for biodiversity in the management and development of the estate in order to comply with that duty. New road schemes are cited as one of main mechanisms through which TREBAP should be delivered.

The key policy requirements within the TREBAP are to:

- conserve or enhance biodiversity of areas of new land take wherever practicable; and
- undertake targeted ecological surveys to collect information on biodiversity.

Overall in the TREBAP, 251 actions are listed for the WG to undertake within 11 habitat action plans, 17 species action plans and two generic action plans: Ecological Survey; and Education and Awareness. Not all of these actions are relevant to the proposed scheme, but those which are appropriate are discussed in Section 3.

3. Compliance with TREBAP Specific Actions

Table 3.1 lists each action under the generic, species and habitat action plans that form the TREBAP. For each action, the table shows whether it applies to the proposed scheme and, if so, how the proposed scheme would comply with each action.

The compliance assessment uses information available from baseline studies, both desktop study and field survey, completed for the proposed scheme (ES Volume 2 - Appendices 11E; 11F; 11G; and 11H) with regards to the relevance of each species or habitat action plan. It then goes on to review the proposed actions for each action plan against commitments to nature conservation as set out in the ES.

Table 3.1 : TREBAP actions and proposed scheme compliance

Key: CP = communications and policy; DCM = road design, construction and maintenance; FRM = future research and monitoring; PGA = policy, guidance and advice; SUR = survey.

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
GENERIC ACTION PLAN			
Ecological Survey			
1 SUR	Undertake two route surveys of 50 km each, per year.	N	N/A
2 SUR	Ensure results relating to existing or potential TREBAP species and habitats are sent to the trunk road managers in the relevant network area(s).	Y	The survey results of the proposed scheme would belong to WG so would be available to share those data with the Trunk Road Agent.
3 SUR	Identify grassland verges of importance, as defined in the WTRMM, such that the relevant management requirements can be applied.	Y	Grassland verges of importance have been identified in the Environmental Masterplan (EMP) and have been assigned relevant management prescriptions. Specifically, the existing species rich neutral grassland road on Rhigos roundabout has a programme of topsoil translocation to the new roundabout proposed.
4 DCM	Ensure records of TREBAP and protected habitats/species in road verges or structures are considered within all stages of new schemes	Y	A biological record search within 2 km of the proposed scheme was undertaken and results considered during scoping. A detailed Phase 1 Habitat Survey and a suite of species surveys were then undertaken to inform the Environmental Statement. Pre-construction surveys would be undertaken where needed.
5 DCM	Ensure that surveys for new road schemes comply with developing best practice and DMRB advice.	Y	Ecological surveys were carried out in reference to the following best practice documents. Amendments to specified methodologies are justified in the relevant factual reports: • Guidelines for Ecological Report Writing (CIEEM, 2015); • Extended Phase 1 Habitat Survey - Phase 1 Habitat Survey Handbook (JNCC, 2010); • Bats - Bat Surveys: Good Practice Survey Guidelines (Hundt, 2012);

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
			• Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd Edition (Collins 2016); • The Bat Worker's Manual (Mitchell-Jones & McLeish, 2004); • Great Crested Newts - Great Crested Newt Conservation Handbook (Langton *et al.*, 2001); • Analytical and Methodological development for Improved Surveillance of the Great Crested Newt (Biggs *et al*., 2014); • Badgers - Design Manual for Roads and Bridges (DMRB) Volume 10, Section 1 – Part 5 HA59/92; • Otters - Design Manual for Roads and Bridges (DMRB) Volume 10, Section 4 – Part 4 HA81/99; and • Reptile Management Handbook (Edgar *et al.*, 2010). • Habitat mapping for marsh fritillary (Fowles & Smith, 2006)
6 DCM	Ensure that surveys for routine and one off maintenance comply with DMRB and WTRMM.	N	N/A
7 DCM	Ensure records of biodiversity interest (for example TREBAP and protected habitats and species) in road verges or structures are used to inform management.	Y	A post-construction, environmental management plan would be developed, in accordance with Natural Resources Wales (NRW), to ensure biodiversity features present are appropriately managed.
8 CP	In areas where LBAPs include a Road Verge Action Plan, liaise with BAP originators and Lead Partners to ensure all parties are aware of current actions that may complement, or may be complemented by, actions undertaken by Trunk Road Managers. Take steps to eliminate or modify actions which conflict with proposed LBAP targets where possible.	Y	Road verges are included as locally important habitat on the Rhondda Cynon Taf County Borough Council (CBC) Local Biodiversity Action Plan (LBAP) and form part of Urban habitat which is highlighted on the Merthyr Tydfil CBC LBAP and Wildlife Corridor habitat which is highlighted as locally important on the Caerphilly CBC LBAP. Objectives listed on these plans include identifying verges of biodiversity interest and reviewing verge management practices. Local Planning Authority (LPA) ecologists have been consulted at Environmental Liaison Groups (ELGs) and Technical Working Groups (TWGs) as part of the proposed scheme where there were opportunities to discuss LBAP actions and

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
			TREBAP actions with trunk road representatives who were also involved.
9 CP	Collate survey results relating to UKBAP species and habitats that are found to be on the network, but which are not the subject of TREBAP Action Plans, for consideration at the five-year review.	N	Not applicable to the proposed scheme as the UK BAP reporting process is no longer in use.
Education and awareness			
10 PGA	Participate actively in the development of DMRB advice with the other UK National Highway Authorities.	N	N/A
11 PGA	Review WTRMM advice to ensure staff and Trunk Road Managers are aware of constraints in relation to the bird-breeding season and the effects of management operations (including, for example, the potential effects of spreading chippings on valuable grasslands; pollution from fuel spillage; not removing arisings from grasslands; pesticide use; etc).	N	N/A
12 PGA	Review, and if necessary update, current advice in WTRMM on control practices with respect to invasive weed and alien species on road verges.	N	N/A
13 DCM	Ensure that those involved in these actions are familiar with relevant advice in DMRB and WTRMM.	N	N/A
14 CP	Organise training seminars for Trunk Road Managers to ensure that they understand their responsibilities for implementing actions under the TREBAP and the requirements for reporting and maintaining records.	N	N/A
15 CP	Liaise with interested parties to ensure that road verges that carry any kind of designation are known to Trunk Road Managers.	Y	Any designations within a 4 km wide corridor centred on the proposed scheme are highlighted in the relevant ecology factual reports and ES Chapter 11: Nature Conservation. The survey results of the proposed scheme would belong to WG and so would be available to data share with the Trunk Road Agent.
16 CP	Liaise with NRW and LAs to ensure that all other lands within the soft estate which carries a statutory or non-statutory wildlife designation,	Y	NRW and LPAs have been involved in the consultation process. The reports compiled by Jacobs highlight all statutory and non-statutory

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
	or which are covered by existing Management Plans, are known to Trunk Road Managers.		wildlife designations. The survey results of the proposed scheme would belong to WG and so would be available to data share with the Trunk Road Agent.
17 CP	Produce publicity information relating to the TREBAP.	N	N/A
18 CP	Produce public information on the value of highways verges and the rationale for management techniques.	N	N/A
19 CP	Review the way information is collected and reported in relation to existing data systems to ensure information on biodiversity issues is available to Trunk Road Agents and contractors.	N	N/A
HABITAT ACTION PLANS			
Boundary Features			
20 PGA	Review existing advice within the WTRMM to ensure it reflects best practice, particularly with respect to boundary features classified as ancient and/or species-rich hedgerows, cloddiau, or hedgerows classified as 'important' under the Hedgerow Regulations.	N	N/A
21 PGA	Review, with the UK Highway Authorities, the need for boundary features advice in the DMRB.	N	N/A
22 SUR	Ensure any surveys that are undertaken are extended sufficiently to assess the connectivity of boundary features and to identify opportunities for new linkages, as well as covering any legal requirements.	Y	Surveys carried out were sufficient to assess connectivity of boundary features. Opportunities for planting vegetation to increase connectivity have been identified and mapped on the EMP – ES, Volume 4.
23 DCM	For all proposed road schemes, seek to identify boundary features of ecological value and identify areas where the boundary features may be improved for the benefit of biodiversity. Identification of valuable boundary features within the scoping phase should help avoid impacts and highlight any potential opportunities.	Y	Boundary features of ecological value were recorded during the Phase 1 Habitat Survey. However, none of these were in the existing soft estate. Boundary features potentially impacted by the proposed scheme include linear corridors of plantation / broadleaved woodland, tree-lines, ditches, walls and hedgerows. Where habitats are impacted, connectivity would be maintained (where possible) during construction and replacement connective habitat would be provided post-construction.

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
			Opportunities for planting vegetation to increase connectivity have been identified and mapped on the EMP – ES, Volume 4.
24 DCM	Where road widening is to be carried out to the detriment of existing boundary features, aim to preserve features on one side of the improvement scheme.	Y	Boundary features would be preserved in situ and connective habitats provided (see EMP).
25 DCM	Where a hedgerow classified as 'important' under The Hedgerow Regulations is removed, replace and/or (as a last resort) translocate it as part of the mitigation.	Y	Approximately 537 m of species-rich hedgerow would be lost to the proposed scheme. Hedgerow translocation would take place (see EMP, Volume 4) and approximately 2250 m of new hedgerow planting proposed. This would connect to the existing hedgerow network in the area. No net loss of hedgerow would result.
26 DCM	Where valuable non-hedgerow boundary features will be lost through new roads or improvement schemes, replace and enhance remaining features through re-creation and translocation.	N	No valuable non-hedgerow boundary features would be lost due to the proposed scheme.
27 DCM	Promote, through Environmental Management Plans wherever possible, environmentally-sensitive management of hedgerows in the Directorate's control. This should include appropriate cutting regimes, retention of standing trees and the use of native species of local provenance where available in planting regimes.	Y	An Environmental Management Plan would be produced, which details management of retained and newly-created hedgerows. New hedgerows planting would use native species of local provenance and translocated material from within the construction footprint of the proposed scheme. Control of non-native invasive and undesirable species and long-term management recommendations would be made.
28 FRM	Monitor successes of hedgerow translocations, replanting and enhancements that have been carried out as mitigation measures.	Y	Newly created and enhanced hedgerow habitat would be monitored, post-construction. The precise approach and objectives / targets of monitoring would be specified in an environmental management aftercare plan. This is also a commitment in the Register of Environmental Actions and Commitments (REAC).
29CP	Include information on the value and management techniques of boundary features within environmental training for the Transport Directorate staff and Trunk Road Agents.	N	N/A
Calcareous Grassland			
30 PGA	Review and, if necessary, issue revised guidance with respect to	N	N/A

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
	calcareous grassland in WTRMM.		
31 SUR	Identify and survey areas of the soft estate that are known or likely to contain calcareous grassland: for example areas adjacent to significant areas of calcareous grassland (using NRW's current grassland surveys), and record the distribution of the habitat on the network on a database.	N	No calcareous grassland was identified within the proposed scheme soft estate or within 500 m of the proposed scheme during the Phase 1 habitat survey (ES Volume 2 – Appendix 11F).
32 SUR	Identify areas of calcareous grassland within the soft estate suitable for restoration.	N	N/A
33 DCM	At the design stage for new road and improvement schemes, ensure that valuable calcareous grassland is taken into consideration. Avoid the direct loss of such habitat wherever possible.	N	No valuable calcareous grassland was identified therefore this action is not applicable.
34 DCM	Phase out the use of seed that is not of local or bioregional provenance.	Y	N/A
35 DCM	Where habitat is unavoidably lost, consider the recreation of calcareous grassland on the road verge or, as a last resort, translocation.	N	No areas of calcareous grassland would be affected by the proposed scheme; therefore, this is not applicable.
36 DCM	Develop appropriate grass-cutting regimes to maintain species diversity in identified areas.	N	N/A
37 DCM	Aim to create or restore five sites of calcareous grasslands using good management practices in road verges.	N	N/A
38 FRM	Set up a system for monitoring known sites (including newly-created sites) to ensure that management is having the desired effect. Modify management when existing techniques are failing.	N	N/A
39 CP	Increase awareness of Transport Directorate staff, Trunk Road Agents and the general public to the importance of calcareous grassland.	N	N/A

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
Coastal and Estuarine			
40 PGA	Review advice provided in the WTRMM on maintenance on, or near, coastal and estuarine habitats. Issue revised guidance where necessary.	N	N/A
41 PGA	Review the need for advice in DMRB with UK Highway National Highway Authorities	N	N/A
42 SUR	Identify all areas of the network, and any relevant road drainage systems, that run within 50 m of coastal and estuarine habitats.	N	N/A
43 DCM	Ensure that valuable habitats (particularly protected sites and UKBAP habitats) are considered at the design stage of new road and improvement schemes; seek advice from the Environment Agency Wales and NRW to help identify and resolve relevant issues.	N	N/A
44 DCM	Ensure avoidable impacts do not occur to estuarine and coastal habitats during road construction.	N	N/A
45 DCM	During operation and maintenance of the road, reduce the impacts of pollution to a minimum by ensuring that drainage systems are kept functional at all times.	N	N/A
46 CP	Raise the profile of coastal and estuarine habitats and their nature conservation value with respect to design, construction and maintenance of schemes.	N	N/A
Heathland			
47 PGA	Review and, if necessary, update guidelines for best practice management of the soft estate within the WTRMM with reference to heathland habitats.	N	N/A
48 SUR	In areas where heathland within and outside of the soft estate, encourage coordination of surveys and subsequent exchange of results by those involved.	Y	The Phase 1 Habitat survey (ES Volume 2 – Appendix 11F) identified areas of dry and wet heathland habitat within and outside of the soft estate. These areas are highlighted on the Phase 1 Habitat survey maps (ES – Figure 11.3). This survey data is owned by WG and is publically

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
			available once planning documentation has been published.
49 DCM	Identify areas of heathland at the route selection stage of road schemes to avoid impacting the habitat where possible.	Y	The areas of heathland habitat were identified during the Phase 1 Habitat survey and were highlighted on the Environmental Constraints and Master Plans in order to inform the proposed scheme design.
50 DCM	At the design stage for new road and improvement schemes, ensure that valuable heathland is taken into consideration. Avoid the direct loss of heathland habitat wherever possible.	Y	Areas of heathland were highlighted on Environmental Constraints and Master Plans that were used to inform the proposed scheme design and would be retained where possible.
51 DCM *	Consider opportunities for habitat creation or restoration where practicable, and take forward 10 sites by 2014.	Y	Acid / heathland habitat would be (re-)created within the new proposed soft estate to mitigate the loss of heathland habitat (see EMP – ES, Volume 4).
52 DCM	Ensure management of heathland is appropriate to maintain its heathland value.	Y	Approximately 8.19 ha of heathland habitat creation within the proposed soft estate would be managed appropriately. This would be implemented via an environmental management plan (a requirement in the REAC).
53 FRM	Review best practice for the management of heathland with the UK government national highway organisations.	N	N/A
54 CP	Raise public awareness to help prevent deliberate / accidental fires, fly-tipping, and parking / driving on heathland in the network.	N	N/A
Lowland Dry Acid Grassland			
55 PG	Review, and if necessary, issue revised guidance with respect to lowland dry acid grassland in WTRMM.	N	N/A
56 SUR	Identify and survey areas of the soft estate that are known or likely to contain lowland dry acid grassland: for example areas adjacent to significant areas of lowland dry acid grassland (using NRW's current grassland surveys), and record the distribution of the habitat on the network on a database.	Y	Areas of acid grassland habitat along the proposed scheme were recorded during the Phase 1 Habitat Survey. Details are discussed and displayed in the Ecology Summer Factual Report (ES Volume 2 – Appendix 11F).
57 SUR	Identify areas of lowland dry acid grassland within the soft estate suitable for restoration.	N	The proposed scheme would result in the loss of the majority of existing habitats in the current soft estate. No remnant areas of acid grassland would remain. However, approximately 24.94 ha of new acid grassland

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
			habitats would be created (see EMP, ES – Volume 4).
58 DCM	At the design stage for new road and improvement schemes, ensure that valuable dry acid grasslands are taken into consideration. Avoid direct loss of such habitats wherever possible, or the potential for changes in the hydrology of such areas.	Y	Areas of acid grassland were mapped on an environmental constraints map issued to the design team and was considered during the design stage to avoid valuable examples of this habitat, where possible.
59 DCM	Phase out the use of seed that is not of local or bioregional provenance.	Y	Minimal seeding would be used in the creation of new grassland habitats. Where necessary, only seed of local or bioregional provenance would be used in habitat replacement or enhancement along the proposed soft estate. The majority of the road verges would allow wildflowers to re-colonise naturally with grass seed mix applied only. This is specified in the ES.
60 DCM	Where habitat is unavoidably lost, consider the recreation of lowland dry acid grassland on the road verge or, as a last resort, translocation.	Y	Some species rich acid grassland would be unavoidably lost to the proposed scheme. Mitigation would, in the first instance, involve like-for-like habitat replacement as close to the original location as possible on the new proposed soft estate (see EMP, ES, Volume 4). Appropriate habitat management plans would be developed in the detailed design stage and are a requirement in the ES i.e. listed in the REAC.
61 DCM *	Create or enhance five sites of lowland dry acid grassland in road verges.	Y	Approximately 24.94 ha of species rich acid grassland would be created in the proposed soft estate.
62 FRM	Set up a system for monitoring known sites (including newly-created sites) to ensure that the management is having the desired effect. Modify management when existing techniques are failing.	Y	Newly created acid grassland habitat would be monitored going forward as part of a post construction environmental management plan. Such a management plan is required in the REAC.
63 CP	Increase awareness of Transport Directorate staff, Trunk Road Agents and the general public to the importance of lowland dry acid grassland.	N	N/A
Lowland Meadows			
64 PGA	Review and, if necessary, issue revised guidance with respect to lowland meadow grassland in WTRMM.	N	N/A

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
65 SUR	Identify and survey areas of the soft estate that are known or likely to contain lowland meadow, for example, areas adjacent to significant areas of lowland meadow (using NRW's current grassland survey information), and record the distribution of the habitat on the network on to a database.	N	The Phase 1 Habitat Survey carried out did not identify areas of unimproved neutral grassland – the Phase 1 Habitat equivalent to lowland meadows - along the proposed scheme (ES Volume 2 – Appendix 11F). Some areas of species rich semi-improved neutral grassland were recorded but this is not comparable to the lowland meadow category.
66 SUR	Identify areas of lowland meadows within the soft estate suitable for restoration.	N	No areas of lowland meadow (unimproved neutral grassland) were identified within the soft estate.
67 DCM	At the design stage for new road and improvement schemes, ensure that valuable lowland meadows are taken into consideration. Avoid the direct loss of lowland meadow habitat wherever possible.	N	N/A
68 DCM	Phase out the use of seed that is not of local or bioregional provenance.	N	N/A for this habitat type
69 DCM	Where the loss of lowland meadow habitat is unavoidable, consideration should be given to the creation of a similar meadow habitat on the road verge or, as a last resort, translocation.	N	N/A
70 DCM	Create or restore six sites of lowland meadow within the highway boundary.	N	N/A
71 FRM	Set up a system for monitoring known sites (including newly-created sites) to ensure that the management is having the desired effect. Modify management when existing techniques are failing.	N	N/A
72 CP	Increase awareness of Transport directorate staff, Trunk Road Agents and the general public to the importance of lowland dry acid grassland.	N	N/A
Purple moor grass and rush pasture			
73 PGA	Review and, if necessary, issue revised guidance with respect to purple moor-grass and rush pasture.	N	N/A
74 SUR	Survey the soft estate that is adjacent to known areas of purple moor-	Y	The Phase 1 Habitat survey identified areas of marshy grassland (Phase

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
	grass and rush pasture habitat to establish distribution of this habitat on the network.		1 equivalent) along the proposed scheme, the results of which are discussed in ES Volume 2 – Appendix 11F – Table 3.9 and shown in Figure 11.3. Target notes within this report show the locations of with additional features of purple moor grass and rush pasture.
75 DCM	At the design stage for new road and improvement schemes, ensure that this habitat is taken into consideration, and avoid its direct loss or fragmentation wherever possible.	Y	Areas of purple moor grass and rush pasture along the proposed scheme were marked onto an environmental constraints map issued to the design team to inform proposed scheme design. Proposed loss of this habitat has been minimised and mitigation in the form of soil salvage, turf translocation and habitat enhancement would be undertaken.
76 DCM	Phase out the use of seed which is not of local or bioregional provenance.	Y	Minimal seeding would be used in the creation of new grassland habitats. Where necessary, only seed of local or bioregional provenance would be used in habitat replacement or enhancement along the proposed soft estate. The majority of the road verges would allow wildflowers to re-colonise naturally with grass seed mix applied only. This is specified in the ES.
77 DCM	Where habitat is unavoidably lost, consider the recreation of purple moor grass and rush pasture on the road verge or, as a last resort, translocation.	Y	Some areas of purple moor grass and rush pasture would be unavoidably lost to the proposed scheme. Mitigation would involve like-for-like habitat replacement as close to the original location as possible (see EMP, ES Volume 4) using translocation or soil salvage techniques. The mitigation site at Llwydcoed slopes to mitigate for marsh fritillary and SSSI loss contains purple moor-grass habitats that would be enhanced for general biodiversity.
78 DCM *	Enhance or create six sites by 2014 within the highway boundary.	Y	The enhancement and creation of species rich marshy grassland sites, incorporating features of purple moor grass, has been incorporated into the proposed scheme (see EMP, ES – Volume 4).
79 FRM	Set up a recording system and monitor known sites (particularly those identified as marsh fritillary butterfly habitat) to ensure maintenance of quality and diversity. Modify management when techniques are failing.	Y	An environmental management plan for the post construction phase is to be produced (requirement of the ES – in the REAC) in which the new soft estate and mitigation habitats would be monitored for a minimum of five years. Known marsh fritillary sites would continue to be monitored pre-construction, during construction and post-construction. An outline management strategy is provided in ES Volume 2 - Appendix 11N. This

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
			would be finalised in agreement with NRW and implemented by the contractor. This would be a dynamic document with management modifications made after consideration of monitoring results.
80 CP	Increase awareness of Transport directorate staff, Trunk Road Agents and the general public to the importance of purple moor-grass and rush pasture.	N	N/A
Rivers and Streams			
81 PGA	Consider the results of the EU Life project to advise on management issues.	N	N/A
82 PGA	Review and, if necessary, update guidelines relating to rivers and streams within the WTRMM, in particular, the way maintenance is carried out (pesticide use, etc.).	N	N/A
83 SUR	Collate the results of any surveys to gain a clearer picture of the extent and quality of river / stream habitats on the network, and liaise with organisations such as NRW to identify any other relevant issues.	Y	Hydromorphology and aquatic ecology walkover surveys (ES Volume 2 – Appendix 11G) have been undertaken along the watercourses and information provided by biodiversity local record centres and NRW has been reviewed. Additionally, Jacobs have liaised with NRW regarding flooding and other issues. This information, as relevant to the proposed scheme, is summarised in the ES.
84 DCM	At the design stage of any scheme, ensure that watercourses, particularly those supporting protected species, are taken into consideration. Liaise with organisations such as the NRW to identify relevant issues, and avoid the direct loss of riverine habitat (for example through inappropriate culverting).	Y	All major watercourses would be crossed by clear span structures, at height. No direct effects on these habitats or species dependent on this habitat are anticipated. Consultation with NRW has been carried out. Additionally hydromorphological walkover and ecological surveying has been undertaken to identify sensitive aquatic habitats. A Water Framework Directive (WFD) assessment has been carried out to assess all modified existing and new proposed culverts. These are of minor watercourses and ditches with limited potential to support protected species.
85 DCM	Before road schemes commence, take into account drainage issues and potential changes in groundwater, and any likely/potential effects	Y	Hydrological assessment has been undertaken as part of ES Chapter 17: Road Drainage and the Water Environment.

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
	on local watercourses.		
86 DCM	Maintain and develop pollution controls, in line with best practice, to stop untreated road runoff and vehicle pollution seeping into nearby watercourses.	Y	Controls in line with CIRIA (2015) guidance would be applied to treat runoff in relation to risk from both routine pollution and major spillages during construction. The operational phase drainage has been designed to best practice with incorporation of Sustainable Urban Drainage techniques. Additionally these have would be adapted to provide wildlife habitat i.e. planting of marginal vegetation (see EMP, ES – Volume 4).
87 DCM	Implement watercourse restoration schemes where road construction has unavoidably disturbed a river or stream where land ownership allows. Apply to 10 different locations by 2014.	Y	New culverts would be designed in accordance with best practice guidelines (CIRIA, 2015) and river beds would be reinstated as per The River restoration Centre (2013).
88 FRM	Monitor the condition of rivers and streams on and adjacent to the soft estate to ensure maintenance of quality following improvement or major maintenance where there are specific identifiable issues of biodiversity concern. Where significant effects remain after mitigation, considerate whether retro-fitted measures can be applied.	Y	Water quality would be monitored during and post-construction where necessary, as per the Construction Environmental Management Plan (CEMP) and the environmental management plan for the post-construction phases.
89 CP	Raise awareness about the importance and vulnerability of water bodies and their associated species within those organisations involved in design, construction and maintenance.	N	N/A
Rock Faces and Screes			
90 PGA	Review WTRMM advice and best practice generally so to include advice on management of rock face and scree habitats, including the management of invasive species, within the WTRMM.	N	N/A
91 PGA	Review the need for advice in the DMRB with the UK National Highway Authorities.	N	N/A
92 SUR	As part of surveys, ensure the location and value of rock faces and screes are assessed.	Y	The Phase 1 habitat survey identified natural rock faces at Taf Fawr and Taf Fechan gorges (ES – Appendix 11F).
93 DCM	At the design stage for new road and improvement schemes, ensure that valuable rock faces and scree, in particular UKBAP habitats and designated sites, are taken into consideration. Avoid the direct loss of	Y	An environmental constraints plan was issued to the design team highlighting ecological constraints to the proposed scheme. The use of natural rock to form retaining edges, where the geology allows, has been

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
	rock faces and scree wherever possible.		investigated as well as the use of scree where space and suitability of the landform allows during proposed scheme design. Direct loss to rock faces and scree has been unavoidable at Taf Fechan and Taf Fawr but has been minimised wherever possible through proposed scheme design.
94 DCM	Create or restore 10 new sites by 2014	Y	Rock faces would be created as part of the proposed scheme in relation to proposed retaining walls and in the proposed cutting east of Baverstocks junction.
95 DCM	Consider creating wet rock faces where road drainage issues allow, and road safety issues are not compromised.	Y	Rock faces would be created as part of the proposed scheme but would be kept dry. Wet rock faces are located naturally at the Taf Fechan and Taf Fawr gorges where proposed loss has been minimised.
96 CP	Raise the awareness of the value of rock face and scree communities within the Transport Directorate staff, Trunk Road Agents and the general public.	N	N/A
Waterbodies			
97 PGA	Review and, if necessary, update guidance in WTRMM on the management of water-bodies on the soft estate.	N	N/A
98 DCM	At the design stage for new road and improvement schemes, ensure that valuable water bodies, in particular UKBAP habitats and designated sites, are taken into consideration. Avoid the direct loss of water bodies wherever possible.	Y	All waterbodies were mapped during the Phase 1 habitats survey (Appendix 11F).Their locations were shown on an environmental constraints map issued to the design team in order to influence the design to avoid impacts on these features as far as possible. The WFD Framework was applied to assess all waterbodies. Waterbody loss would be limited to a partial infill of a reservoir west of Dowlais Top and of a small natural pond on the off-line section at Hirwaun.
99 DCM	Take into account during design and construction indirect effects of drainage or alterations to ground water on surrounding water bodies.	Y	The impacts of design and construction on groundwater, including quality, quantity and the relationship with surrounding waterbodies, is assessed within the ES, specifically Chapter 17: Road Drainage and Water Environment.

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
100 DCM *	Undertake further pond/reed bed creation for biodiversity purposes, at the rate of one pond or reed bed/year.	Y	No reed beds are proposed. The rate of one per year is not applicable to the proposed scheme. Twenty-six attenuation ponds would be created to prevent increased flooding. These would also serve a dual purpose of enhancing biodiversity, where possible.
101 DCM *	Improve road runoff protection in existing schemes or scheme improvements as opportunities arise and/or where the need arises following assessments of risk, at the rate of one d scheme per year.	Y	The existing drainage arrangements along Sections 5 and 6 of the A465 do not include flow attenuation or significant deliberate pollution control measures. The proposed scheme would include SuDS drainage which would seek to reduce peak rates of storm water runoff and reduce pollution being discharged into local waterbodies. The rate of one / year is not applicable to the proposed scheme.
102 FRM	Set up a system to collate records of pollution incidents and monitor effects on waterbodies.	N	N/A
103 FRM	Monitor the waterbodies on and adjacent to the soft estate to ensure maintenance of quality following improvement or major maintenance, or where there are specific identifiable issues of biodiversity concern. Where significant effects remain after mitigation, consider whether retro-fitted measures can be applied.	Y	Water quality would be monitored during and post-construction where necessary, as per the Construction Environmental Management Plan (CEMP) and the environmental management plan for the post-construction phases. However, the proposals are likely to result in a net improvement in water quality over the current proposed scheme.
104 CP	Raise awareness about the importance and vulnerability of water bodies and their associated species within those organisations involved in design, construction and maintenance.	N	N/A
Woodlands and Planted Native Trees and Shrubs			
105 PGA	Review the WTRMM and, if necessary, update guidance to provide detailed information on the appropriate management of woodland, veteran trees and roadside plantings within and adjacent to road verges to maximise biodiversity. Include in this the use of landscape planting to create corridors and links between existing habitat types.	N	N/A
106 SUR	Review existing information on the location of UKBAP woodlands within the network, including NRW's Priority Habitats and Ancient	Y	All ancient woodland within the survey area has been mapped using desktop data including Ancient Woodland Inventories and Phase 1

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
	Woodland Inventories and Forest Enterprise's review data.		habitat survey (ES Volume 2 – Appendix 11F).
107 SUR	Ensure all surveys undertaken take fully into account planted/woodland areas and mature / ancient trees in the network.	Y	A465 Summer 2016 Ecology Factual Report (ES Volume 2 – Appendix 11F) included both a desk study and a detailed Phase 1 Habitat Survey which identified any areas of planted / woodland areas and mature / ancient trees.
108 DCM	At the design stage for new road and improvement schemes, ensure that valuable woodlands and trees, in particular UKBAP habitats and designated sites, are taken into consideration. Avoid the direct loss of valuable woodland habitat and individual trees wherever possible.	Y	The locations of valuable woodland habitats were shown on an environmental constraints map which was used to inform design to minimise woodland loss. Further arboricultural surveys were also undertaken as described in the Tree Survey Report (ES Volume 2 – Appendix 10L).
109 DCM	Protect existing and retained woodland habitat during construction operations by the use of appropriate fencing, and by not stockpiling construction materials in these areas.	Y	Recommendations are made in the draft REAC and CEMP in the ES on appropriate ways of protecting woodland habitat along the proposed scheme such as keeping works, access corridors and stockpiles as far as possible away from woodland habitat along with appropriate fencing for root protection zones. Details are provided in the Tree Survey Report (ES Volume 2 – Appendix 10L).
110 DCM	Where the loss of woodland is unavoidable, consider options for mitigation and enhancement, including the extension of areas of existing woodland, or increasing connections with other woodland areas by the use of native planting. Translocation should only be considered as a last resort.	Y	Some areas of woodland including ancient woodland would be unavoidably lost. Approximately 43 ha of new woodland habitat would be created. An ancient woodland mitigation site (approximately 7 ha) would accept translocation of vegetative material and topsoil. An appropriate habitat management plan would also be put in place; an outline management plan for ancient woodland mitigation habitats is described in ES Volume 2 – Appendix 11O.
111 DCM	Prior to undertaking management on existing planted areas, identify those areas that may benefit from enhancement measures. See enhancement action below.	Y	Retained woodland within the new soft estate (see EMP, ES – Volume 4 at Croesbychan junction) would undergo enhancement and long term management.
112 DCM	Encourage additional tree and shrub planting in existing planted areas in order to enhance species mix and age structure, to extend the areas of existing woodland, or to link valuable woodland habitats	Y	Opportunities for enhancement of existing planted areas, extension of existing woodland and linking of woodland habitat by supplementary planting are identified in the ES and EMP, along with the preferred species to do this.

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
113 DCM	Use only native species when carrying out planting and, where possible, stock of local provenance, ensuring that the species are used in 'natural' abundance and distributions. If appropriate, consider growing from seeds from particular sites.	Y	Any planting would be carried out using species of local / bioregional provenance and abundance and diversity of planted trees would match that already present except where species richness is to be enhanced. Ancient woodland mitigation sites would be planted with saplings propagated from mature and veteran trees lost to the proposed scheme. This is specified in the ES.
114 FRM	Monitor existing mature trees alongside new/improved roads to try to ensure that they remain healthy, and determine whether the road or its construction has adversely affected them.	Y	A tree survey has been carried out as part of the landscape section of the ES to assess the health of nearby existing mature trees and recommendations have been made to ensure retained trees remain unaffected by the proposed scheme, where possible (ES Volume 2 – Appendix 10L).
115 FRM	Assess areas of new planting with respect to their growth/health.	Y	A post construction environmental / habitat management plan would monitor growth / health of new planting (requirement of the REAC).
116 CP	Raise awareness within the Transport Directorate staff and Trunk Road Agents of the value of UKBAP woodland habitats on the network, for example through the use of internal training. See Education and Awareness GAP.	N	N/A
117 CP	Ensure that Transport Directorate staff and Trunk Road Agents involved in road verge management are aware of any updating of the WTRMM with regard to woodland management.	N	N/A
118 CP	Raise public awareness of the value of native trees and shrubs for wildlife, for example through the use of publications (internal and external).	N	N/A
SPECIES ACTION PLANS			
Amphibians			
119 PGA	Review existing advice within WTRMM to ensure it incorporates best practice.	N	N/A
120 SUR	Where new road schemes are proposed, survey terrestrial and	Y	Surveys (HSI assessments and eDNA surveys) were carried out in 2015

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
	aquatic habitat in the area to assess local amphibian populations and predict potential migration routes.		to provide baseline knowledge on great crested newt (*Triturus cristatus*) (GCN) presence or absence and distribution. Thirty-one ponds within 500 m of the proposed scheme were surveyed using eDNA surveys and all samples were negative for great crested newt presence. Further traditional presence / absence surveys were undertaken at ponds within Winchfawr West SINC and Bryniau SINC in 2016. GCN with a peak count of 12 (10 male, two female) was recorded in pond 2254 and one great crested newt (1 male) was recorded in pond 2256. (see ES Volume 2 – Appendix 11G for full details) Amphibians are unlikely to cross the existing A465.
121 DCM	Where a road will unavoidably destroy or degrade amphibian habitat, consider the creation of new breeding waters, artificial hibernacula and suitable foraging habitat (these may be incorporated into soft estate planting depending on the species involved).	Y	One pond would be lost as part of the proposed scheme and a reservoir would be partially infilled. Neither had GCN recorded within them or are located within 500 m of positive GCN records. Attenuation ponds would be created to prevent increased flooding which would also serve a dual purpose of enhancing biodiversity. These would be planted with marginal vegetation to enhance terrestrial habitat. Hibernaculum which would also benefit other amphibian and reptile species are proposed across the proposed scheme soft estate (see EMP – ES – Volume 4)
122 DCM	Where existing amphibian road-kill black spots are known, consider building mitigation measures into the road: these may include tunnels, fencing and road signs.	Y	No road-kill black spots were identified during the desktop study. The proposed scheme would include the creation of new culverts and underpasses and retain existing culverts where possible, permitting amphibian dispersal.
123 DCM	Take into account the possible impacts of alterations to drainage or water levels on the surrounding amphibian populations during construction and maintenance operations.	Y	Road drainage is considered in ES Chapter 17: Road Drainage and the water Environment for the proposed scheme. No impacts on amphibian species are considered likely.
124 DCM *	Replace or amend gully pots that can trap amphibians, with more suitable structures on a rolling programme (as maintenance is undertaken). Aim to replace/amend these on a minimum of three locations/year.	Y	No gully pots are proposed. The features of SuDS would be incorporated into design to limit potential to trap amphibians.
125 DCM	Consider the provision of habitats suitable for amphibians (both for	Y	Mitigation for GCN would include the creation of enhanced terrestrial

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
	foraging and hibernating) when managing the soft estate, to enhance the area for the local amphibian population.		habitats which would form the new soft estate and would include hibernaculum which would benefit additional amphibian and reptile species.
126 DCM	Ensure measures are in place to prevent road runoff pollution events in line with best practice in new schemes.	Y	Mitigation to prevent road run-off pollution events is considered in the ES, in line with best practice guidance (CIRIA, 2015) and SuDS.
127 FRM	Set up a system to collate current and future records of amphibian sites on the network, including road-kill black spots and migration routes.	N	N/A
128 CP	Liaise with local amphibian groups in each county that can survey, monitor and help flag up road-kill black spots and migration routes.	N	N/A
129 CP	Raise awareness of Transport Directorate staff with respect to road-kill black spots, and encourage reporting of such areas.	N	N/A
130 CP	Raise public awareness of amphibian issues via publicity materials.	N	N/A
Aquatic Species			
131 PGA	Review advice within the WTRMM regarding maintenance operations as they impact upon aquatic systems.	N	N/A
132 DCM	During the design phase of a road scheme, assess the impacts upon aquatic species, particularly at river crossing points, at both desk study and field survey phases.	Y	A desk study using local biodiversity record centre data and aquatic and fisheries data from NRW was undertaken along with field visits to watercourse crossing points. The results of the aquatic ecology and hydromorphology assessments were used to inform the design phase of the proposed scheme.
133 DCM	During construction, in consultation with Environment Agency Wales and NRW, ensure as little disruption as possible to aquatic species occurs. Maintain water quality, and the ability of species to move along rivers and water bodies, throughout construction. Ensure footings do not significantly encroach on water courses.	Y	Designed mitigation would avoid in-channel working as far as practicable Use of CIRIA guidance would reduce the likelihood of water quality impacts from construction activities (CIRIA, 2015). Hydrological continuity would be maintained throughout construction (screened over pumping should temporary dry working areas be required in-channel). Supporting infrastructure has been designed so not to encroach in channel footprint (developed through WFD compliance assessment).

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
134 DCM	Ensure that, following construction, runoff from roads does not directly enter watercourses.	Y	Designed mitigation would include the use of buffer zones along aquatic corridors and sustainable drainage design incorporating attenuation ponds to reduce point source inputs into watercourses.
135 DCM *	During design and maintenance, identify opportunities to enhance the ecological value of streams to aquatic birds by the provision of nesting structures including burrows and platforms. Five sites a year in appropriate locations.	Y	Four dipper nest boxes are proposed, see EMP, ES – Volume 4 for locations.
136 CP	Create awareness within the Transport Directorate and the Trunk Road Agents of Ongoing and opportunities for enhancement for aquatic species.	N	N/A
Barn Owl (*Tyto alba*)			
137 PGA	Work with Highways Agency and other UK National Highway Authorities to produce advice in DMRB.	N	N/A
138 PGA	Review Highways Agency and Barn Owl Trust research on the impact of roads on barn owls and any recommendations for soft estate management, and apply in the context of the Welsh trunk road network through the WTRMM.	N	N/A
139 SUR	Set up a system for reporting barn owl casualties to the Transport Directorate.	N	N/A
140 SUR	Identify the extent of the soft estate used by barn owls as current/potential foraging and nesting habitat by collating current information.	Y	Habitat maps along with target notes within the A456 Summer Ecology Factual Report (ES Volume 2 - Appendix 11F) report show the locations of potential suitable habitat for barn owl.
141 DCM	Identify stretches of road where regularly high levels of mortality are recorded.	Y	Local records centre (SEWBReC) contacted for records of barn owl, including for road mortality.
142 DCM	Where new road developments are planned, ensure prior desk studies and surveys determine any likely impacts on the local barn owl population and options available for the mitigation of these impacts.	Y	Local records centre were contacted for records of barn owl, surveys undertaken in summer 2015 (ES Volume 2 - Appendix 11F) to assess habitat suitable to support birds including barn owl and Schedule 1 bird species survey at Taf Fechan were undertaken in 2016 (ES Volume 2 -

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
			Appendix 11G). Suitable habitat for barn owl is highlighted in Summer Ecology Factual Report (ES Volume 2 – Appendix 11F). Incidental records of barn owl are presented in the 2016 Ecology Factual Report (ES Volume 2 – Appendix 11G). Proposed mitigation for barn owl is given in the Protected Species Compliance Report (ES Volume 2 - Appendix 11B).
143 DCM	Apply mitigation to areas of high barn owl road mortality.	N	No specific areas highlighted.
144 CP	Investigate the possibility of warning signs in areas known as important barn owl hunting areas.	N	No important barn owl hunting areas identified along the proposed scheme.
145 CP	Encourage the public to report barn owl road traffic accidents or sightings of barn owls on the network.	N	N/A
Bats			
146 PGA	Review, with the Highways Agency and other UK National Highway Authorities, the DMRB Bat Advice Note.	N	N/A
147 PGA	Review the WTRMM, and publish advice for all network operators to ensure maintenance works are undertaken at the correct time of year, and after the appropriate surveys have been carried out.	N	N/A
148 DCM	Include bats at the earliest stages of road design, construction and maintenance in order to ensure the early identification (and appropriate management) of sites valuable as roosts, foraging areas, and linear corridors.	Y	Bat surveys were undertaken by Jacobs in 2015 and 2016 (ES Volume 2 – Appendix 11E, Appendix 11G and Appendix 11H) including building and tree roost assessments, back-tracking surveys, activity transects, dusk emergence / dawn re-entry surveys and assessments of structures and caves within the vicinity of the proposed scheme for bat roost potential.
149 DCM	Avoid the indirect impacts of water-based pollution on valuable feeding areas by using and maintaining appropriate road runoff control and treatment measures.	Y	Mitigation to prevent road run-off pollution events in both the construction and operational phases of the proposed scheme is considered in the ES (requirement of the REAC).Best practice CIRIA guidelines would be adhered to and best practice drainage design would be implemented.
150 DCM	Consider options for mitigation and enhancement in all road construction and maintenance operations (for example bat tunnels,	Y	Mitigation to off-set any negative effects of the proposed scheme on bats is outlined in the ES and shown in the EMP, ES – Volume 4. This

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
	habitat enhancements and hibernacula).		includes provision of new roosting opportunities, commuting routes and foraging habitat.
151 DCM	Increase opportunities for roosting bats in areas of woodland within the highway boundary (which are otherwise suitable for use by foraging bats) by adding artificial roosts.	Y	Bat boxes would be deployed in suitable retained vegetation in the proposed soft estate. Indicative locations are illustrated in the EMP, ES-Volume 4.
152 DCM *	Provide bat boxes which are suitable for the species likely to be present in order to enhance 30 appropriate locations within the highway boundary.	Y	Bat boxes would be deployed in suitable retained vegetation in the proposed soft estate. Indicative locations are illustrated in the EMP, ES-Volume 4.
153 FRM	Develop a system to collect and maintain information of known roosts which are located on or very near the network.	Y	Information on roosts near the proposed scheme was collected during surveys undertaken in summer 2015 (ES Volume 2– Appendix 11E) and 2016 (ES Volume 2 – Appendix 11G). Monitoring artificial bat boxes will be a requirement of European Protected Species (EPS) licencing. This information is owned by WG and would, therefore, be shared with trunk road maintaining agents.
154 FRM	Develop a system to identify and collate information on well-used crossing points within the network, and any areas of high road mortality of bats.	Y	Bat activity surveys were used to identify crossing points within the proposed scheme and mitigation to reduce the likelihood of mortality for bats would be put in place, especially on offline sections of the proposed scheme. New culverts suitable for commuting bats would be monitored post construction.
155 CP	Develop training materials to support the information in the WTRMM and DMRB after their review.	N	N/A
156 CP	Liaise with NRW and local bat groups who may be able to provide additional information on species distributions.	Y	NRW representatives and LA ecologists were present at ELG and TWG meetings to provide additional information.
157 CP	Ensure maintenance personnel and engineers are aware of issues such as seasonal constraints and licensing requirements, and the consequent need for forward planning.	Y	Seasonal constraints and licencing requirements are outlined in the ES for the proposed scheme and would be communicated to all those involved in the delivery of the proposed scheme.
Dormouse (*Muscardinus avellanarius*)			
158 PGA	Review the need to incorporate detailed advice into the WTRMM	N	N/A

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
	regarding management of the soft estate with regard to dormice.		
159 SUR	For new schemes, identify dormouse suitable habitats within soft estate, and undertake surveys (using licensed surveyors) wherever these are present.	N	Not applicable to the proposed scheme. Dormouse presence scoped out during the environmental scoping stage as no records exist within a 1 km wide corridor centred on the proposed scheme.
160 SUR	Concentrate survey effort on the existing soft estate around areas identified as having local dormouse populations for example Wye Valley.	N	N/A
161 DCM	Include dormice at the earliest stages of road design, construction and maintenance, in order to ensure the early identification of dormice populations.	Y	Dormouse presence considered at environmental scoping stage and was scoped out due to the low risk this species is present along the proposed scheme.
162 DCM	Where impacts are unavoidable, make efforts to create alternative habitats and enhance remaining habitat. Consider the provision of 'links' (such as rope bridges) across roads to prevent them acting as barriers to dispersal.	N	N/A
163 DCM	Promote soft estate management techniques that enhance potentially suitable dormouse habitat. Extend current planting schemes to provide habitats of value to dormice.	N	N/A
164 DCM *	Enhance suitable habitat through the provision of dormouse boxes in 30 locations within the highway boundary.	N	N/A
165 FRM *	Set up a system to monitor suitable dormouse habitats within the soft estate so that the success of management of the soft estate can be assessed.	N	N/A
166 FRM	Monitor mitigation measures (for example, those to connect woodlands that have been fragmented by roads) to inform future schemes.	N	N/A
167 CP	Provide Transport Directorate staff and Trunk Road Agents with information on dormice issues.	N	N/A

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
Marsh Fritillary (*Euphydryas aurinia*)			
168 PGA	Review with the UK National Highways Authorities the need for an advice note within the DMRB on marsh fritillaries.	N	N/A
169 PGA	Update the WTRMM to include information on management of the soft estate to promote marsh fritillary conservation.	N	N/A
170 SUR	Identify areas of marshy grassland in relation to existing and proposed road schemes using the NRW Phase I maps and existing information.	Y	A465 Summer Ecology Factual Report (ES Volume 2 – Appendix 11F) included both a desk study and a detailed Phase 1 Habitat Survey which identified areas of marshy grassland with subsequent species specific habitat suitability assessment for marsh fritillary. .
171 SUR	Survey these areas of suitable habitat on the soft estate that are adjacent to known populations of marsh fritillary for their suitability and presence of larval webs.	Y	Baseline monitoring of 11 sites identified as representative habitats of those across the proposed scheme has been in place since 2008. Over 100 ha of additional suitable habitat for has been identified within the 2 km Blaen Cynon SAC metapopulation area for marsh fritillary in this region.
172 DCM	Identify road schemes that might fragment further known metapopulations of marsh fritillary butterflies. Investigate mechanisms of reducing the effects of fragmentation where this is unavoidable.	Y	The proposed scheme was subject to a Statement to Inform Appropriate Assessment (SIAA) for Blaen Cynon SAC and its marsh fritillary metapopulation. Mitigation for marsh fritillary has involved influencing the proposed scheme design and construction methods to limit fragmentation and isolation of suitable habitat. Provision of additional suitable habitat in specified mitigation land for marsh fritillary lost to the proposed scheme is proposed (see EMP, ES – Volume 4).
173 DCM *	Avoid the indirect effects of road runoff pollution on suitable habitat by appropriate hydrological design: during design phase and as pollution events occur.	Y	Design of road drainage network would reduce significant impact on existing habitat by retaining existing hydrological sources and preventing discharge to sensitive habitats through following CIRIA guidelines (CIRIA, 2015).
174 DCM	Consider options for mitigation and enhancement in road construction and maintenance operations, particularly where small alterations in management (within the soft estate) may result in habitat that might link remnant parcels outside of the soft estate.	Y	There would be some wildflower seed mix provided along the new verges near suitable marsh fritillary habitat which would aim to maintain connectivity and encourage dispersal of the species between suitable habitats in its adult form. An additional area of mitigation land

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
			(approximately 14 ha) is proposed to further link suitable habitat in the wider landscape.
175 DCM	Where marsh fritillaries are found on road verges, consider whether to modify existing management.	Y	Road verges would not be specifically managed to encourage marsh fritillary, other than in its adult dispersal. This is set out in the management prescriptions for such sites, as described in the ES Chapter 11: Nature Conservation and SIAA.
176 FRM	Create and maintain a database of all sites within or adjacent to the trunk road and motorway network that are either known breeding grounds or are potentially suitable for the marsh fritillary.	Y	All sites known to or have potential to support marsh fritillary have identified as part of the ES.
177 FRM	Consider research to determine if major roads do present a barrier to dispersal with the UK National Highway Authorities.	N	N/A
Otter (*Lutra lutra*)			
178 PGA	With the UK National Highway Authorities, review the current Otter Advice Note.	N	N/A
179 PGA	Review the WTRMM on the management of the soft estate for the benefit of otters.	N	N/A
180 DCM	Where impacts of new schemes and road improvements on otter habitat are unavoidable, consider the options for wide-span bridges, otter ledges, road underpasses, otter resting places, other habitat improvements, and artificial holts, and prevent effects on feeding areas through appropriate pollution controls.	Y	Otter surveys were carried out to inform the ES and evidence of otter presence was recorded on all major watercourses. Clear span bridges are proposed at major watercourse crossings to minimise potential impacts. The proposed scheme would involve the creation on new culverts and underpasses, which would be made suitable for mammals through the provision of ledges, where appropriate. The proposed scheme construction would be carried out under current good practice CIRIA guidelines; this would reduce the risk of a water pollution incident occurring.
181 DCM	Increase the amount of available otter habitat by removing barriers to dispersal (for example, under bridges and through culverts) and by	Y	The proposed scheme would include the creation of new culverts with mammal underpasses to improve connectivity between habitats for animal species in general. New commuting and resting habitat features

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
	creating suitable habitat wherever possible.		for otters would be created as part of the proposed scheme as an indirect result of habitat replacement for woodland and hedge / scrub planting.
182 DCM *	Continue providing mitigation for existing roads at sites identified as 'black spots' across the network. Ten appropriate sites/year.	Y	Identified by Cardiff University Otter Project (Wilkinson and Chadwick, 2012) as an area of concern: the A470 junction and Dowlais Top - two road traffic casualties found (although not a priority for action). Otter mitigation is provided in the ES and would aim to minimise impact of the proposed scheme on otter through the provision of underpasses and culverts. Ten sites per year is not applicable to the proposed scheme.
183 DCM	Undertake regular checks of artificial holts, otter underpasses and fences as part of maintenance activities to check that they are not blocked or in bad condition.	Y	Culverts and underpasses would be identified for post construction monitoring which would include regular checks for use by mammals including otter.
184 FRM	Continue supporting work to identify black spots on existing roads which pose a threat to otters.	N	N/A
185 FRM	Monitor the use and success of otter mitigation already installed across the road network to inform future mitigation.	N	N/A
186 CP	Include information on otter issues for Transport Directorate staff and Trunk Road Agents.	N	N/A
Reptiles			
187 PGA	Review existing advice within WTRMM to ensure it incorporates best practice.	N	N/A
188 PGA	With Highways Agency and other UK National Highway Authorities produce advice for DMRB.	N	N/A
189 SUR	Undertake surveys of suitable habitat to build up a more complete picture of soft estate use by reptiles.	Y	Suitable reptile habitat was identified and highlighted during Phase 1 habitat survey as detailed in Summer Ecology Factual Report (ES Volume 2 – Appendix 11F).
190 DCM	Identify the likely presence of reptiles early, particularly for schemes where there is no alternative to effects on reptiles, and which would require translocation as a last resort.	Y	Habitat suitable for reptiles has been identified as part of the Phase 1 habitat surveys undertaken in the summer of 2015 (ES Volume 2 – Appendix 11F). SEWBReC was contacted for records of reptiles within

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
			the vicinity of the proposed scheme and SINC citations were reviewed as part of the exercise of valuing the habitat surrounding the proposed scheme for reptiles. This was provided in the early EMP to influence design. A mitigation plan for reptiles is presented in the Protected Species Compliance Report (ES Volume 2 – Appendix 11B).
191 DCM *	Create reptile habitats on five new sites/year in appropriate locations.	Y	Hibernacula have been incorporated into proposed scheme design for both amphibians and reptiles. Habitats would be created for reptiles as an indirect result of habitat creation throughout the proposed new soft estate.
192 CP	Ensure Trunk Road Agents are aware of current best practice regarding reptiles, particularly new additions to the DMRB and WTRMM.	N	N/A
Water vole (*Arvicola amphibious*)			
193 PGA	Review with the UK National Highway Authorities the need for an advice note within the DMRB on water voles.	N	N/A
194 PGA	Review and update the WTRMM as necessary to include information on management of the soft estate to promote water vole conservation.	N	N/A
195 SUR	Set up system to monitor water vole populations and suitable habitat in areas of the soft estate known to already have vole populations.	N	Not applicable - no known areas with water vole populations. The species was scoped out at the environmental scoping stage as an ecological constraint.
196 DCM	For all road construction and road improvement schemes, include an initial desk study and water vole survey as identification within the scoping stage of the development may allow impacts to be avoided.	Y	Not applicable. Water vole presence scoped out during the environmental scoping stage as no records exist within a 1 km wide corridor centred on the proposed scheme. No evidence of water vole was recorded during other aquatic surveys.
197 DCM	Offset unavoidable impacts from road development by the provision of new habitats, improvement of existing habitats, positive management actions (for example, provision of fencing, scrub control) and control of pollution from road runoff.	N	Proposed scheme not considered to impact occupied water vole habitat. Mitigation would be in place to offset effects of pollution on from road run-off on nearby watercourses.

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
198 DCM *	Remove the barriers to the dispersal of water voles through the provision of purpose designed drains and water features.	N	N/A
199 DCM	Provide new water vole habitat, either through habitat creation or changes in management, in suitable locations: two sites / year.	N	N/A
200 FRM	Monitor water vole populations on or close to the soft estate as part of any mitigation scheme; ascertain the success of any such mitigation measures to inform future actions.	N	N/A
201 CP	Provide information on water voles within environmental training provided within the Transport Directorate and by Managing Agents.	N	N/A
Welsh Clearwing Moth (*Synanthedon scoliaeformis*)			
202 PGA	Update the WTRMM to include information on management of the soft estate to promote Welsh clearwing conservation in appropriate locations.	N	N/A
203 SUR	Identify suitable stands of mature birch on the soft estate, and undertake surveys for Welsh clearwing. Give priority to stands of birch in the locations where Welsh clearwing have been identified in previous surveys.	N	No records exist within a 1 km wide corridor centred on the proposed scheme. No stands of mature birch are located on the existing soft estate or within a 1 km wide corridor centred on the proposed scheme.
204 DCM	Ensure the potential presence of Welsh clearwing is considered in advance of birch tree maintenance and construction of new schemes.	N	N/A
205 DCM	Encourage birch regeneration by using fencing, and plant new birch trees where appropriate.	N	N/A
Native Black Poplar (*Populus nigra*)			
206 SUR	Identify any existing black-poplar trees on the soft-estate.	N	Species not recorded during extended Phase 1 habitat surveys and no records exist within a 1 km wide corridor centred on the proposed scheme.
207 SUR	Monitor the condition of the native black-poplar trees on the soft estate.	N	N/A

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
208 DCM	Identify new opportunities for including native black-poplar trees in any new planting schemes. Plant in ten sites by 2014	N	N/A
209 DCM	For all new road schemes and road improvements, avoid any direct impacts on native black-poplar trees, particularly female trees. Where this is unavoidable, plant new trees of local provenance in appropriate locations.	N	N/A
210 DCM	Undertake any tree surgery necessary to maintain any mature trees in a safe condition so they can be retained.	N	N/A
211 FRM	Consider DNA testing the trees on the soft estate and adjacent land to compare results with similar studies undertaken in the Upper Severn.	N	N/A
Bluebell (*Hyacynthoides non-scripta*)			
212 PGA	Review the WTRMM, and provide detailed information on the appropriate management of woodland ground flora and hedgerows containing bluebells.	N	N/A
213 PGA	Review with other UK National Highway Authorities advice for inclusion in the DMRB on the enhancement of existing planted areas, including bulbs.	N	N/A
214 DCM	At the design stage for new road and improvement schemes, ensure that valuable woodlands and ancient hedgerows with bluebells are taken into consideration. Avoid the direct loss of this habitat wherever possible.	Y	The A465 Summer 2015 Ecology Factual Report (ES – Appendix 11F) included both a desk study and a detailed Phase 1 Habitat Survey which identified valuable woodlands and hedgerows supporting bluebells. Woodland habitat was identified to the design team as a feature to be avoided.
215 DCM	Sympathetically manage woodland sites and ancient hedgerows, and other locations which contain bluebells that are within the soft estate	Y	Management of ancient woodland sites including woodland sites created as part of the proposed scheme would be undertaken, as described in the ES. The presence of bluebells has been taken account of in management prescriptions as presented in the outline management strategy for ancient woodland (Appendix 11O) in terms of soil translocation.

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
216 DCM	Consider the retention, storage and relocation of bulbs and topsoil, wherever road schemes affect areas of native bluebells.	Y	Where the proposed scheme affect areas of native bluebells (i.e. woodland habitats) the bulbs and topsoil would be relocated to the ancient woodland mitigation area (see EMP, ES – Volume 4).
217 DCM *	Plant forty new bluebell sites within the soft estate by 2014. Ensure that locally native bulbs are used and not non-native species such as Spanish bluebell.	Y	Bluebells would be translocated within top soils, where they already exist, to mitigation areas.
218 CP	Raise awareness within the Transport Directorate and Trunk Road Agents of the protection and appropriate management of bluebells.	N	N/A
219 CP	Increase public awareness of the value of bluebells in road verges.	N	N/A
Deptford Pink (*Dianthus armeria*)			
220 PGA	Provide guidance on the management of roadside verges for the benefit of the Deptford pink if populations are found.	N	N/A.
221 SUR	Survey areas of the network which may be suitable.	N	Species not recorded during extended Phase 1 habitat surveys and no records exist within a 1 km wide corridor centred on the proposed scheme.
222 SUR	Set up system for reporting of potential areas of suitable habitat.	N	N/A
223 DCM	Where colonies are found on the soft estate, avoid impacting the species through road construction.	N	N/A
224 DCM	Where impacts on the species cannot be avoided provide appropriate mitigation and consider habitat recreation / translocation.	N	N/A
225 DCM	Manage network verges to be favourable to Deptford pink in existing and potential areas of colonisation close to known sites.	N	N/A
226 FRM	Monitor known existing colonies of Deptford pink on the soft estate.	N	N/A
Limestone Woundwort (*Stachys alpina*)			
227 DCM	In areas close to known populations, survey suitable habitat for limestone woundwort before any road construction or improvement	N	Species not recorded during extended Phase 1 habitat surveys and no records exist within a 1 km wide corridor centred on the proposed

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
	takes place.		scheme.
228 DCM	Where conditions are appropriate, consider introduction schemes onto the soft estate.	N	N/A
229 DCM	All parties (the Directorate and the North-East Wales Trunk Road Agency/Forest Enterprise) to liaise with current interested parties (CCW; Ness Botanic Gardens; and Gloucestershire Wildlife Trust) to obtain advice on management, propagation and reintroduction. Apply results of liaison to existing population.	N	N/A
230 FRM	Monitor all existing (and future) colonies on the network.	N	N/A
Orchids			
231 PGA	Review existing recommendations within WTRMM for management of habitats that currently have orchids or could support them.	N	N/A
232 SUR	Identify areas that support orchids through a combination of field survey and desk study.	Y	The A465 Summer 2015 Ecology Factual Report (ES Volume 2 – Appendix 11F) included both a desk study and a detailed Phase 1 Habitat Survey which identified the presence of orchid species, often within neutral grasslands.
233 DCM	Ensure that any areas of the soft estate that are known to support orchids are managed to benefit these plants; this includes, for example, cutting areas of grassland at appropriate times of year and removing arisings. Avoid the use of herbicides to control alien and invasive weed species.	Y	Newly created soft estate would be appropriately managed for neutral grassland habitats and subsequently plant group. This would be detailed in a habitat management plan, a requirement of the REAC in the ES.
234 DCM	For all new road schemes and road improvements, seek to avoid any direct impacts on orchid-rich habitats. Ensure ornamental/landscape planting does not encroach onto orchid-rich areas.	Y	An orchid-rich area of neutral grassland at Rhigos roundabout was highlighted at an ELG meeting for the proposed scheme and is directly considered in the ES Chapter 11: Nature Conservation and EMP (ES Volume 4).
235 DCM	Create or restore new orchid-rich areas, either using seed of local provenance in appropriate locations, or through restoration management at 10 sites.	Y	Species-rich grassland would be created on the proposed soft estate as part of mitigation for the proposed scheme and managed to encourage natural establishment and subsequent seeding by such plants as orchids. Soil salvage would be used in orchid-rich areas to encourage orchids to

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
			regenerate on newly-created verges and specifically, at the new Rhigos roundabout (see EMP, ES – Volume 4).
236 DCM	Avoid introducing, as part of maintenance operations, inappropriate species (trees, shrubs and seed mixes) in areas that support or have the potential to support orchids.	Y	Landscape design in areas that support, or have potential to support, orchids would avoid the planting of inappropriate species in these areas. The CEMP will outline the methods for avoiding the spread of inappropriate species including invasive species.
237 FRM	Set up a system to review the success of management of areas to benefit orchids.	Y	The success of grassland creation and management would be monitored as part of the proposed scheme's aftercare in a habitat management plan (a requirement of the REAC in the ES)
238 CP	Develop training materials on best management practice for orchids.	N	N/A
239 CP	Raise public awareness of the conservation value of habitats containing orchids	N	N/A
Spreading Bellflower (*Campanula patula*)			
240 PGA	Provide guidance on the management of roadside verges for the benefit of the spreading bellflower, if populations are found.	N	N/A
241 SUR	Survey areas of the network which may be suitable.	N	Species not recorded during extended Phase 1 habitat surveys and no records exist within a 1 km wide corridor centred on the proposed scheme.
242 SUR	Set up system for reporting of potential areas of suitable habitat.	N	N/A
243 DCM	Where colonies are found on the soft estate, avoid impacting the species through road construction.	N	N/A
244 DCM	Where impacts on the species cannot be avoided, provide appropriate mitigation and consider habitat recreation/translocation as a last resort.	N	N/A
245 DCM	Manage network verges to be favourable to spreading bellflower, in existing and potential areas of colonisation close to known sites.	N	N/A
246 FRM	Monitor known existing colonies of spreading bellflower on the soft	N	N/A

Action name	Action	Applicable (Y / N)	Compliance of proposed scheme with action
	estate.		
Wood Bitter-vetch (*Vicia orobus*)			
247 PGA	Publish advice on management of areas on the soft estate known to contain wood bitter-vetch in WTRMM.	N	N/A
248 DCM	If new road construction or road improvements impact areas of grassland containing wood bitter-vetch, ensure that road verges are subsequently planted with a suitable species mix, including wood bitter-vetch. Consider translocation as a last resort.	N	Species not recorded during extended Phase 1 habitat surveys and no records exist within a 1 km wide corridor centred on the proposed scheme.
249 DCM	Manage of highway verges in a manner that controls scrub development and promotes this species' growth.	N	N/A
250 FRM	Monitor the success of seeding areas with wood bitter-vetch to ascertain the factors necessary for successful growth on the soft estate.	N	N/A
251 CP	Include details on appropriate landscape management for the conservation of wood bitter-vetch within the training of Managing Agents and Transport Directorate staff.	N	N/A

4. Conclusion

This report has considered each action under the TREBAP and concludes that the proposed scheme would fulfil objectives for all relevant species and habitats.

The proposed scheme would, therefore, comply with WG's responsibility to limit the impact of the development of the proposed scheme on biodiversity.

5. References

Biggs, J., Ewald, N., Valentini, A., Gaboriaud, C., Griffiths, R. A., Foster, J., et al. (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling. Department for Environment, Food and Rural Affairs.

Chartered Institute of Ecology and Environmental Management (2015) Guidelines for Ecological Report Writing. Accessible at - http://www.cieem.net/data/files/Resource_Library/Technical_Guidance_Series/Guidelines_for_Ecological_Report_Writing/Guidelines_for_Ecological_Report_Writing_and_Appendices.pdf

Collins, J. (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd ed.). London: Bat Conservation Trust.

Construction Industry Research and Information Association (2015). *The SuDS Manual, C753*. Available at: http://www.ciria.org/Memberships/The_SuDs_Manual_C753_Chapters.aspx.

Design Manual for Roads and Bridges (DMRB) (2001). Volume 10, Section 4, Part 1 (HA 84/01): *Nature Conservation and Biodiversity.*

DMRB (2001) Design Manual for Roads and Bridges (DMRB) Volume 10, Section 4 – Part 4 HA81/99; Accessible at: www.standardsforhighways.co.uk/dmrb/vol10/section4/ha8199.pdf

DMRB. (1997). Design Manual for Roads and Bridges Volume 10 Section 4 HA 59/92 Mitigating Against Effects on Badgers. Retrieved April 7, 2016, from http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol10/section4/ha5992.pdf

Edgar, P., Foster, J. & Baker, J. (2010) Reptile Habitat Management Handbook. Amphibian and Reptile Conservation, Bournemouth.

Fowles, A.P. & Smith, R.G. (2006) Mapping the habitat quality of patch networks for the marsh fritillary *Euphydryas aurinia* (Rottemburg, 1775) (Lepidoptera, Nymphalidae) in Wales. Journal of Insect Conservation 10:161-177

Hundt, L. (2012). Bat Surveys: Good Practice Guidelines, 2nd edition. Bat Conservation Trust.

Jacobs (2017) A465 Heads of the Valleys Dualling Section 5 & 6 Statement to Inform Appropriate Assessment. Unpublished consultancy report to Welsh Government.

JNCC. (2010). Handbook for Phase 1 Habitat Survey - a technique for environmental audit. Peterborough: Joint Nature Conservation Committee.

Langton, T. E., Beckett, C. L., & Foster, J. P. (2001). Great Crested Newt Conservation Handbook. Halesworth: Froglife.

Mitchell-Jones, A. J., & McLeish, A. P. (2004). Bat Workers' Manual 3rd Edition. Joint Nature Conservation Committee.

The River Restoration Centre (2013) Manual of River Restoration Techniques [http://www.therrc.co.uk/manual-river-restoration-techniques]

Welsh Assembly Government (2004). *Trunk Road Estate Biodiversity Action Plan* 2004-2014. Biodiversity Wales. Available at: http://gov.wales/docs/det/publications/160113-trebap-en.pdf.

Welsh Trunk Road Maintenance Manual (WTRMM) (1999). Unpublished document.

Wilkinson, C., and Chadwick, E.A. (2012). Otter casualties in Mid Wales: Recommendations for Mitigation. *Cardiff University Otter Project*. Cardiff University.

Page left intentionally blank

Appendix 11E – Jacobs Winter 2015 Ecology Survey Results

CONFIDENTIAL

Please note that this Appendix is confidential as it contains sensitive information regarding protected species. Should you require an electronic copy of this document then please make your request to Welsh Government.

Page left intentionally blank

Appendix 11F – Jacobs Summer 2015 Ecology Survey Results

CONFIDENTIAL

Please note that this Appendix is confidential as it contains sensitive information regarding protected species. Should you require an electronic copy of this document then please make your request to Welsh Government.

Page left intentionally blank

Appendix 11G – Jacobs Summer 2016 Ecology Survey Results

CONFIDENTIAL

Please note that this Appendix is confidential as it contains sensitive information regarding protected species. Should you require an electronic copy of this document then please make your request to Welsh Government.

Page left intentionally blank

Appendix 11H – Jacobs 2016 Bat Survey Results

CONFIDENTIAL

Please note that this Appendix is confidential as it contains sensitive information regarding protected species. Should you require an electronic copy of this document then please make your request to Welsh Government.

Page left intentionally blank

Appendix 11I – Marsh Fritillary Year 9 Monitoring Report

See following page.

Welsh Government

A465 Heads of the Valleys Dualling - Sections 5 and 6 - Dowlais Top to Hirwaun

Blaen Cynon Special Area of Conservation Marsh Fritillary Monitoring Programme Year 9

| 0

March 2017

Contents

Executive Summary **2**

1. Introduction **3**

1.1 Terms of Reference 3

1.2 Objectives 3

2. Background Information **4**

2.1 Description of the proposed A465 Scheme 4

2.2 A465 Sections 5 & 6 4

3. Marsh Fritillary **5**

3.1 Species Biology 5

3.2 Protection, Status and Distribution 6

3.3 Location and Distribution 6

4. Methodology **8**

4.1 Monitoring Sites 8

4.2 Field Survey 8

5. 2016 Survey Results **11**

5.1 Habitat Quality 11

5.2 Web Counts 14

5.3 Adult Counts 14

5.4 2016 Weather 15

6. 2016 Results Discussion **16**

6.1 Site 1 – Blaen Cynon SAC 17

6.2 Site 2 – Dderi Hir 18

6.3 Site 2a – Ger-y-bont, Croesbychan 19

6.4 Site 3 – North Llwydcoed Crematorium 20

6.5 Site 4 – Bryncarnau Grasslands 21

6.6 Site 4a – South Bryncarnau Grasslands 22

6.7 Site 5 – Near the Playing Fields 23

6.8 Site 6 – Heol-y-Graig 24

6.9 Site 6a – Halt Road 25

6.10 Site 7 – Mount Road 26

6.11 Site 7a – East of Mount Road 27

7. Conclusion **28**

8. References **29**

Appendix A. Figures

Appendix B. Blaen Cynon SAC

Appendix C. 2016 Weather Conditions

Executive Summary

Jacobs UK Ltd was commissioned in 2007 by the Welsh Government, to undertake annual baseline ecological monitoring of marsh fritillary *Euphydryas aurinia*. As part of the ecological scoping work in 2007 Jacobs concluded that the A465 Sections 5 and 6 may have a significant effect on the Blaen Cynon Special Area of Conservation (SAC) in terms of the marsh fritillary feature. The monitoring programme which started in 2008, aims to collect sufficient baseline to allow a robust Assessment of Implications on European Sites (AIES) to be produced for the A465 Section 5 and 6 scheme.

This report sets out the marsh fritillary baseline monitoring results for 2016 (year 9). In 2016 sites 3 and 7 were not habitat mapped or surveyed for adults due to land access restrictions. Site 4a was surveyed for adults only due to access restrictions.

Webs were recorded on four sites (2, 2a, 4 and 6). Sites 2 and 4 both supported high numbers of webs, with webs recorded for only the second time on site 6 since monitoring began in 2008. Site 6a had no webs recorded in 2016 for the first time since 2009 due to excessive grazing by ponies on the site.

Adult marsh fritillaries were recorded on three sites in 2016 (2, 4 and 7a). High numbers were recorded on sites 2 and 4 in comparison to other sites, although numbers are lower than those recorded in 2015. No marsh fritillaries have been recorded on site 5 since monitoring began in 2008. NRW did not carry out adult surveys on site 1 in 2016.

The habitat types and extents in the Blaen Cynon SAC were considered by Natural Resources Wales (NRW) not to have significantly changed since 2010 so have not been mapped between 2010 and 2016. Of the monitoring sites surveyed in 2016, site 5 had the most habitat classified as unsuitable condition, 68.5 %. Site 2a had the highest percentage of good condition habitat, 38.3 %, followed by site 6a with 22.5 %. Site 4 had the highest percentage of suitable but overgrazed habitat type, 44.4 %.

1. Introduction

1.1 Terms of Reference

Jacobs UK Ltd was commissioned in 2007 by the Welsh Government, to undertake annual baseline ecological monitoring of marsh fritillary butterfly *Euphydryas aurinia*. The monitoring programme aims to collect sufficient baseline to allow a robust Assessment of Implications on European Sites (AIES) to be produced for the A465 Section 5 and 6 schemes.

As part of the ecological work in 2007 Jacobs concluded that the A465 Sections 5 and 6 may have a significant effect on the Blaen Cynon Special Area of Conservation (SAC) in terms of the marsh fritillary feature. Figure 1 (Appendix A) shows the location of the Blaen Cynon SAC in relation to the proposed A465 scheme. Although the Blaen Cynon SAC has a definitive boundary, the population of marsh fritillary butterflies for which it is designated live across a wider area, forming a metapopulation (Upper Cynon Valley Functional Landscape Area); this is shown in Figure 2 (Appendix A). Further information on the Blaen Cynon SAC is set out in Appendix B.

1.2 Objectives

The monitoring programme aims to enhance the existing information currently held on the marsh fritillary population adjacent to the A465 Sections 5 and 6. The existing information was previously reported in the following survey reports as part of the 1997 Environmental Statement that covered the entire 40km dualling project between Abergavenny and Hirwaun. The 1997 ES supported the Line Order for the 40km dualling project.

- Abergavenny to Hirwaun Dualling: Invertebrate survey and assessment. Report No. SW263 (d)/V1/12-95, SGS Environment Ltd.
- Abergavenny to Hirwaun Dualling: Invertebrate survey and assessment. Report No. SW263 (D)/V3/10-97 SGS Environment Ltd.
- A465 Abergavenny to Hirwaun Dualling. Marsh Fritillary Larval Web Survey. Report No. 531/0263(AI)/V1/11-99. December 1999, SGS Environment Ltd.

The monitoring programme was completed in order to provide information to allow a Statement to Inform the Appropriate Assessment (SIAA) to be completed prior to the Publication of Draft Orders.

The baseline monitoring programme has been designed to fit in to an overall marsh fritillary monitoring programme which is likely to be structured as follows; the proposed timescales for each section of the programme have been based on the Welsh Government proposals:

- baseline monitoring (2008 - 2019);
- construction monitoring (2019 - 2022); and
- post construction monitoring (2022 – 2027).

The purpose of this report is to set out the results of the 2016 baseline monitoring visit and to summarise the changes noted since the start of the monitoring in 2008.

2. Background Information

2.1 Description of the Proposed A465 Scheme

The A465 forms part of the strategic Trans European Road Network and is included in the Welsh Government's National Transport Plan 2010. Together with the M4, it provides one of the two corridors linking south and west Wales to the Republic of Ireland, the Midlands and the North of England. The A465 is also the only major east-west route linking the communities along the heads of the South Wales valleys.

The proposed scheme forms part of a series of proposals to improve the entire route between Abergavenny and Hirwaun and runs along the heads of the South Wales valleys, known as "The Heads of the Valleys road". The proposed scheme will consist of mainly on-line widening of existing three-lane road to a dual carriageway, with construction being undertaken in sections.

The proposed scheme commences at Abergavenny and terminates at Hirwaun, and has been divided into six Sections.

- Section One Abergavenny to Gilwern.
- Section Two Gilwern to Brynmawr.
- Section Three Brynmawr to Tredegar.
- Section Four Tredegar to Dowlais Top.
- Section Five Dowlais Top to A470 Junction.
- Section Six A470 Junction to Hirwaun.

The Line Order for the whole scheme and Compulsory Purchase and Side Road Orders, under the Highways Act, 1980 (as amended) for Sections 1 and 4 were published in 1997, with an Environmental Statement (ES). These orders were considered at Public Inquiry in 1998 and were subsequently made. Section 4 was completed in 2004, Section 1 was completed in 2008, and Section 3 was completed in 2015. Section 2 is currently under construction.

2.2 A465 Sections 5 and 6

The A465 is currently an undulating three lane road between Hirwaun and Dowlais Top, two lanes in the uphill direction and one lane in the downhill. The road passes through a variety of habitat types and many of these were considered to be of South Wales / Local importance in the 1997 ES (Babtie, 1997). Section 5 and Section 6 pass through the unitary authorities of Merthyr Tydfil and Rhondda Cynon Taf (Figure 1, Appendix A).

Section 6 extends from the western edge of the suburban area of Hirwaun, eastwards to the junction of the A470 and the A4102 to the north-east of Merthyr Tydfil. The proposed scheme will follow the existing line of the A465 to the west of Jah – Jireh Care Home (formerly Baverstock Hotel) passing through open countryside.

At the westernmost extent of the proposed scheme the A465 the Hirwaun roundabout would be redesigned to become a grade separated junction. The road will run off line from the southern edge of the Hirwaun recreational ground and join the Trewaun Roundabout further to the east. The proposed scheme would continue eastwards over Nant Hir Reservoir and through a mainly rural area to the west of Jah – Jireh Care Home, Continuing westwards towards Section 5. .

Section 5 extends from the junction of the A470 and the A465, eastwards along the northern edge of Merthyr Tydfil to the junction of the A4060 (Dowlais Top Roundabout) in the east. Within this section, most of the proposed scheme would follow the line of the existing A465, with minor deviations east of Taf Fechan. ..

3. Marsh Fritillary

3.1 Species Biology

Adult marsh fritillaries emerge in early to mid-May and are on the wing until late June although individuals rarely live for more than 5-8 days (Hobson, et al., 2002). Within the United Kingdom the adults breed in two distinct types of unimproved habitats:

- damp neutral or acid grasslands “rhos pasture”; and
- dry chalk and limestone grasslands.

The adults mate on a single occasion during this period, with the female laying a batch of over 300 eggs on the underside of large devil’s bit scabious *Succisa pratensis* leaves (Porter & Ellis, 2011). The eggs hatch in August to September, with the brown / black spiny caterpillars feeding upon the scabious leaves inside a silken web. The larvae move together from one leaf to the next, spinning a new web each time (Butterfly Conservation, 2004).

Larger prominent *Succisa* plants are mainly present in habitats subjected to light grazing by ponies or cattle, which are often dominated by Molinia or Juncus tussocks. Sheep are considered to be an unsuitable grazing stock as they selectively graze *Succisa* (Butterfly Conservation, 2004).

The hibernation period starts in September / October, with the caterpillars spinning a small, dense web which is hidden in the grass tussocks low to the ground. The larvae emerge in February to early March to bask communally, during sunny periods, allowing their body temperatures to increase and them to grow rapidly before dispersing. Fifth and sixth instar larvae will move several metres to find fresh leaves of *Succisa*. In late April and May, larvae undergo pupation, emerging as adults after 16 to 26 days.

The natural pattern of the marsh fritillaries existence is in metapopulations whose survival is dependent upon having a network of nearby patches within which there is periodic extinction and re-colonisation i.e. areas where not all the habitat is occupied by the butterfly all of the time (Warren, 1994). This natural pattern is now broken throughout most of its UK range and the butterfly is often restricted to single habitat patches, or ineffectual groupings of small patches.

Modelling simulations, based upon real landscapes, indicate that marsh fritillaries require the minimum total area to range from 80 to 142 ha, for 95 % persistence after 100 years, depending upon spatial location of the habitat (Bulman, et al., 2007). Many of the present colonies exist as isolated entities, not only from other nearby colonies but also from potentially habitable sites.

3.2 Protection, Status and Distribution

The marsh fritillary is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981.

The marsh fritillary is listed on Annex II of the Council Directive 92/43/EEC [8] on the conservation of natural habitats and of wild fauna and flora (Habitats Directive). Annex II lists the habitats and species considered to be of outstanding international significance and therefore of importance to the maintenance of biodiversity in the European Union. The regulations require the creation of a coherent ecological network of protected areas across the EU - known as NATURA 2000 for these species and habitats. The Blaen Cynon SAC is one of these sites. Its purpose is to maintain or restore the habitats and species at a favourable conservation status in their natural range. In order to avoid deterioration to Natura 2000 sites, bodies are required to review those consents, permissions or authorisations which have an effect upon these sites.

The marsh fritillary is also listed on Appendix II of the Bern Convention. The Bern Convention requires the UK to take appropriate and necessary legislative and administrative measures to ensure the special protection of the wild fauna species specified in Appendix II. The species listed in Appendix II of the Bern Convention are primarily protected in the UK by the Wildlife and Countryside Act (1981) as amended.

In accordance with the Environment (Wales) Act 2016, Welsh ministers must prepare and publish a list of the living organisms and types of habitat which in their opinion are of principal importance for the purpose of maintaining and enhancing biodiversity in relation to wales. A such, the marsh fritillary is a species of principal importance in Wales. Throughout almost every country in Europe the marsh fritillary is declining and is now extinct in northern Belgium. The Atlantic seaboard influences the distribution of marshy grassland, the major habitat of the marsh fritillary, with strongholds in the south-west England, south and west Wales and western Scotland (Asher, et al., 2001). However even in the UK which is now believed to be one of the major European strongholds for the species, its numbers has declined significantly over the last 150 years.

Throughout the UK, the percentage occurrence change 1976 – 2014 of marsh fritillary has declined by 79 % (Fox, et al., 2015). These declines are due to changes in habitat availability as a result of agriculture, forestry and development that has led to habitat loss, fragmentation and isolation (Warren, 1994), (Bulman, 2001), (Smee, *et al.*, 2011), (Fox, *et al*., 2015).

3.3 Location and Distribution

The Blaen Cynon SAC is situated within the Upper Cynon Valley (Figure 2, Appendix A) and a number of surveys have previously been carried out by others to assess the marsh fritillary population levels and habitat conditions in the Upper Cynon Valley area.

- Strategic assessment of the marsh fritillary butterfly and its habitat in Rhondda Cynon Taf. Smith, R. Earth Science Partnership. May 2005.
- Habitat quality mapping for marsh fritillary populations. Fowles, A.P. Staff Science Report. 05/5/1. Countryside Council for Wales 2005.
- Population Survey of the Marsh Fritillary in the vicinity of Hirwaun, Cynon Valley. Wheeler, A.J. et al. CCW Contract Science No. 374. 2000.
- Marsh Fritillary records in the Hirwaun area (Brecon Beacons National Park).
- A465 Abergavenny to Hirwaun Dualling. Marsh Fritillary Habitat Survey 1997. The Welsh Office. SGS Environment 1997.

Smith (Smith, 2005) noted that significant declines in marsh fritillary populations have occurred throughout Wales, from 191 populations recorded in 1990-2000, to 132 in mid-2000. The marsh fritillary is found mainly in the south and west of Wales, with Glamorgan (now predominantly Rhondda Cynon Taf) maintaining strong populations in Tonyrefail, Hirwaun, and Aberbargoed. Rhondda Cynon Taf (RCT) contains at least 12 % of known marsh fritillary sites in Wales and 30 % of sites in Glamorgan (Smith, 2005).

The relatively high numbers of marsh fritillary populations in Wales is correlated with the large amount of suitable habitat found throughout the country. Phase 1 surveys carried out during the 1990's by Countryside Council for Wales (Howe, et al., 2005); revealed that Wales contained a high percentage of suitable habitat for marsh fritillary butterfly including marshy grassland, wet heath and wet heath / acid grassland.

Rhos pasture is a generic term that includes marshy grassland, purple moor grass and rush pasture and wet heath. Wales contained 63 % (35,000 hectares) of the UK's rhos pasture, with RCT containing 27 % of Glamorgan's rhos pasture and 4 % of the total rhos pasture in Wales (Countryside Council for Wales, 2003). RCT has the highest density of purple moor grass and rush pasture within Wales at 4 hectares per square kilometre (Smith, 2005).

The RCT marsh fritillary butterfly biodiversity action plan states that "the butterfly is known to survive in 'meta-populations' where several sites contribute to the long-term viability of a single colony. Over generations individual sites may temporarily become unsuitable (for example short-term over grazing), but when management is returned the butterfly is able to re-colonise from neighbouring sites".

Meta populations are associated with groups of suitable habitat patches (referred to as clusters) on which the butterfly is reliant to breed. Clusters are defined as collections of closely positioned patches of suitable habitat. Smith (Smith, 2005) identified a number of clusters of sites in the upper Cynon Valley based upon CCW marsh fritillary records (Wheeler, *et al*., 2000) (Figure 2, Appendix A).

The Upper Cynon Valley cluster has been considered by Smith (Smith, 2005) to consist of three sub clusters.

Penderyn/Hirwaun cluster

The cluster extends from Werfa farm west to Hirwaun sports ground, south of Hirwaun. In 2003 the cluster contained 117.37 hectares of suitable habitat, with at least 11.70 hectares in good condition.

DderiHir/Tir Mawr/Bryncarnau cluster

The cluster extends from the Jah – Jireh Care Home (formerly Baverstock Hotel) on the A465 near Merthyr Tydfil south to fields of the mineral railway at Penywaun, and to the north by wet heath of Nantmoel Farm. The clusters include populations from both Bryncarnau Grasslands SSSI and Dderi Hir farm, and contain 53.3 hectares of suitable habitat, with 8.83 hectares in good condition.

West Merthyr cluster

The cluster is found north of Swansea Road in Merthyr Tydfil and extends south and east through the village of Heolgerrig and the area of Winchfawr, through to Cwm Glo and into Abercanaid in the south.

Fowles (Fowles & Smith, 2006) set out a methodology for evaluating the landscape for the marsh fritillary butterfly which involved setting criteria for the definition of landscapes and habitat quality categories. This has set the standard for marsh fritillary habitat mapping to allow further evaluation of the habitat clusters and better determine the significance of the landscape for the conservation of the butterfly metapopulations.

To better define the areas of the landscape that should be included in any habitat quality mapping process Fowles (Fowles & Smith, 2006) set about defining core and functional landscapes. The core landscape comprises areas within a 1 km radius of any marsh fritillary records. This radius was defined based on work carried out by Wahlberg et al (Wahlberg, et al., 2002) which suggested that the maximum dispersal for female butterflies is 510 m. The functional landscape is defined as the areas within a 2 km radius of recorded marsh fritillary populations. The upper Cynon Valley Functional Landscape Area contains marsh fritillary clusters from Penderyn / Hirwaun (including Blaen Cynon SAC), Dderi Hir / Ty Mawr / Bryncarnau clusters and the West Merthyr cluster. Figure 2 in Appendix A shows the updated core and functional landscape areas using data collected in previous years.

4. Methodology

4.1 Monitoring Sites

The monitoring programme, since 2008, is made up of the following sites.

- Site 1: Blaen Cynon Special Area of Conservation.
- Site 2: Dderi Hir.
- Site 3: North Crematorium.
- Site 4 Bryncarnau Grasslands.
- Site 5 Near playing field.
- Site 6 Heol-Y-Graig.
- Site 7 Mount Road.

Following the first year of monitoring in 2008, the furthersites were added to the monitoring program in 2009. This was in order to enhance the baseline dataset by including other locations in the area which supported suitable habitat for marsh fritillary. These additional sites are at distance from the A465 and could give indication of population and habitat changes independent of potential impacts from the existing road and proposed scheme.

- Site 2a: Ger-y-bont, Croesbychan.
- Site 4a: South Bryncarnau Grasslands.
- Site 6a: Halt Road.
- Site 7a: East of Mount Road.

The locations of the all of the sites are shown in Figure 3 (Appendix A).

4.2 Field Survey

The highly variable nature of the marsh fritillary population dynamics makes it difficult to only adopt one monitoring approach, particularly as there are regular localised extinctions and reappearances of the species at any one site. Following discussion with both NRW and Butterfly Conservation a three part approach to the long term monitoring baseline was considered to be the most robust method.

The baseline monitoring programme aims to record trends in the metapopulation through:

- habitat quality mapping;
- larval web counts; and
- adult counts.

4.2.1 Habitat quality

The habitat quality of each site is assessed once every year and is based upon the monitoring methods currently used by NRW to assess marsh fritillary populations within the Blaen Cynon SAC itself. The habitat quality surveys were carried out in September 2016 and the exact survey dates for each site are in Table 8.3 in Appendix C.

Within each of the survey sites a grid based recording method was used. The grid was set up using geographic information system (GIS) software (ArcGIS) in advance of the field visit. The sample points were set out on a 10 x 10 m grid and were surveyed using a hand held computer (Mobile Mapper) with a global positioning system (GPS). The use of fixed grid system allows a temporal assessment of changes in habitat quality at fixed points. Each year the survey team returns to the same points using the GPS. At each sample point the habitat

quality for the 10 x 10 square around the point was categorised according to habitat quality definitions below (Fowles & Smith, 2006) and recorded on the mapper. The presence of *Succisa pratensis* was recorded as per the DAFOR scale.

- **Good Quality Habitat (GC)**: Grassland where, for at least 80 % of the quadrat, the vegetation height is within the range of 12 to 25 cm, and *Succisa pratensis* is present within a 1 m radius. Scrub (>1 metre tall) Cover <5 %.
- **Suitable (Under-Grazed) Habitat (SU)**: Grassland where vegetation height is above 25 cm and *Succisa pratensis* is occasional / frequent / abundant. Or in which sward height is between 12-25 cm and *Succisa* at least occasional, but Scrub (>0.5 metres tall) covers >5 % of area.
- **Suitable (Over-Grazed) Habitat (SO)**: Grassland with frequent-abundant *Succisa* but which is currently over-grazed such that the sward is below 12 cm on average.
- **Suitable (Sparse) Habitat (SS)**: Grassland with sparse (occasional or rare) *Succisa* and vegetation height is less than 25 cm on average.
- **Potential (Rank) Habitat (PR)**: Grassland with rare *Succisa* but which is currently under-grazed or neglected such that the sward is above 25 cm on average and *Succisa* occurs as scattered plants in a rank, tussocky sward.
- **Scrub (SC)**: Scrub up to 3 m height.
- **Secondary Woodland (SW)**: Scrub, young trees etc. established to > 3 m height.
- **Not Suitable (NS)**: All other unsuitable habitat, not containing *Succisa*.

The DAFOR scale that has been used for recording the presence of *Succisa pratensis* is:

- dominant (D) - >75 % cover;
- abundant (A) – 51-75 % cover;
- frequent (F) – 26-50 % cover;
- occasional (O) – 11-25 % cover; and
- rare (R) – 1-10 % cover.

The habitat mapping for 2008 highlighted the need to differentiate between unsuitable habitats, secondary woodland and scrub which although are all essentially unsuitable habitat for marsh fritillary the more detailed categorisation has provided a better overview of each of the sites.

4.2.2 Larval web counts

Each year, areas of available suitable habitat located within monitoring sites, were surveyed for marsh fritillary webs. *Succisa pratensis* plants were examined for larvae and larval webs. The location and number of webs were recorded using the mobile mapper. Target notes were also taken which included the type of management practices that were evident within each site.

The web count surveys were carried out across all the sites in September 2016 with exact survey dates set out in Table 8.3 in Appendix C.

4.2.3 Adult counts

Each year a survey of adults was carried out at each of the monitoring sites between mid-May and late June. The location and number of adults was recorded using the mobile mapper. The adult surveys were conducted in June 2016 with exact survey dates set out in Table 8.3 in Appendix C.

4.2.4 Survey limitations

All of the sites were surveyed for numbers of larval webs, adults and an assessment of habitat quality. The size of the study area meant that sites were surveyed over a period of two to four weeks. Localised weather conditions can affect the suitability of the survey period when carrying out the adult and web surveys.

Site 1: The Blaen Cynon SAC is surveyed by NRW as part of their monitoring programme. No adult counts were carried out in 2016 nor was it habitat mapped. NRW carried out a larval web survey in 2016.

Site 7 and site 3 were not surveyed in 2016 due to land access restrictions. Site 4a was not habitat mapped or surveyed for webs due to the presence of cattle.

5. 2016 Survey Results

5.1 Habitat Quality

The monitoring sites (except site 1, site 3 and site 7) were all visited in 2016. The descriptions of each site are set out in the following paragraphs and the habitat quality results are shown on Figures 5 -14.

5.1.1 Site 1: Blaen Cynon SAC

The Blaen Cynon SAC was not habitat mapped by NRW in 2016.

5.1.2 Site 2: Dderi Hir

The triangular area of the site north of the A465 was predominately heavily grazed by cattle and/or sheep with only tussocks of *Juncus* and *Molinia* present, with no *Succisa pratensis*.

The large section of Site 2, south of the A465 consisted of a mosaic of different habitats including scrub, woodland and wet and dry areas containing predominately *Juncus sp*. and *Molinia sp*. with varying cover of *Succisa pratensis*. In previous years (2008 and 2009) horses have been recorded grazing the area but a change in land management in 2010 has resulted in all livestock being removed. At the time of the adult surveys in 2016 there were no livestock present and the area was undisturbed.

In September when the habitat surveys were conducted some areas had been lightly grazed and others still undisturbed. The western fields are very overgrown in places, and although still mostly classed as Good Condition habitat, the area will become under grazed soon. The wetter sections and the fenced area around a large pond have remained unchanged. Most of this area was recorded in the categories Suitable (Sparse) or Good Condition with an increase in Potential Rank category (Figure 5, Appendix A).

The southern protruding part of Site 2 consisted of a mosaic of woodland and grassland containing predominately *Juncus sp* and *Molinia sp*. with varying amounts of *Succisa pratensis*. The habitat remains in a similar condition to 2015, with Good Condition habitat throughout the central and southern part of this section with secondary woodland bordering the southern edge (Figure 5, Appendix A).

5.1.3 Site 2a: Ger-y-bont, Croesbychan

Site 2a at Ger-y-bont, Croesbychan consisted of small round field with a stable block in north east corner. The site was grazed by ponies at the time of survey along with the adjacent field in 2016.

Light grazing in certain areas of the site has meant that the habitat has remained the same as in 2015; a mosaic of both suitable under grazed and suitable over grazed areas with patches of good condition habitat, bordered by potential rank and not suitable habitat (Figure 6, Appendix A).

5.1.4 Site 3: North Llwydcoed Crematorium

Site 3 was not habitat mapped in 2016 due to land access restrictions.

5.1.5 Site 4: Bryncarnau Grasslands

The Bryncarnau Grasslands SSSI continues to be managed under a Tir Gofal scheme. The grass is cut annually, late in the year after flowering has taken place. At the time of the adult survey in June most of the site had been cut recently apart from the south western fields.

The majority of the site area was classed as Suitable (Over-grazed) or Suitable (Sparse) habitat depending on the abundance of *Succisa pratensis*. The northern most field bordering the road has mainly been classified as Not Suitable with some sparse records of *Succisa pratensis* (Figure 8, Appendix A).

5.1.6 Site 4a: South Bryncarnau Grasslands

Site 4a was not surveyed in September 2016 due to access restrictions. The site was being crazed by cattle at the time of the survey.

5.1.7 Site 5: Near the Playing Field

In 2016 site 5 comprised a mosaic of habitats separated by field boundaries including fences / hedges and ditches. The majority of the site has been recorded as unsuitable, particularly to the south and the west. The middle and eastern sections of the site are a mosaic of Suitable (Over grazed), Suitable (Sparse) and Potential (Rank) habitat with a central area of Good Condition habitat with both varying amounts of *Succisa pratensis* and sward height. Three ponies were grazing the eastern and central sections at the time of the web and habitat surveys in September 2016. The fields in the west and south parts of the site recorded no *Succisa pratensis* (Figure 10, Appendix A).

5.1.8 Site 6: Heol-y-Graig

Some areas of site 6 were grazed throughout 2016, particularly the western section. This has resulted in an increased in Suitable (Over grazed) habitat. A large proportion of the site was still classed as Suitable (Over grazed) in 2016, with an increase in Good Condition habitat through southern and central sections of the site (Figure 11, Appendix A).

5.1.9 Site 6a: Halt Road

Site 6a was a small poorly drained sloping field with a stream running along the south boundary. *Succisa pratensis* was recorded frequently throughout the site. The site had been heavily grazed by ponies during the adult counts in June, whilst the *Succisa pratensis* was still present the overall sward height was very low and the site had become fairly poached. By September the whole field had been heaving grazed producing a severely reduced sward height, though selective grazing meant patches of *Succisa pratensis* were still present although very exposed (Figure 12, Appendix A).

5.1.10 Site 7: Mount Road

Site 7 was not habitat mapped in 2016 due to land access restrictions.

5.1.11 Site 7a: East of Mount Road

Site 7a was being grazed by cattle during the web surveys of 2016. The field predominantly comprised *Juncus sp* with *Succisa pratensis* patches throughout. The combination of this grazing and the burning noted in 2015 has resulted in some areas being classed as Suitable (Under grazed) (Figure 14, Appendix A).

5.1.12 Summary of all sites

Table 5.1 sets out the results of the habitat quality assessment as percentage cover per category for each site in the Jacobs 2016 habitat quality survey. Figures 5 to 14 in Appendix A show detailed maps of habitat quality distribution and location at each site.

Table 5.1 : Habitat Quality Assessment- Percentage Cover for each Category 2015 (NS= No Survey)

Habitat Type	Percentage Cover									
	Site 2	Site 2a	Site 3	Site 4*	Site 4a	Site 5	Site 6	Site 6a	Site 7	Site 7a
Good Condition Habitat	8.3	38.3	No Survey	2.4	No Survey	3.4	0.0	0.0	No Survey	1.8
Suitable (Under grazed) Habitat	1.4	0.0	No Survey	0.1	No Survey	1.4	0.0	0.0	No Survey	1.8
Suitable (Over grazed) Habitat	2.7	0.0	No Survey	44.4	No Survey	6.0	31.0	57.1	No Survey	3.2
Suitable (Sparse) Habitat	22.6	10.8	No Survey	19.2	No Survey	11.4	8.9	16.9	No Survey	27.6
Potential (Rank) Habitat	3.9	0.0	No Survey	0.1	No Survey	5.5	5.3	0.0	No Survey	0.0
Scrub	8.9	14.2	No Survey	5.6	No Survey	3.5	13.5	8.6	No Survey	5.7
Secondary Woodland	10.4	33.3	No Survey	5.6	No Survey	0.3	6.4	13.9	No Survey	6.1
Not Suitable	41.7	3.3	No Survey	22.7	No Survey	68.5	35.0	3.5	No Survey	53.8
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**No Survey**	**100**

*Unable to access whole of site 4 to map habitats but the inaccessible area has generally been classified as Not Suitable and Secondary Woodland in previous years (See Figure 8, Appendix A).

5.2 Web counts

Two hundred and eighty webs were recorded across six of the Jacobs surveyed sites in 2016. This is the second time since 2009 that webs have been recorded at site 6 (also in 2014) however this is the first year since 2009 that webs have not been recorded at site 6a. One hundred and ninety six webs were recorded in the Site 1 Blaen Cynon SAC by NRW, with a good number of webs distributed evenly across the main block of Cors Bryn-y-gaer. The distribution of webs was as set out in Figures 5-14. Meta data for surveys listed in Appendix C, Table 8.3.

Table 5.2 : Web Count Results 2015 (NS= No Survey)

Site	Number of webs recorded
1	196
2	160
2a	2
3	NS
4	117
4a	NS
5	0
6	1
6a	0
7	NS
7a	0

5.3 Adult Counts

Twenty four adults were recorded across six sites in the 2016 Jacobs survey. An adult has been recorded at site 7a for the first time since 2012; however this is the first year since 2009 that adults have not been recorded at site 6a. Meta data for surveys listed in Appendix C, Table 8.3.

Table 5.3 : Adult Count Results (NS= No Survey)

Site	Number of adults recorded
1	NS
2	20
2a	0
3	NS
4	3
4a	0
5	0
6	0
6a	0
7	NS
7a	1

5.4 2016 Weather

The records shown in Table 5.4 are data from the UK climate network of observing stations. They represent the Met Office's assessment of weather conditions experienced across the South Wales and SW England region during the 2016 monitoring season. It also sets out a comparison with the 1981 to 2010 long term average. The columns headed 'Anom' (anomaly) show the difference (+ / -) from, or percent of the 1981-2010 long term average (Met Office, 2016).

Table 5.4 : Met Office weather data for south Wales region (amended from (Met Office, 2016))

Month	Max temperature		Min temperature		Mean temperature		Sunshine		Rainfall	
	Actual (°C)	Anom (°C)	Actual (°C)	Anom (°C)	Actual (°C)	Anom (°C)	Actual (hrs)	Anom (%)	Actual (mm)	Anom (%)
Winter (Dec-Feb)	9.0	2.6	3.7	2.6	6.4	2.6	139.2	92	778.2	186
Spring (Mar-May)	12.0	1.0	4.1	0.5	8.0	0.7	509.9	117	295.5	103
May	16.2	2.1	7.4	1.6	11.8	1.8	221.3	120	88.4	102
June	18.1	1.2	10.9	2.3	14.5	1.7	149.0	84	139.6	167
July	18.7	0.0	11.8	1.3	15.2	0.6	161.2	92	82.7	99
August	19.3	1.0	11.9	1.4	15.6	1.2	169.7	104	108.9	99

Winter 2015 / 2016 produced record rainfall totals and severe flooding throughout December in the north and west of the UK. The exceptional warmth resulted in the third warmest winter since 1910, although also the second wettest on record. This resulted in an unsettled January and February, although February was a sunny month for most, with some bright, sunny spells particularly during the second half of the month.

The temperature and rainfall for spring were close to the seasonal average, although there were some stormy exceptions. March produced two weeks of fine and settled weather, leading to a cooler April with some late frosts in the north. May was warm and dry, with sunshine hours above average for all three spring months. March was generally a wet month for the south with some areas receiving over 150 % of the average rainfall for the month.

The summer of 2016 was altogether changeable, beginning with a cloudy and wet June. Sunshine totals for this month were low producing a dull June in the south. July and the first half of August were characterised by a changeable westerly Atlantic flow with a succession of fronts crossing the UK, although rainfall amounts were often small in the south. A heat wave in the third week of July led to a more settled and hot second half of August (amended from (Met Office, 2016)).

5.4.1 Potential Effect of Weather on the Marsh Fritillary Population

The number of adults recorded in 2016 has decreased on every site with the exception of site 7a. Sites 6a and 4 in particular have seen a marked decrease in adults recorded, going from 148 to 0 and 435 to 3 respectively.

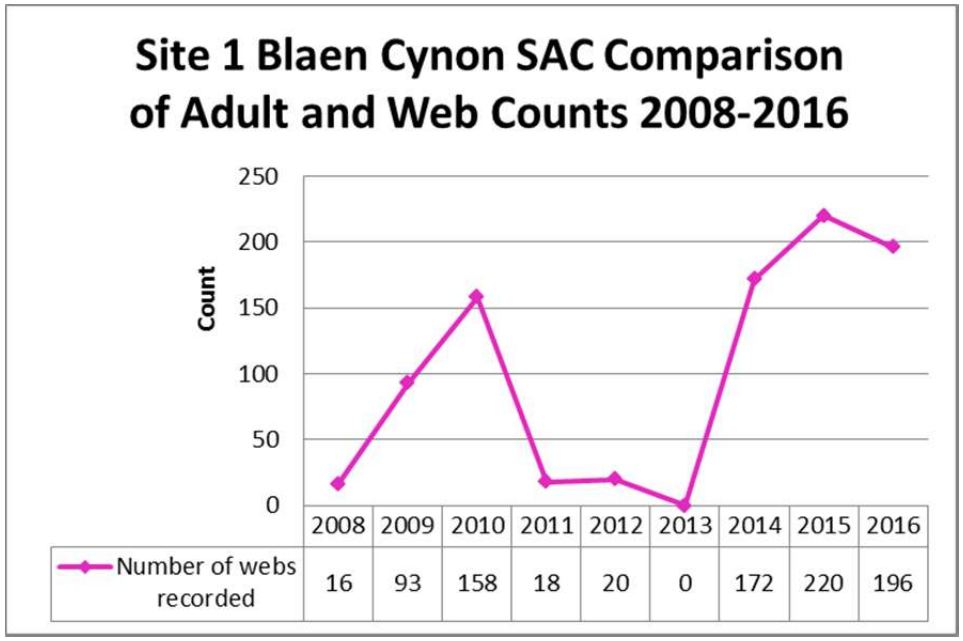
The wet winter of 2015 / 2016 could have resulted in lower winter survival rates of marsh fritillary larvae which could account for the decrease in number of marsh fritillary adults recorded across all sites from 2015 to 2016. The stormy spring would have disrupted the basking time for the caterpillars and reduced the flight period for the adults resulting in a decreased marsh fritillary population.

6. 2016 Results Discussion

This section provides an illustration and short discussion regarding the variation in the marsh fritillary survey results since the Jacobs baseline monitoring surveys started in 2008.

6.1 Site 1 – Blaen Cynon SAC

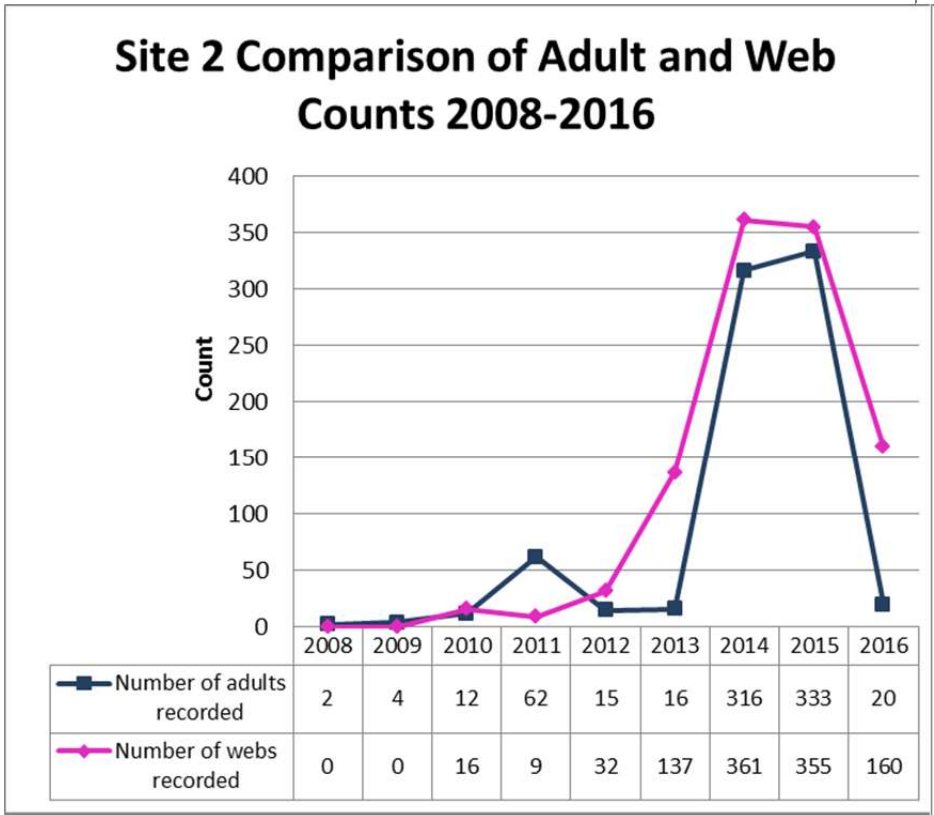
Graph 6-1: Site 1 Comparison of Web Counts 2008-2016



Web counts at the Blaen Cynon SAC in 2016 were carried out by NRW. Adult counts and habitat mapping have not been carried out by NRW since the Jacobs surveys begun as the habitat was not considered to have changed between survey years.

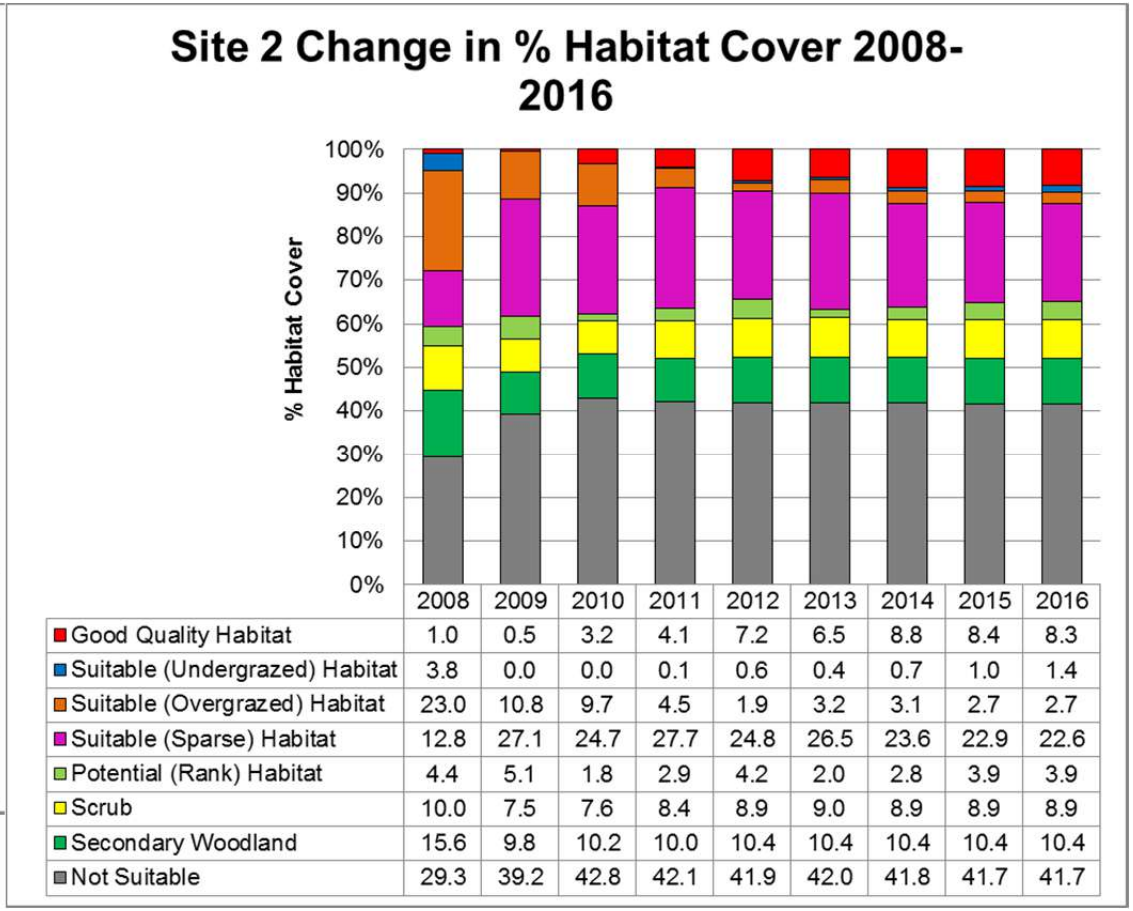
6.2 Site 2 – Dderi Hir

Graph 6-2: Site 2 Comparison of Adult and Web Counts 2008-2016



	2008	2009	2010	2011	2012	2013	2014	2015	2016
Number of adults recorded	2	4	12	62	15	16	316	333	20
Number of webs recorded	0	0	16	9	32	137	361	355	160

Graph 6-3: Site 2 Change in % Habitat Cover 2008-2016

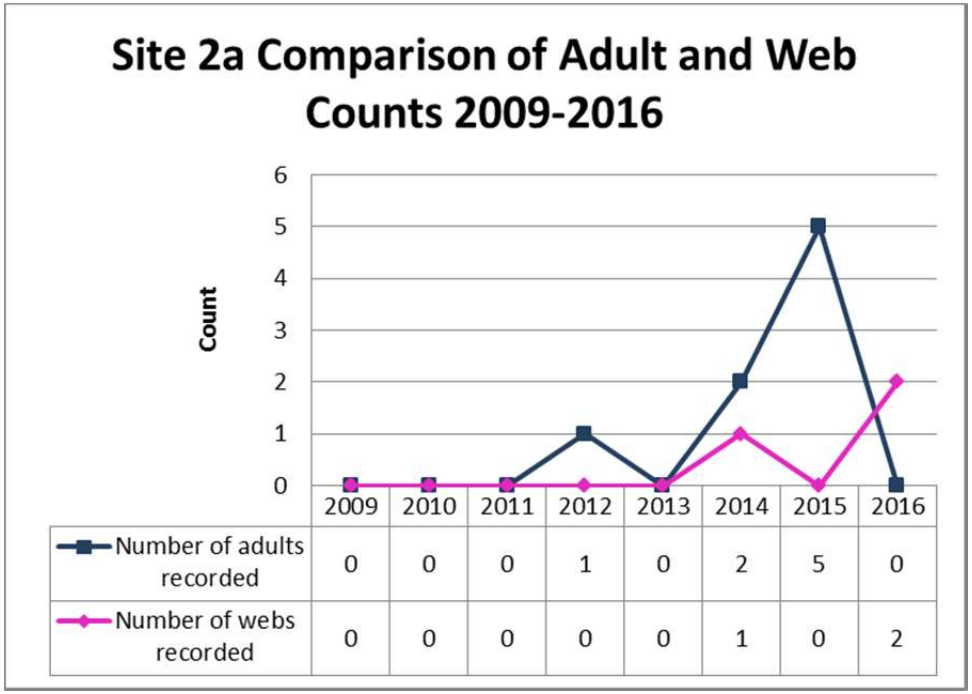


	2008	2009	2010	2011	2012	2013	2014	2015	2016
Good Quality Habitat	1.0	0.5	3.2	4.1	7.2	6.5	8.8	8.4	8.3
Suitable (Undergrazed) Habitat	3.8	0.0	0.0	0.1	0.6	0.4	0.7	1.0	1.4
Suitable (Overgrazed) Habitat	23.0	10.8	9.7	4.5	1.9	3.2	3.1	2.7	2.7
Suitable (Sparse) Habitat	12.8	27.1	24.7	27.7	24.8	26.5	23.6	22.9	22.6
Potential (Rank) Habitat	4.4	5.1	1.8	2.9	4.2	2.0	2.8	3.9	3.9
Scrub	10.0	7.5	7.6	8.4	8.9	9.0	8.9	8.9	8.9
Secondary Woodland	15.6	9.8	10.2	10.0	10.4	10.4	10.4	10.4	10.4
Not Suitable	29.3	39.2	42.8	42.1	41.9	42.0	41.8	41.7	41.7

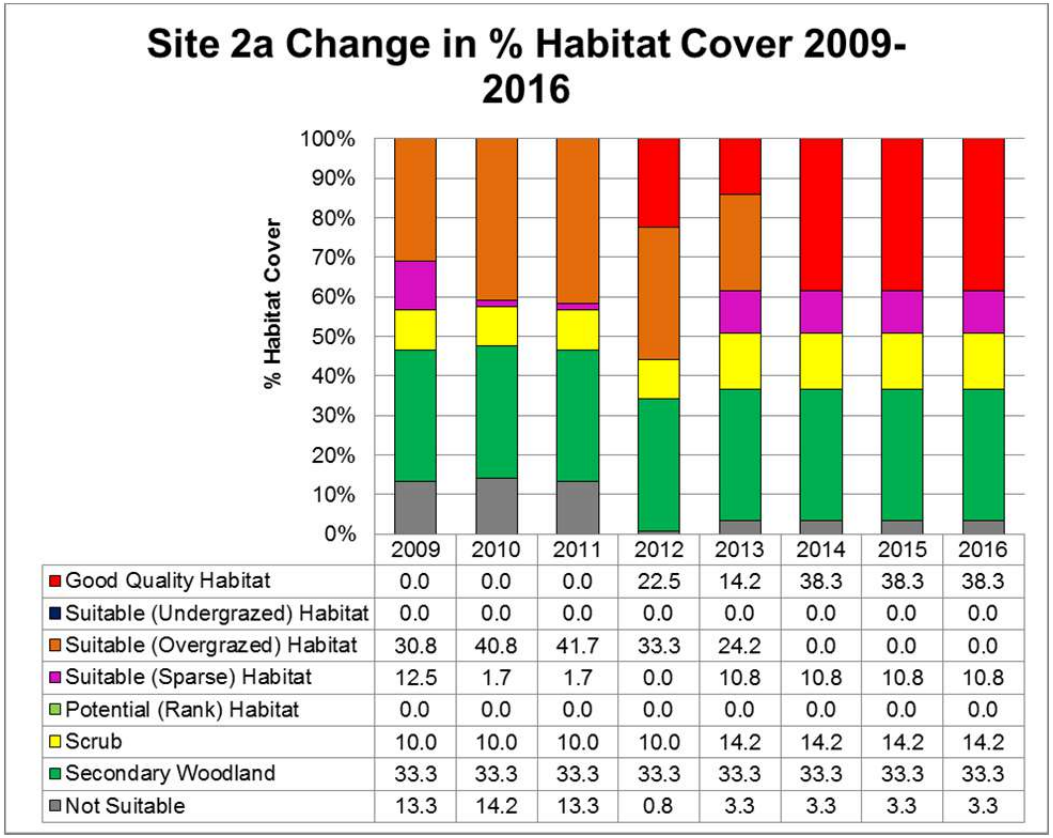
Dderi Hir was one of the original sites identified for monitoring in 2008. Graph 6-2 shows the adult and web count data and Graph 6-3 illustrates the changes in % habitat cover at Dderi Hir between 2008 and 2016. Site 2 saw a marked decrease in both adults and webs recorded in 2016.

6.3 Site 2a – Ger-y-bont, Croesbychan

Graph 6-4: Site 2a Comparison of Adult and Web Counts 2009-2016



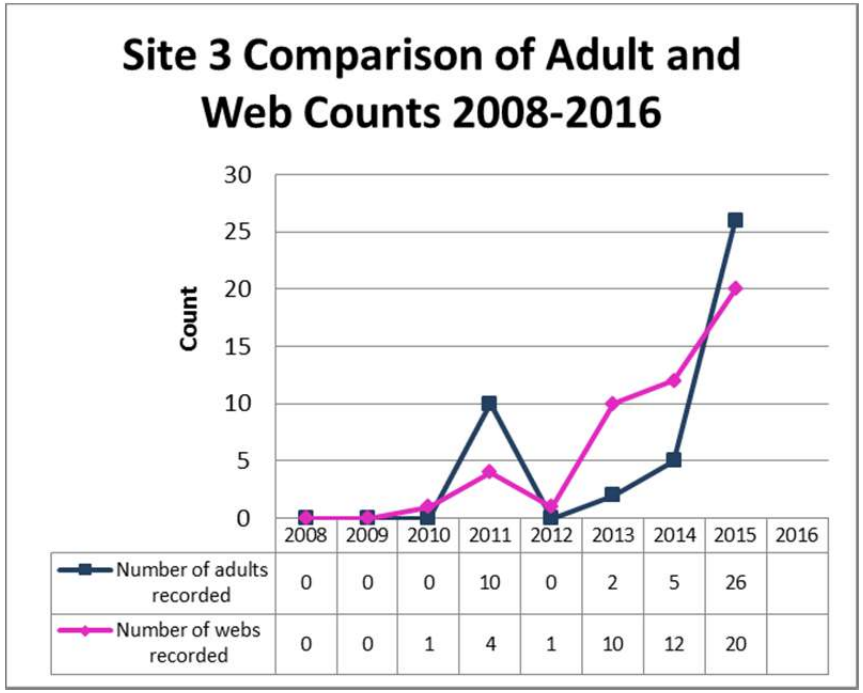
Graph 6-5: Site 2a Change in % Habitat Cover 2009-2016



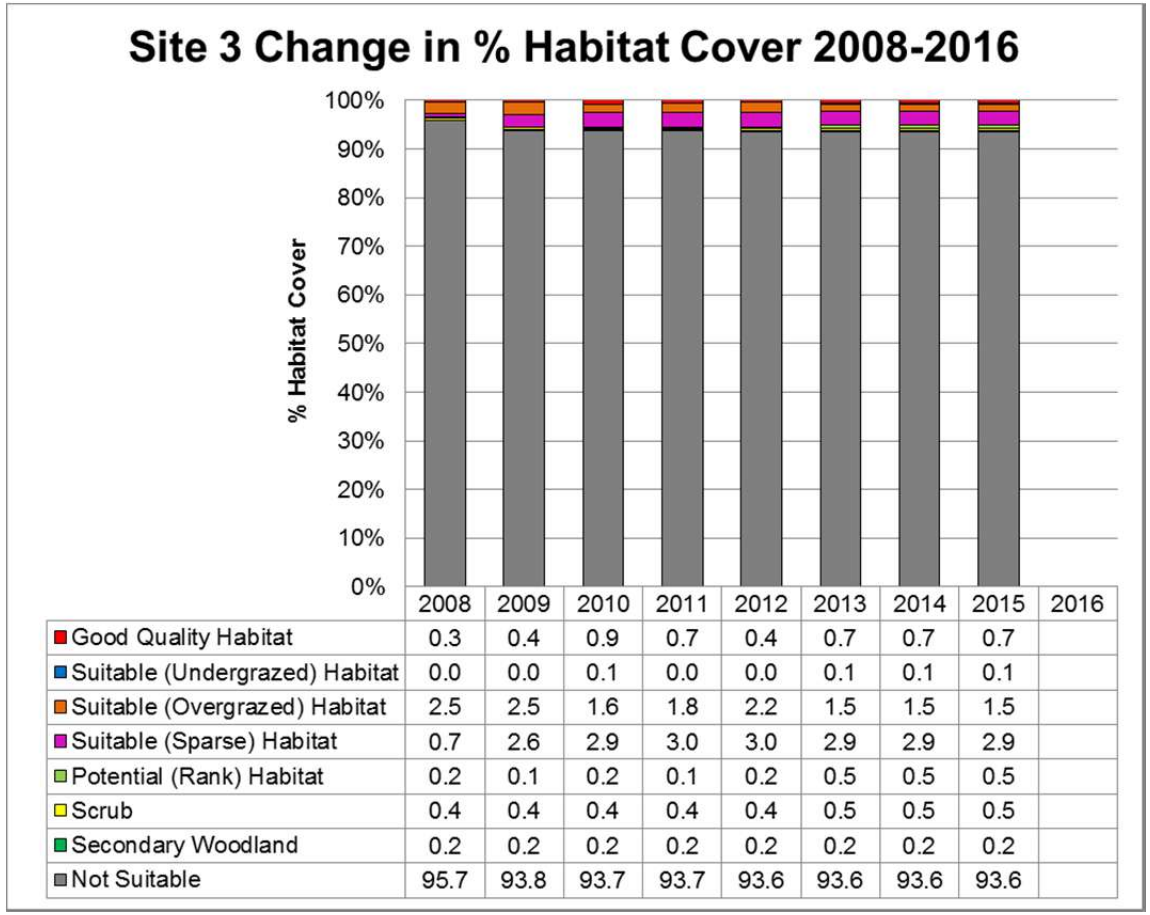
Ger-y-bont was one of the additional sites identified and added to the Jacobs baseline monitoring survey in 2009. Graph 6-4 shows the adult and web count data and Graph 6-5 illustrates the change in percentage habitat cover at Ger-y-bont between 2009 and 2016. Although web numbers increased in 2016, adults recorded and habitat types remained the same as recorded in 2015.

6.4 Site 3 – North Llwydcoed Crematorium

Graph 6-6: Site 3 Comparison of Adult and Web Counts 2008-2016



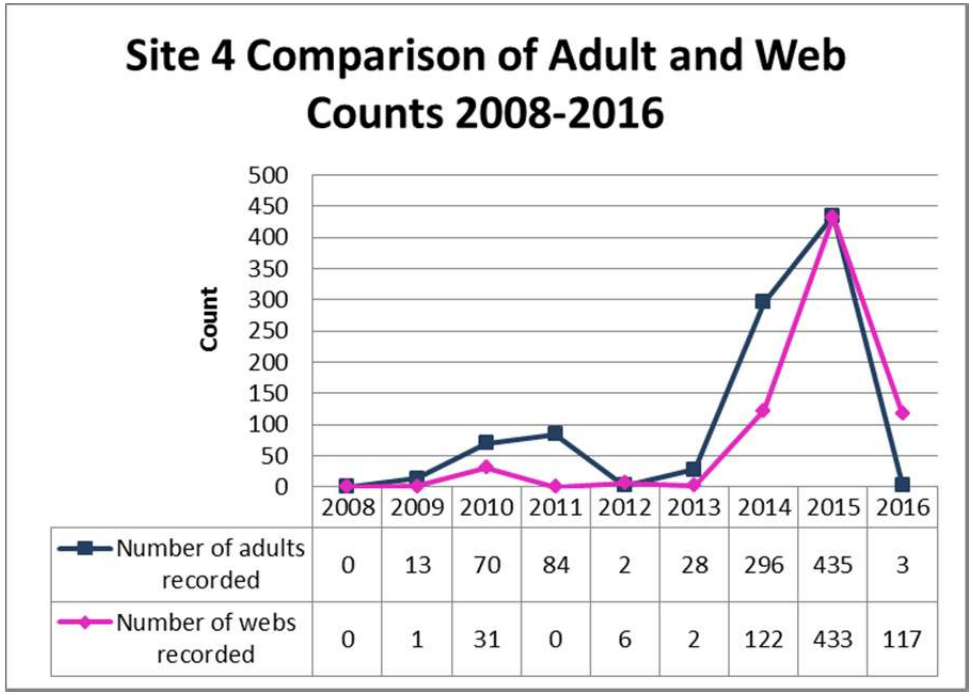
Graph 6-7: Site 3 Change in Habitat Cover 2008-2016



Graph 6-6 shows the adult and web count data and Graph 6-7 illustrates the changes in % habitat cover at site 3 between 2008 and 2015. Site 3 was not surveyed in 2016.

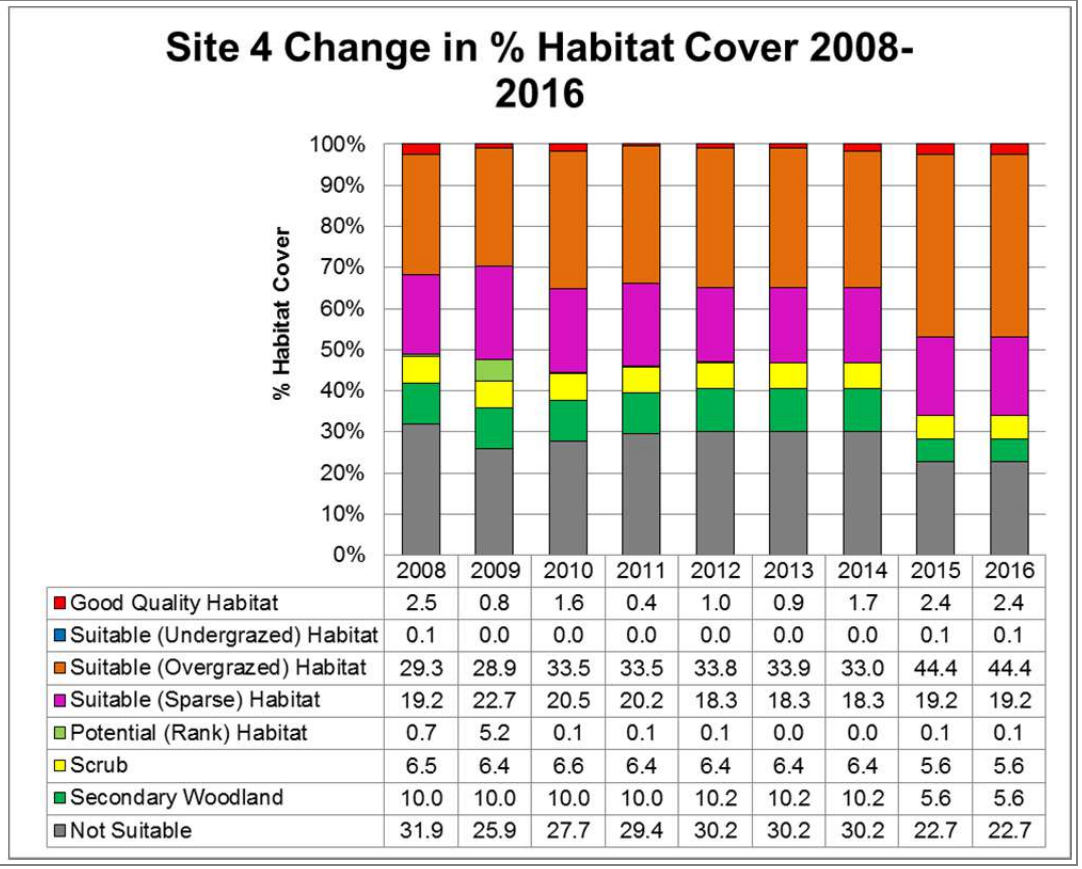
6.5 Site 4 – Bryncarnau Grasslands

Graph 6-8: Site 4 Comparison of Adult and Web Counts 2008-2016



	2008	2009	2010	2011	2012	2013	2014	2015	2016
Number of adults recorded	0	13	70	84	2	28	296	435	3
Number of webs recorded	0	1	31	0	6	2	122	433	117

Graph 6-9: Site 4 Change in % Habitat Cover 2008-2016

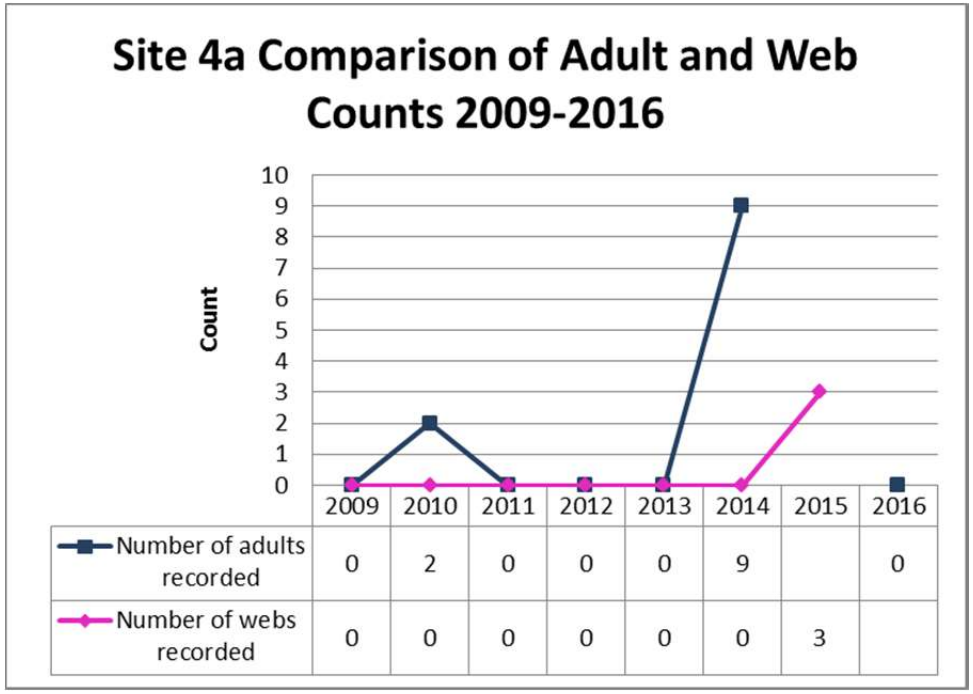


	2008	2009	2010	2011	2012	2013	2014	2015	2016
Good Quality Habitat	2.5	0.8	1.6	0.4	1.0	0.9	1.7	2.4	2.4
Suitable (Undergrazed) Habitat	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Suitable (Overgrazed) Habitat	29.3	28.9	33.5	33.5	33.8	33.9	33.0	44.4	44.4
Suitable (Sparse) Habitat	19.2	22.7	20.5	20.2	18.3	18.3	18.3	19.2	19.2
Potential (Rank) Habitat	0.7	5.2	0.1	0.1	0.1	0.0	0.0	0.1	0.1
Scrub	6.5	6.4	6.6	6.4	6.4	6.4	6.4	5.6	5.6
Secondary Woodland	10.0	10.0	10.0	10.0	10.2	10.2	10.2	5.6	5.6
Not Suitable	31.9	25.9	27.7	29.4	30.2	30.2	30.2	22.7	22.7

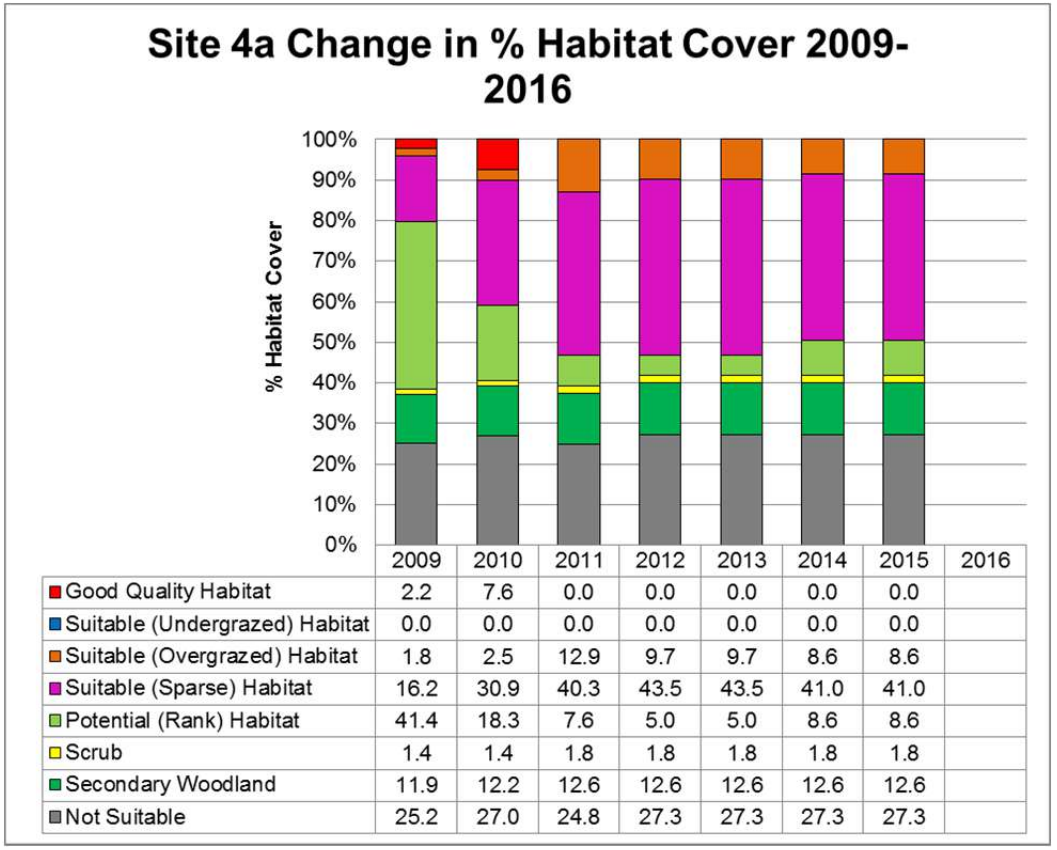
Graph 6-8 shows the adult and web count data and Graph 6-9 illustrates the changes in % habitat cover at Bryncarnau Grasslands between 2008 and 2016. The numbers of adults and webs recorded in 2016 has dropped since 2015, although the condition of the habitat has remained the same.

6.6 Site 4a – South Bryncarnau Grasslands

Graph 6-10: Site 4a Comparison of Adult and Web Counts 2009-2016



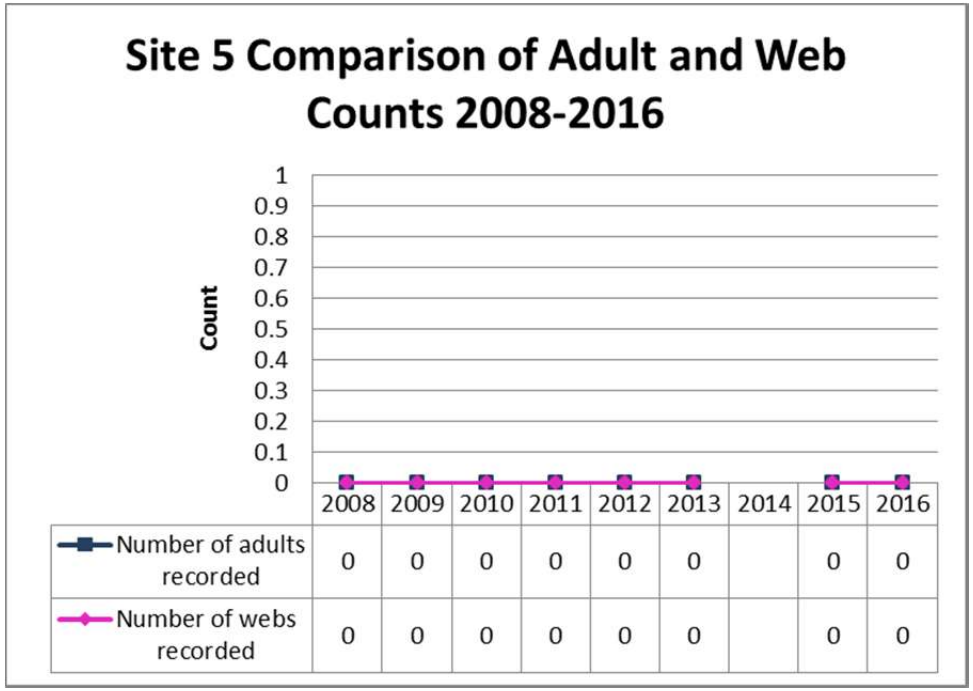
Graph 6-11: Site 4a Change in % Habitat Cover 2009-2016



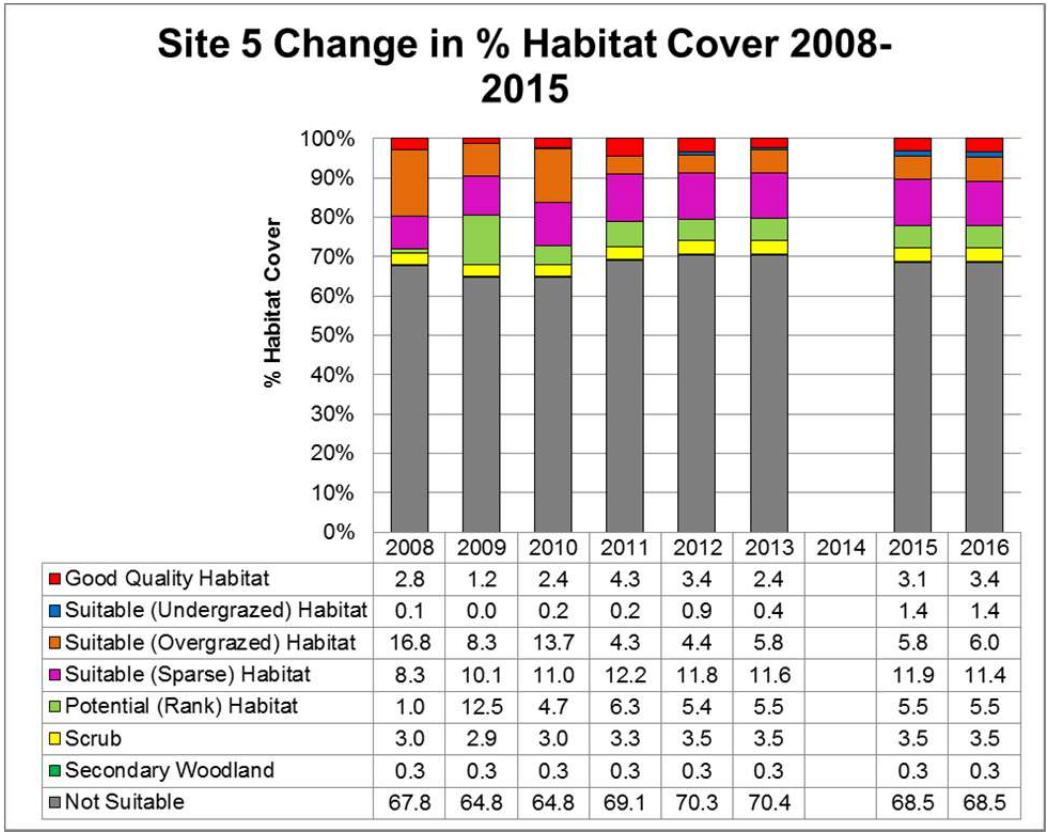
Graph 6-10 shows the adult and web count data and Graph 6-11 illustrates the changes in % habitat cover at South Bryncarnau Grasslands. The site was not surveyed for adults in 2015 or webs and habitat in 2016.

6.7 Site 5 – Near the Playing Fields

Graph 6-12: Site 5 Comparison of Adult and Web Counts 2008-2016



Graph 6-13: Site 5 Change in % Habitat Cover 2008-2016

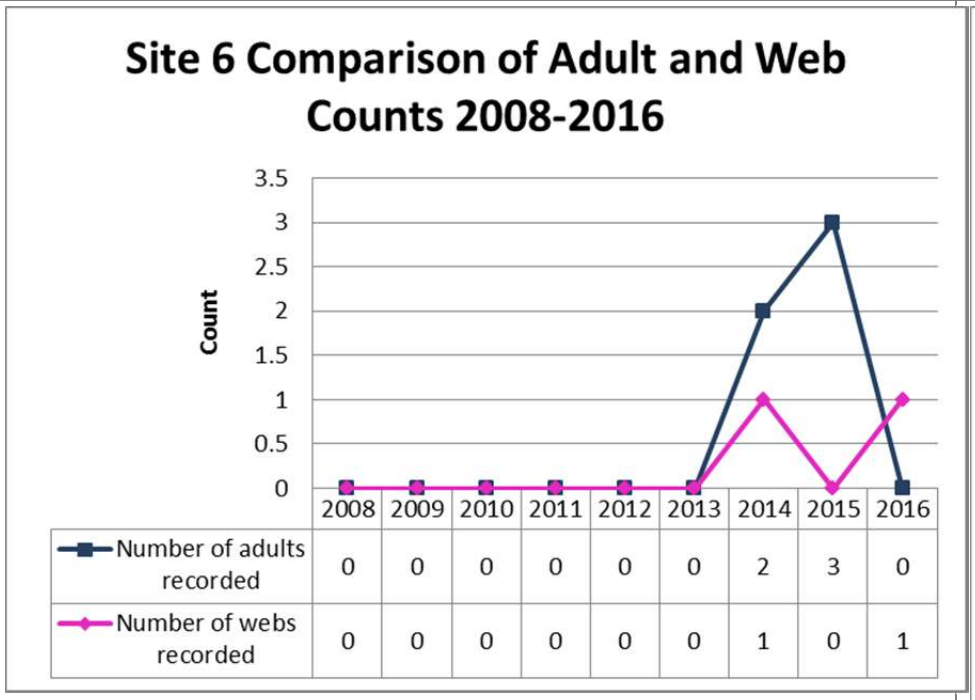


	2008	2009	2010	2011	2012	2013	2014	2015	2016
Good Quality Habitat	2.8	1.2	2.4	4.3	3.4	2.4		3.1	3.4
Suitable (Undergrazed) Habitat	0.1	0.0	0.2	0.2	0.9	0.4		1.4	1.4
Suitable (Overgrazed) Habitat	16.8	8.3	13.7	4.3	4.4	5.8		5.8	6.0
Suitable (Sparse) Habitat	8.3	10.1	11.0	12.2	11.8	11.6		11.9	11.4
Potential (Rank) Habitat	1.0	12.5	4.7	6.3	5.4	5.5		5.5	5.5
Scrub	3.0	2.9	3.0	3.3	3.5	3.5		3.5	3.5
Secondary Woodland	0.3	0.3	0.3	0.3	0.3	0.3		0.3	0.3
Not Suitable	67.8	64.8	64.8	69.1	70.3	70.4		68.5	68.5

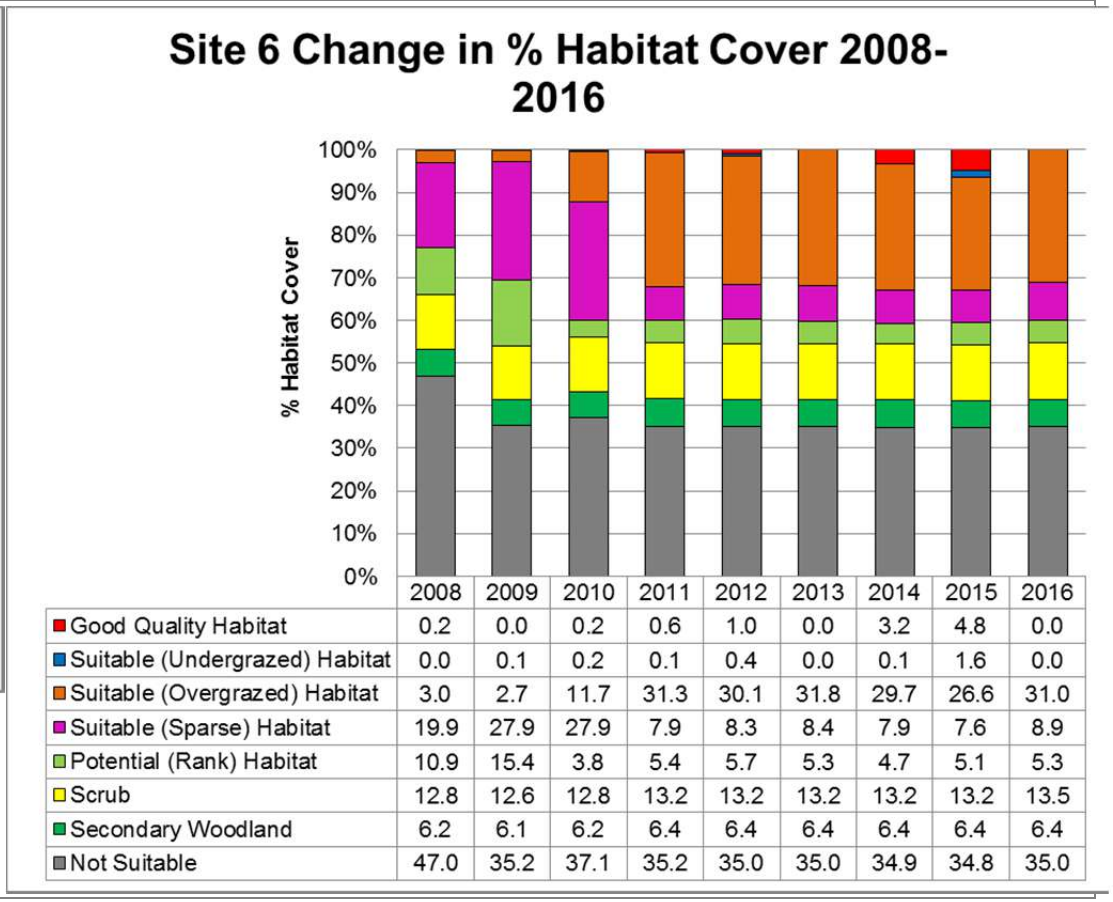
Graph 6-12 shows the adult and web count data and Graph 6-13 illustrates the change in % habitat cover at site 5 between 2008 and 2016. The site was not surveyed in 2014.

6.8 Site 6 – Heol-y-Graig

Graph 6-14: Site 6 Comparison of Adult and Web Counts 2008-2016



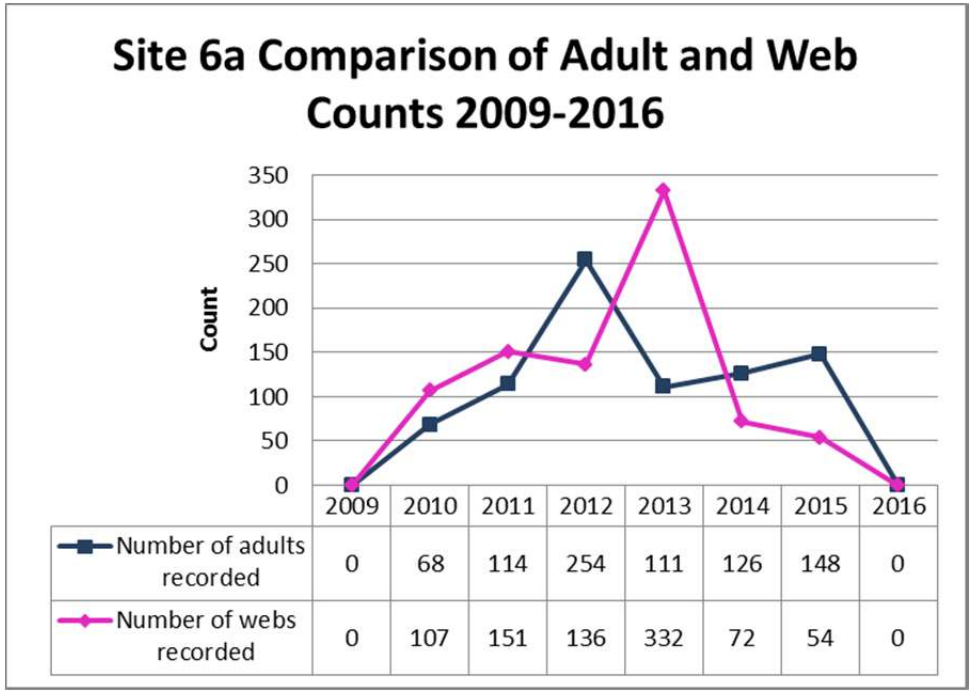
Graph 6-15: Site 6 Change in % Habitat Cover 2008-2016



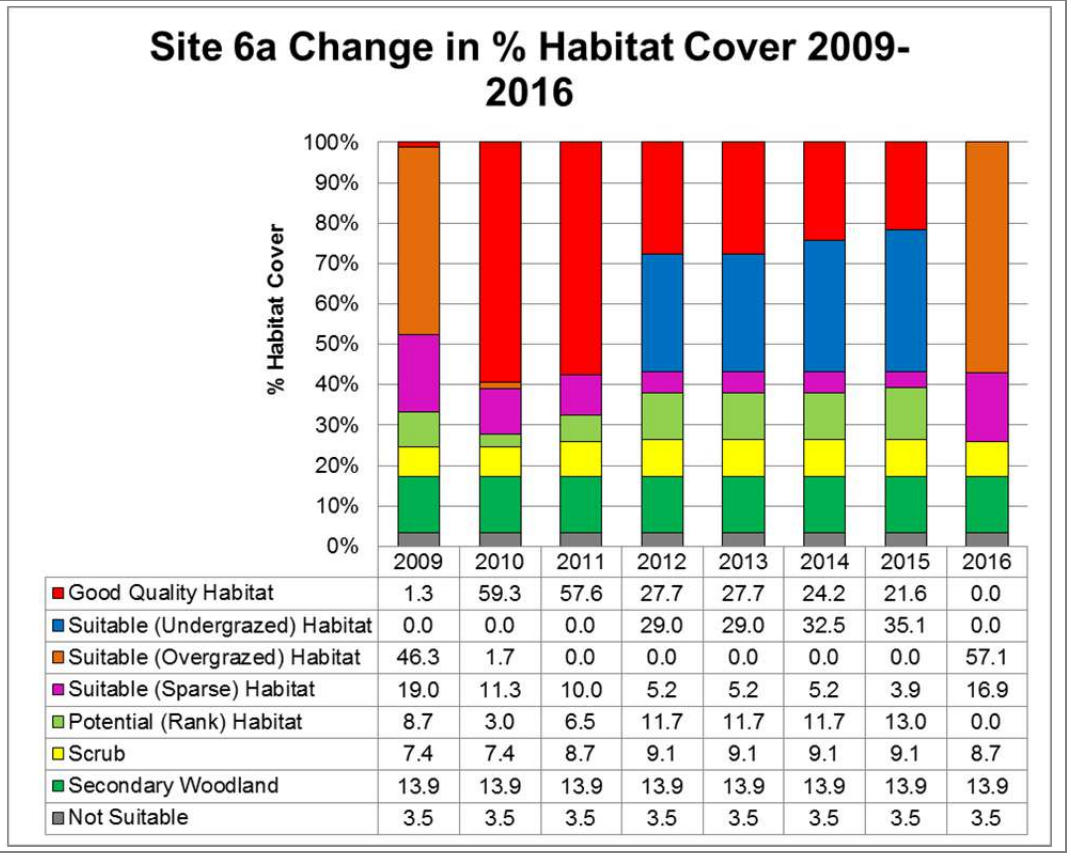
Graph 6-14 above shows the adult and web count data and Graph 6-15 illustrates the changes in % habitat cover at site 6 between 2008 and 2016. There has been a decrease in the good quality habitat recorded on the site, along with a drop in adults recorded.

6.9 Site 6a – Halt Road

Graph 6-16: Site 6a Comparison of Adult and Web Counts 2009-2016



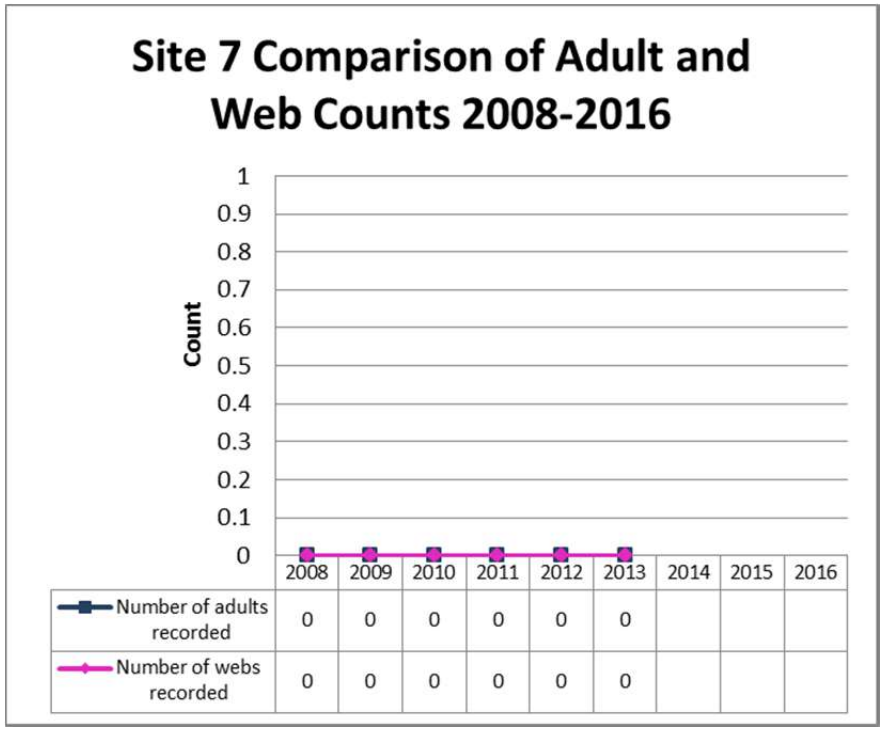
Graph 6-17: Site 6a Change in % Habitat Cover 2009-2016



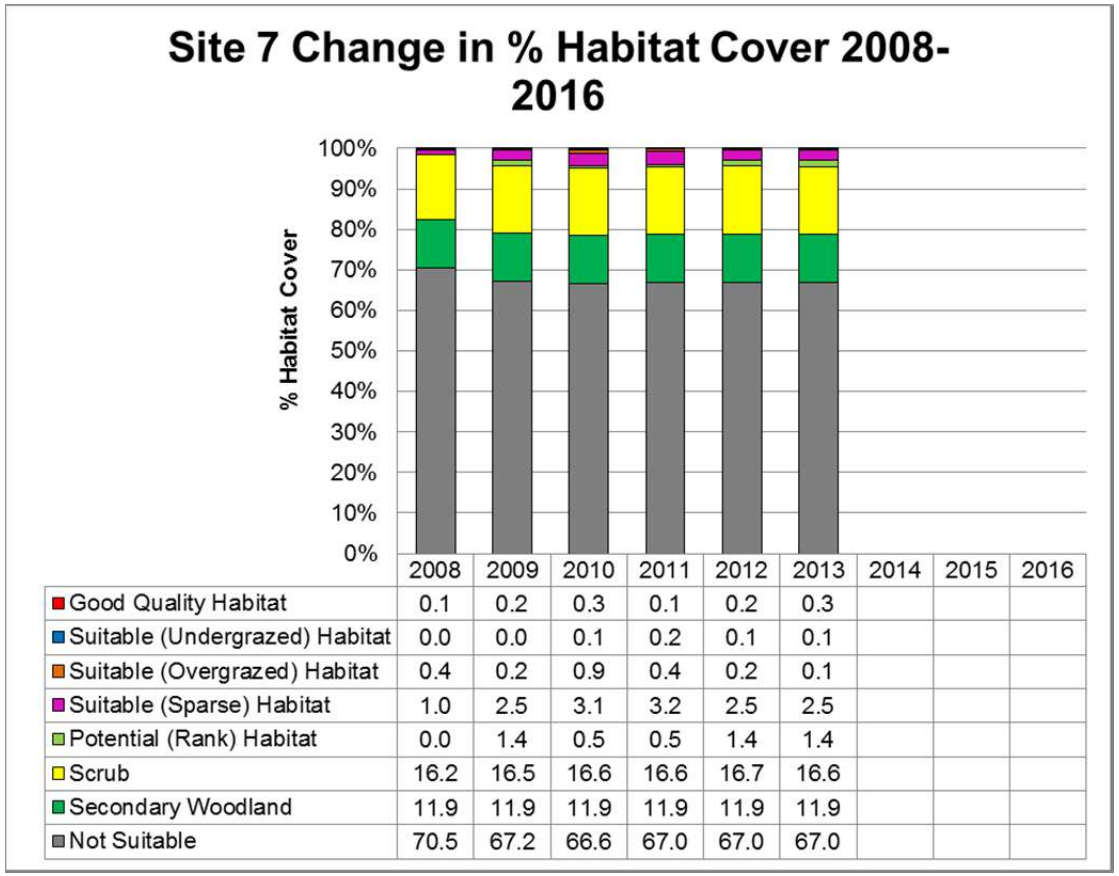
Halt Road was one of the additional sites identified and added to the Jacobs baseline monitoring survey in 2009. Graph 6-16 shows the adult and web count data and Graph 6-17 illustrates the changes in percentage habitat cover at Halt Road between 2009 and 2016. Due to increased grazing at site 6a, numbers of both webs and adults recorded have dropped. There was also no good quality or suitable (undergrazed) habitat recorded at the site.

6.10 Site 7 – Mount Road

Graph 6-18: Site 7 Comparison of Adult and Web Counts 2008-2013 (No survey in 2014, 2015 or 2016)



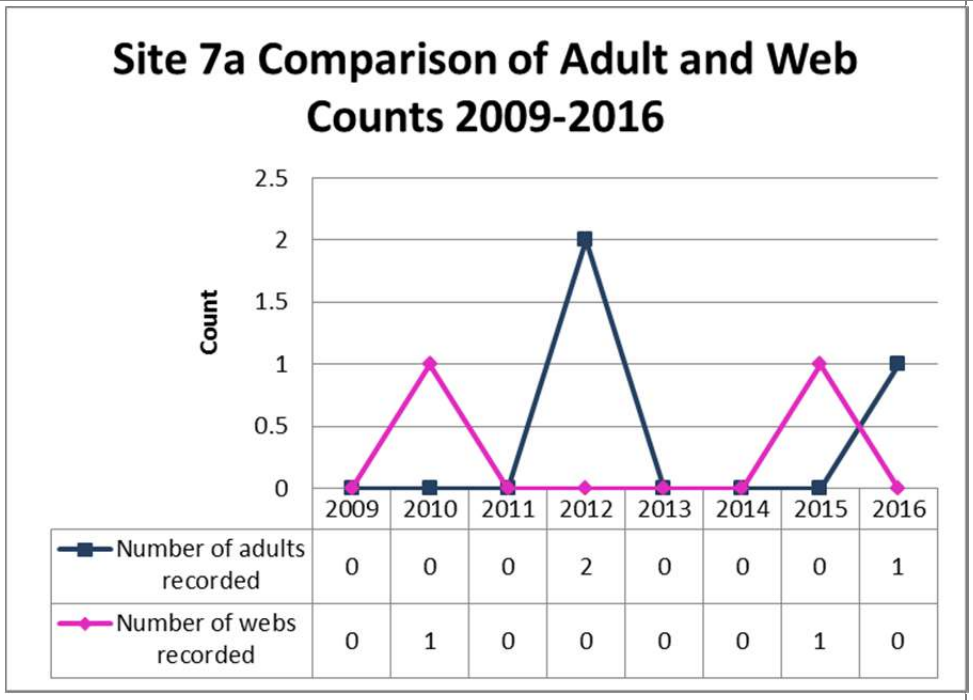
Graph 6-19: Site 7 Change in % Habitat Cover 2008-2013 (No survey in 2014, 2015 or 2016)



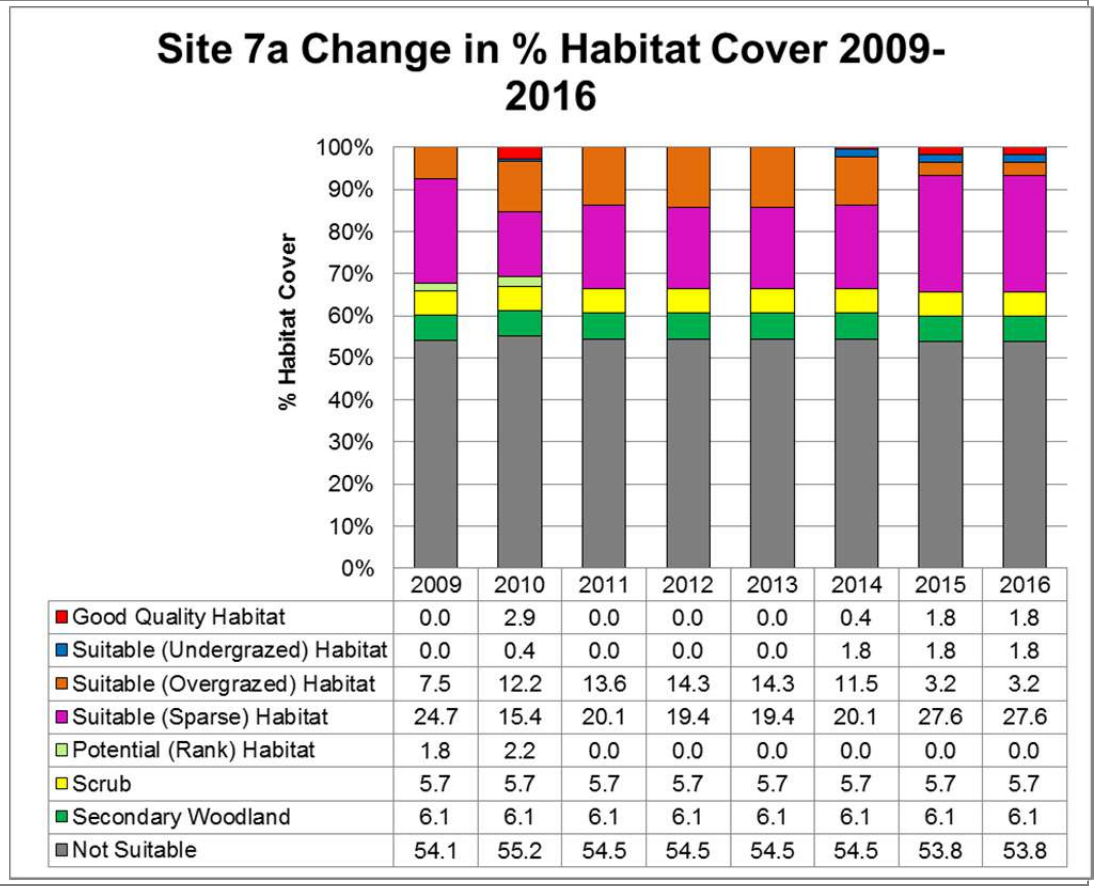
There were no surveys in 2016 at Mount Road.

6.11 Site 7a – East of Mount Road

Graph 6-20: Site 7a Comparison of Adult and Web Counts 2009-2016



Graph 6-21: Site 7a Change in % Habitat cover 2009-2016



	2009	2010	2011	2012	2013	2014	2015	2016
Good Quality Habitat	0.0	2.9	0.0	0.0	0.0	0.4	1.8	1.8
Suitable (Undergrazed) Habitat	0.0	0.4	0.0	0.0	0.0	1.8	1.8	1.8
Suitable (Overgrazed) Habitat	7.5	12.2	13.6	14.3	14.3	11.5	3.2	3.2
Suitable (Sparse) Habitat	24.7	15.4	20.1	19.4	19.4	20.1	27.6	27.6
Potential (Rank) Habitat	1.8	2.2	0.0	0.0	0.0	0.0	0.0	0.0
Scrub	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Secondary Woodland	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Not Suitable	54.1	55.2	54.5	54.5	54.5	54.5	53.8	53.8

The site East of Mount Road was one of the additional sites identified and added to the Jacobs baseline monitoring survey in 2009. Graph 6-20 shows the adult and web count data and Graph 6-21 illustrates the changes in percentage habitat cover at site 7a between 2009 and 2016.

7. Conclusion

In 2016, all sites were surveyed for adults, webs and habitat condition apart from site 7, site 3 and site 4a (adults only) due to access issues. The habitat types in Site 1, Blaen Cynon SAC, were considered by NRW not to have significantly changed since 2010 so were not mapped in 2016. For the other monitoring sites, site 5 had the most habitat classified as unsuitable condition, 68.5 %. Site 2a had the highest percentage of good condition habitat, 38.3 %, followed by site 6a with 22.5 %. Site 4 had the highest percentage of suitable but overgrazed habitat type, 44.4 %.

Webs were recorded on four sites in 2016 (2, 2a, 4 and 6). Sites 2 and 4 both supported high numbers of webs, with webs recorded for only the second time on site 6 since monitoring began in 2009. Site 6a had no webs recorded in 2016 for the first time since 2009 due to excessive grazing by ponies on the site.

Adult marsh fritillaries were recorded on three sites in 2016 (2, 4 and 7a). High numbers were recorded on sites 2 and 4 in comparison to other sites, although numbers are lower than those recorded in 2015. No marsh fritillaries have been recorded on site 5 since monitoring began in 2008. NRW did not carry out adult surveys on site 1 in 2016.

8. References

Asher, J. et al., 2001. *Millennium Atlas of Butterflies in Britain and Ireland.* s.l.:Oxford University Press.

Babtie, 1997. *Abergavenny to Hirwaun Dualling Environmental Statement,* s.l.: Unpublished Consultancy Report to Welsh Government.

Bulman, C. R., 2001. *Conservation biology of the marsh fritillary butterfly euphydryas aurinia. PhD Thesis.* [Online]
Available at: http://etheses.whiterose.ac.uk/454/1/uk_bl_ethos_394690.pdf
[Accessed 19th December 2016].

Bulman, C. R. et al., 2007. Minimum viable metapopulation size, extinction debt, and the conservation of a declining species. *Ecological Applications,* 17(5), pp. 1460-1473.

Butterfly Conservation, 2004. *The Marsh Fritillary needs your help. A guide to managing damp grassland.* [Online]
Available at: https://butterfly-conservation.org/files/habitat-marsh-fritillary.pdf
[Accessed 19th December 2016].

Countryside Council for Wales, 2003. *Priority Habitat of Wales: A Technical Guide.* s.l.:Cyngor Cefn Gwlad Cymru.

Countryside Council for Wales, 2008. *Core Management Plan Including Conservation Objectives for Blaen Cynon Special Area of Conservation (SAC).* [Online]
Available at:
https://www.naturalresources.wales/media/671013/Blaen%20Cynon%20core%20management%20plan.pdf
[Accessed 19th December 2016].

Fowles, A. P. & Smith, R. G., 2006. Mapping the habitat quality of patch networks for the marsh fritillary Euphydryas aurinia (Rottemburg, 1775) (Lepidoptera, Nymphalidae) in Wales. *Journal of Insect Conservation,* Volume 10, pp. 161-177.

Fox, R. et al., 2015. *The State of the UK's Butterflies 2015,* Wareham, Dorset: Butterfly Conservation and Centre for Ecology & Hydrology.

Hobson, R., Bourn, N. & Warren, M., 2002. *Conserving the Marsh Fritillary in Britain. British Wildlife.* [Online]
Available at: https://www.researchgate.net/publication/291767551_Conserving_the_Marsh_Fritillary_in_Britain
[Accessed 2016 December 2016].

Howe, L., Blackstock, T., Burrows, C. & Stevens, J., 2005. The Habitat Survey of Wales. *British Wildlife,* 16(3), pp. 153-162.

Jacobs UK Ltd, 2007. *Abergavenny to Hirwaun Dualling Section 6. Blaen Cynon SAC Appropriate Assessment. Stage 1, Screening: Finding of Significant Effects Report,* s.l.: Unpublished Consultancy Report to Welsh Government.

Met Office, 2016. *2016 weather summaries.* [Online]
Available at: http://www.metoffice.gov.uk/climate/uk/summaries/2016
[Accessed 19th December 2016].

Porter, K. & Ellis, S., 2011. Securing viable metapopulations of Marsh Fritillary butterfly, Euphydras aurinia, (Lepidoptera: Nymphalidae) in Northern England. *Journal Insect Conservation,* Volume 15, pp. 111-119.

Smee, M. et al., 2011. Butterflies on the brink: habitat requirements for declining populations of the marsh fritillary (Euphydryas aurinia) in SW England. *Journal Insect Conservation,* Volume 15, pp. 153-163.

Smith, R., 2005. *Strategic Assessment of the Marsh Fritillary Butterfly and its Habitat in Rhonnda Cynon Taff. Document Reference 2132c/1027,* s.l.: Earth Science Partnership.

Wahlberg, N., Klemetti, T., Selonen, V. & Hanski, I., 2002. Metapopulation structure and movements in five species of checkerspot butterflies. *Oecologia,* Volume 130, pp. 33-43.

Wales Biodiversity Partnership, 2015. *Section 42 Lists.* [Online]
Available at: https://www.biodiversitywales.org.uk/Section-42-Lists
[Accessed 19th December 2016].

Warren, M. S., 1994. The UK status and suspected metapopulation structure of a threatened European butterfly, the marsh fritillary Eurodryas aurinia. *Biological Conservation,* 67(3), pp. 239-249.

Wheeler, A. J., Smith, R. G. & Clark, M., 2000. *Population survey of the marsh fritillary in the vicinity of Hirwaun, Cynon Valley. CCW Contract Science. 374.* s.l.:Countryside Council for Wales.

Appendix A. Figures

Figure 1: Location of the Blaen Cynon SAC in relation to the A465 Scheme

Figure 2: Marsh Fritillary Upper Cynon Valley Functional Landscape Area

Figure 3: Location of Monitoring Programme Sites

Figure 4: Site 1 Blaen Cynon SAC

Figure 5: Site 2 Dderi Hir

Figure 6: Site 2a Ger-y-bont

Figure 7: Site 3 North Llwydcoed Crematorium

Figure 8: Site 4 Bryncarnau Grasslands

Figure 9: Site 4a South Bryncarnau Grasslands

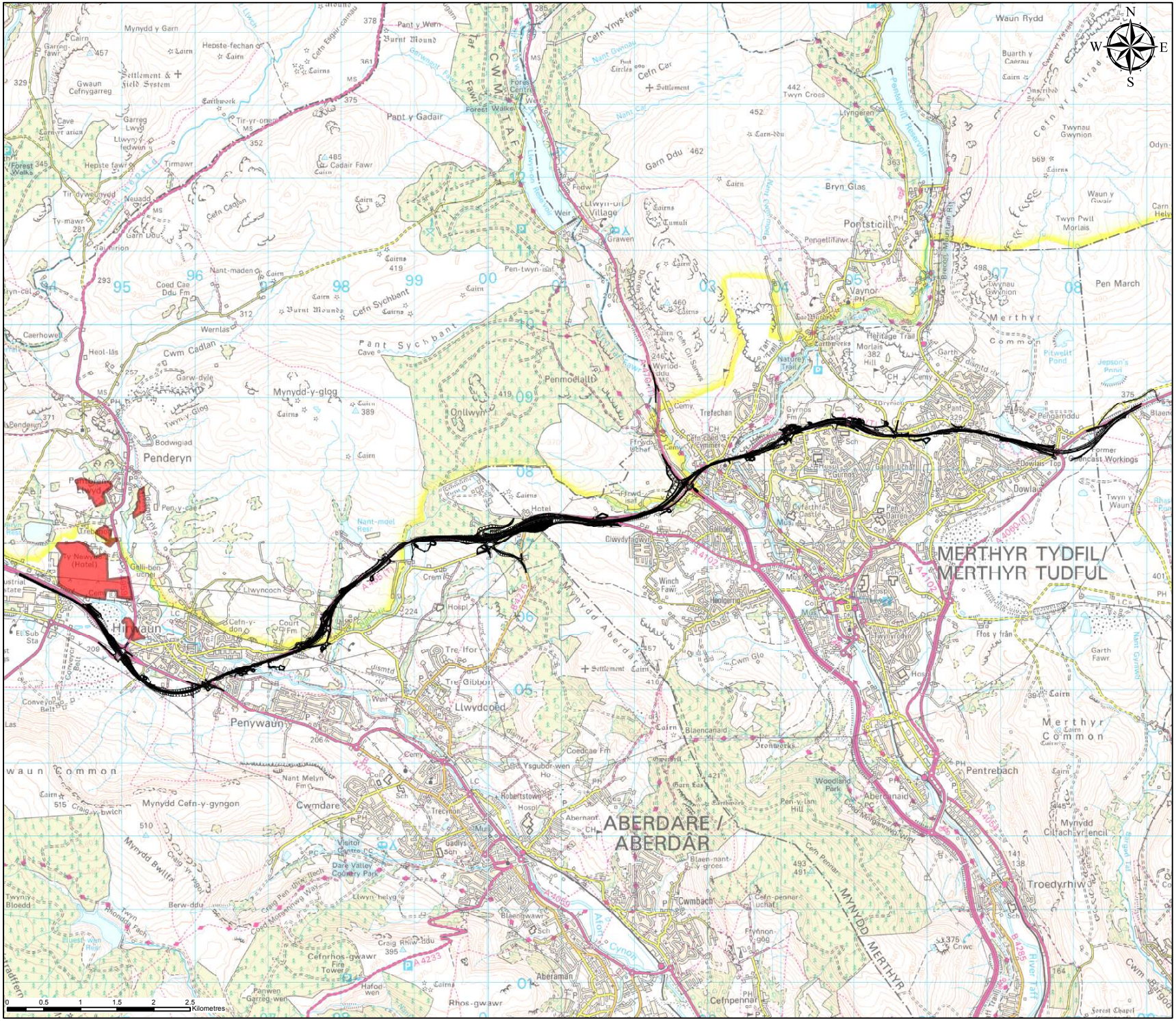
Figure 10: Site 5 Nr Playing Field

Figure 11: Site 6 Heol-y-Graig

Figure 12: Site 6a Halt Road

Figure 13: Site 7: Mount Road

Figure 14: Site 7a East of Mount Road



Legend

Scheme design fix

Blaen Cynon SAC

Rev.	Purpose	Date	Orig	Chk'd	Rev'd	App'd
0	ISSUE	DEC16	FL	LE	LE	GP

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: 02920 353200 Fax: 02920353222
www.jacobsbabtie.com

Client

Llywodraeth Cymru
Welsh Government

Project

A465 Abergavenny to HirwaunDualling - Section 5 & 6Blaen Cynon SAC: Marsh FritillaryMonitoring Programme Year 9

Title

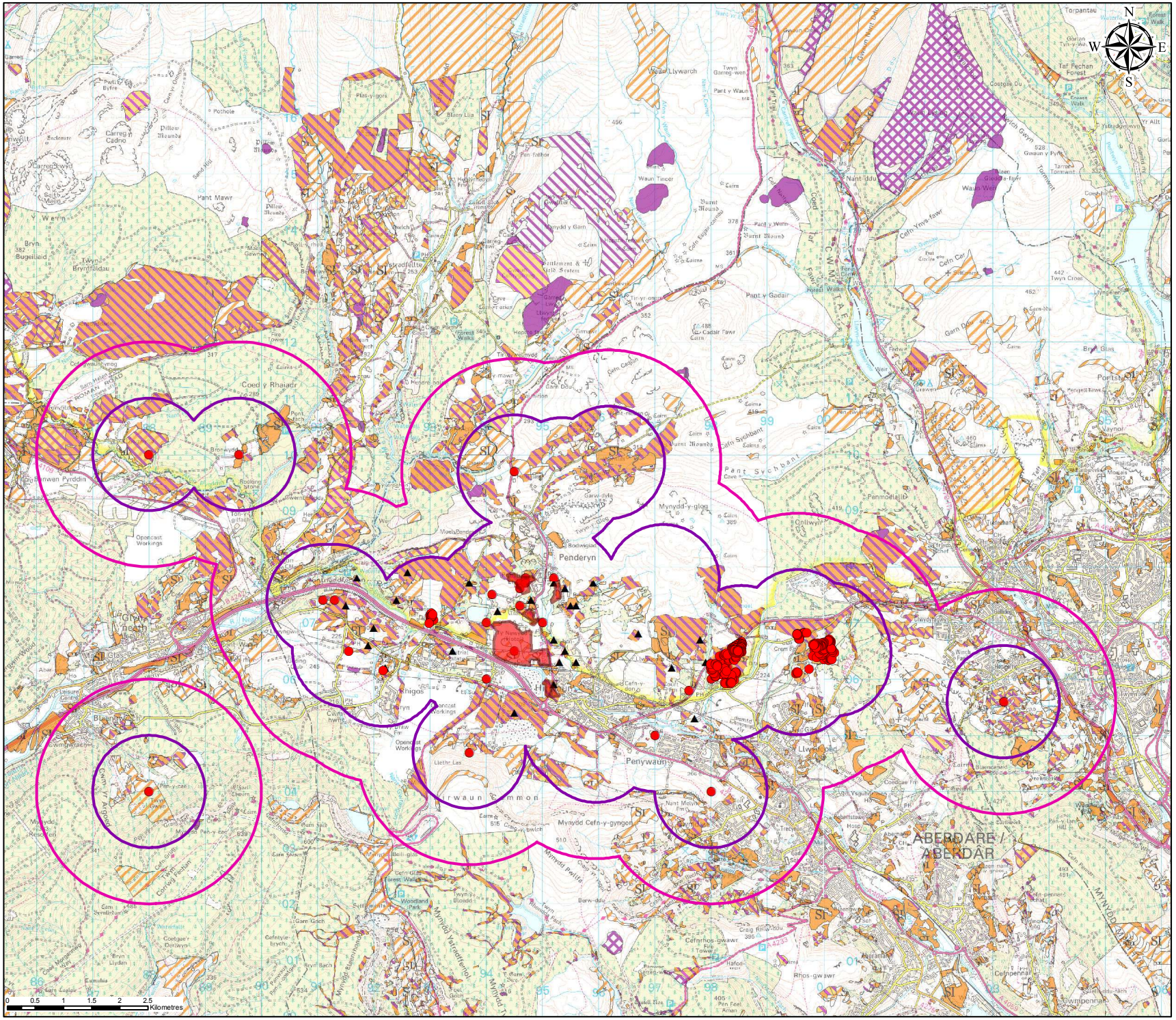
Location of the Blaen Cynon SAC in relation to the A465 Scheme

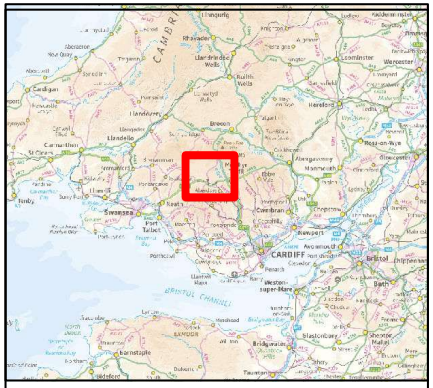
Figure	**Figure 1**		
Status	FINAL		
Scale	1:50,000 @ A3	Jacobs No.	B2191100

Drawing

B2191100_MF_2016_01

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office ©Crown copyright. All rights reserved. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Ordnance Survey Licence Number: GD27221





Legend

- Upper Cynon Functional Landscape Area (approx.)
- 1km core landscape area
- Blaen Cynon SAC
- Marsh Fritillary Recorded
- No Marsh Fritillary Recorded

Potential Suitable Habitat Areas (from CCW Phase 1 1997)

- Unimproved acid grassland
- Semi-improved acid grassland
- Unimproved neutral grassland
- Semi-improved neutral grassland
- Marshy grassland
- Wet dwarf shrub heath
- Wet heath/acid grassland
- Blanket sphagnum bog
- Wet modified bog
- Dry modified bog
- Valley fen
- Basin mire
- Flood plain mire

Rev.	Purpose	Date	Orig	Chk'd	Rev'd	App'd
0	ISSUE	DEC16	FL	LE	LE	GP

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: 02920 353200 Fax: 02920353222
www.jacobsbabtie.com

Client

Llywodraeth Cymru
Welsh Government

Project

A465 Abergavenny to HirwaunDualling - Section 5 & 6Blaen Cynon SAC: Marsh FritillaryMonitoring Programme Year 9

Title

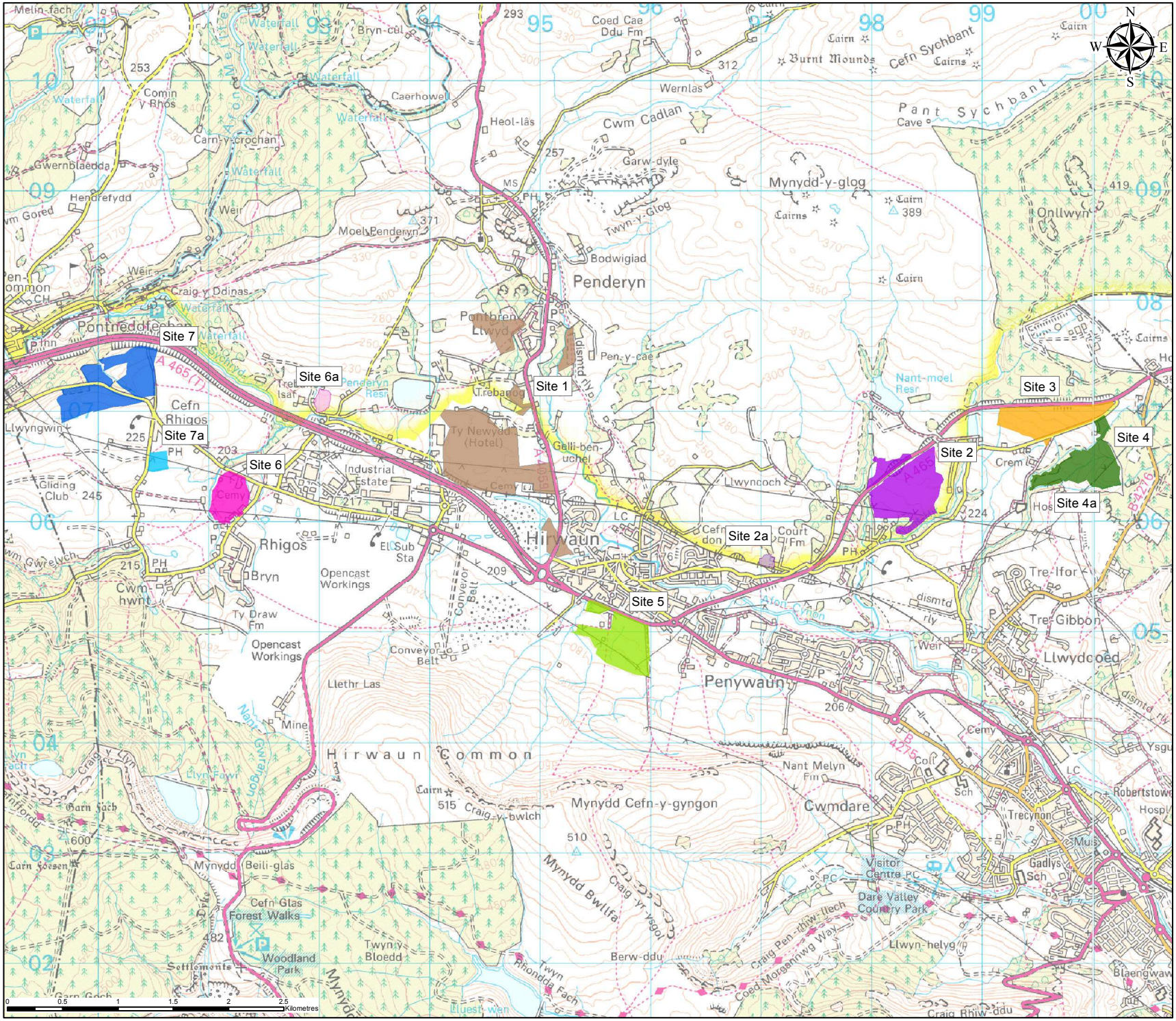
Marsh Fritillary Upper Cynon Valley Functional Landscape Area

Figure	**Figure 2**		
Status	FINAL		
Scale	1:65,000 @ A3	Jacobs No.	B2191100

Drawing

B2191100_MF_2016_02

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office ©Crown copyright. All rights reserved. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Ordnance Survey Licence Number: GD27221



Legend

Monitoring Programme Sites

Site Number

- Site 1
- Site 2
- Site 2a
- Site 3
- Site 4
- Site 5
- Site 6
- Site 6a
- Site 7
- Site 7a

Rev.	Purpose	Date	Orig	Chk'd	Rev'd	App'd
0	ISSUE	DEC16	FL	LE	LE	GP

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: 02920 353200 Fax: 02920353222
www.jacobsbabtie.com

Client

Llywodraeth Cymru
Welsh Government

Project

A465 Abergavenny to HirwaunDualling - Section 5 & 6Blaen Cynon SAC: Marsh FritillaryMonitoring Programme Year 9

Title

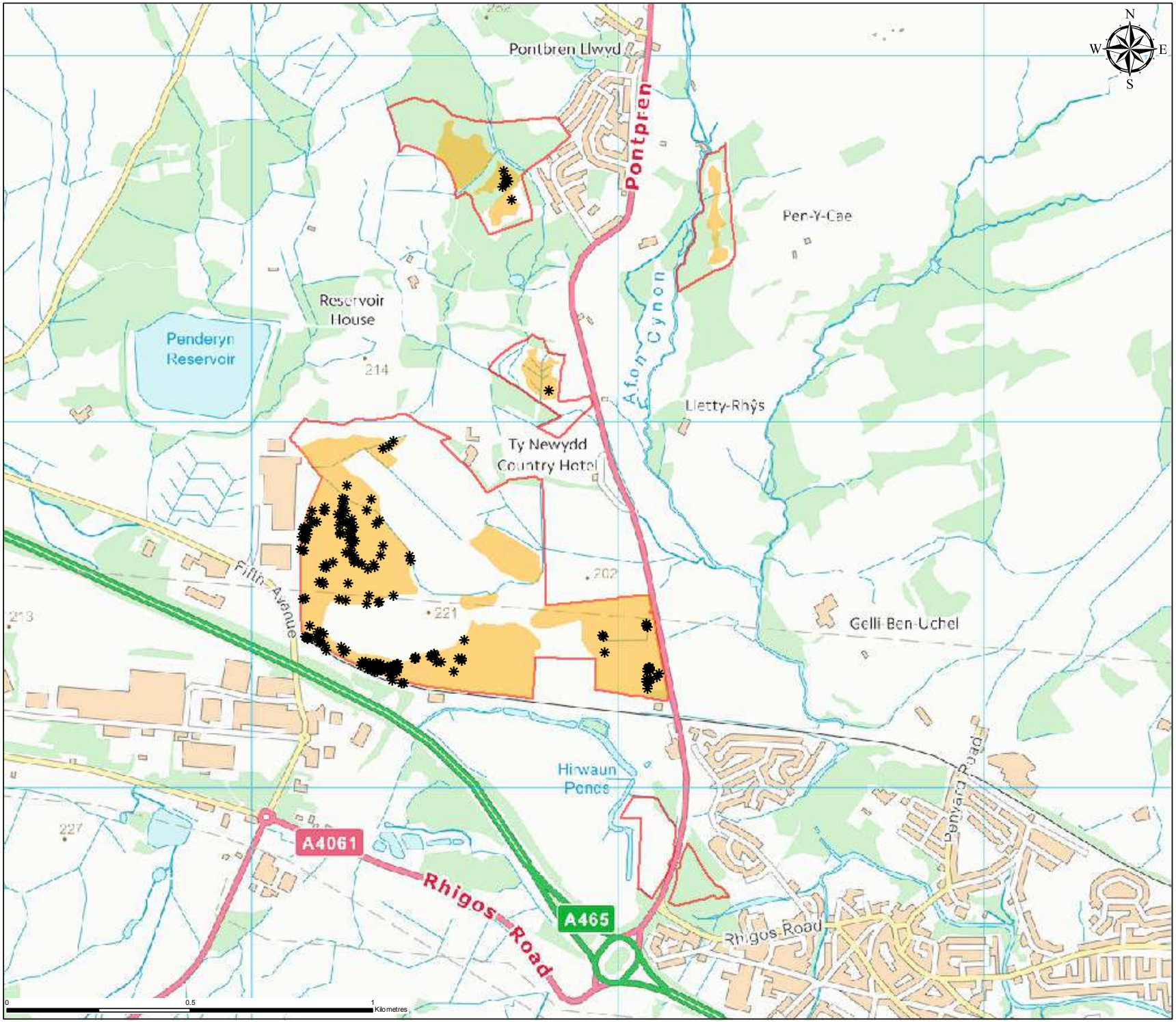
Location of Monitoring Programme Sites

Figure	**Figure 3**		
Status	FINAL		
Scale	1:33,098 @ A3	Jacobs No.	B2191100

Drawing

B2191100_MF_2016_03

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office ©Crown copyright. All rights reserved. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Ordnance Survey Licence Number: GD27221



Legend

- Blaen Cynon SAC
- Extent of SAC surveyed during 2016
- Marsh Fritillary Web

No habitat mapping or adult searches have been undertaken for 2016.

Rev.	Purpose	Date	Orig	Chk'd	Rev'd	App'd
0	ISSUE	FEB17	FL	LE	LE	GP

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: 02920 353200 Fax: 029 20353222
www.jacobsbabtie.com

Client

Llywodraeth Cymru
Welsh Government

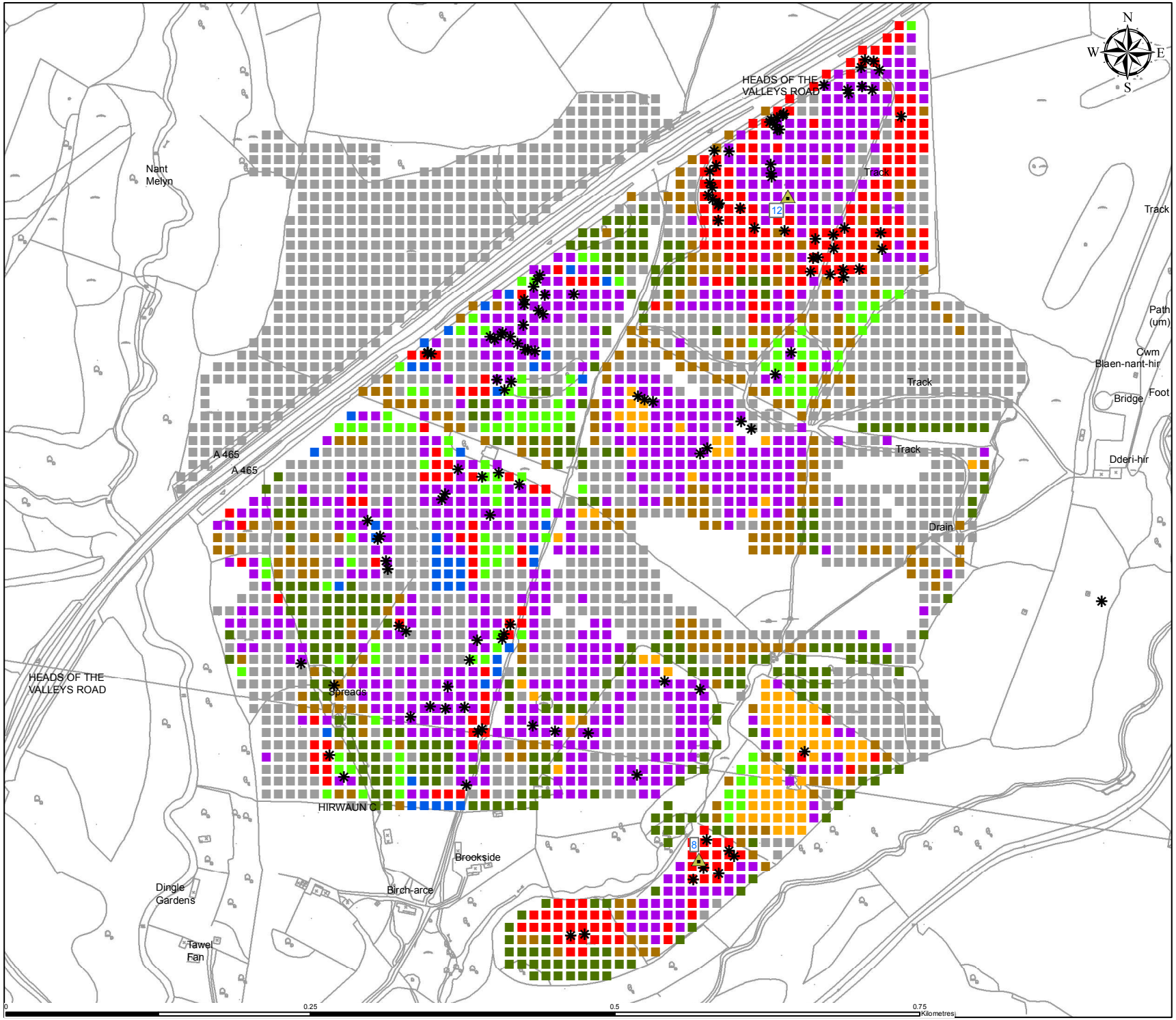
Project
A465 Abergavenny to HirwaunDualling - Section 5 & 6Blaen Cynon SAC: Marsh FritillaryMonitoring Programme Year 9

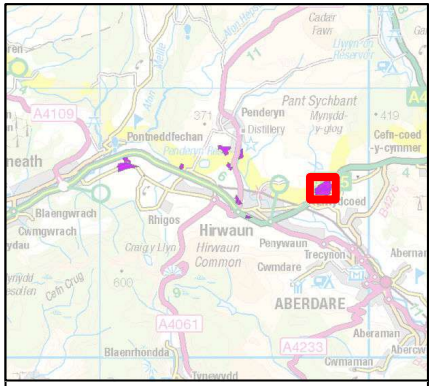
Title
Site 1 Blaen Cynon SAC

Figure	**Figure 4**		
Status	FINAL		
Scale	1:10,000 @ A3	Jacobs No.	B2191100

Drawing
B2191100_MF_2016_04

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office ©Crown copyright. All rights reserved. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Ordnance Survey Licence Number: GD27221





Legend

Marsh Fritillary Habitat Data Sept 2016

- Good Quality Habitat
- Suitable (Undergrazed) Habitat
- Suitable (Overgrazed) Habitat
- Suitable (Sparse) Habitat
- Potential (Rank) Habitat
- Scrub
- Secondary Woodland
- Not Suitable

Marsh Fritillary Adult Search 2016

- Marsh Fritillary Web
- Marsh Fritillary
- Web count
- Adult count

Labels are only shown where over 5 adult or webs have been recorded at a single point

Rev.	Purpose	Date	Orig	Chk'd	Rev'd	App'd
0	ISSUE	DEC16	FL	LE	LE	GP

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: 02920 353200 Fax: 02920353222
www.jacobsbabtie.com

Client

Llywodraeth Cymru
Welsh Government

Project

A465 Abergavenny to HirwaunDualling - Section 5 & 6Blaen Cynon SAC: Marsh FritillaryMonitoring Programme Year 9

Title

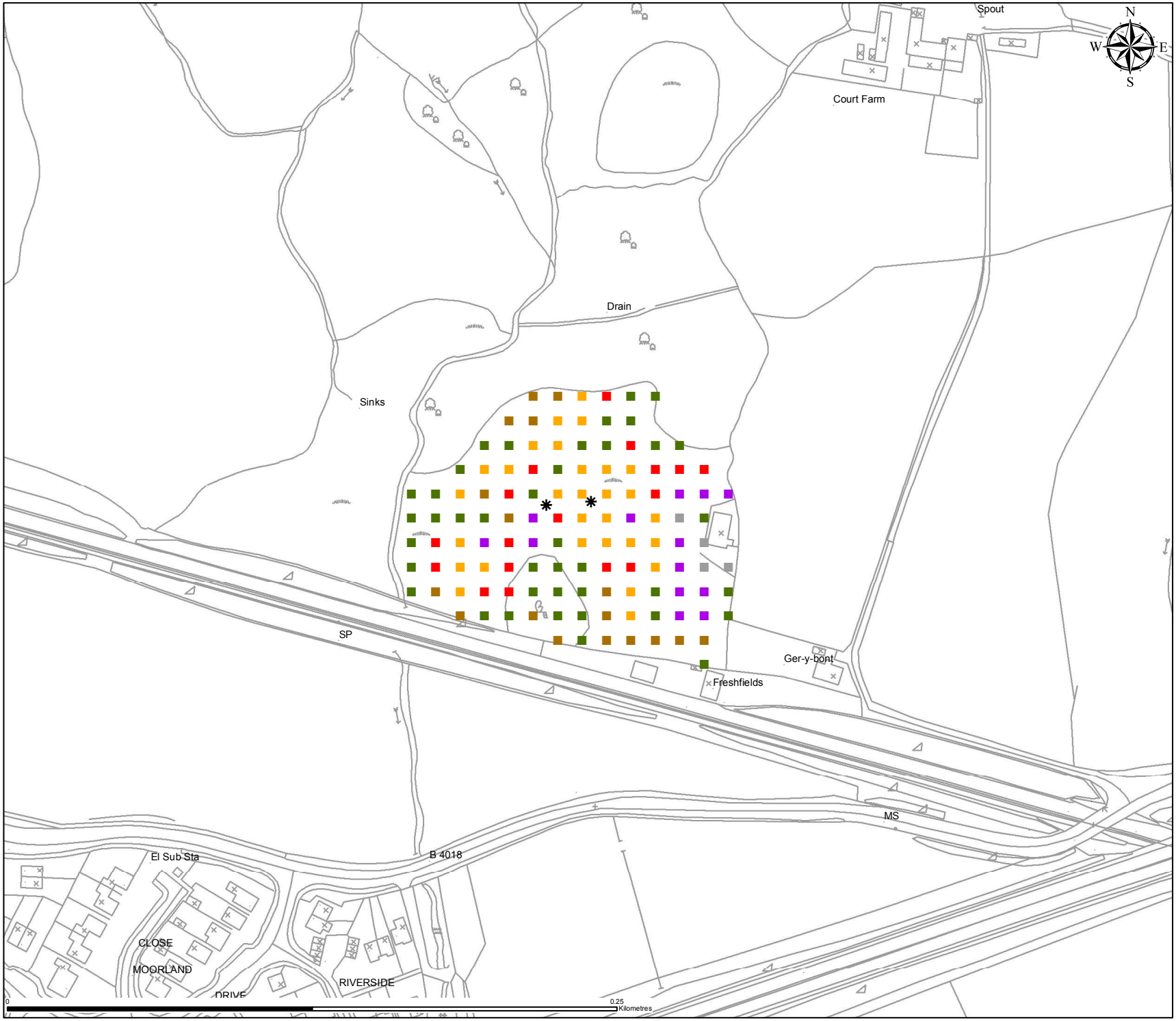
Site 2 Dderi Hir

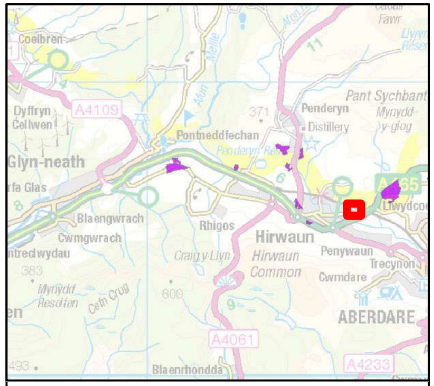
Figure	**Figure 5**		
Status	DRAFT		
Scale	1:3,000 @ A3	Jacobs No.	B2191100

Drawing

B2191100_MF_2016_05

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office ©Crown copyright. All rights reserved. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Ordnance Survey Licence Number: GD27221





Legend

Marsh Fritillary Habitat Data Sept 2016

- Good Quality Habitat
- Suitable (Undergrazed) Habitat
- Suitable (Overgrazed) Habitat
- Suitable (Sparse) Habitat
- Potential (Rank) Habitat
- Scrub
- Secondary Woodland
- Not Suitable

Marsh Fritillary Adult Search 2016

- Marsh Fritillary Web
- No adults recorded
- # Web count

Labels are only shown where over 5 adult or webs have been recorded at a single point

Rev.	Purpose	Date	Orig	Chk'd	Rev'd	App'd
0	ISSUE	DEC16	FL	LE	LE	GP

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: 02920 353200 Fax: 02920353222
www.jacobsbabtie.com

Client

Llywodraeth Cymru
Welsh Government

Project

A465 Abergavenny to HirwaunDualling - Section 5 & 6Blaen Cynon SAC: Marsh FritillaryMonitoring Programme Year 9

Title

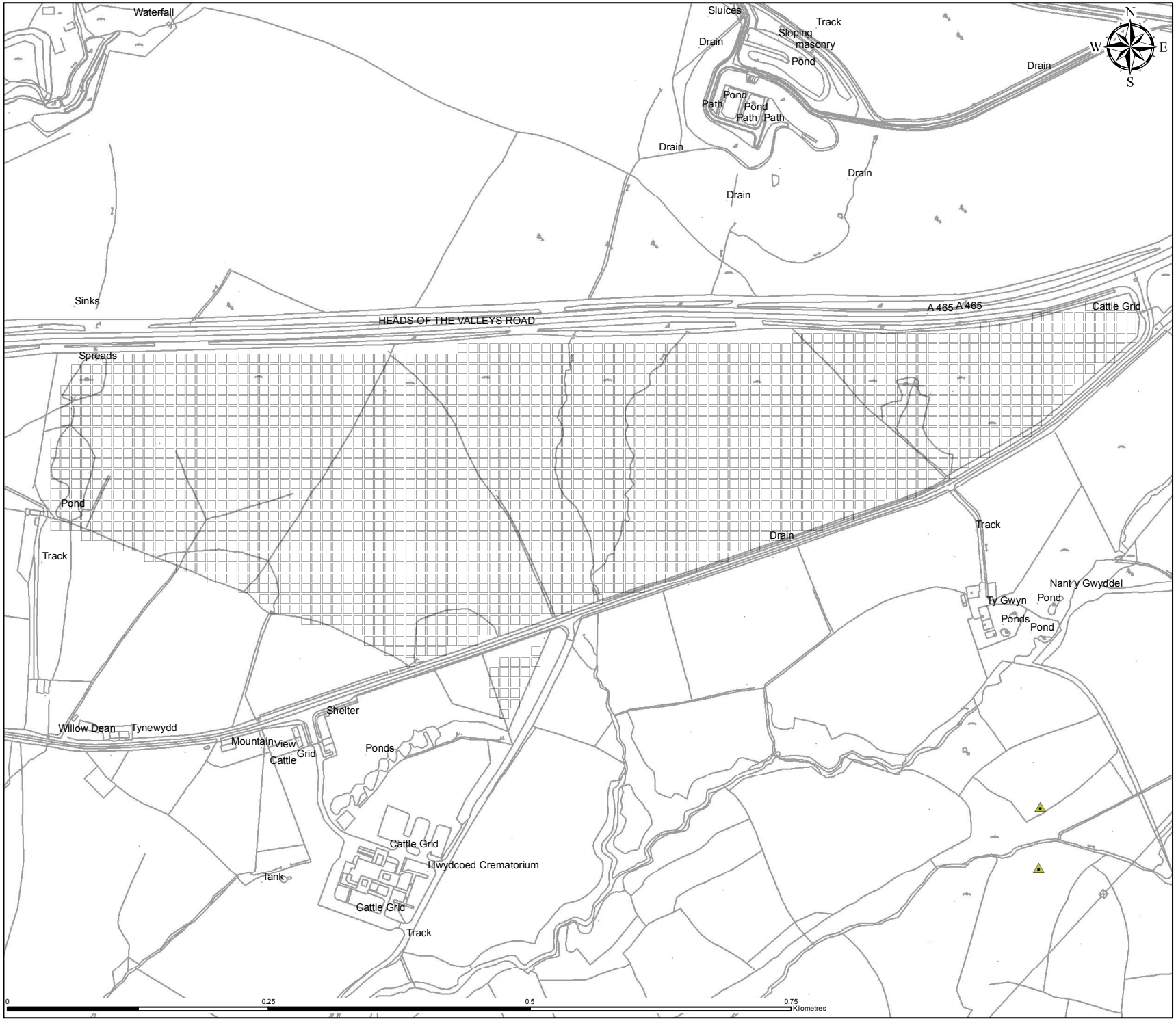
Site 2a Ger-y-bont

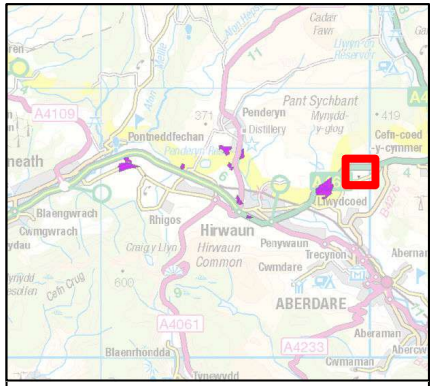
Figure	**Figure 6**		
Status	DRAFT		
Scale	1:1,500 @ A3	Jacobs No.	B2191100

Drawing

B2191100_MF_2016_06

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office ©Crown copyright. All rights reserved. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Ordnance Survey Licence Number: GD27221





Legend

Marsh Fritillary Habitat Data Sept 2016

☐ No access for 2016 surveys

Marsh Fritillary Adult Search 2016

No access for 2016 surveys

Rev.	Purpose	Date	Orig	Chk'd	Rev'd	App'd
0	ISSUE	DEC16	FL	LE	LE	GP

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: 02920 353200 Fax: 02920353222
www.jacobsbabtie.com

Client

Llywodraeth Cymru
Welsh Government

Project

A465 Abergavenny to HirwaunDualling - Section 5 & 6Blaen Cynon SAC: Marsh FritillaryMonitoring Programme Year 9

Title

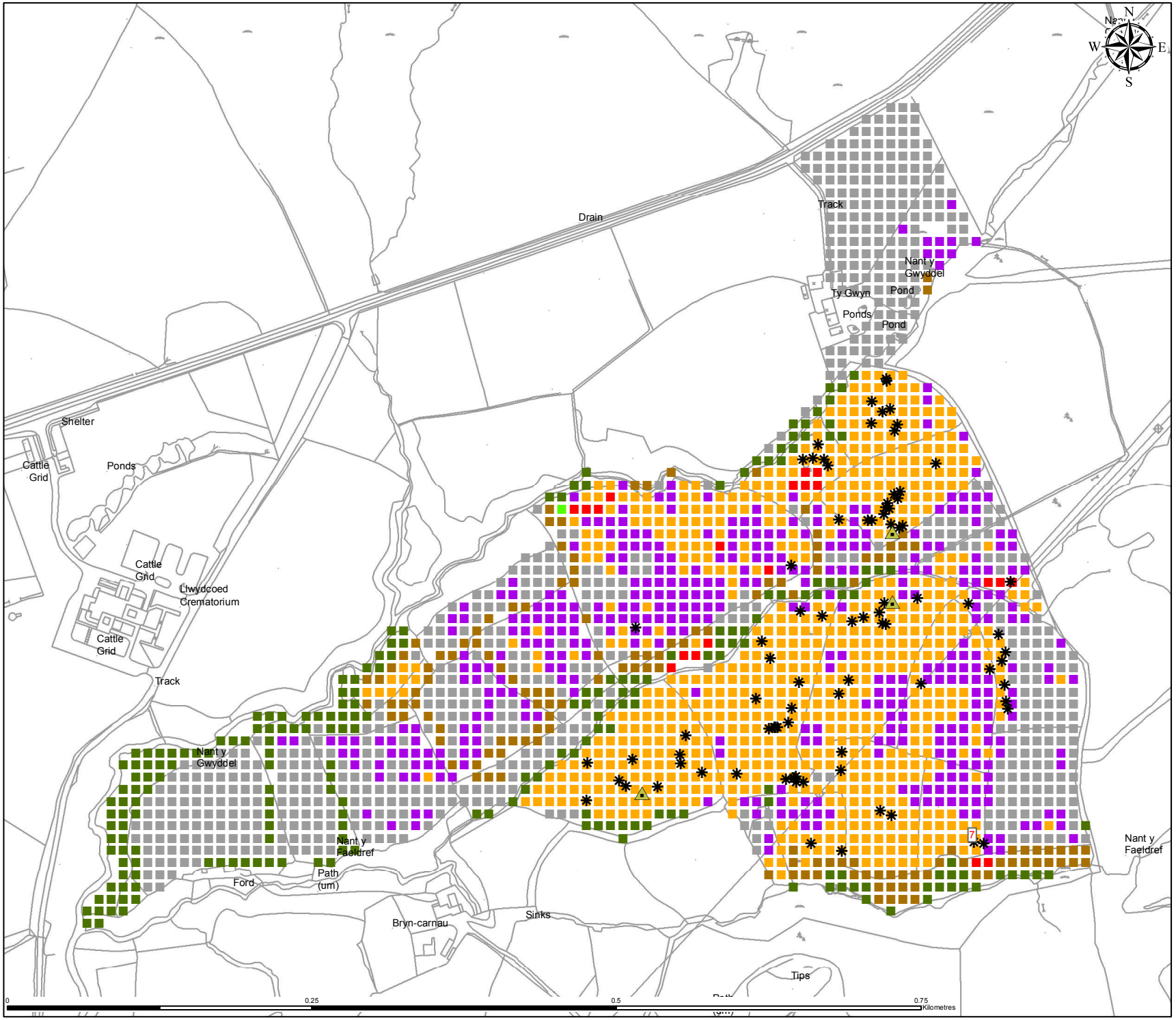
Site 3 North Llwydcoed Crematorium

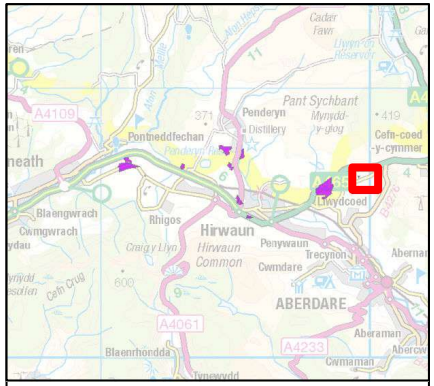
Figure	**Figure 7**		
Status	DRAFT		
Scale	1:3,500 @ A3	Jacobs No.	B2191100

Drawing

B2191100_MF_2016_07

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office ©Crown copyright. All rights reserved. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Ordnance Survey Licence Number: GD27221





Legend

Marsh Fritillary Habitat Data Sept 2016

- Good Quality Habitat
- Suitable (Undergrazed) Habitat
- Suitable (Overgrazed) Habitat
- Suitable (Sparse) Habitat
- Potential (Rank) Habitat
- Scrub
- Secondary Woodland
- Not Suitable

Marsh Fritillary Adult Search 2016

- Marsh Fritillary
- Marsh Fritillary Web
- # Web count
- # Adult count

Labels are only shown where over 5 adult or webs have been recorded at a single point

Rev.	Purpose	Date	Orig	Chk'd	Rev'd	App'd
0	ISSUE	DEC16	FL	LE	LE	GP

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: 02920 353200 Fax: 02920353222
www.jacobsbabtie.com

Client

Llywodraeth Cymru
Welsh Government

Project

A465 Abergavenny to HirwaunDualling - Section 5 & 6Blaen Cynon SAC: Marsh FritillaryMonitoring Programme Year 9

Title

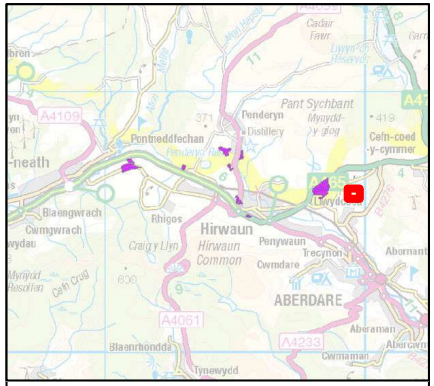
Site 4 Bryncarnau Grasslands

Figure	**Figure 8**		
Status	DRAFT		
Scale	1:3,000 @ A3	Jacobs No.	B2191100

Drawing

B2191100_MF_2016_08

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office ©Crown copyright. All rights reserved. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Ordnance Survey Licence Number: GD27221



Legend

Marsh Fritillary Habitat Data Sept 2016

☐ No access for 2016 surveys

Marsh Fritillary Adult Search 2016

No access for 2016 web surveys
0 adults seen in 2016 survey

Rev.	Purpose	Date	Orig	Chk'd	Rev'd	App'd
0	ISSUE	DEC16	FL	LE	LE	GP

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: 02920 353200 Fax: 02920353222
www.jacobsbabtie.com

Client

Llywodraeth Cymru
Welsh Government

Project

A465 Abergavenny to HirwaunDualling - Section 5 & 6Blaen Cynon SAC: Marsh FritillaryMonitoring Programme Year 9

Title

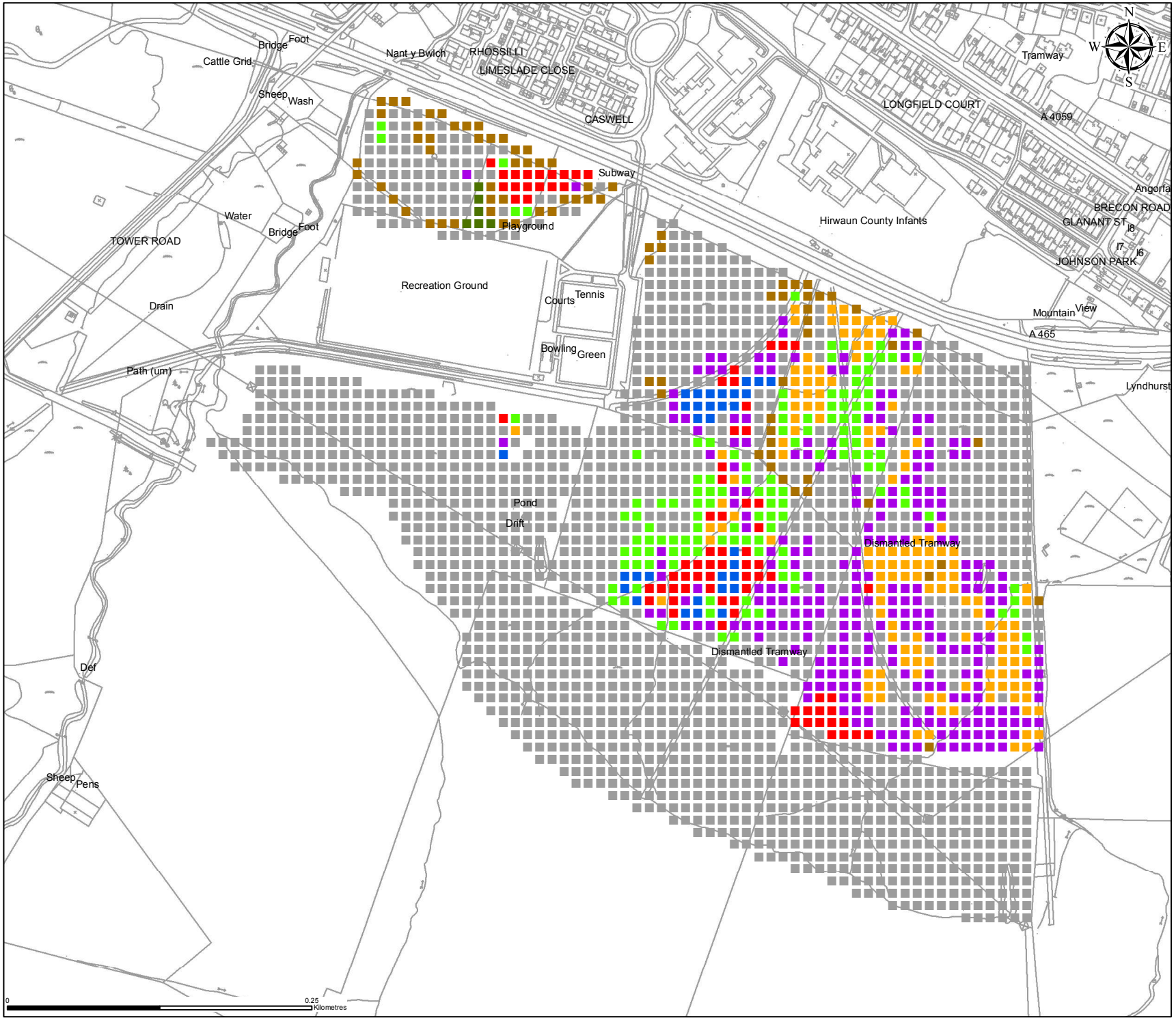
Site 4a South Bryncarnau Grasslands

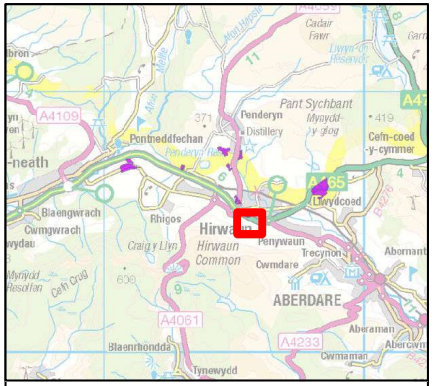
Figure	**Figure 9**		
Status	DRAFT		
Scale	1:1,500 @ A3	Jacobs No.	B2191100

Drawing

B2191100_MF_2016_09

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office ©Crown copyright. All rights reserved. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Ordnance Survey Licence Number: GD27221





Legend

Marsh Fritillary Habitat Data Sept 2016

- Good Quality Habitat
- Suitable (Undergrazed) Habitat
- Suitable (Overgrazed) Habitat
- Suitable (Sparse) Habitat
- Potential (Rank) Habitat
- Scrub
- Secondary Woodland
- Not Suitable

Marsh Fritillary Adult Search 2016

No adults or webs recorded

Rev.	Purpose	Date	Orig	Chk'd	Rev'd	App'd
0	ISSUE	DEC16	FL	LE	LE	GP

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: 02920 353200 Fax: 02920353222
www.jacobsbabtie.com

Client

Llywodraeth Cymru
Welsh Government

Project

A465 Abergavenny to HirwaunDualling - Section 5 & 6Blaen Cynon SAC: Marsh FritillaryMonitoring Programme Year 9

Title

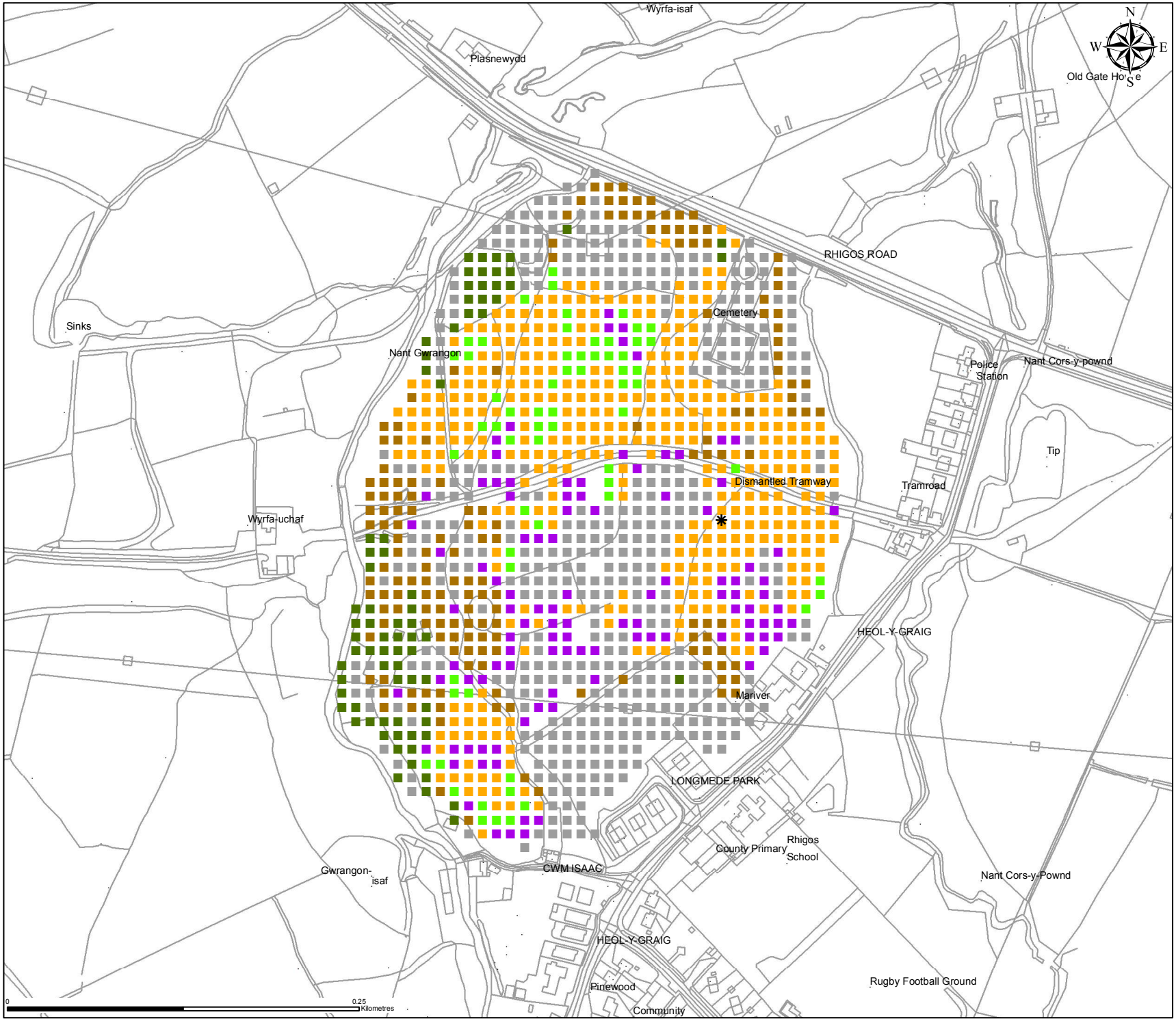
Site 5 Nr Playing Field

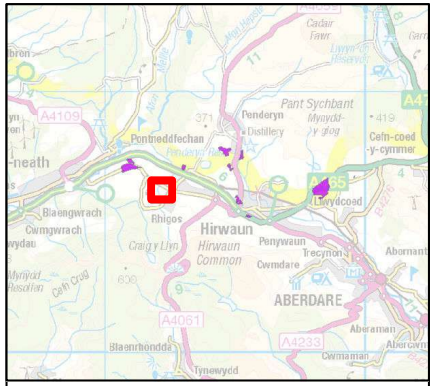
Figure	**Figure 10**		
Status	DRAFT		
Scale	1:3,000 @ A3	Jacobs No.	B2191100

Drawing

B2191100_MF_2016_10

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office ©Crown copyright. All rights reserved. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Ordnance Survey Licence Number: GD27221





Legend

Marsh Fritillary Habitat Data Sept 2016

- Good Quality Habitat
- Suitable (Undergrazed) Habitat
- Suitable (Overgrazed) Habitat
- Suitable (Sparse) Habitat
- Potential (Rank) Habitat
- Scrub
- Secondary Woodland
- Not Suitable

Marsh Fritillary Adult Search 2016

- Marsh Fritillary Web

No adults recorded

Rev.	Purpose	Date	Orig	Chk'd	Rev'd	App'd
0	ISSUE	DEC16	FL	LE	LE	GP

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: 02920 353200 Fax: 02920353222
www.jacobsbabtie.com

Client

Llywodraeth Cymru
Welsh Government

Project

A465 Abergavenny to HirwaunDualling - Section 5 & 6Blaen Cynon SAC: Marsh FritillaryMonitoring Programme Year 9

Title

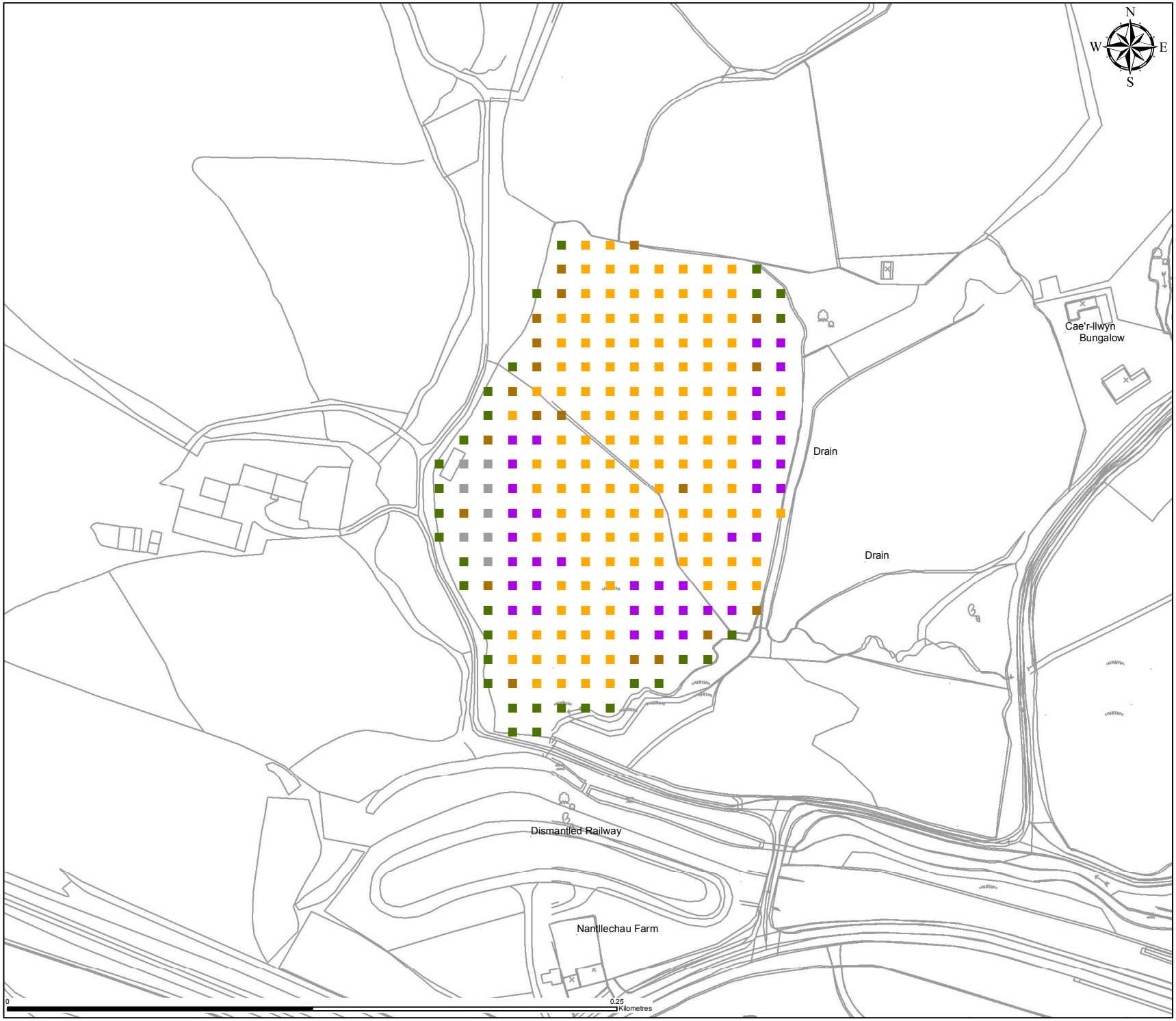
Site 6 Heol-y-Graig

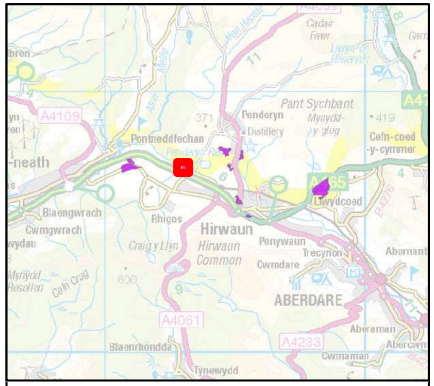
Figure	**Figure 11**		
Status	DRAFT		
Scale	1:2,600 @ A3	Jacobs No.	B2191100

Drawing

B2191100_MF_2016_11

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office ©Crown copyright. All rights reserved. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Ordnance Survey Licence Number: GD27221





Legend

Marsh Fritillary Habitat Data Sept 2016

- Good Quality Habitat
- Suitable (Undergrazed) Habitat
- Suitable (Overgrazed) Habitat
- Suitable (Sparse) Habitat
- Potential (Rank) Habitat
- Scrub
- Secondary Woodland
- Not Suitable

Marsh Fritillary Adult Search 2016

No adults or webs recorded

Rev.	Purpose	Date	Orig	Chk'd	Rev'd	App'd
0	ISSUE	DEC16	FL	LE	LE	GP

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: 02920 353200 Fax: 02920353222
www.jacobsbabtie.com

Client

Llywodraeth Cymru
Welsh Government

Project

A465 Abergavenny to HirwaunDualling - Section 5 & 6Blaen Cynon SAC: Marsh FritillaryMonitoring Programme Year 9

Title

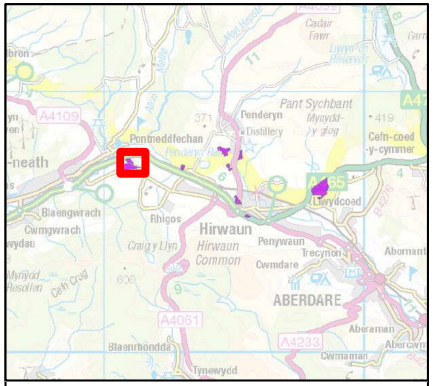
Site 6a Halt Road

Figure	**Figure 12**		
Status	DRAFT		
Scale	1:1,500 @ A3	Jacobs No.	B2191100

Drawing

B2191100_MF_2016_12

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office ©Crown copyright. All rights reserved. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Ordnance Survey Licence Number: GD27221



Legend

Marsh Fritillary Habitat Data Sept 2016

☐ No access for 2016 surveys

Marsh Fritillary Adult Search 2016

No access for 2016 surveys

Rev.	Purpose	Date	Orig	Chk'd	Rev'd	App'd
0	ISSUE	DEC16	FL	LE	LE	GP

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: 02920 353200 Fax: 02920353222
www.jacobsbabtie.com

Client

Llywodraeth Cymru
Welsh Government

Project

A465 Abergavenny to HirwaunDualling - Section 5 & 6Blaen Cynon SAC: Marsh FritillaryMonitoring Programme Year 9

Title

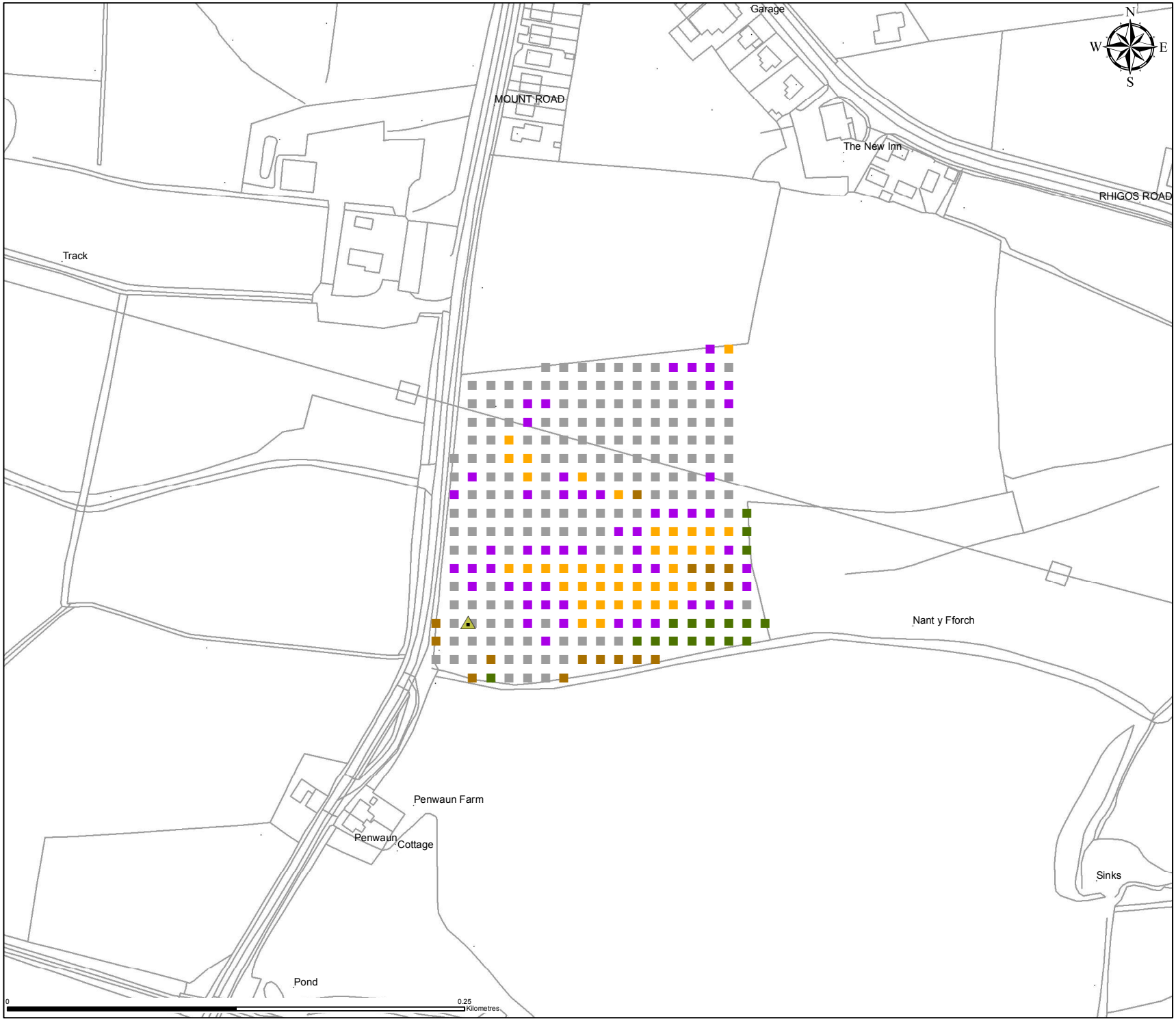
Site 7 Mount Road

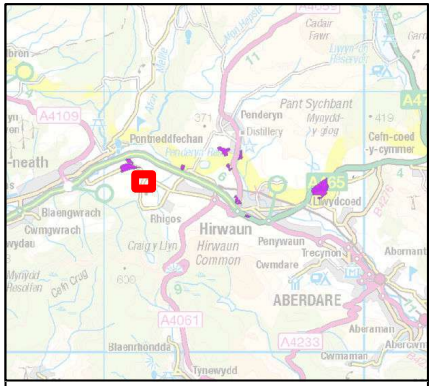
Figure	**Figure 13**		
Status	DRAFT		
Scale	1:3,000 @ A3	Jacobs No.	B2191100

Drawing

B2191100_MF_2016_13

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office ©Crown copyright. All rights reserved. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Ordnance Survey Licence Number: GD27221





Legend

Marsh Fritillary Habitat Data Sept 2016

- Good Quality Habitat
- Suitable (Undergrazed) Habitat
- Suitable (Overgrazed) Habitat
- Suitable (Sparse) Habitat
- Potential (Rank) Habitat
- Scrub
- Secondary Woodland
- Not Suitable

Marsh Fritillary Adult Search 2016

- Marsh Fritillary

No webs recorded

Rev.	Purpose	Date	Orig	Chk'd	Rev'd	App'd
0	ISSUE	DEC16	FL	LE	LE	GP

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: 02920 353200 Fax: 02920353222
www.jacobsbabtie.com

Client

Llywodraeth Cymru
Welsh Government

Project

A465 Abergavenny to HirwaunDualling - Section 5 & 6Blaen Cynon SAC: Marsh FritillaryMonitoring Programme Year 9

Title

Site 7a East of Mount Road

Figure	**Figure 14**		
Status	DRAFT		
Scale	1:2,000 @ A3	Jacobs No.	B2191100

Drawing

B2191100_MF_2016_14

This map is reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office ©Crown copyright. All rights reserved. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Ordnance Survey Licence Number: GD27221

Appendix B. Blaen Cynon SAC

B.1 The Site

The Blaen Cynon SAC is situated within the Upper Cynon Valley and it consists of two SSSI's (Cors Bryn –y–Gaer SSSI, Woodland Park and Pontpren SSSI). It is made up of five separate parcels of land, which extend from the north of Hirwaun to the southern sections of Penderyn (see Figure 1).

- *Grid Reference: SN946066.*
- *Unitary Authority: Rhondda Cynon Taf.*
- *Area: 66.83ha.*
- *Annex I habitats that are a primary reason for selection of this site: Not applicable.*
- *Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: Not applicable.*
- *Annex II species that are a primary reason for selection of this site: 1065 Marsh fritillary butterfly Euphydryas (Eurodryas, Hypodryas) aurinia. Blaen Cynon contains an extensive complex of damp pastures and heaths supporting the largest metapopulation of marsh fritillary Euphydryas aurinia on the southern edge of the Brecon Beacons National Park.*
- *Annex II species present as a qualifying feature, but not a primary reason for site selection: Not applicable.*

B.2 Conservation Objectives

The following information on the Conservation Objectives for the Marsh Fritillary have been taken directly from the Countryside Council for Wales (now NRW) Core Management Plan for the Blaen Cynon SAC (Countryside Council for Wales, 2008).

Conservation Objective for Feature 1: Marsh fritillary butterfly *Euphydryas (Eurodryas Hypodryas) aurinia* (EU Species Code: 1065).

B.3 Vision for feature 1

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied.

- *The site will contribute towards supporting a sustainable metapopulation of the marsh fritillary in the Penderyn/Hirwaun area. This will require a minimum of 50 ha of suitable habitat, of which at least 10 ha must be in good condition, although not all is expected to be found within the SAC. Some will be on nearby land within a radius of about 2 km.*
- *The population will be viable in the long term, acknowledging the extreme population fluctuations of the species.*
- *A minimum of 30 % of the total site area will be grassland suitable for supporting marsh fritillary. (As the total area of the SAC is 66.62 ha, 30 % represents approximately 20 ha.).*
- *At least 40 % of the suitable habitat (approximately 8 ha) must be in optimal condition for breeding marsh fritillary.*
- *Suitable marsh fritillary habitat is defined as stands of grassland where Succisa pratensis is present and where scrub more than 1 metre tall covers no more than 10 % of the stands.*
- *Optimal marsh fritillary breeding habitat will be characterised by grassland where the vegetation height is 10-20 cm, with abundant purple moor-grass Molinia caerulea, frequent "large-leaved" devil's-bit scabious Succisa pratensis suitable for marsh fritillaries to lay their eggs and only occasional scrub. In peak years, a density of 200 larval webs per hectare of optimal habitat will be found across the site.*

B.4 Performance indicators for feature 1

The performance indicators form part of the conservation objective and the assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators.

Table 8.1 : Performance indicators for feature condition

Attribute	Attribute rationale and other comments	Specified limits
A1. Density of larval webs	Larval web density in a 'good' year for marsh fritillary has been identified as a measurable performance indicator of the population. During peaks in the population cycle a density of 200 webs per hectare of suitable habitat is an appropriate target to set as defining favourable condition for strong populations. Wide fluctuations in abundance occur, with dramatic crashes in population size occurring every ten years or so. Recovery from these crashes may take 4 or 5 yrs.	Upper limit: not required Lower limit: in one year in six the number of larval webs is estimated to be 200 per hectare of Good Condition habitat.

Table 8.2 : Performance indicators for factors affecting the future

Factor	Factor rationale and other comments	Operational limits
F1. Extent and quality of the marshy grassland as habitat for marsh fritillary.	The marsh fritillary is a highly localised and sedentary butterfly that inhabits unimproved Molinia grassland in the lowlands. It has an annual life-cycle and feeds as a larva on Succisa pratensis, especially on large-leaved plants that are growing amongst vegetation that is between 10 and 20 cm tall in late summer / autumn. The larvae over-winter communally amongst litter in such situations and the shelter provided by leaf litter and tussocks is considered to be important. Approximately 50 ha of habitat is required to maintain the population in the long term, with at least 10 ha is good condition. Not all is expected to be within the SAC. The operational limits reflect the minimum contribution of the Blaen Cynon SAC towards the favourable conservation status of the species in the Hirwaun / Penderyn area. Definition of Good Condition marsh fritillary habitat Grassland, with Molinia abundant where, for at least 80 % of sampling points, the vegetation height is within the range of 10 to 20 cm (when measured using a Boorman's disc) and Succisa pratensis is present within a 1 m radius. Scrub (>0.5 metres tall) covers no more than 10 % of area Definition of Suitable marshy grassland Stands of grassland where Succisa pratensis is present at lower frequencies but still widely distributed (>5 % of sampling points) throughout the habitat patch and in which scrub (>0.5 metre tall) covers no more than 25 % of area. Alternatively, Succisa may be present at high density in close-cropped swards. [note: Available habitat is the total of Good Condition and Suitable habitat]	20 hectares of Available marshy grassland, including: 8 hectares of Good Condition marsh fritillary habitat Within Areas 1, 2, 3 and 4 (Cors y Gaer SSSI) 50 % of the vegetation meets the following criteria: Within a 50 cm radius: Molinia is present. AND The cover of Succisa is 10 % or greater. AND The vegetation height is between 10- 20 cm when measured using a Boorman's disc. AND The cover of Juncus spp. does not exceed 50 %.

Appendix C. 2016 Weather Conditions

Table 8.3 : 2015 Weather Conditions

Date	Survey	Site	Temperature	Precipitation	Wind	Cloud cover
06/06/2016	Adults	2	15	None	1	30 %
16/06/2016	Adults	6a	20	None	1	80 %
17/06/2016	Adults	6	13	Light	1	95 %
27/06/2016	Adults	4, 4a, 5, 7a	18	None	2	50 %
30/06/2016	Adults	2, 2a, 5	13	None	1	90 %
01/07/2016	Adults	2, 3	11	None	2	70 %
12/09/2016	Webs	4	14	Light	2	100 %
13/09/2016	Webs	6	20	None / Heavy	1	90 %
14/09/2016	Webs	5, 6, 7a	20	None	1	0 %
15/09/2016	Webs	6a	16	None	1	50 %
21/09/2016	Webs	2	14	None	1	80 %
27/09/2016	Webs	2a, 5	22	Light	1	40 %

Habitat mapping was carried out in conjunction with the web counts in September 2016.

Page intentionally left blank

Welsh Government

A465 Heads of the Valleys Dualling - Sections 5 and 6 - Dowlais Top to Hirwaun

Appendix 11J - Statutory Designated Site Citations

Rev 0

July 2017

Final

Summary

This technical report provides the citation references for the statutory designated sites for nature conservation located within the respective study areas of the proposed scheme.

Two Special Areas of Conservation (SAC) are located within 2 km of the proposed scheme (ES Volume 3 Figure 11.1): the Blaen Cynon SAC; and the Coeddydd Nedd a Melte SAC.

One SAC designated for bat species is located within 30 km of the proposed scheme (ES Volume 3 Figure 11.1): Usk Bat Sites SAC.

Eleven Sites of Special Scientific Interest (SSSI) are located within 2 km of the proposed scheme (ES Volume 3 Figure 11.1):

- Dyffrynoedd Nedd a Mellte a Moel Penderyn;
- Cors Bryn-y-Gaer (part of Blaen Cynon SAC);
- Woodland Park and Pontpren (part of Blaen Cynon SAC);
- Tir Mawr a Dderi Hir, Llwydcoed;
- Bryncarnau Grasslands, Llwydcoed;
- Cwm Glo a Glyndyrys;
- Penmoelallt;
- Daren Fach;
- Cwm Taf Fechan Woodlands;
- Nant Glais Caves; and
- Lower House Stream Section.

The citations for these sites are presented in order of importance and then running west to east, following chainage direction.

1. Coedydd Nedd a Mellte SAC

(taken from - http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUcode=UK0030141)

Site details

Country	Wales
Unitary Authority	East Wales
Centroid*	SN919093
Latitude	51.77222222
Longitude	-3.567222222
SAC EU code	UK0030141
Status	Designated Special Area of Conservation (SAC)
Area (ha)	376.32

* This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.

General site character

Inland water bodies (Standing water, Running water) (2.6%)
Heath, Scrub, Maquis and Garrigue, Phygrana (8.5%)
Dry grassland, Steppes (7.4%)
Humid grassland, Mesophile grassland (1%)
Improved grassland (0.2%)
Broad-leaved deciduous woodland (76.9%)
Coniferous woodland (2.1%)
Inland rocks, Screes, Sands, Permanent Snow and ice (0.9%)
Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites) (0.4%)

Location of Coedydd Nedd a Mellte SAC/SCI/cSAC

Annex I habitats that are a primary reason for selection of this site

91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles

Coedydd Nedd a Mellte is a very large and diverse example of **old sessile oak wood** in south Wales. The woods extend along a series of deeply incised valleys and ravines, and contain complex mosaics of sessile oak *Quercus petraea* woodland, ash *Fraxinus excelsior* woodland (some of which is referable to Annex I type **9180** ***Tilio-Acerion*** **forests of slopes, screes and ravines**), and transitions to lowland woodland types. The whole site is biologically rich, with many woodland plant communities represented and rich bryophyte and lichen assemblages. Notable higher plant species include wood fescue *Festuca altissima* and the ferns *Dryopteris aemula*, *Hymenophyllum tunbrigense* and *Asplenium viride*.

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

9180 Tilio-Acerion forests of slopes, screes and ravines * Priority feature

Annex II species that are a primary reason for selection of this site

Not applicable.

Annex II species present as a qualifying feature, but not a primary reason for site selection

Not applicable.

2. Blaen Cynon SAC

(taken from - http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0030092)

Site details

Country	Wales
Unitary Authority	East Wales
Centroid*	SN946066
Latitude	51.74833333
Longitude	-3.528055556
SAC EU code	UK0030092
Status	Designated Special Area of Conservation (SAC)
Area (ha)	66.52

* This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.

General site character

Bogs, Marshes, Water fringed vegetation, Fens (27.6%)
Heath, Scrub, Maquis and Garrigue, Phygrana (8.3%)
Dry grassland, Steppes (11.7%)
Humid grassland, Mesophile grassland (41.3%)
Improved grassland (5.5%)
Broad-leaved deciduous woodland (3.9%)
Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites) (1.7%)

Annex I habitats that are a primary reason for selection of this site

Not applicable

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

Not applicable.

Annex II species that are a primary reason for selection of this site

1065 Marsh fritillary butterfly **Euphydryas (Eurodryas, Hypodryas) aurinia**
Blaen Cynon contains an extensive complex of damp pastures and heaths supporting the largest metapopulation of **marsh fritillary *Euphydryas aurinia*** on the southern edge of the Brecon Beacons National Park.

Annex II species present as a qualifying feature, but not a primary reason for site selection

Not applicable.

3. Usk Bats Site / Safleoedd Ystlumod Wysg SAC

(taken from - http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUcode=UK0014784)

Site details

Country	Wales
Unitary Authority	East Wales, West Wales and The Valleys
Centroid*	SO190145
Latitude	51.8239
Longitude	-3.1764
SAC EU code	UK0014784
Status	Designated Special Area of Conservation (SAC)
Area (ha)	1684.71

* This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.

General site character

Inland water bodies (Standing water, Running water) (0.4%)
Bogs, Marshes, Water fringed vegetation, Fens (40.2%)
Heath, Scrub, Maquis and Garrigue, Phygrana (32.2%)
Dry grassland, Steppes (3.8%)
Humid grassland, Mesophile grassland (3%)
Alpine and sub-Alpine grassland (3.9%)
Improved grassland (5.3%)
Broad-leaved deciduous woodland (3.4%)
Inland rocks, Screes, Sands, Permanent Snow and ice (3%)
Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites) (4.8%)

Location of Usk Bat Sites/ Safleoedd Ystlumod Wysg SAC/SCI/cSAC

Annex I habitats that are a primary reason for selection of this site

Not applicable

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

4030 European dry heaths
7120 Degraded raised bogs still capable of natural regeneration
7130 Blanket bogs (* if active bog) * Priority feature
8210 Calcareous rocky slopes with chasmophytic vegetation
8310 Caves not open to the public
9180 Tilio-Acerion forests of slopes, screes and ravines * Priority feature

Annex II species that are a primary reason for selection of this site

1303 Lesser horseshoe bat **Rhinolophus hipposideros**
The Usk Valley area in south-east Wales contains one of the largest maternity roosts for **lesser horseshoe bat** ***Rhinolophus hipposideros*** as well as a number of important hibernacula in caves in the area. The area contains up to 5% of the UK population, though counts in hibernation sites suggest this may be an underestimate.

Annex II species present as a qualifying feature, but not a primary reason for site selection

Not applicable.

4. SSSIs

(citation sheets provided by Natural Resources Wales)

CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

POWYS
NEATH PORT TALBOT
RHONDDA CYNON TAFF

DYFFRYNNOEDD NEDD A MELLTE, A MOEL PENDERYN

Date of Notification: 1954, 1965, 1978, 1979, 1999

National Grid Reference: SN 907100, SN 921090, SN 937088

O.S. Maps: 1:50,000 Sheet number: 160
1:10,000 Sheet number: SN 80 NE, SN 90 NW, SN 91 SW

Site Area: 421.1 ha

Description:

Dyffrynnoedd Nedd a Mellte, a Moel Penderyn is of special interest for its extensive and diverse semi-natural woodland, important populations of several flowering plants and supporting outstanding assemblages of mosses, liverworts and lichens. The site includes a range of geological features, well-exposed in the cliffs and rocky river beds. These include exposures at Moel Penderyn, Craig y Ddinas and Bwa Maen and geomorphological features within parts of the valleys of the Hepste and Mellte are also of special interest.

This site includes the wooded valleys of the rivers Nedd and Mellte, and their tributaries above Pontneddfechan, as they pass through a Millstone Grit and limestone plateau, and Moel Penderyn, which lies to the east. The plateau lies at about 300 m, the rivers having eroded deep, narrow valleys with gorges, river cliffs, block scree and waterfalls.

GEOLOGY

The old quarry faces and rock outcrops at Craig y Ddinas and Moel Penderyn provide important exposures of geological structures formed during the Variscan Orogeny, late in the Carboniferous and early in the Permian periods of geological history. The Carboniferous Limestone layers are steeply tilted on Craig y Ddinas, as a result of folding, and small tight folds can be seen in the banks of the River Sychryd. The exposed Dinas fault, a major dislocation of the crust, is marked by a belt of shattered limestone associated with several minor fractures. Numerous other small structures occur, including faults, fractures, veins and folds. This complex assemblage of structures makes up a narrow belt called the Neath Disturbance, which extends from the Welsh Borders to the Gower Peninsula. The Disturbance probably lies above an ancient line of weakness in the deep crust reactivated during the Variscan Orogeny. These localities provide the best exposures of this important feature of the geological structure of South Wales.

The best exposure in South Wales of the rock strata of the *Gastrioceras subcrenatum* Marine Band (below the Farewell Rock) in its full development occurs in the valley of the Nedd Fechan. The full range of environment types is represented in the marine band section, including brackish

water with a restricted fauna and off-shore marine environments with a goniatite-rich fauna. The site is important in understanding how this brief marine incursion occurred, which, in turn, is important because the marine band, the expression of this event in the rocks, is taken to indicate the start of the Westphalian Epoch of Carboniferous time.

The Nedd, Mellte and Sychryd, forming the headwaters of the Afon Nedd, provide key exposures of Carboniferous rocks. These include extensive and spectacular exposures of the whole Namurian of the North Crop. In particular, the Basal Grits are well exposed and present the best available section in the Main South Wales Basin. The predominantly shaley sequences of the higher Namurian are also well exposed here and their study has been of great importance in the elucidation of the stratigraphy of the Namurian. Additional importance attaches to the presence of a varied and abundant Basal Grit flora. These are outstanding, nationally important sections of the Carboniferous.

The river system is exceptional in showing the combined effects of geological controls and changing sea levels in river landform development. Faulting has juxtaposed rocks of varying resistance and influenced the form and evolution of waterfalls. Thus the landforms of this area reflect a variety of interacting controls, and both the total assemblage as well as the individual features are important.

BIOLOGY

This site supports one of the most extensive and diverse areas of semi-natural woodland in Wales. The predominant woodland vegetation communities are characteristic of the uplands of north and western Britain, with extensive areas of oak *Quercus spp*. woodland, and smaller areas of ash *Fraxinus excelsior* woodland. The distribution of the particular communities reflects the distribution of soils of low, moderate and high base status, respectively. More locally, however, the aspects and microclimate have allowed the development of the southern and eastern lowland counterparts of these free-draining oak, birch *Betula spp*. and ash-dominated woodlands.

Large areas of the site have a woodland canopy dominated by oak intermediate in character between the sessile oak *Quercus petraea* and the pedunculate oak *Q. robur*, with a little downy birch *Betula pubescens* and small-leaved lime *Tilia cordata* in places. Here, the shrub layer is absent or sparse with a little hazel *Corylus avellana* or rowan *Sorbus aucuparia*. The field layer is typically dominated by wavy hair-grass *Deschampsia flexuosa*, with bilberry *Vaccinium myrtillus* present and, where grazing is relatively light, quite abundant. The ground layer has a very high cover of mosses, including *Rhytidiadelphus loreus*, *Polytrichum formosum*, *Dicranum majus*, *Plagiothecium undulatum*, *Hypnum cupressiforme*, *Mnium hornum* and *Sphagnum quinquefarium*. Elsewhere, large stands of similar canopy and shrub layer composition have a ground layer typically dominated by wavy hair-grass with common bent *Agrostis capillaris* and some sweet vernal-grass *Anthoxanthum odoratum*. Purple moor-grass *Molinia caerulea* is present occasionally and is sometimes abundant, while bilberry is absent or very rare except on inaccessible ledges and cliffs. The ground layer often has carpets of the bryophytes mentioned above.

Another woodland community that occurs extensively in some parts of the site is dominated by sessile oak and forms intermediate with pedunculate oak, or downy birch, or a mixture. Other canopy trees are rare and the shrub layer is typically sparse, but in some areas dense hazel and scattered hawthorn *Crataegus monogyna* are present. The field layer is grassy, with common bent, sweet vernal-grass and creeping soft-grass *Holcus mollis* often abundant with patchy wavy

hair-grass. Other species that occur here are wood-sorrel *Oxalis acetosella*, bluebell *Hyacinthoides non-scripta*, bracken *Pteridium aquilinum* and heath bedstraw *Galium saxatile* and the mosses *Rhytidiadelphus squarrosus* and *Polytrichum formosum*.

Small stands of woodland, particularly along steep tributary stream valleys are dominated by ash with a dense shrub layer of hazel, a little hawthorn and locally frequent rowan. No single species is dominant in the field layer, but wood-sorrel, false brome *Brachypodium sylvaticum*, common bent, lady-fern *Athyrium filix-femina* and rough meadow-grass *Poa trivialis* are all locally frequent. In the ground layer, mosses and liverworts are prominent, with *Plagiomnium undulatum*, *Mnium hornum*, *Atrichum undulatum*, *Pellia* sp., and *Ctenidium molluscum* all frequent and often abundant. The ground flora in these areas can be extremely rich and includes species that are scarce in mid and south Wales, such as wood fescue *Festuca altissima*.

The canopy in one area of the site is composed mainly of intermediate oak, with a little downy birch in places. The shrub layer is sparse, with only scattered hazel and holly *Ilex aquifolium*. The field layer is a carpet of wavy hair-grass with few other species present, although bracken occurs in places. Mosses are sometimes quite prominent in scattered tufts, especially *Polytrichum formosum* and *Mnium hornum*.

In another area, the canopy mostly comprises intermediate oak and occasional ash with a relatively dense shrub layer, primarily of hazel, but with scattered holly and rowan. The field layer is dominated by three species: bramble *Rubus fruticosus*, bracken and creeping soft-grass with frequent wavy hair-grass.

Small patches of woodland on open, steep cliffs and screes, particularly of limestone, are dominated by ash and are relatively species-rich, with many calcicoles. On shadier steep cliffs, similarly ash-dominated patches are relatively species-poor, with abundant ivy *Hedera helix* and some calcicoles. In small areas of woodland at the base of shadier steep cliffs, scattered field maple *Acer campestre* occurs in the shrub layer, beneath a canopy of ash. The field layer includes species such as dog's mercury *Mercurialis perennis*, herb-Robert *Geranium robertianum*, common nettle *Urtica dioica*, cleavers *Galium aparine* and, where bouldery, hart's-tongue *Phyllitis scolopendrium*.

Elsewhere, soils with impeded drainage or flushing support an extensive area of alder *Alnus glutinosa*-dominated woodland, in a range of topographical situations. Wet flushes within this type of woodland provide the most southerly known locality in Britain for marsh hawk's-beard *Crepis paludosa*. There are small patches of woodland where alder is dominant, with a little ash and downy birch over a shrub layer of hazel. Here, the field layer is generally dominated by remote sedge *Carex remota* with many other species present in small amounts. Elsewhere, extensive stands of alder-dominated woodland have a relatively dense shrub layer, primarily composed of hazel but often with ash saplings, hawthorn and downy birch saplings. The ground layer is dominated by tufted hair-grass *Deschampsia cespitosa*, with wood-sorrel and lady-fern. Further areas have a canopy mostly of alder with occasional downy birch and little of a shrub layer except scattered ash saplings. The field layer is a mixture of meadowsweet *Filipendula vulgaris*, creeping buttercup *Ranunculus repens*, false brome, soft-rush, great horsetail *Equisetum telmateia* and bramble. In the ground layer, the mosses *Eurhynchium praelongum* and *Thuidium tamariscinum* are frequent.

Locally, where woodland extends onto the drift-covered plateau, stands of a community dominated by alder with occasional downy birch, rowan and ash are present. There is no shrub

layer and the field layer is dominated by purple moor-grass, with frequent bramble, soft-rush *Juncus effusus* and broad buckler-fern *Dryopteris dilatata*. Scattered, relatively small patches of a similar type of woodland have the same canopy trees and a typically sparse or absent shrub layer. The field layer here is always dominated by purple moor-grass, with soft-rush, tormentil *Potentilla erecta*, creeping soft-grass, tufted hair-grass and common bent typically present. In the ground layer, bog moss *Sphagnum recurvum* and hair moss *Polytrichum commune* are usually present.

The overall botanical diversity is outstanding, with more than 600 species of plant having been recorded from the site. This includes a very large proportion of the bryophyte flora of mid and south Wales.

The high humidity of much of the woodland has a strong influence on its botanical diversity. Trees and rocks support a diverse assemblage of plant species largely confined in their distribution to the Atlantic Seaboard of Europe. These Atlantic species include green spleenwort *Asplenium viride*, Tunbridge filmy-fern *H. tunbridgense*, hay-scented buckler-fern *Dryopteris aemula*, all of which are rare in south Wales, liverworts, such as *Bazzania trilobata*, *Jubula hutchinsiae* and the scarce *Anastrophyllum hellerianum*, *Colura calyptrifolia*, *Jamesoniella autumnalis* and *Sphenolobopsis pearsonii*, mosses, such as *Isothecium holtii*, *Dichodontium denudatum* and the scarce *Bartramia hallerana* and *Seligera acutifolius*, lichens, such as *Enterographa hutchinsii*, *Micarea alabastrites*, the rare *Micarea hedlundii*, and the scarce *Micarea stipitata* and *Phyllopsora roseii*. These contrast with the local abundance of more continental species such as, on logs, the scarce moss *Dicranum flagellare*, on gritstone cliffs, the scarce lichen *Chrysothrix chlorina* and, on bark, the scarce lichen *Micarea pycnidiophora*.

Boulder screes, cliff faces, springs, seepages, decaying logs and mature and overmature trees provide some of the specific habitats required by several scarce lower plants demanding conditions that are subject to little change with time, including the lichens *Leptogium plicatile* and *L. subtile*, and the liverwort *Cephalozia catenulata*. Despite recent high levels of atmospheric pollution, the epiphytic <u>*Lobarion*</u> lichen community persists in these sheltered valleys and includes species such as *Lecanactis premnea*, *Biatora sphaeroides*, *Parmeliella triptophylla* and *Dimerella lutea*.

The rivers, with their fine waterfalls, are an integral part of the site with the splash zones and spray providing wetness and humidity necessary for many species. River courses support a notable riparian flora dominated by liverworts, and mosses, including the nationally scarce *Fissidens rufulus* and *F. rivularis*, and *Tetrodontium brownianum*, which is threatened in Europe.

The woodland in the valleys is interspersed with several more open habitats that provide additional interest. As well as the cliffs, screes and rivers there are extensive areas of grassland dominated by common bent and sheep's fescue *Festuca ovina*. There are also patches of less acidic grassland in the valley bottoms and, at Craig y Ddinas and Moel Penderyn, the limestone supports calcareous grassland. Wet grassland dominated by purple moor-grass or rushes (*Juncus* spp.) occurs in a series of flushes along the valley sides and bracken-dominated glades are widespread. Patches of dry heath and wet heath characterised by deergrass *Scirpus cespitosus* and cross-leaved heath *Erica tetralix* can be found in Hepste valley.

Other habitats of interest include areas of beech *Fagus sylvatica* plantation, grey willow *Salix cinerea* and bramble scrub and nutrient-rich ponds.

The fauna of these valleys is well developed, and includes birds such as breeding dipper, grey wagtail, goosander, pied flycatcher, redstart, wood warbler, woodcock, buzzard and sparrowhawk.

Remarks:

Part of this site lies within the Brecon Beacons National Park.

The Forestry Commission and the Brecon Beacons National Park Authority own parts of this site.

CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

RHONDDA CYNON TAFF **CORS BRYN-Y-GAER**

Date of Notification: 2002

National Grid Reference: SN 945065

O.S. Maps: 1:50,000 Sheet number: 160
1:10,000 Sheet number: SN 90NE and NW

Site Area: 52.1 ha

Description:

Cors Bryn-y-gaer is of special interest for its lowland bog and for areas of soligenous flush, marshy grassland, dry neutral grassland and lowland acid grassland. These habitats occur in a complex with wet heath, swamp and semi-improved grassland. The site is also of special interest for the marsh fritillary butterfly *Eurodryas aurinia*.

The site is located immediately north-west of Hirwaun and south of the Brecon Beacons National Park. Cors Bryn-y-gaer is situated at the northern edge of the South Wales Coalfield, on glacial boulder clay, with areas of deep peat on lower ground. Several small water courses and springs are associated with the site, which is in the catchment of the Afon Cynon. The altitude varies from 205 to 220m. The main part of the site comprises several drumlins (smooth oval hills of glacial drift) interspersed with lower lying flat ground. A series of enclosed fields form the northern margin. Also included within the site are two small level fields situated 500 m to the south of the main block of land; these fields are bisected by the A4059 Hirwaun-Penderyn road.

The lowland bog at Cors Bryn-y-gaer is actively peat forming. The vegetation is characterised by a carpet of bog moss *Sphagnum cuspidatum*, together with species such as deergrass *Trichophorum cespitosum*, hare's tail cottongrass *Eriophorum vaginatum* and round-leaved sundew *Drosera rotundifolia*. In slightly drier areas cross-leaved heath *Erica tetralix* becomes more abundant and there is a greater range of bog moss species *Sphagnum spp*., whilst in the wettest areas common cottongrass *Eriophorum angustifolium* is frequent.

Areas of acidic soligenous flush (under the influence of slow flowing mineral-rich ground or surface waters) cover most of the remaining deep peat between the drumlins. Here the vegetation is dominated by sharp-flowered rush *Juncus acutiflorus* over a carpet of bog moss. Associated species include purple moor-grass *Molinia caerulea*, heath wood-rush *Luzula multiflora* and tormentil *Potentilla erecta*. More sedge-rich flushes, with abundant carnation sedge *Carex panicea*, frequent bog asphodel *Narthecium ossifragum* and common cottongrass occur locally.

Marshy grassland is common on sloping ground on drumlins throughout Cors Bryn-y-gaer. Much of this grassland is dominated by purple moor-grass together with species such as sheep's

fescue *Festuca ovina* and tormentil. In places, this grassland is slightly heathy with frequent heath rush *Juncus squarrosus* and occasional cross-leaved heath. Elsewhere grasses are more prominent, including sweet vernal-grass *Anthoxanthum oderatum* and heath grass *Danthonia decumbens*. Small patches where the soil is slightly less acidic are distinguished by the presence of meadow thistle *Cirsium dissectum*.

Areas of marshy grassland dominated by rushes such as soft rush *Juncus effusus* and sharp-flowered rush are also present throughout Cors Bryn-y-gaer. Associated species include frequent marsh bedstraw *Galium palustre*, devil's-bit scabious *Succisa pratensis* and greater bird's-foot-trefoil *Lotus pedunculatus*.

Other habitats found at Cors Bryn-y-gaer include dry acid and neutral grassland. The neutral grassland is characterised by a range of grasses including common bent *Agrostis capillaris*, red fescue *Festuca rubra* and crested dog's tail *Cynosurus cristatus*, together with common knapweed *Centaurea nigra* and common bird's-foot trefoil *Lotus corniculatus*. On the lower slopes of the drumlins this community often grades into the more extensive acid grassland community, containing frequent sheep's fescue *Festuca ovina* and bird's-foot trefoil. Several small areas of wet heath also occur in association with marshy grassland and acid flush. These typically include frequent purple moor-grass, along with deergrass, cross-leaved heath and a range of mosses.

Many of the plant communities are closely juxtaposed, with well displayed transitions between them. Other habitats present on the site include small patches of swamp, inundation vegetation and scrub which add to the ecological and structural diversity of the site.

The nationally scarce marsh fritillary butterfly is associated with the marshy grassland, in which its larval food plant, devil's bit scabious, is frequent and widespread.

Cors Bryn-y-gaer also supports a population of cruet collar moss *Splachnum ampullaceum*, a nationally declining species, scarce in south Wales. This moss occurs mainly in lowland wet pastures, where it grows on decaying cattle and sheep dung.

Remarks:

Cors Bryn-y-gaer SSSI and the nearby Woodland Park/Pontpren SSSI support one of the largest metapopulations of marsh fritillary in South Wales. These two sites comprise the Blaen Cynon candidate Special Area of Conservation (cSAC).

Cors Bryn-y-gaer supports the following UK Biodiversity Action Plan priority habitats: lowland raised bog, purple moor-grass and rush pasture, fen, lowland acid grassland and lowland meadow.

The marsh fritillary is included on Annex IIa of the EC Habitats and Species Directive (Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora) and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and is a Biodiversity Action Plan species.

*This document is **NOT** a definitive legal version and has been formatted, updated and partially edited for use on the CCW Web site. This document should not be used in any legal proceedings, public enquiry or any other hearing or appeal. If you require a full legal copy of the document please contact CCW in writing.*

CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

RHONDDA CYNON TAFF **WOODLAND PARK AND PONTPREN**

Date of Notification: 2000, 2002

National Grid Reference: SN 946077, SN 952075, SN 948071

O.S. Maps: 1:50,000 Sheet number: 160
1:10,000 Sheet number: SN90NW, SN90NE

Site Area: 14.5 ha

Description:

Woodland Park and Pontpren is of special for the interest for the marsh fritillary butterfly *Eurodryas aurinia*. Additional special interest is provided by its mixture of habitat types, including marshy grassland, dry acid and neutral grassland, heathland and woodland, which add to the ecological and biodiversity interest of the site and which also provide food and shelter necessary for the survival of the marsh fritillary.

This site consists of three separate blocks of land, approximately 1km south of the village of Penderyn. The underlying geology is of Namurian and Westphalian sandstones, overlain by stagnohumic gleyed soils. Drainage is impeded across most of the site. The altitude ranges from 210 to 265m.

A variety of purple moor-grass *Molinia caerulea*-dominated communities are present at the site. The largest stands, in the north-western block, were planted with trees in 1995 and are rather tussocky and species-poor. Smaller areas of tussocky vegetation with an abundance of tall herbs such as wild angelica *Angelica sylvestris*, are present in the southern block. Scattered throughout the site are small, grassier stands, with species such as sheep's-fescue *Festuca ovina*, sweet vernal-grass *Anthoxanthum odoratum*, small sedges *Carex spp.* and tormentil *Potentilla erecta*. Heathier areas have cross-leaved heath *Erica tetralix* and bog mosses *Sphagnum spp.*.

Small patches of fen-meadow, with abundant meadow thistle *Cirsium dissectum*, tawny sedge *Carex hostiana* and flea sedge *C. pulicaris*, occur scattered in all three blocks of land and, more locally, there are base-enriched flushes with a high cover of bryophytes such as *Bryum pseudotriquetrum* and *Campylium stellatum*.

Marshy grassland with a high cover of sharp-flowered rush *Juncus acutiflorus* and soft-rush *J. effusus* occurs in the eastern and southern blocks, where it sometimes grades into tall-herb fen dominated by meadowsweet *Filipendula ulmaria* or damp grassland dominated by tufted hair-grass *Deschampsia cespitosa*.

On better drained soils there are small areas of acid and neutral grassland and bracken. The acid grassland is characterised by species such as common bent *Agrostis capillaris*, sheep's-fescue,

heath bedstraw *Galium saxatile* and tormentil. Common species in the neutral grassland include crested dog's-tail *Cynosurus cristatus*, common bird's-foot-trefoil *Lotus corniculatus* and red clover *Trifolium pratense*.

Devil's-bit scabious *Succisa pratensis*, the larval food plant of the marsh fritillary, is widespread and abundant in most of the wet and dry pasture at the site. It is also common in ditches in planted areas in the north-west of the site. Flowers of plants such as meadow thistle, provide a nectar source for the adult marsh fritillary.

Stands of broadleaved woodland and scrub occur throughout the site. On wetter ground, the main species are alder *Alnus glutinosa* and willow *Salix spp*., with oak *Quercus spp*. and birch *Betula pubescens* common on more free-draining soils.

Remarks:

Woodland Park and Pontpren SSSI and the nearby Cors Bryn-y-gaer SSSI support one of the largest metapopulations of marsh fritillary in south Wales. These two sites comprise the Blaen Cynon Special Area of Conservation (cSAC).

The marsh fritillary is included on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Annex IIa of the EC Habitats Directive (Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora) and is a priority Biodiversity Action Plan species.

The site, apart from the most southerly field, lies within the Brecon Beacons National Park.

*This document is **NOT** a definitive legal version and has been formatted, updated and partially edited for use on the CCW Web site. This document should not be used in any legal proceedings, public enquiry or any other hearing or appeal. If you require a full legal copy of the document please contact CCW in writing.*

CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

RHONDDA CYNON TAF **TIR MAWR A DDERI HIR, LLWYDCOED**

Date of Notification: 12 September 2012

National Grid Reference: SN 984048 & SN 983062

OS Maps: 1:50,000 Sheet number: 160, 170
1:10,000 Sheet number: SN 90 SE, NE

Site Area: 49.85 ha

Description:

Tir Mawr a Dderi Hir, Llwydcoed is of special interest for its species-rich neutral grassland and for its marshy grassland, some of which is heathy fen-meadow.

Tir Mawr a Dderi Hir, Llwydcoed is made up of two separate blocks of land, 620 m apart. Both are situated 2 km east of Hirwaun, between the A4059 and the A465 roads. The altitude ranges from 150 to 240 m. Both blocks of land are drained by tributaries of the River Cynon.

The bedrock beneath the northern block of fields, around Deri Hir, comprises sandstones and some mudstones which are Carboniferous in age. The southern fields are underlain by sandstones, siltstones, mudstones and coals, which are also Carboniferous in age. Throughout the site, bedrocks are buried beneath a covering of boulder clay of Pleistocene age. The main soils are slowly permeable gleys with a distinct topsoil of dark slightly stony clay loam. There are also brown earths that are more free-draining and drier as a result. The embankment of an old dismantled railway intersects the site and here the soils are even better drained.

Species-rich neutral grassland occurs on free-draining ground, most of which is in the southern part of the site. Here, common knapweed *Centaurea nigra* and common bird's-foot-trefoil *Lotus corniculatus* occur, together with grasses such as common bent *Agrostis capillaris*, sweet vernal-grass *Anthoxanthum odoratum*, crested dog's-tail *Cynosurus cristatus* and red fescue *Festuca rubra*. Other herbs include ribwort plantain *Plantago lanceolata*, meadow buttercup *Ranunculus acris* and red clover *Trifolium pratense*, with rough hawkbit *Leontodon hispidus* and smooth lady's mantle *Alchemilla glabra*. A particular feature of the neutral grassland here is the frequent occurrence of great burnet *Sanguisorba officinalis* in some stands. Plentiful great burnet in high quality vegetation is confined in Glamorgan to a handful of sites in the north of the county.

Some of this grassland, in both parts of the site, contains plants that are tolerant of nutrient poor, slightly acidic conditions, such as devil's-bit scabious *Succisa pratensis*, sheep's-fescue *Festuca ovina*, heath-grass *Danthonia decumbens* and tormentil *Potentilla erecta*. More locally, betony *Betonica officinalis* and bitter-vetch *Lathyrus linarifolius* can be found.

Where the drainage is impeded and the soils are mildly base-rich, areas of fen-meadow occur. These are mostly in the northern part of the site. Here, purple moor-grass *Molinia caerulea* is prominent with meadow thistle *Cirsium dissectum* and devil's-bit scabious. Some areas also show signs of more acidic conditions and here saw-wort *Serratula tinctoria*, bog asphodel *Narthecium ossifragum* and bog-mosses *Sphagnum* spp. occur.

Other areas of wet ground throughout the site, where the conditions are less base–rich, support rush-pasture dominated by sharp-flowered rush *Juncus acutiflorus*. This is associated with greater bird's-foot-trefoil *Lotus uliginosus*, devil's-bit scabious and Yorkshire fog *Holcus lanatus,* cuckooflower *Cardamine pratensis*, meadowsweet *Filipendula ulmaria* and common marsh-bedstraw *Galium palustre.*

In the wetter, northern part of the site around Deri Hir other plant communities are present, including areas of purple moor-grass pasture that lack any base-enrichment and in which the common associated herbs are tormentil and devil's-bit scabious. There are also small areas of acid flush and significant areas of wet heath, distinguished by deergrass *Trichophorum cespitosum*, which is present in continuous blocks and also amongst stands of purple moor-grass dominated vegetation. A population of petty whin *Genista anglica* occurs in areas of wet heath and purple moor-grass mire.

Some of the fields are bounded by woodland and scrub which adds to the interest of the site. Some of the woodland is situated on steep slopes.

The northern part of the site provides habitat suitable for the marsh fritillary butterfly. Larval webs and adult butterflies have been recorded in the north western fields.

Uncommon plants which occur at Deri Hir include petty whin. The closely-related dyer's greenweed *Genista tinctoria* has been recorded at the site in the past, as has whorled caraway *Carum verticillatum*. Wood bitter-vetch *Vicia orobus* occurs in the southern part of the site.

Remarks:

The site supports the following UK biodiversity action plan (BAP) priority habitats: purple moor-grass and rush pastures; lowland fen; lowland meadows.

Marsh fritillary butterflies have been recorded at the site in several years since 1993.

Gamlyn Viaduct is a Scheduled Ancient Monument.

Part of the site is within the Brecon Beacons National Park

CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

RHONDDA CYNON TAFF **BRYNCARNAU GRASSLANDS, LLWYDCOED**

Date of Notification: 1993

National Grid reference: SN995061

O.S. Maps: 1:50,000 Sheet number: 160
1:25,000 Sheet number: SN90, SO 00

Site Area: 24.8 ha

Description:

Bryncarnau Grasslands are situated on a west-facing hillside at the head of the Cynon Valley, to the north of Aberdare. They range from 270 to 320m in altitude, and are bounded by small tributaries of the River Cynon which, towards the western end of the site, occupy deeply incised wooded valleys. The soils are derived from boulder clay over Coal Measures. The site represents a particularly good example of a gradation from lowland mesotrophic grassland to pasture of a more upland character. A range of plant communities are present and these include 2 of very high nature conservation value. A number of plants which are rare in the Glamorgans occur here.

The western part of the site and the isolated south western field both support a mosaic of lowland grassland types including plant communities typical of both well and poorly drained ground. The drier areas are typified by grasses such as common bent *Agrostis capillaris,* sweet vernal-grass *Anthoxanthum odoratum*, crested dog's-tail *Cynosurus cristatus* and red fescue *Festuca rubra* with a range of broad-leaved herbs including common knapweed *Centaurea nigra*, rough hawkbit *Leontodon hispidus,* common bird's-foot-trefoil *Lotus corniculatus* and great burnet *Sanguisorba officinalis*. Other species which occur more locally in this community include smooth lady's-mantle *Alchemilla glabra,* common spotted-orchid *Dactylorhiza fuchsii* and betony *Stachys officinalis*. The wetter areas include some which are dominated by rushes and others typified by meadow thistle *Cirsium dissectum*, purple moor-grass *Molinia caerulea* and carnation sedge *Carex panicea*. In terms of the National Vegetation Classification, most of the drier grassland may be ascribed to the *Centaurea nigra - Cynosurus cristatus* neutral grassland and substantial areas of the wetter ground to the *Molinia caerulea - Cirsium dissectum* fen meadow. The upper, eastern part of the site includes an extensive area of dry, acidic grassland typified by common bent and sheep's-fescue *Festuca ovina*. Also present is a smaller area of more poorly drained grassland dominated by purple moor-grass with tormentil *Potentilla erecta* and cross-leaved heath *Erica tetralix*.

A number of unusual plants occur within the site. Greater butterfly-orchid *Platanthera chlorantha* and wood bitter-vetch *Vicia orobus* both have a very restricted distribution in the dry neutral grassland within the site pale sedge *Carex pallescens* is more widely distributed in the same community. Springs and flushes areas towards the upper end of the site support round-leaved

sundew *Drosera rotundifolia*, few-flowered spike-rush *Eleocharis quinqueflora*, fen bedstraw *Galium uliginosum* and common butterwort *Pinguicula vulgaris*.

*This document is **NOT** a definitive legal version and has been formatted, updated and partially edited for use on the CCW Web site. This document should not be used in any legal proceedings, public enquiry or any other hearing or appeal. If you require a full legal copy of the document please contact CCW in writing.*

CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

MERTHYR TYDFIL **CWM GLO**

Date of Notification: 2003

National Grid Reference: SO 034054

O.S. Maps: 1:50,000 Sheet number: 160
1:10,000 Sheet number: SO 00 SW

Site Area: 29.1 ha

Description:

Cwm Glo is of special interest for its wet pastures and species-rich neutral grassland, and for the association of these habitats with others including acid grassland and wet heath.

The site is located approximately 1.5km to the south west of the centre of Merthyr Tydfil, on an east facing slope at an altitude of between 250m and 350m. The site comprises a series of small enclosures surrounded by woodland, together with more open land with scattered mature trees. This open area includes remnant spoil tips between one hundred and two hundred years old.

In the north east of the site there are a series of small enclosures, sheltered by mixed woodland. Drainage is mainly impeded across this area, which supports base-rich fen-meadow communities characterised by meadow thistle *Cirsium dissectum*, devil's bit scabious *Succisa pratensis* and a number of sedge species, including glaucous sedge *Carex flacca*, carnation sedge *C. panicea*, common sedge *C. nigra*, tawny sedge *C. hostiana*, common yellow sedge *C. demissa* and flea sedge *C. pulicaris*.

In places this fen-meadow community grades into drier species-rich neutral grassland. Typical species here include bird's-foot-trefoil *Lotus corniculatus*, black knapweed *Centaurea nigra* and a range of grasses including common bent *Agrostis capillaris* and sweet vernal-grass *Anthoxanthum odoratum*. A slight acid nature to the soil is suggested by the presence of heath-grass *Danthonia decumbens* and tormentil *Potentilla erecta*, whilst, in places flushing is indicated by quaking-grass *Briza media* and great burnet *Sanguisorba officinalis*.

Elsewhere on the site, the landscape is more open, with pastures separated by steep, wooded streams and the remnants of former field boundaries. The fen-meadow community is present here also, but has a conspicuous heathy element with cross-leaved heath Erica tetralix and heather *Calluna vulgaris*. Other wet pasture communities also occur in this area, dominated by purple moor-grass *Molinia caerulea*, sweet vernal grass, sheep's fescue *Festuca ovina* and mat-grass *Nardus stricta*, with lousewort *Pedicularis sylvatica*, tormentil and heath wood-rush *Luzula multiflora*. In places, cross-leaved heath and heather are frequent, and where these two species become dominant, the vegetation grades into wet heath. Here deergrass *Trichophorum cespitosum* and bilberry *Vaccinium myrtillus* occur, together with the moss *Pleurozium schreberi*.

Where springs reach the surface, there are small areas of flush dominated by a carpet of *Sphagnum auriculatum* and sedge species.

In the drier areas, and on the remnant spoil heaps, two types of grassland have developed. Species-rich neutral grassland occurs where the soils are not too acidic. Typical grass species here include common bent, crested dog's tail *Cynosurus cristatus* and red fescue *Festuca rubra*. Bird's foot trefoil, black knapweed, autumn hawkbit *Leontodon autumnalis*, common cat's ear Hypochaeris radicata, eyebright *Euphrasia sp*., and, locally, wild thyme *Thymus praecox*, are all present, together with spring sedge *Carex caryophylla*, glaucous sedge *C. flacca*, and pill sedge *C. pilulifera*. In places, there is also an abundant carpet of Cladonia lichens.

In places, this neutral grassland grades into vegetation more associated with dry acid conditions. The main grass species are common bent and sheep's fescue. A number of herb species also occur. Bird's foot trefoil and devil's bit scabious are still present, but are here joined by species such as heath bedstraw *Galium saxatile*, tormentil, common sorrel *Rumex acetosa*, heath speedwell *Veronica officinalis* and saw-wort *Serratula tinctoria*.

Cwm Glo is host to a number of uncommon species, including whorled caraway *Carum verticillatum*, petty whin *Genista anglica* and adder's tongue *Ophioglossum vulgatum*. In addition, a number of scarce or declining animal species have been recorded in the area. The marsh fritillary butterfly *Eurodryas aurinia* has been noted in the marshy grassland areas, where its foodplant, devil's bit scabious occurs. Both great crested newts *Triturus cristatus* and water voles *Arvicola terrestris* have been recorded in ponds on the site.

Remarks:

Cwm Glo lies within the Merthyr Tydfil landscape of outstanding historic interest, identified on the CCW/Cadw/ICOMOS Register of Landscapes of Outstanding Historic Interest in Wales and noted for its evidence of industrial activity that dates back to about 1750.

CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

RHONDDA CYNON TAFF **PENMOELALLT**

Date of Notification: 1959, 1982

National Grid Reference: SO 017095

O.S. Maps 1:50,000 Sheet number: 160
1:25,000 Sheet number: SO 00

Site Area: 6.88 ha

Description:

A mixed woodland of ash, oak, wych elm and small-leaved lime overlying Carboniferous Limestone. The rare Ley's whitebeam grows on a small escarpment within the wood.

Remarks:

Within the Brecon Beacons National Park. A Forest Nature Reserve managed by agreement with the Forestry Commission.

CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

MERTHYR TYDFIL **DAREN FACH**

Date of notification: 1960, 1983

National Grid Reference: SO019105

O.S. Maps 1:50,000 Sheet number: 160
1:25,000 Sheet number: S0 01

Site Area: 12.1 ha

Description:

The site consists of an open scrub on low limestone cliffs with screes and woodland on the gentler slopes. The latter are dominated by ash inter-mixed with wych elm together with a well developed understorey of hazel and hawthorn. Field maple is present and a group of small-leaved lime lies at the northern end. The primary interest lies in a concentration of Sorbus spp. on the southern end of the Darren Fach crags. This is the type locality for the rare Ley's Whitebeam *Sorbus leyana* . Several shrubs of *S. leyana* together with a specimen of *S. rupicola* grow in association with ash, yew and holly.

Remarks:

Within the Brecon Beacons National Park

CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

MERTHYR TYDFIL **CWM TAF FECHAN WOODLANDS**

Date of Notification: 1972, 1985

National Grid Reference: SO 052101

O.S. Maps 1:50,000 Sheet number: 160
1:25,000 Sheet number: S0 00, 01, 10

Site Area: 60.9 ha

Description:

Where the partially wooded valley of the Taf Fechan crosses the north crop Carboniferous Limestone. Mixed deciduous woodlands cover steep slopes and spoil from quarries with one of the few Glamorgan stations for *Gymnocarpium robertianum*. There are interesting plant communities in flushes around tufa springs and luxuriant growths of bryophytes in the splash zone of the river.

*This document is **NOT** a definitive legal version and has been formatted, updated and partially edited for use on the CCW Web site. This document should not be used in any legal proceedings, public enquiry or any other hearing or appeal. If you require a full legal copy of the document please contact CCW in writing.*

CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

MERTHYR TYDFIL **NANT GLAIS CAVES**

Date of Notification: 1963, 1985

National Grid Reference: SO 040105

O.S. Maps 1:50,000 Sheet number: 160
1:25,000 Sheet number: S0 00/10, SO 01/11

Site Area: 15.7 ha

Description:

The site covers the limestone gorge of the Nant Glais and two vadose cave systems which lie parallel to it and under each bank. Both caves are formed at the contact of the oolitic and dolomitic facies within the Carboniferous Limestone and the contrasting solutional properties of the two lithologies have spectacularly influenced the passage morphology. The caves are also important for their unusually large populations of white trout.

Remarks:

The site is within the Brecon Beacons National Park and is in part a Glamorgan Trust for Nature Conservation Reserve.

CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

CAERPHILLY **LOWER HOUSE STREAM SECTION**

Date of Notification: 1965, 1986

National Grid Reference: ST 104101

O.S. Maps: 1:50,000 Sheet number: 170
1:25,000 Sheet number: SO 11

Site Area: 0.11 ha

Description:

This site yields the most diverse *Gastrioceras cancellatum* Marine Band fauna known in southern Britain, including goniatites, brachiopods, bivalves and crinoids. It is an horizon of considerable stratigraphical importance, since it is used to locate the boundary between the Marsdenian and Yeadonian stages of the Namurian, and a full understanding of its faunal composition is vital to its correct identification. The site thus plays an important role in establishing detailed correlations with other areas of Namurian deposition, particularly in the Pennines, Belgium and the Ruhr.

*This document is **NOT** a definitive legal version and has been formatted, updated and partially edited for use on the CCW Web site. This document should not be used in any legal proceedings, public enquiry or any other hearing or appeal. If you require a full legal copy of the document please contact CCW in writing.*

Welsh Government

A465 Heads of the Valleys Dualling - Sections 5 and 6 - Dowlais Top to Hirwaun

Appendix 11K - Non Statutory Designated Sites Citations

Rev 0

July 2017

Final

Summary

This technical report provides the citation references for the non-statutory designated sites for nature conservation located within the study area of the proposed scheme. These sites namely consist of Sites of Importance for Nature Conservation (SINCs), designated by local authorities.

The proposed scheme crosses through four local planning authorities; Rhondda Cynon Taf County Borough Council (RCTCBC); Brecon Beacons National Park Authority (BBNPA); Merthyr Tydfil County Borough Council (MTCBC); and Caerphilly County Borough Council (CCBC).

SINCs that are located within 500 m of the proposed scheme are:

Rhondda Cynon Taf

- Hirwaun Industrial Estate;
- Hirwaun Ponds;
- Hirwaun Common;
- Hirwaun Ponds North;
- Hirwaun Iron Works;
- Upper Cynon Floodplain;
- Nant Hir Valley and Reservoir;
- Llwydcoed Slopes;
- Bryn-defaid Heath;
- Aberdare Mountain;

Merthyr Tydfil

- Bryn-du and Ty'n-y-coedcae;
- Winchfawr West;
- Cwm Ffrwd;
- Coed Meirig Pastures;
- Gellideg North Fields;
- Cwm Taf Fields and Cefn Coed Tip;
- Cwm Taf Fawr;
- Cilsanws Common South;
- Cwm Taf Fechan;
- Y Graig;
- Cyfartha Park;
- Gyrnos Wood;
- Bryniau;
- Morlais Hill;
- Blaenmorlais;
- Merthyr Common North; and

Caerphilly

- Pan March and Traed y Milwyr, Llechryd.

Additional SINCs within 200m of affected roads included in the assessment of air quality impacts are listed below:

- Coed Wernhir
- Werfa Farm
- Nant Hir Gwyddel
- East Llwydcoed
- Cwm Glo
- Afon Taf
- River Rhymney
- Butetown, Llechryd and Rhymney Grasslands

There are no SINC within 500 m of the proposed scheme within BBNPA.

The citations for each of these sites are presented in order running west to east following chainage direction. The location of each site is shown in Environmental Statement Volume 3 Figure 11.2.

Table 11K.1 : SINC Citations

(*http://www.sewbrec.org.uk/content/attachments/Mid%20Valley%20SINCs%20Introduction%20Section%201.pdf)

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
RCTCBC	1	Coed Wernhir	A large mosaic SINC. Coed Wernhir is semi-natural deciduous woodland, part of which is ancient woodland. It supports mixed woodland, characterised by oak, birch, alder and ash with under storey including hazel, rowan, holly and willows. Alder predominates on wetter flushed areas. The woodland is mainly open, with some areas approaching wood pasture in nature. There are significant elements of an ancient woodland ground flora. Within open areas there are associated areas of marshy and semi-improved acid grassland. The woodlands represent good breeding bird habitat, including pied flycatcher. Lesser horseshoe bats occur in the wider area and Coed Wernhir is potentially important foraging habitat. The SINC also includes extensive areas of marshy grassland. These include areas of purple moor-grass and rush pasture (M25), which represent potential marsh fritillary butterfly habitat. Elsewhere large areas of marshy grassland are rush dominated, and unmanaged with encroaching scrub, and bramble. These areas, although in poor condition, support wetland grassland habitat, which justifies inclusion in the SINC as part of an extensive habitat mosaic. There are also a few areas of standing water, with stands of reed mace and other emergent species. Based largely upon habitat potential, these have a high potential as amphibian habitat.	Primary Woodlands Woodpasture, Parklands, Orchards and Veteran Trees Marshy Grassland Mosaic Habitats and Common Land Secondary Neutral Grassland Ffridd Communities Fens, Reedbeds and Other Swamps Watercourses Standing Open Water Hedgerows Mammals Birds Amphibians Invertebrates
RCTCBC	2	Werfa Farm	An extensive area of marshy and acid grassland (rhos pasture) with smaller areas of associated habitat. At its southern end the SINC represents a good example of lowland, species rich marshy grassland (National Vegetation Classification of M24 and M25), particularly notable for a large population of whorled caraway. The main part of the SINC is sheep-grazed marshy grassland with a complex mosaic of purple moor-grass and rush pasture with wet heath and acid flushes (sphagnum bog moss) and large areas of wet acidic grassland. The eastern boundary of the SINC is the deeply incised valley of the Cwm Wylfa, with a fast flowing upland stream and an oak and alder dominated wooded gorge. Although, areas of the site are in relatively poor habitat condition, the size and continuity of habitats, represents an important wet grassland and heath mosaic. The SINC is an important area of marsh fritillary butterfly habitat which lies close to the Blaen Cynon SAC.	Primary Marshy Grassland Heathlands and Grass-heath Communities Mosaic Habitats and Common Land Invertebrates Secondary Woodland Neutral Grassland

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
				Acid Grassland Bog Habitats and Flushes Watercourses
RCTCBC	7	Hirwaun Industrial Estate	Large mosaic site which at its heart includes an ancient peat bog, and around its edges a mosaic of 'brown field' grassland and scrub habitats. The peat bog is a continuation of the deep peat of the closely adjacent Cors Bryn-y-Gaer SSSI (part of the Blaen Cynon SAC). It is unmanaged peat land with extensive areas of rank purple moor-grass, with varying amounts of associated cross-leaved heath, deer-grass, heather, common and hares-foot cotton-grass. There are numerous peat pools (possibly associated with old peat diggings) and these have associated sphagnum moss communities. At its fringes the peat bog grades into marshy grassland (in National Vegetation Classification terms mainly M25) with areas of tufted hair grass and rush pasture. This grades further into long derelict brown field grasslands, which are species rich mosaics of marshy grassland and drier neutral grassland (National Vegetation Classification of MG5). The site has a raised central 'tump', which supports a large area of gorse and associated dry heath. The habitat mosaic supports good invertebrate habitat, which includes the mountain bumblebee *Bombus monticola*, and has a high potential for green hairstreak and dingy skipper. The peat bog supports keeled skimmer dragonflies with amphibian and reptile habitat, and diverse breeding bird habitat (including linnet, stonechat and warblers) and potential (in the peat bog) for breeding snipe.	<u>Primary</u> Scrub Communities Neutral Grasslands Marshy Grasslands Heathland and Grass-Heath Communities Bog Habitats and Flushes Mosaic Habitats and Common Land <u>Secondary</u> Acid Grasslands Fens, Reedbeds and Other Swamps Birds Reptiles Amphibians Invertebrates
RCTCBC	9	Hirwaun Ponds	A species rich area of marshy grassland, swamp and ponds occupying low-lying land between A465 and A4061, and part based on old colliery spoil. The marshy grassland supports purple moor-grass, rush and tufted hair-grass and although unmanaged is very diverse. It is best characterised as a mosaic of marshy grassland habitats (National Vegetation Classification M23 and M25) and tall fen communities, which includes meadow thistle, angelica, marsh bedstraw and whorled caraway. This marshy grassland/fen grades into swamp dominated by reed mace and willow scrub. Royal fern has been recorded on the site. At the western end Tower Colliery manage and maintain a number of fishing pools, which contain a rich emergent flora including sea club-rush, common reed and lesser water parsnip. The pools support very species rich dragonfly populations and the site is one of the best recorded sites in RCT with 14 species recorded, including small blue-tailed damselfly, broad bodied chaser, black-tailed skimmer, and keeled skimmer. The mosaic of wetland vegetation offers excellent invertebrate, amphibian (frogs and toads have been recorded) and nesting bird habitat including reed bunting, grasshopper warbler, reed warbler, water rail, redpoll and sedge warbler. Barn owl and kestrel both breed on or close to the SINC.	<u>Primary</u> Scrub Communities Marshy Grasslands Fens, Reedbeds and Other Swamps Standing Open Water Mineral Spoil Tips and Other Post-industrial Land Mosaic Habitats and Common Land <u>Secondary</u> Neutral Grasslands Acid Grasslands Heathland and Grass-Heath Communities

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
			Coal spoil areas support a mosaic of thin open grassland (with silver hair-grass, carline thistle, pearly everlasting, thyme leaved sandwort, marsh cudweed, and rats tail fescue) and emerging heath (with some lichen heath). Grayling and small copper butterflies occur on the site.	Birds Invertebrates Vascular Plants
RCTCBC	10	Hirwaun Common	Upland parts of this large SINC support an extensive upland mosaic characterised as upland marshy grassland and acid grassland with significant areas of dry heath (heather, bilberry and western gorse) and areas of flushed wet heath. The Upland Survey of Glamorgan listed a number of rare or local species recorded from Hirwaun Common (which includes part of this SINC) these included Newman oak fern (*Gymnocarpium dryopteris*), fir clubmoss (*Huperzia selago*), mossy saxifrage (*Saxifraga hypnoides*), cowberry (*Vaccinuim vitis-idaea*), beech fern (*Phegopteris connectilis*), and ivy-leaved bellflower (*Wahlenbergia hereracea*). A large area of bilberry dominated dry heath includes a small area of western gorse heath. Upland bird communities include skylark and wheatear. The lower slopes of Hirwaun Common represent an expanse of M25 marshy grassland, which includes, sphagnum flushes, wet heath and acid grassland and heather and bilberry dry heath on old spoil. Whorled caraway occurs in the grassland on the lower slopes. Ivy-leaved bellflower is abundant together with bog asphodel and round-leaved sundew. Skylark, wheatear and stonechat nest. Pools have potential for great crested newt. Marsh fritillary butterfly habitat occurs and an adult has recently been recorded. Small pearl-bordered fritillary and grayling have also been recorded. Dark green fritillary and green hairstreak are all likely to occur.	<u>Primary</u> Acid Grasslands Marshy Grasslands Ffridd Communities Heathland and Grass-Heath Communities Mineral Spoil Tips and Other Post-industrial Land Mosaic Habitats and Common Land Rock Exposures <u>Secondary</u> Neutral Grasslands Watercourses Birds Reptiles Amphibians Invertebrates Vascular Plants
RCTCBC	12	Hirwaun Ponds North	The SINC includes a mosaic of wetlands, ponds and drainage channels on the north side of the A465. The complex of water features supports excellent aquatic and emergent flora. The ponds and channels also support diverse dragonfly populations, which includes keeled skimmer. The ponds have a high potential for breeding amphibians. Breeding frogs have been recorded and the habitat represents good quality grass snake habitat. The water bodies support breeding coot and moorhen, with potential for water rail. Reed bunting and sedge warbler occur in areas of reed bed. Small areas of marshy grassland occur, and these have potential as marsh fritillary butterfly habitat (the Site is immediately adjacent to the marsh fritillary colony of Blaen Cynon SAC). Barn owls use the site. The ponds and channels represent otter and possibly water vole habitat. The SINC includes areas of willow scrub together with stunted grassland on the coal spoil. This area of open grassland traditionally supported an important lapwing breeding colony. Base rich flushes, emerge from the very	<u>Primary</u> Fens, Reedbeds and Other Swamps Standing Open Water Mineral Spoil Tips and Other Post-industrial Land Mosaic Habitats and Common Land Birds <u>Secondary</u> Scrub Communities

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
			acid tip, and these support interesting floras, including the base loving marsh arrow-grass.	Neutral Grasslands Acid Grasslands Marshy Grasslands Bog Habitats and Flushes Mammals Reptiles Amphibians Fish Invertebrates
RCTCBC	13	Hirwaun Iron Works	A largely post-industrial SINC, which lies on the banks of the River Cynon close to the centre of Hirwaun. The Site includes the famous Iron Works Site with areas of slag and spoil. A very diverse assemblage of habitats occurs, which includes species rich neutral grassland (National Vegetation Classifications MG1, MG5 and MG10) and smaller areas of wetter, marsh grassland (National Vegetation Classifications M23, M24 and M25). Grassland species include lady's mantle (*filicaulis susp vestita*), pale sedge, black knapweed, bird's-foot trefoil, greater bird's-foot trefoil, lady's bedstraw, marsh bedstraw, rough hawkbit, ragged robin, purple moor-grass, rushes, tormentil, greater burnet, common spotted orchid, southern marsh orchid, devil's bit scabious, marsh speedwell, meadowsweet, and lesser reed mace (*Typha angustifolia*). Areas of shorter turf support potentially wax cap fungi habitat. Grayling butterfly has been recorded. The extensive areas of mixed scrub and a wet alder-willow carr represent particularly good songbird and invertebrate habitat. Seasonal standing water is important for breeding colonies of frog and palmate newt. The mixture of grassland and scrub represents good reptile habitat with slowworm and common lizard both recorded. The site is good bat foraging habitat with a high potential for roost sites within the iron works site and riverbank walls. Hobby has been recorded hunting over the site. The SINC includes a section of the River Cynon, with its riparian woodland, and generally good water quality. Brown trout have been recorded within this section, together with dipper and grey wagtail, and evidence of otter. The SINC includes the wide floodplain grassland, scrub and pool of Parc Hensol. The swamp supports areas of reed mace and wood club-rush and with scattered alder trees and willow scrub.	<u>Primary</u> Woodlands Scrub Communities Neutral Grasslands Watercourses Mineral Spoil Tips and Other Post-industrial Land <u>Secondary</u> Mammals Birds Reptiles Amphibians Fish Invertebrates
RCTCBC	15	Upper Cynon Floodplain	A very large SINC, which is comprised of a network of damp and marshy grassland, semi-natural woodland and the meandering course of the River Cynon. The SINC supports an exceptional resource of species rich semi-improved grasslands. These include species rich damp pastures (National Vegetation Classifications MG5, MG6 and MG10) with crested dog's-tail, common	<u>Primary</u> Woodland Scrub Communities

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
			bent, sweet vernal grass, Yorkshire fog, red fescue, cock's-foot, bird's-foot trefoil, black knapweed, yarrow, greater burnet, bulbous buttercup, red clover, cuckoo flower, pignut and burnet saxifrage. Areas of old coal workings (e.g. SN990044) support similar species rich neutral grassland communities. The wetter floodplain, and flushed slopes, support marshy grassland (National Vegetation Classifications M23, M24, M25 and M27), with purple moor-grass, soft rush, tufted hair-grass, Yorkshire fog, greater bird's-foot trefoil, meadowsweet, tormentil, bulbous buttercup, marsh bedstraw and occasional meadow thistle. Devil's-bit scabious occurs within a number of the marshy grassland and damp neutral grassland pastures and marsh fritillary butterflies have been recorded. The uncommon upright vetch (Vicia orobus) and upright brome have both been recorded. There are significant areas of wet alder woodlands, drier oak woodland and areas of mixed scrub and swamp all within the floodplain of the Afon Cynon. The woodlands are species rich with alder, oak, wych elm, hawthorn, birch, willow, ash and dog rose, and ground floras which include bluebell, dog violet, lesser celandine, wood speedwell, male fern and broad buckler fern. The River Cynon meanders its way through the SINC via a series of typical riffle/pool sequence, with gravel banks exposed at times of low flow, undercut banks and bank side woodland and pastures. Dipper, grey wagtail, goosander and kingfisher, brown trout and otter all occur. A very species rich habitat, supporting one of the largest areas of unimproved lowland grassland and floodplain woodland in the Cynon Valley. The mixture of wet, unimproved pastures, and mature woodland represents excellent invertebrate, bird and bat habitat. Barn owl, which nest locally, will hunt through the wet grassland of the SINC.	Marshy Grassland Watercourses Mineral Spoil Tips and Other Post-industrial Land Mosaic Habitats and Common Land Secondary Mammals Birds Reptiles Amphibians Fish Invertebrates
RCTCBC	16	Nant Hir Valley and Reservoir	The wooded valley of the Nant Hir supports ancient woodland of oak, alder, ash, birch, rowan, and hazel. Much of the wooded bank of the stream is essentially ancient woodland with associated ancient woodland ground flora, and songbird communities. The Nant Hir is a fast flowing upland stream, with good water quality, and supports habitat for otter, brown trout, dipper and grey wagtail. The SINC includes the Nant Hir Reservoir, a large water body with bank side oak and larch woodland. The banks of the reservoir include areas of quite diverse neutral grassland with sweet vernal grass, common bent, crested dog's-tail, ribwort plantain, bird's-foot trefoil, and black knapweed. The SINC, and the reservoir, extends north under the A465 and includes further areas of oak, birch, rowan, alder and hazel woodland (and a purple hairstreak butterfly colony) with acid grassland (sheep's fescue, common bent, sweet vernal grass, tormentil and heath bedstraw). The acid grassland grades into areas of heather and purple moor-grass marshy grassland with willow scrub. Although unmanaged and rank, the marshy grassland includes elements of species rich grassland with heather, greater burnet, green ribbed sedge, tufted hair-grass, heath	Primary Woodlands Acid Grasslands Ffridd Communities Watercourses Standing Open Water Secondary Mammals Birds Reptiles Amphibians

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
			bedstraw, and tormentil all present. The purple moorgrass extends into an extensive larch plantation. Although rank, the marshy grassland is in National Vegetation Classification terms M25 and lies within a well-established marsh fritillary butterfly meta-population.	Fish Invertebrates
RCTCBC	17	Nant Hir Gwyddel	The SINC includes the wooded valley of the Nant Gwyddel. Nant Gwyddel is a typical upland stream, with pool/riffle sequences, and a rocky/gravel bed. Along much of its length the Nant Gwyddel supports mature woodland with elements of an ancient woodland groundflora. Good woodland breeding bird habitat occurs and otter will use the stream. The SINC includes a section of the wooded disused railway line of the Llwydcoed/Abernant cycle track. This hazel, ash, oak woodland forms an obvious habitat corridor which links the woodlands of Nant Gwyddel with SINCs further south along the line. The SINC includes areas of mature semi-nature woodland associated with disused quarries in Lwydcoed. These support mixed oak, ash, hazel, alder, holly and willow woodland, with areas of associated acid and neutral grassland (National Vegetation Classifications U4 and MG6). The mosaic of habitats represents good songbird and bat habitat.	Primary Woodland Scrub Communities Neutral Grassland Watercourses Mosaic Habitats and Common Land Secondary Mammals Birds Fish
RCTCBC	18	Llwydcoed Slopes	A large area of species rich marshy grassland (National Vegetation Classifications M23 and M25 with small areas of M24) on the upland edge with purple moorgrass, soft rush, compact rush, tormentil, heather, bilberry, cross-leaved heath, and deer-grass. Heather occurs on drier ground. Flushed areas support yellow sedge, carnation sedge, lousewort, and bog asphodel. In places the flushing is base-rich with flea sedge, carnation sedge, common sedge and meadow thistle. Areas of drier acid grassland (National Vegetation Classification U4) include sweet vernal grass, mat grass, common bent, sheep's fescue, heath grass, tormentil, heath bedstraw and devil's-bit scabious and again where there is evidence of more base rich soil, bird's-foot trefoil, lady's mantle and quaking-grass are locally frequent within the acidic turf. The site has a high potential as marsh fritillary habitat. The southern end of the SINC includes the upper reaches of the valley of the Nant y Gwyddel (see SINC 17).	Primary Neutral Grasslands Acid Grasslands Marshy Grasslands Heathland and Grass-Heath Communities Watercourses Secondary Scrub communities Mammals Birds Reptiles Amphibians Fish Invertebrates
RCTCBC	19	Bryn-defaid Heath	The SINC supports a large area of well-established dry lichen heath (which primarily occurs on old colliery tips), together with acid grassland, conifer plantations and areas of associated marshy grassland.	Primary

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
			The dry heath supports heather, bilberry, wavy hair -grass and *Cladonia* lichens, with areas of associated acid grassland (including sheep's fescue, sweet vernal grass, mat grass, common bent, heath bedstraw sheep's sorrel and tormentil). There are associated of marshy grassland, which can be characterised as purple moor-grass and rush pasture (National Vegetation Classifications M23 and M25). The SINC is immediately adjacent to the species-rich grasslands of Bryncarnau Grasslands SSSI. The conifer plantations form part of the habitat complex. They are primarily included as part of the overall habitat mosaic, and for their value as conifer bird habitat. The plantations also have potential for habitat restoration to heath and acid grassland. The SINC represents excellent invertebrate habitat with grayling and green hairstreak butterflies present and a high potential for reptiles. Areas of gorse scrub and conifer plantation offer nesting sites for a range of birds including potential stonechat and nightjar habitat. The site lies close to a great crested newt colony and any areas of standing water have potential as amphibian habitat.	Woodlands Acid Grasslands Heathland and Grass-Heath Communities Mineral Spoil Tips and Other Post-industrial Land Mosaic Habitats and Common Land <u>Secondary</u> Birds Reptiles Amphibians Invertebrates
RCTCBC	20	East Llwydcoed	A complex mosaic of grasslands, woodland, heath and scrub on the eastern flank of Llwydcoed. The SINC includes a complex of semi-natural habitat with areas of species rich grassland (National Vegetation Classification MG5), with locally frequent bird's foot-trefoil, black knapweed, greater burnet and devil's-bit scabious. The majority of the drier grassland represents a large area of relatively unmodified neutral grassland (National Vegetation Classification MG6). The large area of semi-improved grassland is a feature of the SINC and is designated as an important linking habitat. Small, but diverse areas of base flushed marshy grassland occur with meadow thistle a feature (National Vegetation Classifications M23 and M24). The old mineral-spoil habitat, supports areas of dry heath (with heather), neutral grassland (with kidney vetch), acid grassland (National Vegetation Classification U4) and large areas of emerging willow, birch, hawthorn, elm, hazel and gorse scrub. The Nany-y-derlwyn stream is included in the SINC and supports mature oak, ash and birch woodland. To the south, the SINC includes a small area of ancient woodland (oak, sycamore, and birch). The SINC includes a section of the Llwydcoed to Abernant Cycle track. This disused railway forms a wooded corridor, with oak, birch, alder, hazel, and ash woodland. This woodland links through to Abernant, and the wooded valley of the Nant Yr Wenallt. The mosaic of woodland, scrub and grassland habitat represents very diverse breeding bird habitat. Survey work in part of the SINC has recorded 34 bird species, which amongst a large number of breeding species included wood warbler and tree pipit. The site is also good invertebrate habitat with 18 recorded butterfly species important species including dingy skipper and green hairstreak. The site also has 7 species of recorded dragonfly including scarce blue-tailed damselfly.	<u>Primary</u> Woodland Scrub Communities Neutral Grassland Ffridd Communities Heathlands and Grass-heath Communities Mineral Spoil Tips and Other Post-Industrial Land Mosaic Habitats and Common Land <u>Secondary</u> Birds Reptiles Invertebrates
RCTCBC	29	Aberdare Mountain	Extensive areas of natural land and old coal and mineral spoil, which supports a complex mosaic of dry and wet	<u>Primary</u>

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
			heath, acid grassland, upland marshy grassland, acid flushes, conifer plantation, bracken and areas of open water. Dry heath is an important feature of the SINC with extensive areas of heather, bilberry and wavy-hair grass with western gorse. This intergrades with areas of wet heath with cross leaved heath, heather, deer grass, purple moor-grass and occasional common cotton grass. On coal/mineral spoil the dry heath includes significant lichen communities. Thirteen species of *Cladonia* lichen occur, including the nationally scarce *Cladonia azorica*, three further species which are scare or uncommon in Glamorgan (Vice County 41): *Cladonia cervicornis ssp.verticillata, Cladonia glauca*, and *Cladonia ramulosa*. The lichen species list includes 5 further notable lichens: *Arthrorhaphis grisea, Aspicilia grisea, Bachmanniomyces uncialicola, Cercidopora epipolytropa* and *Trapeliopsis gelatinosa*. The heath communities grade into acid grassland communities characterised by common bent, sheep's fescue, mat grass, matt grass, green-ribbed sedge, tormentil, heath bedstraw, heath speedwell, heath milkwort, and sheep's sorrel. On coal spoil the drier grassland supports a more varied composition, with neutral grassland with common bird's-foot trefoil, rough hawkbit, thyme-leaved sandwort, glaucous sedge and squirrel-tail fescue. Bare ground is an important feature within this mineral spoil habitat. The SINC includes areas of purple moor-grass and rush pasture with larger stands of bracken/ffridd, often associated with acid grassland. There are also some old quarries. The large quarry at S0 023042 supports heather and bilberry heath with bell heath, and colonies of both stag's-horn clubmoss and fir clubmoss. The conifer plantations support lodgepole pine, with sitka spruce and occasional larch. While much of the groundflora under these plantation is sparse, open areas and track sides support diverse marshy grassland communities dominated by purple moor-grass and rushes (including hard rush, and sharp flowered rush) but with glaucous sedge, common sedge, marsh thistle, and greater bird's-foot trefoil. Locally significant species including marsh valerian (a calcicole), lesser skullcap and creeping willow. Stag's head clubmoss (*Lycopdium clavatum*) has been recorded in these plantation rides. There is a network of ponds within the SINC (some of which are associated with coal workings). These support important amphibian populations including great crested newt and the site forms an extension of a meta-population area, which occurs on Winch Fawr West, Merthyr Tydfil. Palmate newt, toad and common frog occur in good numbers. The ponds support dragonfly communities with 11 species recorded, including scarce blue-tailed damselfly and black darter. Within or immediately adjacent to the SINC (including survey work for the Winch Fawr West site, in Merthyr) a number of uncommon and rare moths have been recorded, including Devon carpet (a nationally notable/Nb) plain wave (Local in Great Britain), Welsh wave (Local in GB), small engrailed (Local in GB), red necked footman (notable/Nb), neglected rustic (Local in GB), glaucous shears (Local in GB) and the confused (Local in GB). At	Woodlands Acid grasslands Ffridd Communities Heathland and Grass-Heath Communities Mineral Spoil Tips and Other Post-industrial Land Mosaic Habitats and Common Land Rock Exposures Amphibians Vascular Plants Mosses and Liverworts <u>Secondary</u> Scrub Communities Mammals Birds Reptiles Invertebrates

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
			least 14 butterfly species include dark green fritillary butterfly, green hairstreak and dingy skipper have been recorded. 11 species of dragonfly and damselfly, including the National Notable scarce blue-tailed damselfly. Thirty one breeding species have been recorded holding territories. The list of birds includes open hill species (wheatear, skylark, meadow pipit, stonechat) and woodland birds (lesser redpoll, siskin, willow warbler, chaffinch etc). The high density of nesting songbirds is reflected in the presence of cuckoo territories (cuckoo is an increasingly scarce breeding bird in the County Borough. The site supports summering (and possibly nesting) lapwing.	
MTCBC	8	Bryn-du & Ty'n-y-coedcae	Extensive upland moorland area of mainly marshy grasslands with wet heathlands and smaller areas of blanket bog, acid flush, valley mire and unimproved acid grassland, forming a mosaic. The marshy grasslands are dominated by purple moor-grass and grade into wet heathland supporting abundant cross-leaved heath and deergrass. The boggy habitats of the site support numerous species of interest, including round-leaved sundew, bogbean, sneezewort, bog asphodel, narrow buckler-fern, lesser skullcap, ivy-leaved bellflower and hare's-tail cottongrass. Several uncommon dragonflies have been recorded along with grayling butterfly.	Acid Grassland Marshy Grassland Heath & Grass-Heath Habitats Fens, Reedbeds & Other Swamps Bog Habitats & Flushes Watercourses Mosaic Habitat Invertebrates
MTCBC	9	Winchfawr West	Very extensive area of mostly upland habitats, comprising a complex mosaic of moorland and 'ffridd' habitats supporting many species of interest. Of particular note are the wet and dry heathlands, partly developed on old colliery spoil tips, which are the most extensive in the county borough. Other habitats of note include marshy and acid grasslands, acid flushes and grassheaths. Numerous small pools are present, particularly in the north. These support a colony of great crested newt which extends over the hilltop into the adjacent Aberdare Mountain pSINC in Rhondda Cynon Taff County Borough. Several other amphibian species occur in the ponds, and common lizard is a characteristic species of the heathland areas. The ponds also support diverse dragonfly assemblages, including uncommon species such as black darter, scarce blue-tailed damselfly and emerald damselfly. A range of other localised invertebrate species has been recorded from the site, including dark green fritillary butterfly and a strong population of grayling butterfly. Other fauna species of interest include breeding skylark, which nests at a high density on the site, and brown hare. Plant species of interest include regionally scarce species such as shoreweed, alternate-leaved water milfoil, spiked water-milfoil, unbranched bur-reed and long-stalked yellow sedge. Other noteworthy plant species include saw-wort, ivy-leaved bellflower, flea sedge and white sedge. Several nationally scarce lichens have been recorded from the heathland areas.	Scrub Communities Neutral Grassland Acid Grassland Marshy Grassland Heath & Grass-Heath Habitats Bog Habitats &Flushes Standing Open Water Post-industrial land Mosaic Habitat Mammals Birds Reptiles Amphibians Invertebrates

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
				Vascular Plants Lichens
MTCBC	7	Cwm Ffrwd	Valley habitats along the course of the Nant Ffrwd, which forms part of the boundary with the Brecon Beacons National Park. This is a large stream draining from the uplands in a largely unmodified course, passing through narrow gorges in places. Adjacent habitats include mainly broadleaved semi-natural woodlands with some marshy grasslands. The riverine woodland is dominated by ash, alder and hazel, giving way to sessile oak woodland on the valley sides. The woodlands have a rich ground flora supporting many ancient woodland indicator species, including wild garlic, sanicle, tutsan, sweet woodruff, hairy brome, giant fescue, wood melick and common cow-wheat, as well as regionally scarce species including beech fern, oak fern, toothwort and stone bramble. Several nationally scarce bryophytes and lichens have also been recorded. The site also includes a series of riverside fields between the river and the Heads of the Valleys Road. These support marshy grasslands, acid flushes, wet woodland and acid grasslands, with localised species including heath-spotted orchid and lousewort. Small pearl bordered fritillary occurs on the site, and otter ranges along the river system.	Woodlands Acid Grassland Marshy Grassland Bracken Communities Bog Habitats & Flushes Watercourses Mosaic Habitat Rock Exposures Mammals Fish Invertebrates Vascular Plants Mosses & Liverworts Lichens
MTCBC	60	Coed Meirig Pastures	Small group of horse-grazed fields supporting semi-improved acid grassland with areas of marshy grassland. The marshy areas support sneezewort, bog asphodel, lousewort, cross-leaved heath and devil's-bit scabious. An area of fen meadow in the east of the site supports the regionally scarce fen bedstraw, as well as other localised species including meadow thistle and marsh valerian.	Neutral Grassland Acid Grassland Marshy Grassland Watercourses Mosaic Habitat Other Features
MTCBC	12	Cwm Glo	Extensive mosaic of 'ffridd' (valleyside) habitats supporting a complex mosaic of semi-upland and lowland vegetation, in large part developed on old spoil heaps and colliery tips. Mainly unimproved acid grasslands but with extensive areas of wet and dry heathland. Other habitats of note include marshy grasslands with acid flushes, bracken slopes, small ponds and streams, the latter typically lined by semi-natural broadleaved woodlands mostly of oak and alder. The SINC contains the Cwm Glo SSSI. Plant species of interest include regionally scarce species such as fen bedstraw, soft-leaved sedge, intermediate lady's-mantle, alternate leaved water milfoil and moonwort, as well as local species such as meadow thistle, whorled caraway, saw-wort, petty	Woodlands Neutral Grassland Acid Grassland Marshy Grassland Bracken Communities

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
			whin and marsh arrow-grass. The Cwm Glo / Rhydycar West larger area isof international significance for waxcap fungi and is collectively the joint 13th most significant waxcap grassland site in the British Isles. The Cwm Glo cSINC itself contains 13 known waxcap grasslands which collectively support at least 24 species of waxcap as well as many other associated species of fungi. Great crested newt occurs in small ponds together with a range of other common amphibians and reptiles. Otter is thought to occur along the watercourses, and water vole has been recorded in the past. The site contains at least one known bat roost, and there is a good nesting bird fauna which includes redstart, wood warbler, reed bunting and linnet. Marsh fritillary butterfly has been recorded from the SSSI, and other local species such as grayling and dingy skipper are also present. Up to 11 species of Nationally Scarce invertebrates have been recorded, mainly associated with wetlands.	Heath & Grass- Heath Habitats Bog Habitats & Flushes Standing Open Water Post-industrial land Mosaic Habitat Other Features Mammals Birds Amphibians Invertebrates Vascular Plants Fungi
MTCBC	10	Gellideg North Fields	Series of fields containing acid grasslands, marshy grasslands, neutral grasslands and areas of bracken and scrub, together with sections of oak and alder woodland alongside small streams. Characteristic plant species of interest in the species-rich grasslands include devil's-bit scabious, heath spotted orchid, burnet saxifrage, pignut, saw-wort and bitter vetch. Greater butterfly orchid, a regionally scarce plant, was recorded from the woodland margin.	Woodlands Neutral Grassland Acid Grassland Marshy Grassland Bracken Communities Heath & Grass- Heath Habitats Watercourses Post-industrial land Mosaic Habitat Rock Exposures
MTCBC	13	Cwm Taf Fields &	Linear series of fields between the Afon Taf Fawr and the A470, also containing areas of semi-natural woodland and a revegetated limestone tip. The fields are a mosaic of damp and dry neutral grasslands with species-rich patches which support many plant species of interest including devil's-bit scabious, bitter vetch, quaking grass,	Woodlands Neutral Grassland

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
		Cefn Coed Tip	southern marsh orchid, common restharrow and pignut. The woodlands are variable in character, including areas of wet willow woodland, acid oak woodland and some ash woodland near the calcareous tip. The latter type supports brittle bladderfern, a regionally scarce plant, and many ancient woodland indicator species. The tip itself consists of limestone slag from the nearby ironworks, and overhangs the adjacent river in places. The thin soils on the tip plateau support an unusual type of calcareous grassland, the vegetation being dominated by heathgrass and supporting many localised plant species including moonwort, blue fleabane, small cudweed, hairy rockcress and wild thyme. Dark green fritillary occurs on the site.	Calcareous Grassland Acid Grassland Bracken Communities Heath & Grass- Heath Habitats Post-industrial land Mosaic Habitat Other Features Invertebrates
MTCBC	16	Cwm Taf Fawr	Section of major river tributary of the Afon Taf. The river extends into Brecon Beacons National Park and takes on an upland character to the north. cSINC includes adjacent woodlands, which are relatively undisturbed in the upper reaches and more urban in character further downstream. The upper reaches in particular are of high ecological value, comprising limestone gorge woodland dominated by oak and ash, with a rich ground flora including abundant wood anemone and bluebell. Numerous rare plant species occur here, including the nationally scarce grasses lesser hairy-brome and mountain melick, and the regionally scarce herb Paris, water avens and common twayblade. Further south the riverside woodland is more acid in character, but nevertheless supports a relatively diverse ground flora including localised species such as common cow-wheat and bitter vetch. The site also includes some adjacent areas of species-rich calcareous, neutral and acid grasslands. The calcareous grasslands in particular support numerous species which are scarce in the county borough, including salad burnet, common restharrow and field scabious. Otter ranges along the Afon Taf Fawr, and small pearl bordered fritillary butterfly is present on the site.	Woodlands Neutral Grassland Calcareous Grassland Acid Grassland Bracken Communities Watercourses Mammals Fish Invertebrates Vascular Plants
MTCBC	14	Cilsanws Common South	Area of semi-upland and upland common land, part of which is used as a golf course. The site represents a section of a much larger area of common land which is included within the adjacent Brecon Beacons National Park. The larger common is of key biodiversity interest in the county borough. The habitats of the site include dry heathland and acid grassland mosaics, acid flushes, wet heathlands, extensive bracken slopes with scattered trees, and small areas of calcareous grassland and scrub bordering the National Park. Noteworthy plant species include bog asphodel and round-leaved sundew in the wet habitats of the site, and carline thistle, blue fleabane, wild thyme, common milkwort and downy oat-grass in the calcareous grasslands. Common rock-rose, a regionally scarce plant, occurs at the margins of the calcareous scrub. Common lizard and slow worm also occur on the site.	Scrub Communities Calcareous Grassland Acid Grassland Bracken Communities Heath & Grass- Heath Habitats Bog Habitats & Flushes Mosaic Habitat Rock Exposures

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
				Other Features
MTCBC	15	Cwm Taf Fechan	A long linear site based on the valley of the Afon Taf Fechan and containing the Cwm Taf Fechan Woodlands SSSI. The cSINC covers a more extensive area of adjacent habitats supplementary to those of the SSSI. The valley of the Afon Taf Fechan passes through limestone geology, giving rise to habitats on the steep valley slopes which are either not or only poorly represented elsewhere in the county borough. These include limestone woodlands, calcareous grasslands, species-rich neutral grasslands, heathlands and limestone scrub. It is probably the single most important biodiversity resource in the county borough. Much of the woodland is ancient semi natural ash, with some oak. This is of an upland character on the highest slopes to the north. Alder dominated wet woodlands occur on the valley floor. Many species of interest have been recorded from the woodlands, including the nationally scarce limestone fern, which also occurs on a wall outside the SSSI area. The grasslands of the valley slopes and bottom are typically species rich and support species such as meadow saxifrage and adder's-tongue fern, which are of restricted occurrence in the county borough. The cSINC additionally includes heathlands, acid and calcareous grasslands, bracken slopes, calcareous flushes and calcareous scrub woodland habitats. Many regionally rare and scarce plant species occur in these habitats, including soft-leaved sedge, brittle bladder fern, intermediate lady's-mantle, upright brome, butterwort, limestone bedstraw, water avens, dwarf thistle, mountain melick and common rock-rose. Otter ranges along the Afon Taf Fechan. Birds of interest on the river include kingfisher, grey wagtail and dipper. Many rare and scarce invertebrate species have been recorded from the SSSI, including small pearl-bordered and silver-washed fritillary butterflies, and many of these are likely to occur in the habitats outside the SSSI.	Woodlands Scrub Communities Neutral Grassland Calcareous Grassland Bracken Communities Bog Habitats & Flushes Watercourses Mosaic Habitat Rock Exposures Other Features Mammals Fish Invertebrates Vascular Plants
MTCBC	58	Afon Taf	The major river in the county borough. cSINC includes areas of bankside and floodplain habitats, particularly towards the south of the county borough where the river corridor is less urbanised than further north. Associated habitats are chiefly semi-natural woodland (including areas of ancient semi-natural oak woodland and linear wet woodlands dominated by alder), neutral and marshy grasslands, bracken and scrub. Notable features of the river course include shingle banks which support localised plant species such as water chickweed, bearded couch and giant fescue. Otter occurs throughout the length of the cSINC, and the river is known to be of value to a wide variety of birds of interest, including kingfisher, grey wagtail, sand martin and dipper, as well as fish species including salmon, brown trout and bullhead and a range of foraging bat species.	Woodlands Neutral Grassland Watercourses Other Features Mammals Reptiles Fish
MTCBC	17	Y Graig	Area of 'ffridd' habitats mainly dominated by bracken, with patches of acid grassland and dry heath, particularly around rocky outcrops, and scattered birch trees. Also includes species-rich neutral and marshy grasslands to the west and areas of wet willow woodland. Plant species of interest include the regionally rare stag's-horn clubmoss, the regionally scarce heath dog-violet, climbing corydalis and grass vetchling, and other localised species such as yellow rattle and southern marsh orchid. Dark green fritillary butterfly occurs on the site.	Woodlands Neutral Grassland Acid Grassland Marshy Grassland Bracken Communities

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
				Heath & Grass- Heath Habitats Mosaic Habitat Rock Exposures Other Features Invertebrates Vascular Plants
MTCBC	18	Cyfartha Park	Area of ornamental parkland within Merthyr Tydfil. The cSINC includes an area of semi-natural woodland and several enclosures of neutral grassland in the eastern half of the park. Also includes small areas of secondary broadleaved plantation woodland and several small woodland ponds. The woodlands are of mixed composition, mainly oak, ash, beech and alder, with a ground flora including bluebell, giant fescue and yellow archangel. The majority of the grassland enclosures support species-rich flowery grassland with common knapweed, yellow rattle, eyebright and common spotted orchid.	Woodlands Neutral Grassland Standing Open Water Amphibians
MTCBC	19	Gyrnos Wood	Small area of wet woodland and an adjacent field supporting marshy grassland, acid grassland and bracken stands, immediately to the north of the Heads of the Valleys Road. There are also some gritstone outcrops and scattered mature trees. The wet woodland is dominated by alder, grey willow and downy birch, with a ground flora including hairy brome, giant fescue, bluebell, meadowsweet and marsh marigold. The acid grasslands support heath-grass and wavy hair-grass, while devil's-bit scabious and wild angelica occur in the marshy areas. The regionally scarce climbing corydalis is present in the bracken stands.	Woodlands Acid Grassland Marshy Grassland Bracken Communities Mosaic Habitat Rock Exposures
MTCBC	2	Bryniau	Semi-upland site comprising a complex mosaic of many habitats, partly associated with disused quarries (Bryniau Quarries) and spoil tips. Main habitats are acid grasslands with bracken stands, intermixed with numerous areas of acid flush and marshy grassland. Also present are areas of semi-natural woodland, including wet woodland areas dominated by grey willow, neutral grassland, ponds and streams, a small reedbed and some small areas of calcareous grassland. Species of interest include the regionally scarce royal fern and climbing corydalis, along with numerous localised plant species, including heath spotted orchid, southern marsh-orchid, bog asphodel, common milkwort and wild thyme. The ponds of the site support good populations of common amphibian species and great crested newt has also been recorded.	Woodlands Scrub Communities Neutral Grassland Calcareous Grassland Acid Grassland Marshy Grassland Bracken Communities Fens, Reedbeds & Other Swamps Bog Habitats & Flushes Watercourses Standing Open Water

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
				Post-industrial land Mosaic Habitat Rock Exposures Other Features Amphibians
MTCBC	1	Morlais Hill	Complex semi-upland area of limestone influenced habitats, partly derived from old limestone quarries (Morlais Castle Quarries) and quarry spoil tips. Part of the site is currently in use as a golf course. Extensive calcareous grasslands and screes supporting numerous rare and characteristic species, including the nationally scarce plants mossy saxifrage, soft-leaved sedge and limestone fern, as well as regionally scarce species including limestone bedstraw, brittle bladder-fern, dwarf thistle, common rockrose, common cudweed and green spleenwort. Also includes areas of neutral grassland and some small areas of acid grassland. Other habitats include limestone outcrops with ledge communities, small pools and limestone scrub. Many of the calcareous habitats are of extremely limited occurrence in the county borough. Grayling butterfly occurs in the quarries.	Scrub Communities Neutral Grassland Calcareous Grassland Acid Grassland Marshy Grassland Bracken Communities Standing Open Water Mosaic Habitat Rock Exposures Other Features Invertebrates Vascular Plants Mosses & Liverworts
MTCBC	3	Blaenmorlais	A large area supporting a mosaic of upland habitats at the western edge of Merthyr Common. Mainly acid grasslands with some acidic flushes, grass-heaths, dry heathlands, marshy grasslands and smaller areas of wet heathland. The flushes are particularly rich and hold populations of round leaved sundew, bog asphodel, lesser skullcap and common cotton-grass. The site also contains small disused quarries (Garth Quarries) and acid screes. A section of the Nant Morlais within the site has steep valley sides with rocky outcrops. A large pond in the south of the site supports floating bur-reed, a regionally rare plant, and several uncommon dragonflies. Grayling butterfly is present in the quarries and the site is likely to be important for a range of ground-nesting birds. To the north the site contains an area of limestone spoil tips supporting unimproved upland calcareous grassland, as well as some limestone outcrops and scree. These habitats are species rich, and support a population of the nationally rare mossy saxifrage as well as many regionally rare and scarce species, including limestone	Calcareous Grassland Acid Grassland Marshy Grassland Heath & Grass- Heath Habitats Bog Habitats & Flushes Watercourses Standing Open Water Post-industrial land Mosaic Habitat

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
			bedstraw, brittle ladder-fern, dwarf thistle and green spleenwort	Rock Exposures Invertebrates Vascular Plants
MTCBC	39	Merthyr Common North	Very extensive area of upland common land supporting a mosaic of both wet and dry moorland habitats. These include extensive areas of unimproved acid grassland, marshy grassland, dry heathland and grass-heath, together with areas of wet heath, acid flush, bracken patches, scree and exposed gritstone bedrock. Tracts of modified blanket bog occur on the highest ground in the northeast of the site; these are often wet with abundant bog-mosses, although sometimes drier where drainage channels have been cut. These moorland habitats are variously dominated by wavy hair-grass, mat grass, green-ribbed sedge, deer-grass and purple moorgrass, with ling heather, bilberry, crossleaved heath and crowberry dominating the heathlands. Localised plant species in these habitats include round-leaved sundew, butterwort and long-stalked yellow sedge. Numerous small ponds and streams are present, including the headwaters of the Nant Morlais. Several ponds support floating bur-reed, a rare species in Glamorgan. In the north-west of the site, in contrast, there are areas of outcropping limestone, scree and extensive disused quarries (Twynau Gwynion) supporting calcicole grassland and ledge communities of very restricted occurrence in the county borough. These areas are characteristically species rich, and support many regionally rare and scarce species, including mossy saxifrage, limestone bedstraw, brittle bladder-fern, dwarf thistle and green spleenwort. Numerous other localised plant species also occur in these habitats. Breeding populations of skylark, meadow pipit and snipe are present, and numerous other bird species of interest have been recorded, including hen harrier, merlin, peregrine, red kite, red grouse and golden plover. Other species of interest include grayling butterfly and a range of localised moths. Several uncommon dragonflies have been recorded, including scarce blue-tailed damselfly, keeled skimmer, black darter and golden-ringed dragonfly.	Calcareous Grassland Acid Grassland Marshy Grassland Heath & Grass- Heath Bog Habitats & Flushes Watercourses Standing Open Water Post-industrial land Mosaic Habitat Rock Exposures Birds Reptiles Invertebrates Vascular Plants
CCBC		Pan March and Traed y Milwyr, Llechryd	Extensive area of open countryside where semi-natural upland features predominate. Presence of acid grassland, heath and semi-improved acid grassland with at least 7 indicator species; Presence of *Sparganium angustifolium*. Presence of Ponds and ditches. Presence of Bracken.	<u>Primary</u> Acid grassland <u>Secondary</u> Standing Open Water Ffridd Communities
CCBC		River Rhymney	Waters with resident populations of sea / river / brook lamprey, sturgeon, allis / twaite shad, Atlantic salmon, grayling, common goby, bullhead, bleak, smelt, brown trout or sea trout. Watercourses used as regular migratory routes by anadromous species listed above. Probable breeding Otter, plus areas for foraging, laying up and territorial use. Relatively unpolluted main river with unmodified bed and banks. Watercourses with exposed sediment / erosion features (e.g. soft cliffs).	Watercourses

Local Authority	SINC No.	Site Name	Description	Meets or Exceeds the following Mid Valleys SINC Criteria*
CCBC		Butetown, Llechryd and Rhymney Grasslands	Semi-improved acid grassland with at least 7 indicator species. Semi-improved neutral grassland with at least 8 indicator species. Marshy grassland with at least 12 indicator species. Scrub. Ditches.	Acid Grassland Marshy Grassland

Page left intentionally blank.

Welsh Government

A465 Heads of the Valleys Dualling - Sections 5 and 6 - Dowlais Top to Hirwaun

Appendix 11L - Scoping Matrix

| Rev 0

July 2017

Final

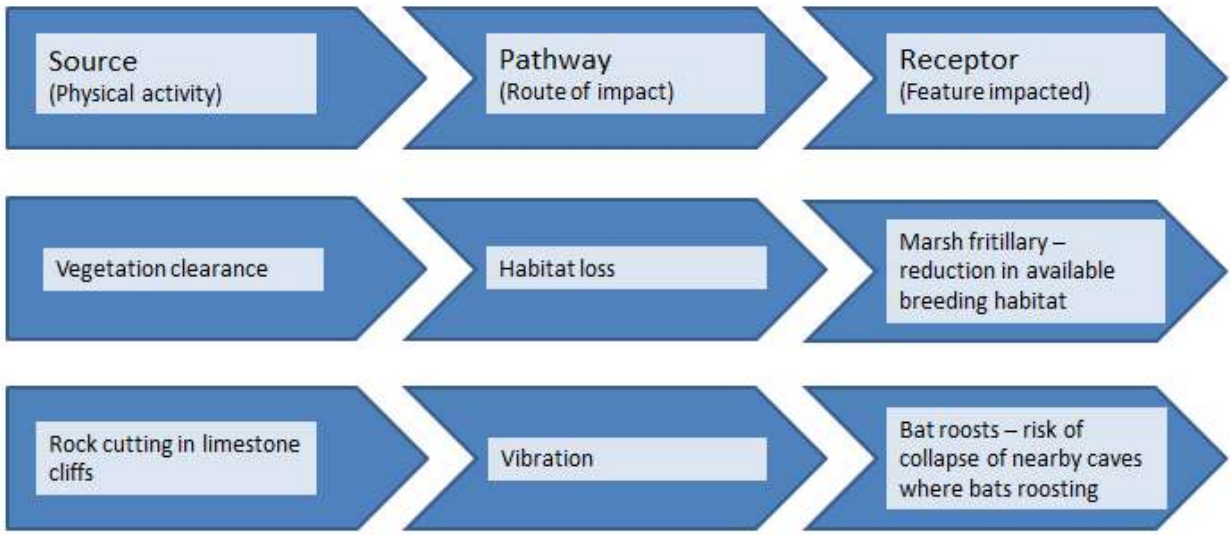
Contents

1. Introduction....1
2. Scoping matrix....3

1. Introduction

The source-pathway-receptor approach was used to understand the mechanisms by which the proposed scheme could result in likely significant effects on ecological resources. The approach started by identifying potential sources of effects, defined the zone of influence, and then mapped the progression of the effect along potential migration pathways. Where it was observed that an effect was potentially connected, via such a pathway, to an ecological resource, an analysis was undertaken to assess the implications for the resource including the likely sensitivity of the resource. This approach is shown in Plate 1 below.

Plate 1 : Source-pathway-receptor approach



Embedded measures are an integral part of the proposed scheme and as such are also taken into account. The measures include (full details provided in Appendix 11M and in Chapter 5: Scheme Description):

- alignment changes to avoid or reduce the potential for likely significant effects, specifically to minimise land take of key sites and habitats;
- design of new or modified culverts for safe mammal passage;
- lighting design to reduce spill on surrounding environments;
- use of clear span structures to cross larger watercourses;
- design and construction of a road drainage system to collect and attenuate the road drainage prior to discharge;
- construction commitment to create a Construction Environmental Management Plan (CEMP) which will include details of the measures to be employed to minimise effects on air quality, noise and vibration, traffic and water quality; and
- a construction commitment to comply with best practice guidelines on environmental protection, for example CIRIA C741 - Environmental Good Practice on Site (4th Edition) (CIRIA, 2015a), CIRIA C532 - Control of Water Pollution from Construction Sites (CIRIA, 2001) and CIRIA C648 - Control of Water Pollution from Linear Construction Projects (CIRIA, 2006).

Where embedded measures mitigates any potential likely significant effects,

Where embedded measures prevented effects from occurring, or reduced them to a level where no significant effect could be reasonably predicted, the effects were scoped out; the respective effect without mitigation is acknowledged but is 'greyed out' in Table 2.1. Impacts and effects were also scoped out if the ecological resource was:

- outside the zone of influence;
- not sensitive to the impact; or
- there was no pathway to an effect.

Any impacts to ecological resources that could not be ruled out in the scoping matrix were considered to have the potential to be significant and taken forward to the impact assessment, as reported in the main body of the assessment chapter.

2. Scoping matrix

Table 2.1 : Scoping matrix for likely significant effects

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
Statutory Designated Sites														
SAC – Coeddydd Nedd a Melte	None – Outside zone of influence	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	No pathway to effect	No pathway to effect	None – Outside zone of influence	None - No pathway to effect	None - No pathway to effect	None – Outside zone of influence (200 m)	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive
SAC – Blaen Cynon Marsh fritillary butterfly (within SAC meta-population)	Yes – Loss of suitable habitat within the Blaen Cynon Valley Functional landscape area – approximately 7.96 ha	Yes - Potential for severance / fragmentation of suitable habitat at new offline section at Hirwaun. Functionality of this habitat for marsh fritillary butterfly would likely be lost due to isolation effects	Yes – Potential for the direct mortality of eggs and caterpillars (webs)	Yes – Potential for (increased) road collisions to occur due to the wider road to cross	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	Yes – Proposed scheme could result in hydrological changes of the habitat due to the presence of new physical structures	Yes – Proposed scheme could result in introduction of alien species to the supporting habitat	None – No pathway to effect	None - No pathway to effect	None - Feature not sensitive	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive
SAC – Usk bat sites Annex I habitats only	None – Outside zone of influence	None - Outside zone of influence	None – Feature not sensitive	None – Feature not sensitive	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – No pathway to effect	None - No pathway to effect	None – Outside zone of influence (200 m)	None – Outside zone of influence	None – Feature not sensitive	None – Feature not sensitive	None - Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
SAC – Usk bat sites Annex II species only – Lesser horseshoe bats	Yes – Reduction of / potential loss of suitable bat roosting and foraging habitat and commuting routes across the proposed scheme outside of the SAC – roosting features within Taf Fechan and Taf Fawr and approximately 64 ha of woodland habitats	None	Yes – Potential for death or injury of individuals if roosts damaged outside of the SAC	Yes - Bats may be forced to cross road into pathway of traffic if existing safe crossing points are removed / routes altered	None – Feature not sensitive	None – Feature not sensitive	None – Feature not sensitive	None – Feature not sensitive	None – Feature not sensitive	None – Feature not sensitive	None – Feature not sensitive	Yes – Noise and vibration caused by excavation or rock cutting works adjacent to bat roosts could disturb bats and cause them to abandon their roosts. It can also disorientate and reduce efficacy of echolocation during foraging outside of the SAC.	Yes – Lighting near a bat roost access point or commuting and foraging habitat could delay bats from emerging and shorten the amount of time available to them for foraging outside of the SAC	Yes - Disturbance during operation and maintenance at the new permanent structures from presence of people, noise, lighting and vehicular movements. New lighting design may cause bats to abandon roosts, avoid flight lines and feeding areas.
SSSI – Dyffrynoedd Nedd a Mellte a Moel Penderyn	None – Outside zone of influence	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	No pathway to effect	No pathway to effect	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None – Outside zone of influence (200 m)	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
SSSI – Cors Bryn-y-Gaer (part of Blaen Cynon SAC)	None – Outside zone of influence	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None – Outside zone of influence (200 m)	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive
SSSI – Woodland Park and Pontpren (part of Blaen Cynon SAC)	None – Outside zone of influence	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	No pathway to effect	No pathway to effect	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None – Site is located over 200 m from the proposed scheme	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive
SSSI – Tir Mawr a Dderi Hir, Llwydcoed	Yes – Approximately 1.34 ha along its northern boundary with the existing A465	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction.	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
SSSI – Bryncarnau Grasslands, Llwydcoed	None – Outside zone of influence	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	None – Outside zone of influence	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive
SSSI – Cwm Glo a Glyndyrys	None – Outside zone of influence	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	No pathway to effect	No pathway to effect	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None – Outside zone of influence (200 m)	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive
SSSI – Penmoelallt	None – Outside zone of influence	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	No pathway to effect	No pathway to effect	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None – Outside zone of influence (200 m)	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive
SSSI – Daren Fach	None – Outside zone of influence	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	No pathway to effect	No pathway to effect	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None – Outside zone of influence (200 m)	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
SSSI – Cwm Taf Fechan Woodlands (also a Local Nature Reserve (LNR))	Yes – Approximately 0.24 ha in two locations: underneath the proposed structure over the Taf Fechan and of the north east of this where a new access to the site is proposed	None	None - Feature not sensitive	None - Feature not sensitive	No pathway to effect	No pathway to effect	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive
SSSI – Nant Glais Caves	None – Outside zone of influence	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	No pathway to effect	No pathway to effect	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None – Feature not sensitive	None – Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive
SSSI – Lower House Stream Section	None – Outside zone of influence	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	No pathway to effect	No pathway to effect	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive
Non-statutory designated sites														
SINC – Coed Wernhir, Rhondda Cynon Taf	None – Outside zone of influence	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None – Outside zone of influence	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
SINC – Werfa Farm, Rhondda Cynon Taf	None – Outside zone of influence	None – Outside zone of influence	None - Feature not sensitive	None - Feature not sensitive	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None – Outside zone of influence	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive
SINC – Hirwaun Industrial Estate	No – Construction activities begin at ch.900	None	Feature not sensitive	No pathway to effect	No pathway to effect	No pathway to effect	No – outside zone of influence	None – no pathway to effect	None – no pathway to effect	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Hirwaun Ponds Rhondda Cynon Taf	Yes – Approximately 1.69 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
SINC – Hirwaun Common Rhondda Cynon Taf	Yes – Approximately 10.03 ha	None site already fragmented by existing road network	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	Yes – Proposed scheme could result in hydrological changes of the habitat due to the presence of new physical structures	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Hirwaun Ponds North Rhondda Cynon Taf	Yes – Approximately 0.21 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Hirwaun Iron Works Rhondda Cynon Taf	Yes – Approximately 0.77 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
SINC – Upper Cynon Floodplain Rhondda Cynon Taf	Yes – Approximately 1.06 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Nant Hir Valley and Reservoir Rhondda Cynon Taf	Yes – Approximately 11.98 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Llwydcoed Slopes Rhondda Cynon Taf	Yes – Approximately 10.23 ha	No	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	Yes – Proposed scheme could result in hydrological changes of the habitat due to the presence of new physical structures	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
SINC - Nant Hir Gwyddel, Rhondda Cynon Taf	No	No	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – East Llwydcoed, Rhondda Cynon Taf	None – Outside zone of influence	None – Outside zone of influence	Feature not sensitive	Feature not sensitive	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Bryn-defaid Heath Rhondda Cynon Taf	None	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
SINC – Aberdare Mountain Rhondda Cynon Taf	Yes – Approximately 1.57 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	Yes – Proposed scheme could result in hydrological changes of the habitat due to the presence of new physical structures	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Bryn-du and Ty'n-y-coedcae Merthyr Tydfil	Yes – Approximately 0.35 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Winchfawr West Merthyr Tydfil	Yes – Approximately 11.67 ha	None	Yes - Great Crested Newt	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	Yes – Proposed scheme could result in hydrological changes of the habitat due to the presence of new physical structures	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction.	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
SINC – Cwm Ffrwd Merthyr Tydfil	Yes – Approximately 1.46 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	Yes – Proposed scheme could result in hydrological changes of the habitat due to the presence of new physical structures	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Coed Meurig Pastures Merthyr Tydfil	Yes – Approximately 1.59 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Gellideg North Fields Merthyr Tydfil	None – Outside zone of influence	None – Outside zone of influence	Feature not sensitive	Feature not sensitive	None – No pathway to effect	None	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
SINC – Cwm Taf Fields and Cefn Coed Tip Merthyr Tydfil	None – Outside zone of influence	None – Outside zone of influence	Feature not sensitive	Feature not sensitive	None – No pathway to effect	None	None – Outside zone of influence	Yes – Proposed scheme could result in water pollution pathways during construction.	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems.	None – Outside zone of influence (200 m)	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Cwm Taf Fawr Merthyr Tydfil	Yes – Approximately 0.36 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction.	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems.	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Afon Taf, Merthyr Tydfil	None – Outside zone of influence	None – Outside zone of influence	Feature not sensitive	Feature not sensitive	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
SINC – Cwm Glo, Merthyr Tydfil	None – Outside zone of influence	None – Outside zone of influence	Feature not sensitive	Feature not sensitive	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Cilsanws Common South Merthyr Tydfil	None – Outside zone of influence	None – Outside zone of influence	Feature not sensitive	Feature not sensitive	None – No pathway to effect	None	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None – Outside zone of influence (200 m)	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Cwm Taf Fechan (also a Local Nature Reserve) Merthyr Tydfil	Yes – Approximately 0.86 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
SINC – Y Graig Merthyr Tydfil	Yes – Approximately 5.5 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	Yes – Proposed scheme could result in hydrological changes of the habitat due to the presence of new physical structures	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Cyfartha Park Merthyr Tydfil	None – Outside zone of influence	None – Outside zone of influence	Feature not sensitive	Feature not sensitive	None – No pathway to effect	None	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None – Outside zone of influence (200 m)	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Gyrnos Wood Merthyr Tydfil	Yes – Approximately 1.24 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction.	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems.	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
SINC – Bryniau Merthyr Tydfil	Yes – Approximately 1.79 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Morlais Hill Merthyr Tydfil	None – Outside zone of influence	None – Outside zone of influence	Feature not sensitive	Feature not sensitive	No pathway effect	None	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None – Outside zone of influence (200 m)	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Blaenmorlais Merthyr Tydfil	None – Outside zone of influence	None – Outside zone of influence	Feature not sensitive	Feature not sensitive	No pathway effect	None	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None – Outside zone of influence (200 m)	None – Outside zone of influence	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – Merthyr Common North Merthyr Tydfil	None – Outside zone of influence	None – Outside zone of influence	Feature not sensitive	Feature not sensitive	No pathway effect	None	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None – Outside zone of influence (200 m)	None – Outside zone of influence	Feature not sensitive	Feature not sensitive	Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
SINC – Pan March and Traed y Milwyr, Llechryd Caerphilly	Yes – Approximately 2.55 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC – River Rhymney, Caerphilly	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
SINC - Butetown, Llechryd and Rhymney Grasslands, Rhymney	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
Ancient Woodland Inventory (AWI) sites	Yes – Approximately 5 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	Yes – Proposed scheme could result in hydrological changes of the habitat due to the presence of new physical structures	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
Habitats														
Marshy grassland, species-rich: (for example purple moor-grass and rush pasture) OUTSIDE OF DESIGNATED SITES	Yes – Approximately 1.78 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	Yes – Proposed scheme could result in hydrological changes of the habitat due to the presence of new physical structures	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
Semi-improved acid grassland, species-rich OUTSIDE OF DESIGNATED SITES	None	None	Feature not sensitive	Feature not sensitive	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
Semi-improved neutral grassland, species-rich OUTSIDE OF DESIGNATED SITES	Yes – Approximately 5.44 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	Yes – Proposed scheme could result in hydrological changes of the habitat due to the presence of new physical structures	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
Heathland mosaic OUTSIDE OF DESIGNATED SITES	None	None	Feature not sensitive	Feature not sensitive	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
Flush and spring OUTSIDE OF DESIGNATED SITES	None	None	Feature not sensitive	Feature not sensitive	None – No pathway to effect	None – No pathway to effect	None – Outside zone of influence	None – No pathway to effect	None – No pathway to effect	None – No pathway to effect	None – No pathway to effect	Feature not sensitive	Feature not sensitive	Feature not sensitive
Wet woodland OUTSIDE OF ANCIENT WOODLAND INVENTORY	None	None	Feature not sensitive	Feature not sensitive	None – Outside zone of influence	None	None – Outside zone of influence	None – Outside zone of influence	None – Outside zone of influence	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
Natural inland cliff	Yes – Limited to areas where pillar supports are needed for proposed structures over Taf Fawr and Taf Fechan	None	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive
Hedgerows (species-rich)	Yes – Approximately 537 m	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	None – No pathway to effect	None – No pathway to effect	Yes – Proposed scheme could result in dust / air pollution	Yes – Proposed scheme could result in habitat degradation due to a change in air quality as a result of vehicular emissions	Feature not sensitive	Feature not sensitive	Feature not sensitive
Running water (rivers, streams and ditches)	Yes – Approximately 2.5 km of temporary diversions or culverting	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	None - Feature not sensitive	Feature not sensitive	Feature not sensitive	Feature not sensitive	Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
Standing water (lakes, ponds and reservoirs)	Yes – approximately 0.49 ha loss of standing water at two locations, including one pond and one reservoir	None	Feature not sensitive	Feature not sensitive	Yes – proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – proposed scheme could result in introduction of alien species	Yes – proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	None - Feature not sensitive	Feature not sensitive	Feature not sensitive	Feature not sensitive	Feature not sensitive
Other habitats valued at Local or below	Yes – Approximately 62 ha	None	Feature not sensitive	Feature not sensitive	Yes – Proposed scheme could result in hydrological changes of the habitat due to soil compaction and site compounds / soil storage areas	None	Yes – Proposed scheme could result in introduction of alien species	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	None - Feature not sensitive	Feature not sensitive	Feature not sensitive	Feature not sensitive	Feature not sensitive

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
Species														
Bats (excluding lesser horseshoe bats) Greater horseshoe Common pipistrelle Soprano pipistrelle Myotis spp. Noctule Brown long-eared	Yes – Reduction of suitable bat roosting and foraging habitat and commuting routes across the proposed scheme	Yes - Loss of connectivity between bat roosts and feeding grounds where hedgerows that provide commuting routes have been bisected by the construction works – could result in changes in movements and increased use of energy	Yes - Tree felling, demolition of buildings and construction work on caves and structure containing bat roosts may cause direct mortality of bats present	Yes - Bats may be forced to cross road into pathway of traffic if existing safe crossing points are removed / routes altered	None – Feature not sensitive	None – Feature not sensitive	None – Feature not sensitive	None – Feature not sensitive	None - Feature not sensitive	None – Feature not sensitive	None – Feature not sensitive	Yes - Noise and vibration caused by excavation or rock cutting works adjacent to bat roosts could disturb bats and cause them to abandon their roosts, and could also disorientate and reduce efficacy of echolocation during foraging	Yes - Lighting near a bat roost access point or commuting and foraging habitat could delay bats from emerging and shorten the amount of time available to them for foraging	Yes - Disturbance during operation and maintenance at the new permanent structures from presence of people, noise, lighting and vehicular movements. New lighting design may cause bats to abandon roosts, avoid flight lines and feeding areas.
Great Crested Newts (GCN)	Yes – Terrestrial habitat to be lost within the proposed scheme footprint and areas of work, approximately 4 ha of terrestrial habitat	None - Mo pathway to effect. Linking habitat between ponds of confirmed GCN presence and terrestrial habitat maintained	Yes - Terrestrial habitat to be cleared as part of the construction woks	None – No pathway to effect	None - No loss or change in number, distribution or water levels of ponds	None	Yes – Potential to introduce invasive species to ponds	Yes – Proposed scheme could result in water pollution pathways during construction	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	None - Feature not sensitive	None – Feature not sensitive	None – Feature not sensitive	None - Feature not sensitive	None – No pathway to effect

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
Otter	No – No otter holts identified within the proposed scheme footprint and working areas	Yes – Severance could be caused if any existing culverts are removed or altered in a way to make unsuitable for mammal passage or if none are provided in offline sections	Yes - Mortality possible if fall into or become trapped in excavations / works compounds	Yes – Road Traffic Accident (RTA) – Blocking or removal of existing underpasses / culverts could prevent safe passage under road, and force individuals up on to the road causing RTA	None - No loss or change in flow of watercourses - Main watercourses to remain open and undisturbed and terrestrial habitat connectivity is retained for safe passage	None	None - Feature not sensitive	Yes – proposed construction methods could result in pollution event/decrease in water quality causing decreased food source, or decreased fecundity	Yes - proposed scheme could result in pollution event/decrease in water quality causing decreased food source, or decreased fecundity. However, beneficial impacts are predicted due to implementation of currently absent pollution prevention and control systems	None - Feature not sensitive	None – Feature not sensitive	Yes – Noise and vibrations may disturb otters lying up in the nearby area and also commuting routes	Yes – lighting of watercourses has the potential to effect otter commuting movements	None – no lighting near watercourses is proposed. All operational traffic is at height from major water features (clear span structures) and therefore unlikely to generate likely significant effects.
Lapwing	Yes – Loss of breeding habitat at Dowlais Top – currently supports twelve breeding pairs	None - Habitat severance already occurs where this species has been recorded.	Yes - There is the potential for mortality or injury of lapwing eggs and chicks during the construction of the proposed scheme	Yes - There is the potential for mortality or injury of lapwing chicks due to collision with traffic on the proposed scheme if breeding adults return to a reduced Dowlais Top	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None – Feature not sensitive	Yes - There is the potential for disturbance of breeding lapwing at locations adjacent to the construction footprint	Yes - There is the potential for disturbance of breeding lapwing by construction lighting at locations adjacent to the construction footprint	None – No pathway to effect
Badger	No – No loss of setts	None – No pathway to effect	None – No pathway to effect	None – No pathway to effect	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None – Feature not sensitive	None – No pathway to effect	None – No pathway to effect	None – No pathway to effect

Ecological resource	Land take / habitat loss	Severance / fragmentation	Direct mortality (during construction)	Direct mortality (during operation i.e. road collisions)	Changes to hydrology (construction)	Changes to hydrology (operation)	Invasive species	Water pollution (construction)	Water pollution (operation)	Air pollution (dust during construction)	Air pollution (during operation)	Disturbance (construction noise / vibration)	Disturbance (construction – lighting)	Disturbance (operation and maintenance visits)
Reptiles	Yes – Suitable habitat to support reptiles is located within the proposed scheme footprint – approximately 17 ha of high suitability habitat, 42 ha of moderate suitability habitat and 37 ha of low suitability habitat	No – Habitats for reptiles are already severed in locations. Landscape connections at the wider scale are not affected	Yes – During vegetation clearance and clearance of verge habitat	None – No pathway to effect	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None – Feature not sensitive	None - Feature not sensitive	None - Feature not sensitive	None – No pathway to effect
European eel, Atlantic Salmon,	Yes - There is the potential for injury or mortality of freshwater fish species during the construction phase of structures within watercourses. Limited to areas of in-channel working or percussive piling in riparian areas	Yes - Freshwater habitats capable of supporting migrating fish may be lost due to dewatering in-channel modification of bed and bank structures, or the insertion of culverts and bridge infrastructure which could form physical barriers or changes in-channel habitat	Yes - Freshwater habitats capable of supporting migrating fish may be lost due to dewatering in-channel modification of bed and bank structures, or the insertion of culverts and bridge infrastructure which could form physical barriers or changes in-channel habitat	Yes - Pollution events could cause potential mortality during operation	Yes - Construction related discharges, and dewatering could influence the flow type/habitat of the watercourses and the fish communities. Additional surface water discharge has the potential to increase flow in receiving waterbodies, affecting the distribution of habitats and flow of sensitive species	None	Yes - Potential to introduce invasive species to watercourses	Yes – Proposed scheme could result in water pollution pathways during construction causing mortality	Yes - Beneficial impacts are predicted due to implementation of currently absent pollution prevention systems	None - Feature not sensitive	None – Feature not sensitive	Yes - Construction activities undertaken within the channel and adjacent riparian zones have the potential to disturb migratory fish species. Noise and vibration can create behavioural and physical avoidance, preventing migration through the area and reducing feeding and spawning behaviours	Yes - Construction activities undertaken within the channel and adjacent riparian zones have the potential to disturb migratory fish species. Noise and vibration can create behavioural and physical avoidance, preventing migration through the area and reducing feeding and spawning behaviours	None - Feature not sensitive

Page intentionally left blank.

Welsh Government

A465 Heads of the Valleys Dualling - Sections 5 and 6 - Dowlais Top to Hirwaun

Appendix 11M - Design Mitigation

Rev 0

July 2017

Final

Contents

1. Introduction 1
2. Principles Adopted During Proposed Scheme Design 1
3. Important Ecological Resources 2
4. Environmental Mitigation Achieved by Proposed Scheme Design 3
4.1 Mitigation Achieved by Design 3
4.2 Mitigation Achieved During Proposed Scheme Construction Phase 4
4.3 Mitigation Achieved by Regulation of the Contractor's Compound Locations 8
4.4 Ensuring Mitigation is achieved by Adopting Standard Post Construction Management and Maintenance Protocols 9
Annex A. Outline Strategy for Management Plans 10

1. Introduction

Environmental mitigation achieved by the proposed scheme design is considered embedded within the design and a feature of the proposed scheme. This report summarises the process of achieving that embedded mitigation.

2. Principles Adopted During Proposed Scheme Design

The environmental design principals provided in Table 2.1 formed part of the proposed scheme design process which had an overall aim of minimising land take and environmental impact, on important ecological resources. These also included minimising any secondary impacts due to changes in the environmental conditions for key designated sites and habitats.

Table 2.1 : Environmental design principals

A465 Sections 5 & 6 design principles
Principle 1 – Minimise impact on existing marshy grassland habitats by minimising risk of drying out, whilst considering whole life cost of the scheme
Principle 2 – Minimise impact on Ancient Woodland in close proximity of the scheme
Principle 3 – Where technically feasible and not entailing excessive cost, consider opportunities to enhance existing ecological connectivity
Principle 4 – Aim to achieve an earthworks balance and make use of exposed geology, where suitable in terms of slope stability and safety, to create drama and reduce land take when compared with typical engineering batters
Principle 5 – Minimise habitat loss from Sites of Importance for Nature Conservation in close proximity to the scheme
Principle 6 – Adopt a "Simple and Elegant" approach for structures
Principle 7 – Minimise lighting on scheme as a whole, particularly viaducts over Taf Fawr and Taf Fechan
Principle 8 – Ensure structures design, facing and finishes provides integration to current vernacular balanced by whole life cost
Principle 9 – Maintain existing underpasses to maintain connectivity for wildlife and minimise habitat severance
Principle 10 – Provide linear landscape strips in areas where they currently exist, if appropriate, to re-integrate proposed scheme as per the existing highway planting
Principle 11 – Where appropriate, minimise tree and shrub planting to create open, outward views from the scheme and integrate with existing upland landscape character
Principle 12 – Minimise flooding and water quality impacts

3. Important Ecological Resources

Mitigation measures have been incorporated into the proposed scheme and are relevant to a range of valued ecological resources. The important ecological resources include, but are not limited to:

- statutory and non-statutory designated sites for nature conservation: SACs; SSSIs; SINCs and Ancient Woodland Inventory (AWI) sites;
- habitats suitable for marsh fritillary *Euphydryas aurinia*, a qualifying Annex II species for the Blaen Cynon SAC, within the landscape functional area;
- woodland and hedgerows;
- semi-improved, species rich grasslands and heath;
- rivers and streams;
- terrestrial and aquatic mammals and under-road crossing points;
- bats and their roosts, commuting routes and under-road crossing points;
- lapwing;
- great crested newt *Triturus cristatus* habitats;
- otter *Lutra lutra*, their commuting and foraging locations and their laying up places; and
- reptile species.

4. Environmental Mitigation Achieved by Proposed Scheme Design

Following the development of the environmental design principles in December 2015, an initial environmental constraints plan was provided to the design team to facilitate further environmental mitigation within the design. This constraints plan was a live document that was continuously refreshed as additional baseline environmental data were gathered, and feedback received from stakeholders, so that the design team was aware of all emerging issues and constraints that needed to be addressed in the design development. This fed into all aspects of the design including alignment, junction strategy, structures, drainage design, temporary land take for construction, lighting proposals etc.

Mitigation for the proposed construction phase was detailed by requiring specific process or methods of work during the proposed construction phase, that were added to the Register of Environmental Actions and Commitments (REAC), or by influencing the proposed construction programme in key sensitive areas to avoid sensitive periods for the wildlife known to be present. In addition there was close dialogue between the Environment and Buildability team in consideration of likely location of temporary working areas and likely storage compounds

Finally a series of post-construction outline management and maintenance protocols were specified to ensure land acquired for mitigation develops into the required habitat type set out in the Environmental Masterplan (EMP). These features are individually discussed in the following sections (Sections 4.1 to 4.4).

4.1 Mitigation by Design

Table 4.1 details the process and activities undertaken in order to mitigate effects on specified ecological resources during the design development to date of the proposed scheme. In summary, alignment, choice / design of structures and characteristics of new and existing culverts was influenced by the (potential) presence of valued ecological resources. Features are shown in the EMP ES Volume 4. Specified standards in design that minimise noise and vibration, control lighting and limit dispersal of pollutants were referenced at this stage. It should be emphasised that the provision of new road culverts and improvement of existing road culverts is an embedded mitigation measure for road drainage and water quality only. In terms of the nature conservation assessment, road culverts are considered as enhancements rather than mitigation. In the table below, the influence on the road drainage design is described with the aim of achieving this enhancement for nature conservation.

Table 4.1 : Mitigation achieved by proposed scheme design

Summary of activity	Proposed measure adopted	Resource
Development of proposed scheme design		
Consider changes in alignment	Avoid and protect existing woodland and ancient woodland wherever practicable.	Ancient woodland
Consider changes in alignment	Minimise habitat loss from SSSI, Special Areas of Conservation (SACs) and SINCs.	Designated sites
Consider changes in alignment	Retain all existing great crested newt breeding ponds.	Great crested newt
Consider changes in alignment	Minimise impact on existing marshy grassland habitats.	Marshy grassland
Maximise size of culverts where possible	Size of new culverts are a minimum 1.5 m x 1.5 m, where practicable to provide flight space for commuting bats and / or ‘dry’ mammal ledges	Enhancement - increased wildlife permeability
Retain culverts on existing	New culverts have, in the main, been designed to facilitate	Enhancement -

Summary of activity	Proposed measure adopted	Resource
watercourse alignments where possible	existing watercourse alignment. Where possible, they would also provide opportunities for improved permeability for wildlife under the road.	increased wildlife permeability
Minimise hydrological change	Minimise realignment and changes to watercourse hydromorphology so far as is possible. Outfalls have been designed to prevent significant change to hydrological conditions. Hydrological continuity would be maintained throughout construction, with measures to maintain water flows during and post-construction.	Fish / otter
Sensitive drainage design	Drainage design, as much as practical, has avoided sensitive receptors, for example designated sites, habitats important in supporting protected species and freshwater habitats; to avoid potential impacts. The specification of gully pots has been avoided, to remove the risk of amphibians becoming trapped in the drainage system.	All Amphibians
Attenuate drainage	All road drainage would be held in attenuation ponds that would act as a filtering system before being discharged road run-off into local waterways.	
Pollution prevention	Pollution Prevention and Control systems have been designed into the proposed scheme and include features such as filter drains, attenuation ponds, infiltration trenches and oil separators. These would be used to reduce and treat pollution incidents before runoff were to reach watercourses and susceptible habitats.	All
Use appropriate species in planting	Landscape planting would use stock of local provenance.	All

4.2 Mitigation Achieved During Proposed Scheme Construction Phase

Table 4.2 details the process and activities undertaken in order to mitigate effects on specified ecological resources during the construction phase of the proposed scheme. In summary, resource specific management plans / method statements and protocols would be prepared in advance of all works. An Ecological Clerk of Works (EcCoW) would be present on site throughout the construction phase and build awareness of ecological resources present with those on site. Protection of retained habitats is fundamental at this stage while habitat creation on the new soft estate would be essential embedded mitigation. This embedded mitigation would be delivered by contract documentation which would include the REAC and a Construction Environmental Management Plan (CEMP). The current REAC is available on request. The REAC is a live document updated throughout future key project stages. An outline CEMP is provided as a standalone document (available on request) which details the likely processes that will be adopted during the construction phase to minimise impacts on the environment.

Requirements of legal documents (such as European Protected Species licencing) or methods in order to avoid contravention of wildlife legislation are also considered as embedded measures in the proposed scheme. Outline management / method statement strategies for specific ecological resources are included in Annex A.

Table 4.2 : Mitigation achieved by scheme design during the construction phase

Summary of activity	Proposed measure	Resource
Liaison and consultation		
Environmental Clerk of Works and Ecological clerk of works	ECoW and EcCoW to provide advice on site	All
Provision / implement of management plans / method statements / protocols		
Invasive species management plan	An invasive species management plan would be prepared and adhered to throughout the construction works phase	Invasive species
Avoid key fish migration periods	Construction works in or near watercourses are not required. Where minor culvert works or minor watercourse realignments are required they would be undertaken in times that avoid the key fish migration periods.	Fish
Temporary culverting	Temporary culverting of watercourses to be minimised. Where unavoidable, the design would meet current best practice design (for example, DMRB Volume 10, Section 4 Nature Conservation, Parts 1-7) to minimise impact on the watercourse and maximise suitability to provide safe passage for fish species.	All
Fish rescue ahead of dewatering	Fish within dewatered areas would be captured and release into adjacent waters.	Fish
Sensitive stockpiling of materials	No stockpiling of material would be permitted within 10 m of any watercourse.	Fish, otter
Minimise noise and vibration near ecological resources	All generators / pumps would be baffled / screened to reduce noise and located as far away as practicable from known ecologically sensitive resources. For example, a buffer zone of at least 50 m radius would be provided around bat roosts within retained trees and structures.	Fish, birds, bats, otter, badger
Control of lighting	No night time working is proposed. However, if temporary lighting is required it would be controlled and follow guidance on lighting including the use of directional lighting or preventative measures such as installation of shields, hoods or limiting the height of lighting columns. The following guidance would be followed: • CIRIA C741 – Environmental Good Practice on Site (4th Edition); • Institute of Lighting professionals (2011) Guidance Notes for the reduction of obtrusive lighting (GN01:2011); and • CIE 150: 2003 Technical Report, Guide to the Limitation of the Effects of Obstructive Light from Outdoor Lighting Installations. Mitigation for temporary lighting would be directed and approved by the EcCoW prior to works commencing.	Bats, otter
Control of pollution	Best practice pollution prevention guidelines to treat run-off in relation to routine pollution and major spillages to reduce or avoid impacts to the water quality of watercourses would be employed. Measures to manage different types of water pollution (such as sedimentation, nutrients from wastewater, surface water pollution, and	All

Summary of activity	Proposed measure	Resource
	chemical pollution from vehicles) would be specified where required. The following industry standards would be adhered to: • CIRIA guidance, in particular CIRIA C741 - Environmental Good Practice on Site (4th Edition) (CIRIA, 2015); • CIRIA C532 - Control of Water Pollution from Construction Sites (CIRIA, 2001); and • CIRIA C648 - Control of water pollution from linear construction projects (CIRIA, 2006). Waterbodies would be monitored during and post construction where necessary.	
Document ecological constraints	All ecological constraints would be clearly marked on all construction drawings, including the Series 100, Series 200 and Series 3000 specifications, and detailed in the EMP and CEMP.	All
Document ecological incidents	An ecological incident recording and response plan would be implemented in order to document information and detail appropriate procedures to be implemented in response to potential incidents.	All
Awareness building		
Ecological toolbox talks	Ecological toolbox talks would be provided to all contractors working on the proposed scheme by the EcCoW immediately prior to the start of works. This would include a description of ecologically valuable resources and constraints, the legislative protection and the procedures for reporting. All contractors working on the proposed scheme would be required to read and sign the toolbox talk and agree to comply with the methods of working.	All
Protection of habitats and resources		
Fence retained vegetation	All retained vegetation and ecologically valuable would be appropriately fenced to protect them from damage or disturbance from construction activities. To avoid / reduce the effects of local compaction of ground within the root protection zones of retained trees and hedgerows, or other accidental damage, appropriate tree protection measures would be implemented in accordance with (find relevant BS 5837:2012- 'Trees in relation to design, demolition and construction. Recommendations') and additional arboricultural advice.	All
Demarcate exclusion zones for sensitive resources	Exclusion zones around sensitive resources in the form of fencing would be erected to protect retained habitats, sites and species (for example SSSI, SINC and marsh fritillary habitat), immediately adjacent to construction works.	All
Demarcate working areas	Clearly defined working areas and haul routes would be marked out. Plant and personnel would be constrained to a prescribed working corridor through the use of temporary barriers, thereby minimising unnecessary damage to	All

Summary of activity	Proposed measure	Resource
	habitats and potential direct mortality and disturbance to species. Barriers should be erected prior to works commencing on site and shall aim, in particular, to protect the river corridor, woodland, or any other sensitive habitats from unnecessary disturbance.	
Provision of effective Stock proof fencing	Effective highway boundaries and fencing to standard specifications to protect designated sites and habitat creation sites would be provided where grazing is an important part of management, to avoid cattle escaping onto the road.	Designated sites – Tir Mawr a Dderi Hir SSSI and Llwydcoed Slopes.
Sensitive location of temporary works areas	Site compounds, soil storage areas, haul roads would be located appropriately to minimise land take of key sites and habitats and disturbance to species and their places of rest.	All
Avoid bird breeding season	Site clearance would be undertaken outside the bird breeding season (March to August, inclusive).	Birds
Prevent wildlife becoming trapped	All construction excavations would either be covered (with plywood), fenced or have an escape ramp put in them overnight to prevent wildlife from falling into them and becoming trapped. Actions in adherence to (CIRIA) C741 would be implemented.	All
Habitat creation		
Soft estate planting	This includes planting around culverts, structures and other features for bats, badgers and otters, and planting of food / nectar plants for marsh fritillary.	All
Provision of roosting / nesting opportunities	Replacement of opportunities for bats to roost and birds to nest through the provision of artificial roosting and nesting boxes / features.	Bats, birds
Monitoring		
Implementation of control measures and ecological mitigation during construction	ECoW and EcCoW to monitor implementation of control measures and construction phase ecological mitigation.	All
Reporting		
Ecological monthly report	An ecological progress report would be produced monthly during construction to provide a review of ecological issues and recommendations for remedial action if required. Issues in the monthly progress report (to be defined in agreement with the contractor and NRW) would likely include topics such as water quality testing at selected locations and top soil monitoring.	All
Annual ecological monitoring report during construction	An annual ecological monitoring report would be compiled during the construction phase. Ecological monitoring would be defined in agreement with the contractor and NRW but would likely include: • bat roost surveys: maternity roosts in buildings and structures; hibernation cave surveys; • marsh fritillary habitat assessment and adult and larval web count of the continued long-term	

Summary of activity	Proposed measure	Resource
	monitoring and of the mitigation site as it develops; • breeding lapwing surveys and monitoring of mitigation habitat establishment and development; • great crested newt survey of ponds in Winchfawr SINC; and • surveys to monitor success of INNS control.	

4.3 Mitigation Achieved by Regulation of the Contractor's Compound Locations

Table 4.3 details the process and activities that would be undertaken in order to mitigate effects on specified ecological resources during the construction phase of the proposed scheme, specifically in relation to temporary working areas and site compounds. In summary, the location of these areas, including soil storage areas, would be specified to avoid sensitive habitats and valuable ecological resources.

Table 4.3 : Mitigation achieved by scheme design with regulation of contractor's compound

Summary of activity	Proposed mitigation and offsetting	Resource
Protection of habitats and resources		
Location of works compounds and soil storage mounds	Works compounds would not be located in designated or other sensitive areas of habitat. If works compound areas needed to be enlarged, the EcCoW would need to be consulted prior to disturbance occurring and these adjacent areas would need to be re assessed to confirm the presence / absence of any ecological constraints. Works compounds would not be situated where a likely significant effect would be expected to occur. Specifically, temporary works would not be situated on any designated site, or on suitable marsh fritillary habitat, lapwing breeding habitat, or ancient woodland. Contractor's compounds would be sited away from known bat roosts to minimise disturbance from noise / light / vibration.	All
Fencing of works compounds	Works compounds, storage sites and access roads would be suitably fenced to prevent the trapping of mammals. Fencing specification would need to be post and rail to let animals use the site during construction (allow them to access and leave without becoming trapped).	Badgers, otters
Specified standards		
Safe storage of all materials and machinery	Safe storage of all materials and machinery within compound to prevent injury to mammals. Any areas that need to be used for storage outside the proposed scheme construction boundary would need to be re-assessed for ecological impact.	Badgers, otters

4.4 Ensuring Mitigation is Successfully Delivered by Adopting Standard Post Construction Management and Maintenance Protocols

Table 4.4 details the post-construction management plans and monitoring programmes that would be required. Monitoring is an essential part of the mitigation process allowing, where required, management plans to be modified in respect to dynamic habitat change and species presence / absence. This would be a requirement of planning and contract documentation and its implementation would be the responsibility of the 'appointed DBFO company. Outline management strategies for marsh fritillary, lapwing and ancient woodland habitats are provided in Appendix 11N; Appendix 11P and Appendix 11O, respectively in Volume 2 of the ES.

Table 4.4 : Mitigation achieved by Post-Construction Managements

Summary of Activity	Proposed mitigation	Resource
Provision / implement of management plans / method statements / protocols		
Post construction – short term (between Year 1 and year 5 post construction)	Bat roost surveys: maternity roosts in buildings and structures; hibernation cave surveys; and bat boxes and pipe roosts.	Bats
	Marsh fritillary habitat assessment and adult and larval web count of the continued long-term monitoring and of the mitigation site as it develops.	Marsh fritillary
	Great crested newt survey of ponds in Winchfawr SINC.	GCN
	Survey of habitat suitability and breeding lapwing at mitigation site.	Lapwing
	Ancient woodland mitigation site.	Ancient woodland
	EcCoW to monitor success of ecological planting up to five years post planting to ensure target habitat achieved for: • Woodland habitats; • Grassland habitats; and • Marginal planting of attenuation ponds.	All
	EcCoW to monitor waters at risk of pollution and discharges to them.	Watercourses, fish
Post-construction – long term (between year 6 and year 25 post construction)	Compilation of an Environmental Management Plan outlining detailed prescriptions for the long term management, maintenance and aftercare of habitats and species within the new soft estate and land acquired for mitigation.	All sites, habitat, species

Annex A. Outline Strategy for Management Plans

A.1 – Invasive and Non-Native Species (INNS)

- Pre-construction surveys to identify the location of INNS species.
- All personnel on site to receive Tool box talks on identification of INNS and adhering to protocol.
- Areas of INNS identified should be isolated and demarcated and clearly sign posted (warning signs for site workers specifying location, type and reason for installation) prior to works to avoid immediate spread of material.
- Appropriately timed in situ herbicide treatment and / or physical removal of large areas as controlled waste to landfill, if required.
- Biosecurity protocols will be developed to avoid the introduction and spread of INNS between sites.

A.2 – Bats

- Pre-construction surveys to identify / confirm status location of bat roosts.
- All personnel on site to receive Tool box talks on adhering to protocol and legislation with regards to bats.
- No working during dusk, dawn or night time has been proposed during the indicative construction programme and, therefore, no disturbance to roosting, commuting or feeding bats is anticipated.
- Timing of construction works at particularly sensitive locations (Taf Fawr and Taf Fechan) would be programmed to cause minimum disturbance to roosting lesser horseshoe bats. Works are to occur when lesser horseshoes are not present / less active in the affected caves of the Taf gorges. No works are permitted on the gorge crossings between the dates of the 15 December and the 31 March with no working during dusk, dawn or night time.
- A Karst protocol would be developed in consultation with NRW to minimise effects on limestone features and define responses to unexpected findings during construction.
- Areas sensitive to disturbance will be demarcated and clearly sign posted (warning signs for site workers specifying location, type and reason for installation) prior to works to avoid disturbance.
- The construction site would not be lit around watercourses.
- All generators / pumps would be baffled / screened to reduce noise and located as far away as practicable from known ecologically sensitive resources. For example, at least 50 m radius would be provided around bat roosts within retained trees and structures.

A.3 - Marsh fritillary

- Pre-construction surveys to identify the location of larval webs, caterpillars and suitable turves for translocation.
- All personnel on site to receive Tool box talks on protocol and legislation with regards to marsh fritillary.
- Sensitive retained vegetation will be fenced and demarcated where possible and clearly sign posted (warning signs for site workers specifying location, type and reason for installation) prior to works to avoid potentially killing, injuring or disturbing marsh fritillary and to avoid the damage of habitats of the larval and adult life stages of the species.
- Larval webs, the devil's-bit scabious plant upon which they are found feeding and their immediate turf will be translocated from the proposed scheme footprint to a suitable and prepared receptor at the land acquired for ecological mitigation at Llwydcoed Slopes under specific method statement, developed in consultation with NRW. This would occur between August and October (prior to vegetation clearance) when the caterpillars are gregarious and above ground and can be easily located. These activities would be undertaken in accordance with a detailed method statement agreed with NRW.

A.4 – Otters

- Pre-construction surveys to identify the location of otter holts and hovers.
- No working during dusk, dawn or night time during the construction programme.
- The construction site would not be lit around watercourses.
- All generators / pumps would be baffled / screened to reduce noise and located as far away as practicable from known otter holts / hovers.
- Works compounds, storage sites and access roads would be suitably fenced to prevent the trapping of mammals. Fencing specification would need to be post and rail to let animals use the site during construction (allow them to access and leave without becoming trapped).
- No oils, chemical, soil or other storage areas would be located within 10 m of a watercourse.
- All excavations will be covered at night to prevent the trapping of otter. Where this is not practicable means of escape should be provided.
- All watercourses and adjacent riparian habitat would maintain an undisturbed route of passage to allow otters to move freely.
- An emergency response protocol to set out the appropriate course of action in the unlikely event should a water pollution incident occur would be developed.
- Under-road crossing points will be retained and kept open for commuting badger.

A.5 – Great Crested Newt (GCN)

- Pre-construction surveys to identify the location of GCN, including waterbodies and terrestrial habitat.
- Erection of exclusion fencing to prevent the movement of GCN into areas of works (northern boundary of Winchfawr West SINC).
- Biosecurity protocols will be developed to avoid the introduction and spread of aquatic INNS and pathogens between sites.
- All excavations will be covered at night to prevent the trapping of amphibians. Where this is not practicable means of escape should be provided.
- Retained waterbodies and sensitive terrestrial habitat will be fenced and demarcated where possible and clearly sign posted (warning signs for site workers specifying location, type and reasons for installation) prior to works to avoid potentially killing, injuring or disturbance of GCN and to avoid the damage of terrestrial habitat.
- An emergency response protocol to set out the appropriate course of action in the unlikely event should a water pollution incident occur will be developed.
- The landscape proposals of the proposed scheme have incorporated beneficial features for amphibians: marginal vegetation planting around attenuation ponds and provision of artificial refugia / hibernacula in retained areas.

A.6 – Reptiles

- Pre-construction surveys to identify the location of reptiles.
- Seasonally and directionally appropriate vegetation clearance techniques.
- Deployment of exclusion fencing where suitable to prevent the movement of reptiles into areas of works.
- All excavations will be covered at night to prevent the trapping of reptiles. Where this is not practicable means of escape should be provided.
- Retained reptile habitat will be fenced and demarcated and clearly sign posted (warning signs for site workers specifying location, type and reasons for installation) prior to works to avoid potentially killing, injuring or disturbing reptiles and to avoid the damage of habitat.

- Receptor sites and retained habitat suitable for reptiles would be fenced and demarcated and clearly sign posted (warning signs for site workers specifying location, type and reasons for installation) to avoid entry by construction machinery where they are contiguous with the proposed scheme.

A.7 - Fish

- Where minor culverting is required this would be undertaken in times that avoid the key fish migration periods.
- Fish within dewatered areas would be captured and release into adjacent waters.
- No stockpiling of material would be permitted within 10 m of any watercourse.
- All generators / pumps would be baffled / screened to reduce noise and located as far away as practicable from watercourses.
- An emergency response protocol to set out the appropriate course of action in the unlikely event should a water pollution incident occur will be developed.
- Watercourse bed material would be retained and returned to new culverted locations in accordance with The River Restoration Manual (RRM, 2013).

A.8 – Badgers

- Pre-construction surveys to identify the location of badger setts within 30 m of the construction footprint.
- Works compounds and soil storage areas within the location of badger setts will be avoided and will not obstruct any likely badger pathways.
- All generators / pumps would be baffled / screened to reduce noise and located as far away as practicable from known badger setts.
- Works compounds, storage sites and access roads would be suitably fenced to prevent the trapping of mammals. Fencing specification would need to be post and rail to let animals use the site during construction (allow them to access and leave without becoming trapped).
- All excavations will be covered at night to prevent the trapping of badgers. Where this is not practicable means of escape should be provided.
- Under-road crossing points will be retained and kept open for commuting badger.

A.9 – Birds

- Pre-construction surveys to identify the location of Schedule 1 breeding birds.
- Vegetation removal should be undertaken outside of the breeding bird season (March to August, inclusive). Any variation in the dates for specific species will be included in the management plan. If works cannot be avoided during the breeding season, it is recommended that an inspection should be undertaken by a suitably experienced ecologist immediately prior to works commencing to ensure there are no active birds' nests present in the vicinity of the works. Should an active bird nest be found, it would be necessary to establish a buffer zone around the nest and leave it undisturbed until the chicks have fledged.
- The areas of vegetation and structures scheduled to be cleared each day would be walked by a suitably qualified and experienced ecologist or ECoW prior to the arrival on site of clearance contractors to avoid the risk of disturbance to birds from excessive movement of vehicles / people or through the noise of the hand tools used in the clearance works.
- Retained vegetation will be fenced and demarcated where possible and clearly sign posted (warning signs for site workers specifying location, type and means of installation) prior to works prevent accidental incursion or clearance.
- Schedule 1 breeding birds would be dealt with so not to contravene wildlife legislation. This may include provision of alternative breeding sites and suitable timed construction works.

A.10 – General

- An Environmental Clerk of Works, supported by an Ecological Clerk of Works, would be present on site throughout the construction phase.
- All personnel on site to receive Tool box talks on protocol and legislation with regards to relevant ecological features.

Page left intentionally blank.

Welsh Government

A465 Heads of the Valleys Dualling - Sections 5 and 6 - Dowlais Top to Hirwaun

Appendix 11N - Outline Mitigation Strategy - Llwydcoed Slopes

Rev 0

July 2017

Final

Contents

1. Introduction 2
2. Outline Strategy Structure 3
2.1 Ecological resources 3
2.2 Issues affecting marsh fritillary and SSSI feature habitat 3
2.3 Aims and objectives of management 3
2.4 Management options for achieving aims and objectives 3
2.5 Prescriptions for management options 3
2.6 Work schedule 4
2.7 Delivery 5
2.8 Monitoring and remedial measures 5
3. Useful Reading 6

1. Introduction

An outline management strategy for the long term management of the land acquired for mitigation at Llwydcoed Slopes is provided here as an indication of the content required for the final version to be agreed in consultation with Natural Resources Wales (NRW).

Management for this mitigation area would be specifically designed in relation to creating marsh fritillary *Euphydryas aurinia* habitat and botanical features consistent with that contained within habitat loss at the Tir Mawr a Dderi Hir Site of Special Scientific Interest (SSSI). The management strategy would be phased into three main stages:

- 2017 to 2019 – Pre-construction;
- 2019 to 2022 – Construction;
- 2022 to 2027 – Five year post –construction; and
- 2027 to 2042 – Twenty five year operational and maintenance.

The structure of the management strategy would be in accordance with Clause 11 of BS 42020:2013 and include the elements stated. Section 2 provides indicative headings and information required in the finalised management strategy. The objectives of the finalised management strategy would be to provide clarity and certainty over what is to be provided and enable sufficient resources to be identified and allocated.

Section 3 provides some sources of useful reading to inform the finalised management strategy.

2. Outline Strategy Structure

2.1 Ecological resources

This section of the management strategy would describe the habitat requirements and latest survey information and ecological information for marsh fritillary. Baseline habitat information on the Tir Mawr a Dderi Hir SSSI and the mitigation site would also be provided. An evaluation should be made of individual elements as required.

2.2 Issues affecting marsh fritillary and SSSI feature habitat

The most recent local and UK ecological / population trends would be detailed here and the issues affecting marsh fritillary, its specific habitat and the species rich grasslands, generally.

2.3 Aims and objectives of management

Clear aims and objectives including specific success criteria would be set out for each ecological receptor (habitat and species).

The mitigation measures could be considered successful if the monitoring programme demonstrates the following:

- the majority of land at Llwydcoed Slopes is in suitable condition for marsh fritillary by the end of the fifth summer post construction;
- a stable management regime at Llwydcoed Slopes has been established by the end of the fifth summer post construction; and
- that the management measures are in place and secured to develop high quality, diverse habitats within the Llwydcoed Slopes.

Additional success criteria would be developed where necessary for different stages through the post construction period in agreement with NRW in relation to percentage of ground cover, botanical species diversity and suitable / good condition marsh fritillary habitat.

2.4 Management options for achieving aims and objectives

As the Llwydcoed Slopes mitigation site is to be managed for the benefit of multiple ecological resources, the influences of different management options should be considered in relation to each of the different ecological features. Options for different management techniques would be discussed and detailed in this section.

2.5 Prescriptions for management options

Prescriptions for management of the Llwydcoed Slopes mitigation site are likely to include the following. Please note that this list is not exhaustive and that the final management strategy would be agreed in consultation with NRW and the relevant nature conservation interests.

- Consultation with local authority ecologists, Butterfly Conservation and PONT to discuss management and grazing options of the site but also what management already occurs / planned in the local area is a specified requirement of planning documentation.
- Preparation of the mitigation could include:
  - grazing;
  - burning;
  - mowing;
  - tree and scrub clearance; as well as

  - the devil's-bit scabious *Succisa pratensis* planting and turf translocation required as part of the planning documentation.
- Long term management will include site specific grazing by either cattle or ponies. Grazing should be extensive in nature and should be limited to spring and summer on wetter sites, although autumn/winter grazing or all-year grazing can also be suitable, particularly on drier sites. In general, a low stocking rate over a longer period is preferable. As the habitat varies between sites and over time stocking rates may also need to vary to reflect prevalent conditions but as a general rule stocking rates should not exceed 0.2 - 0.3 livestock units / ha / year. On seasonally grazed sites, roughly 1 cow every hectare (2.5 acres) for three months per year is recommended (Butterfly Conservation, 2016). Detail on species, number of animals, duration of grazing as well as any other actions (e.g. new stock fencing, natural regeneration areas or scrub control) would be provided.
- Provisions would also be made for any necessary remedial action to address any issues identified through monitoring.

2.6 Work schedule

Table 2.1 outlines potential management actions for the Llwydcoed Slopes mitigation site. Additional detail and timings would be necessary within the finalised version.

Table 2.1 : Indicative works schedule

Key Stage	Phase	Estimated date	Indicative management actions
Key Stage 4 (Public Local Inquiry and Minister Decision)	Pre-construction	July 2017 to July 2018	Harvest and propagate devil's-bit scabious plants at plant / garden nurseries
Key Stage 5 (Procurement of the DBFO Contractor)	Pre-construction	July 2018 to September 2019	Continue to propagate devil's-bit scabious plants
Key Stage 6 (Construction phase)	Construction – Pre vegetation clearance	Nov 2019 to Oct 2022	Identify and translocate larval webs present, with their immediate turves, in the footprint of the proposed scheme from August to October, to the land acquired for mitigation under a detailed method statement agreed with NRW
			Acquire land for mitigation (Lwydcoed Slopes) under the Highways Act 1980 (as amended) process (to manage in the long-term) to mitigate for loss of habitat suitable to support marsh fritillary and SSSI habitat loss
			Mark out turves for later translocation to mitigation site
	Construction – Post vegetation clearance	Nov 2019 to Oct 2022	Plant nursery grown devil's-bit scabious into the mitigation site
			Translocate turfs to mitigation site under a detailed method statement.
			Monitor mitigation habitats and marsh fritillary presence thereon as part of the ongoing monitoring programme.
			Engage / revise management as per monitoring results annually
5 year post construction phase	Post construction	Nov 2022 to Nov 2027	Development and implementation of a long-term extensive cattle grazing management system. Likely to be at approximate stocking rates that should not exceed 0.2 - 0.3 livestock units/ha/year.
			Monitoring programme to be agreed in consultation with NRW.
			Engage / revise management as per monitoring results annually.
25 year operational and maintenance phase	Post construction	Dec 2027 to Dec 2042	Continue grazing plan. Likely to be at approximate stocking rates that should not exceed 0.2 - 0.3 livestock units/ha/year. Modify as per revised monitoring programme.

2.7 Delivery

Funding resources and mechanisms and responsible parties would be detailed here to show how sustainable long-term delivery of the proposed management would be implemented. Specific actions / deliverables, related timeframes for that delivery and the responsible person / lead (with contact details) would be detailed in this section.

2.8 Monitoring and remedial measures

Monitoring of the mitigation site should be undertaken to establish the success and effectiveness of measures undertaken to mitigate for the impacts on marsh fritillary and the botanical aspects of the habitat lost at Tir Mawr a Dderi Hir SSSI.

A complete monitoring programme, as an essential component of the management strategy (in agreement with NRW) would be devised and should include the following:

- purpose, aims and objectives of monitoring;
- identification and provision of data describing the baseline condition prior to the start of the proposed scheme;
- appropriate success criteria;
- methods for data gathering and analysis;
- locational details;
- timing and duration;
- responsible person and lines of communications;
- reporting and review of outcomes; and
- provision for adaptive management (e.g. contingencies and remedial actions) that would be undertaken if monitoring showed that proposed management measures were not effective or not reaching their stated aims and objectives.

3. Useful Reading

Borsje, H.J. (2005) *The marsh fritillary butterfly in the Avalon Marshes, Somerset: A study on habitat restoration and the re-establishment potential.* English Nature Report number 632.

Butterfly Conservation (u.d.) Marsh Fritillary factsheet [https://butterfly-conservation.org/files/marsh_fritillary-psf.pdf]

Countryside Council for Wales (2008) *Core Management Plan Including Conservation Objectives For Blaen Cynon Special Area of Conservation (SAC).* Version: 1. Date: 28th February 2008.

Fowles A.P. (2005) *Habitat quality mapping for marsh fritillary populations*. Staff Science Report. 05/5/1. Countryside Council for Wales.

Jacobs (2017) *A465 Abergavenny to Hirwaun Dualling Sections 5 & 6; Blaen Cynon Special Area of Conservation Marsh Fritillary Monitoring Programme Year 9 (2016).* Consultancy Report to Welsh Government.

Page left intentionally blank.

Welsh Government

A465 Heads of the Valleys Dualling - Sections 5 and 6 - Dowlais Top to Hirwaun

Appendix 11O - Outline Management Strategy - Croesbychan Ancient Woodland Mitigation Site

Rev 0

July 2017

Final

Contents

1. Introduction 1
2. Outline Management Strategy Structure 2
2.1 Introduction 2
2.2 Ecological Resources 2
2.3 Issues Affecting Ancient Woodland Habitats 2
2.4 Aims and Objectives of Management 2
2.5 Management Options for Achieving Aims and Objectives 2
2.5.1 Pre-Construction 2
2.5.2 During Construction 3
2.5.2.1 Retained ancient woodland 3
2.5.2.2 Creation of new woodland habitat 3
2.5.3 Post Construction 3
2.5.3.1 Retained ancient woodland 3
2.5.3.2 New woodland habitat 3
2.6 Prescriptions for management options 3
2.7 Work schedule 4
2.8 Delivery 4
2.9 Monitoring and remedial measures 4
2.9.1 Monitoring of enhancement features 4
3. Useful Reading 9

1. Introduction

An outline management strategy for the long term management of woodland habitats created at Croesbychan is provided in this document as a guide to the content required for the final version to be agreed by the Design Build Finance Operate (DBFO) Contractor in consultation with Natural Resources Wales (NRW).

Management for this mitigation area would be specifically designed in relation to creating new woodland habitat with ancient woodland characteristics and enhancement of retained ancient woodland plots. The management strategy would be phased into three main stages:

- 2017 to 2019 – Pre-construction;
- 2019 to 2022 – Construction;
- 2022 to 2027 – Five year post –construction; and
- 2027 to 2042 – Twenty five year operational and maintenance.

The structure of the management strategy would be in accordance with Clause 11 of BS 42020:2013 and include the elements stated. Section 2 provides indicative headings and information required in the finalised management strategy. The objectives of the finalised management strategy would be to provide clarity and certainty over what is to be provided and enable sufficient resources to be identified and allocated.

Section 3 provides some sources of useful reading to inform the finalised management strategy.

2. Outline Management Strategy Structure

2.1 Introduction

This section would describe the background to the selection and justification for the long term management of the mitigation site. A map of the mitigation site should also be presented.

The proposed scheme would result in the loss of sensitive habitats including ancient woodland. The adverse effects of the proposed scheme are to be mitigated as far as is practicable through replacement woodland planting and enhancement of retained ancient woodland habitat at Croesbychan (see Environmental Masterplan in Volume 4 of the Environmental Statement).

2.2 Ecological Resources

Baseline woodland habitat information would be detailed here. This would include the baseline conditions of the retained woodland habitats, the woodland to be lost and the existing habitat where woodland creation is proposed.

2.3 Issues Affecting Ancient Woodland Habitats

The most recent UK and local habitat trends and status would be detailed here and the issues affecting its sustainable management discussed.

2.4 Aims and Objectives of Management

Clear aims and objectives including specific success criteria would be set out. These would be agreed in consultation with NRW and the local authority ecologists.

Objectives for new and enhanced habitats could include:

- at least 95% of both canopy and shrub layer should consist of native species;
- removal of non-native invasive species from newly created and retained woodland habitats;
- 80% of ground flora to correspond with a targeted National Vegetation Classification (NVC) community;
- approximately 10% of woodland habitat to comprise open space; and
- increase levels of deadwood within woodland habitat.

2.5 Management Options for Achieving Aims and Objectives

Options for different management techniques would be discussed and detailed in this section. Additional specific aims and objectives at different times would be developed such as objectives and resulting specific necessary actions during the creation, establishment and management stages. Indicative actions are provided below in terms of their timeframe in relation to the proposed scheme. Table 2.1 provides further detail.

2.5.1 Pre-Construction

This section would detail measures to be undertaken prior to the onset of construction works and could include:

- collection of seeds from veteran and mature trees within local ancient woodland habitats, to be propagated and planted in habitat creation areas post construction;
- assessment of the retained ancient woodland habitat and habitat to be lost to classify the woodland in line with National Vegetation Classification (NVC) habitats;
- identify retained ancient woodland (any veteran and mature trees within retained woodland) to be protected during construction and enhanced post construction;

- translocation of deadwood from areas of woodland to be lost, into retained habitat for enhancement;
- identify biodiversity and cultural features within retained woodland to be protected, maintained or enhanced; and
- assess threats from grazing / browsing animals on the new and retained woodland habitats.

2.5.2 During Construction

This section would detail indicative measures and techniques which could be employed during the construction phase of the works, to prevent damage to retained habitats and to create new woodland habitat and could include the following.

2.5.2.1 Retained ancient woodland

- Protection of retained trees / woodland habitat during construction with fencing, incorporating root protection zones;
- Protection of the soil profile of retained ancient woodland habitat from damage or changes in structure;
- Diversifying the structure of the woodland through thinning and clearing regimes, targeting non-native species;
- Retention of vegetation felled during the clearance works for the provision of refugia and dead wood within retained ancient woodland habitat.

2.5.2.2 Creation of new woodland habitat

- Planting of seeds / propagated saplings collected from veteran and mature trees during pre-construction phase;
- Planting of native saplings from horticultural stock of local provenance;
- Translocation of top soil (containing ground flora seed bank) from lost woodland habitats to areas of new woodland habitat creation;
- Translocation of coppiced stumps and scrub from cleared areas of woodland to new woodland habitat creation;
- Buffering / screening of newly created habitat from adjacent habitats to increase structural and biodiversity.

2.5.3 Post Construction

2.5.3.1 Retained ancient woodland

- Gradual (‘Halo’) thinning around veteran and mature trees;
- Creation of open spaces such as rides and glades within the retained woodland;
- Management and removal of invasive species;
- Removal of any fly tipped material where possible;
- Enhancement of woodland for additional species, for example by provision of bat and bird boxes.

2.5.3.2 New woodland habitat

- Watering, supplementary planting and undesirable species management.
- Long term management to aid establishment.

2.6 Prescriptions for management options

The specified prescriptions for specified locations would be provided here.

2.7 Work schedule

Specified prescriptions would be at specified times. A works schedule would be required and presented so it should be easily interpreted by those actioning the management strategy.

2.8 Delivery

Funding resources and mechanisms and responsible parties would be detailed here to show how sustainable long-term delivery of the proposed management would be implemented. Specific actions / deliverables, related timeframes for that delivery and the responsible person / lead (with contact details) would be detailed in this section.

2.9 Monitoring and remedial measures

Monitoring of both the retained ancient woodland habitat, and newly created woodland habitats could be undertaken annually for the first five years. Post construction monitoring will need to be agreed with NRW but could be and in years 10, 15, 20 and 25. Monitoring of the mitigation site should be undertaken to establish the success and effectiveness of measures undertaken to mitigate for the impacts.

A complete monitoring programme, as an essential component of the management strategy (in agreement with NRW) would be devised and should include the following:

- purpose, aims and objectives of monitoring;
- identification and provision of data describing the baseline condition prior to the start of the proposed scheme;
- appropriate success criteria;
- methods for data gathering and analysis;
- locational details;
- timing and duration;
- responsible person and lines of communications;
- reporting and review of outcomes; and
- provision for adaptive management (e.g. contingencies and remedial actions) that would be undertaken if monitoring showed that proposed management measures were not effective or not reaching their stated aims and objectives.

Indicative methods of monitoring could include:

- fixed point quadrat survey;
- fixed point photography;
- additional random quadrats;
- assessment of overall site condition; and
- species list for the entire area.

2.9.1 Monitoring of enhancement features

Bird nest boxes and bat roosting boxes deployed in the retained ancient woodland habitats could also be monitored.

Table 2.1 : Indicative management options

Construction Phase	Indicative management to be undertaken
Pre-construction	**Collection of seeds from veteran and mature trees within the ancient woodland** • Prior to construction works, seeds would be collected from veteran and mature trees within the area of habitat that is to be cleared. These should be retained or propagated for planting within the new habitat being created post construction; • Seeds would be collected from as many suitable trees as possible to maximise genetic diversity in the replanted woodland and to maintain local provenance of species. **Assessment of the retained ancient woodland habitat to classify the woodland in line with NVC guidelines** • The ancient woodland habitat marked for enhancement, that to be lost and the grassland habitat where new woodland habitat is to be created would be surveyed prior to the start of construction works to classify the habitats present. This will inform the enhancement measures employed in this habitat in terms of species structure. **Identification of any veteran and mature trees within retained woodland** • Suitable veteran and mature trees within the ancient woodland habitat being retained would be identified to ensure protection throughout the works and for enhancement during post construction works. **Identify biodiversity and cultural features within retained woodland** • Any biodiversity or cultural features within the ancient woodland habitat being retained should be identified to ensure protection throughout the works and for enhancements during the post construction works. **Translocation of deadwood** • Dead wood present within areas of woodland that are to be lost to the proposed scheme would be translocated into retained areas to enhance this habitat. **Assess threats from grazing / browsing animals on the new and retained woodland habitat** • An assessment should be made of the potential of both retained ancient woodland, and the woodland habitat to be created to be impacted by grazing / browsing animals. If this is deemed to be a potential threat, then steps should be taken to mitigate this impact for example through the provision of fencing.

Construction Phase	Indicative management to be undertaken
During Construction	**Tree protection during construction** • Retained trees / woodland would be fenced prior to any construction works taking place to prevent damage to habitats. Fencing should extend either to the calculated root protection zones; • These fenced areas would be signed and identified for all workers on site; • No excavations, tracking of machinery or storing of equipment should occur within fenced areas; • Works should follow appropriate guidelines outlined in the Environmental Good Practice Site Guide, 4th edition. **Grubbing up of coppiced stumps and scrub to be translocated** • Coppiced stools and scrub should be 'grubbed up' to be translocated into newly created habitat areas. Trees identified for translocation should be coppiced immediately prior to translocation. This coppicing should only be undertaken on species known to benefit from such woodland management; • Coppiced stumps and scrub should be stored appropriately and regularly monitored prior to translocation to ensure the health of plants to maximise the likelihood of the translocation to new habitat being successful. **Salvage of top soil during clearance works and protection of the soil profile** • Top soil will be salvaged during the construction works for use in new planting areas to mimic ground conditions of the lost ancient woodland. Dependent on the results of pre-construction detailed botanical surveys, the top layer of soil may not be translocated to the new woodland areas as it could contain the seeds of species which may impede the growth of trees and ground flora associated with ancient woodlands and is likely to comprise more ruderal and scrub species; • Soil should only be translocated in autumn and early winter, in suitable weather conditions to minimise damage to the soil and plants that may start to grow as early as December; • Compaction of this soil after translocation to new planting areas should be avoided, particularly that relating to heavy machinery, as this may impact the hydrology of the soil and thus there species of plant that are able to grow there. • Works should avoid the use of herbicides / pesticides, to prevent the accumulation of chemicals in the soil strata, thus impacting the soil profile. **Use of cleared vegetation for enhancement** • Some vegetation cleared during the construction works would be retained for use in creating artificial refugia. These would form part of the enhancement of retained ancient woodland habitat providing potential refugia and suitable habitat for a range of species.

Construction Phase	Indicative management to be undertaken
	Woodland planting • Planting to create a new woodland habitat would combine the planting of the seeds and saplings from veteran / mature trees and the coppiced stumps collected prior to site clearance, alongside the planting of saplings from local provenance horticultural stock; • Dense planting should be avoided as this would rapidly shade out desirable ground flora; • New planting should seek to increase the core area of woodland, whilst maintaining the amount of 'edge habitat' present; • New planting should incorporate areas of open space to provide structural diversity; • Any deadwood identified during the pre-construction should be translocated to retained ancient woodland habitat (as stated above) to increase biodiversity and be spread across the habitat to increase diversity.
Post Construction	**Thinning and clearing of retained woodland and creation of open spaces within the retained woodland** • Thinning and clearing would be undertaken within the retained ancient woodland. This would increase the structural diversity of the woodland. Any thinning should target non-native species where possible. • Areas of open space within retained ancient woodland would also be created, or if present maintained, to aid structural and biodiversity. **'Halo' thinning around veteran and mature trees** • Thinning should be undertaken around veteran and mature trees to increase structural diversity within the woodland. This work should release the tree gradually, to reduce the risk of damage to the tree through sudden exposure. This management allows for surviving trees, ground flora and epiphytes to develop into more robust communities. **Management and removal of invasive species** • Where invasive species are identified within the area, they should be managed, or where possible removed, in line with the appropriate guidelines for the relevant species. **Removal of fly tipped material** • Any fly tipped material should be removed from the area, where safe to do so. **Enhancement of woodland for additional species** The retained ancient woodland habitat would also be manged to improve biodiversity through the provision of refugia / resting places for other species. This could include the following:

Construction Phase	Indicative management to be undertaken
	• The use of felled logs from the construction phase of the works to create log piles, suitable for use my invertebrate, amphibians and reptiles. • Translocated deadwood from the clearance area would also provide similar habitat. • Management should seek to increase the levels of deadwood within enhancement areas, both stranding and fallen. Where safe to do so, fallen vegetation should be left in situ. Standing dead wood could be created as part of the thinning process by felling stumps at a range of heights. Further standing dead wood could also be created through the ring barking of selected trees. This ring barking should be targeted at non-natives wherever possible. • Provision of bird boxes for a range of species could be installed within the enhancement ancient woodland areas. These should be of varying construction, to provide suitable habitat for a range of species. • Provision of bat boxes to provide additional roosting opportunities for bats within the retained ancient woodland habitat. 'Self-clean' bat boxes could be installed to remove the need for annual management to ensure boxes could be used. Boxes installed should be suitable for species that were recorded during field surveys in the area. The bat conservation trust gives guidelines on the placement of bat boxes on trees; installation of boxes should aim to match the criteria given in this document (see BCT Bat box information pack).

3. Useful Reading

- Managing your woodland for wildlife – woodlands.co.uk
- Ancient Woods – A guide for woodland owners and managers – Woodland Trust
- Managing ancient and native woodland in England – Forestry Commission
- Managing deadwood in forests and woodlands – Forestry Commission
- The conservation and restoration of plantations on ancient woodland sites – Woodland Trust
- Common Standards Monitoring Guidance for Woodland Habitats - JNCC
- Habitat translocation a best practice guide – CIRIA C600
- Translocation and Ancient Woodland – Woodland Trust
- Managing open habitats in upland forests – Forestry Commission
- Bat box information pack – Bat Conservation Trust
- Environmental Good Practice Site Guide, 4th edition - CIRIA

Page left intentionally blank.

Welsh Government

A465 Heads of the Valleys Dualling - Sections 5 and 6 - Dowlais Top to Hirwaun

Appendix 11P - Outline Management Strategy - Blaencarno - Lapwing

Rev 0

July 2017

Final

Contents

1. Introduction 2
2. Outline Management Strategy Structure 3
2.1 Introduction 3
2.2 Ecological Resources 3
2.3 Issues Affecting Lapwing 3
2.4 Aims and Objectives of Management 3
2.5 Management Options for Achieving Aims and Objectives 3
2.6 Prescriptions for Management Options 3
2.7 Work Schedule 4
2.8 Delivery 5
2.9 Monitoring and Remedial Measures 5
3. Useful Reading 6

1. Introduction

An outline management strategy for the long term management of the land acquired for mitigation at Blaencarno is provided here as an indication of the content required for the final version to be agreed in consultation with Natural Resources Wales (NRW).

Management for this mitigation area would be specifically designed in relation to creating breeding habitat for lapwing *Vanellus vanellus*. The management strategy would be phased into three main stages:

- 2017 to 2019 – Pre-construction;
- 2019 to 2022 – Construction;
- 2022 to 2027 – Five year post –construction; and
- 2027 to 2042 – Twenty five year operational and maintenance.

The structure of the management strategy would be in accordance with Clause 11 of BS 42020:2013 and include the elements stated. Section 2 provides indicative headings and information required in the finalised management strategy. The objectives of the finalised management strategy would be to provide clarity and certainty over what is to be provided and enable sufficient resources to be identified and allocated.

Section 3 provides some sources of useful reading to inform the finalised management strategy.

2. Outline Management Strategy Structure

2.1 Introduction

This section would describe the background to the selection and justification for the long term management of the mitigation site. Plans / Figures of the mitigation site should also be presented. Habitat requirements for the species would be discussed.

2.2 Ecological Resources

Latest survey information and ecological data for lapwing would be provided. Baseline habitat information on the existing breeding habitat that would be lost to the proposed scheme and that of the proposed mitigation site (before management) would also be provided.

2.3 Issues Affecting Lapwing

The most recent local and UK ecological / population trends would be detailed here and the issues affecting lapwing and its specific habitat requirements.

2.4 Aims and Objectives of Management

Clear aims and objectives including specific success criteria would be set out for lapwing and the establishment of suitable habitat.

The mitigation measures could be considered successful if the monitoring programme demonstrated the following:

- the majority of land at the Blaencarno mitigation site was in suitable condition for lapwing by the end of the fifth summer post construction; and
- a stable management regime at Blaencarno had been established by the end of the fifth summer post construction.

Alternative or additional success criteria would be developed where necessary for different stages through the pre and post construction and long term operational and maintenance periods in agreement with NRW. This could include percentage of ground cover and presence of lapwing.

2.5 Management Options for Achieving Aims and Objectives

Options for different management techniques would be discussed and detailed in this section. A review of existing lapwing mitigation programmes for lapwing elsewhere in the wider A465 Dualling project area would be reviewed and lessons learned.

2.6 Prescriptions for Management Options

Prescriptions for management of the Blaencarno mitigation site are likely to include the following. Please note that this list is not exhaustive and that the final management strategy would be agreed in consultation with NRW and the relevant nature conservation interests.

- Consultation with local authority ecologists and RSPB to discuss site preparation, management and potential long term grazing options of the site.
- Preparation of the mitigation could include:
    - tree and scrub clearance;
    - creation of ponds and scrapes;
    - creation of bare earth patches;

- corvid control;
- ground predator control;
- removal of all but essential fence lines;
- suitable and appropriate fencing of the mitigation site boundary; and
- habitat translocation from the existing breeding habitat at Dowlais Top.

- Long term management could include site specific grazing by either cattle or ponies. Grazing levels should not exceed one head of cattle per hectare between mid-March and the end of June. Heavy grazing from late summer onwards will provide a short sward for nesting lapwings the following spring.
- Provisions would also be made for any necessary remedial action to address any issues identified through monitoring.

2.7 Work Schedule

Table 2.1 outlines potential management actions for the Blaencarno mitigation site. Additional detail and timings would be necessary within the finalised version.

Table 2.1 : Indicative works schedule

Key stage	Phase	Estimated date	Indicative management actions
Key Stage 5 (Procurement of the DBFO Contractor)	Pre-construction	July 2018 to September 2019	Surveys to inform mitigation and management strategy: • Lapwing • Existing breeding habitat at Dowlais Top • Proposed mitigation area at Blaencarno
Key Stage 6 (Construction phase)	Construction – Pre vegetation clearance	Nov 2019 to Oct 2022	Acquire land for mitigation (Blaencarno) under the Highways Act 1980 (as amended) process to manage in the long-term to mitigate for loss of breeding habitat.
			Preparation of mitigation site prior to proposed work at Dowlais Top: • tree and scrub clearance; • creation of ponds and scrapes; • creation of bare earth patches; • removal of all but essential fence lines; and • habitat translocation, if required, from the existing breeding habitat at Dowlais Top.
	Construction – Post vegetation clearance	Nov 2019 to Oct 2022	Translocate suitable habitats, if required, to mitigation site under a detailed method statement during appropriate period (i.e. not breeding season – March – July, inclusive).
			Monitor mitigation habitats and lapwing presence thereon as part of the ongoing monitoring programme.
			Engage / revise management as per monitoring results annually
5 year post construction phase	Post construction	Nov 2022 to Nov 2027	Development and implementation of a long-term extensive grazing or other management system. If grazing option selected, specific stocking densities and occupancy periods to be specified.
			Monitoring programme to be agreed in consultation with NRW.
			Engage / revise management as per monitoring results annually.
25 year operational and maintenance phase	Post construction	Dec 2027 to Dec 2042	Continue grazing or other management strategy. Modify as per revised monitoring programme.

2.8 Delivery

Funding resources and mechanisms and responsible parties would be detailed here to show how sustainable long-term delivery of the proposed management would be implemented. Specific actions / deliverables, related timeframes for that delivery and the responsible person / lead (with contact details) would be detailed in this section.

2.9 Monitoring and Remedial Measures

Monitoring of the mitigation site should be undertaken to establish the success and effectiveness of measures undertaken to mitigate for the impacts on breeding lapwing.

A complete monitoring programme, as an essential component of the management strategy (in agreement with NRW) would be devised and should include the following:

- purpose, aims and objectives of monitoring;
- identification and provision of data describing the baseline condition prior to the start of the proposed scheme;
- appropriate success criteria;
- methods for data gathering and analysis;
- locational details;
- timing and duration;
- responsible person and lines of communications;
- reporting and review of outcomes; and
- provision for adaptive management (e.g. contingencies and remedial actions) that would be undertaken if monitoring showed that proposed management measures were not effective or not reaching their stated aims and objectives.

3. Useful Reading

Breeding habits of the lapwing [https://britishbirds.co.uk/wp-content/uploads/article_files/V20/V20_N07/V20_N07_P162_168_A031.pdf]

European Union Management Plan 2009-2011. Lapwing *Vanellus vanellus*. Technical report 2009 – 033. [http://ec.europa.eu/environment/nature/conservation/wildbirds/hunting/docs/Lapwing%20EU_MP.pdf]

Natural England Technical Information Note TIN090 – Illustrated Guide to managing farmland for lapwing [publications.naturalengland.org.uk/file/92021]

RSPB – Lapwing [https://www.rspb.org.uk/birds-and-wildlife/bird-and-wildlife-guides/bird-a-z/l/lapwing/]

Page intentionally left blank.

Appendix 12A - Quantum Geotechnical Phase II Ground Investigation Factual Report (May 2016)

See following page.

Page left blank intentionally

Quantum Geotechnical

A465 HEADS OF THE VALLEYS SECTIONS 5 & 6

PHASE II GROUND INVESTIGATION – FACTUAL REPORT

Report No. G791/FR

A465 HEADS OF THE VALLEYS
SECTIONS 5 & 6 HIRWAUN TO DOWLAIS

Phase II Ground Investigation – Factual Report

Report No. G791/FR May 2016

Client:

Costain Limited
A465 Section 2 Project Office
Ty Gwyn Road
Twyn Wenallt
Gilwern
Abergavenny
NP7 0BQ

Prepared by:

Quantum Geotechnical
Ty Berwig,
Bynea,
Carmarthenshire,
SA14 9ST

Tel: (01554) 744880
Fax: (01554) 776150

CONTENTS

0. FOREWORD 1

1. INTRODUCTION 2

1.1. General 2

2. SITE DETAIL 3

2.1. Site Description 3
2.2. Statutory Service Information 3
2.3. Published Geology 3

3. FIELDWORK 4

3.1. General 4
3.2. Exploratory Hole Locations 4
3.3. Cable Percussive Boreholes 4
3.4. Trial Pits 5
3.5. Window Sample Boreholes 6
3.6. Land Gas & Groundwater Borehole Installations 8
3.7. In-Situ Testing 8
3.8. Photoionization Detector 9

4. LABORATORY TESTING 10

4.1. General 10
4.2. Geotechnical Laboratory Testing 10
4.3. Geo-environmental Laboratory Testing 11

5. REFERENCES 15

APPENDICES

APPENDIX I – SITE PLANS AND FIGURES I

APPENDIX II – CABLE PERCUSSIVE BOREHOLE LOGS II

APPENDIX III – TRIAL PIT LOGS III

APPENDIX IV – WINDOW SAMPLE LOGS IV

APPENDIX V – GAS AND GROUNDWATER MONITORING RECORDS V

APPENDIX VI – GEOTECHNICAL LABORATORY TEST RESULTS VI

APPENDIX VII – GEO-ENVIRONMENTAL LABORATORY TEST RESULTS VII

0. FOREWORD

The following Conditions and Notes on Site Investigation Procedures should be read in conjunction with this report.

0.1. General

Recommendations made and opinions expressed in the report are based on the strata observed in the excavations, together with the results of site and laboratory tests. No responsibility can be held for conditions which have not been revealed by the Exploratory Holes or which occur between Exploratory Holes. Whilst the report may suggest the likely configuration of strata, both between Exploratory Holes and below the maximum depth of investigation, this is only indicative and liability cannot be accepted for its accuracy.

Unless specifically stated, no account has been taken of possible subsidence due to mineral extraction below or close to the site.

0.2. Investigation Procedures

Cable percussive borehole drilling, trial pitting, and window sampling techniques for ground investigation have been employed within the project. All Exploratory Hole operations, sampling and logging of soils, rocks and in-situ testing complies with the recommendations of the British Code of Practice BS 5930 (2015), 'Site Investigations' as superseded in part by BS EN ISO 14688-1 (2002) and 14688-2 (2004), British Code of Practice BS 10175 (2011) 'Investigation of Potentially Contaminated Sites' and BS 1377: 1990, 'Methods of Test for Soils for Engineering Purposes'.

0.3. Routine Sampling

Representative bulk, disturbed and environmental samples of the different strata are taken following completion of logging. These samples are sealed and labelled in clear plastic bags and 2kg plastic tubs. Soil samples obtained for environmental testing are sampled and sealed in borosilicate amber jars or in specialist vessels where required. All samples were sent to the appropriate laboratory within 24 hours of sampling to await test scheduling/requirements. Geoenvironmental samples were stored in sealed cool boxes along with ice packs for transit to I2 Analytical. Geotechnical samples were returned to QG's laboratory.

0.4. In-Situ Testing

In-situ testing comprised:
- Standard Penetration Tests in Boreholes

0.5. Groundwater

Where possible, the depth of entry of any influx of groundwater is recorded during the course of excavation or boring operations. The rate of inflow into the excavation or borehole is monitored during the course of the excavation or during boring procedures. Upon encountering any water strikes, work is temporarily halted and the water levels monitored for a standard twenty minute period recording the change in water level at the end of the twenty minutes.

Groundwater conditions observed in the excavations are those appertaining to the period of investigation. It should be noted, however, that groundwater levels are subject to diurnal, seasonal and climatic variations and can also be affected by drainage conditions or other causes.

0.6. Retention of Samples

After satisfactory completion of all the scheduled laboratory tests on any sample, the remaining material is discarded. Further to notifying the Engineer/ Client with one week's notice all soil and/or rock samples will be discarded 28 days after submission of the approved final report.

1. INTRODUCTION

1.1. General

Upon the instructions of the client, Costain Limited, Quantum Geotechnical Limited (QG) was commissioned to undertake a ground investigation across a variety of locations along and nearby the existing A465 Heads of the Valleys Road between Hirwaun and Dowlais. The specification for ground investigation, titled *Geotechnical and Geoenvironmental Ground Investigation Specification (2016)*, was provided by Jacobs UK Limited.

The purpose of this investigation (as detailed by the specification) was to identify the presence of any contaminants across the site region, quantify their nature and extent, and characterise the quality of the soils.

This report presents a factual account of the fieldwork carried out, the strata encountered, groundwater observations and details in-situ testing and subsequent laboratory testing of samples obtained from the investigation and post fieldwork monitoring.

Other available sources of information that have been consulted include the published geological maps for the area.

General notes on the techniques employed by QG are described in the Foreword together with the limitations inherent in carrying out site investigation work.

2. SITE DETAIL

2.1. Site Description

The ground investigation was undertaken predominantly along the route of the current A465 road, with a number of positions road side. Areas offline include farmers' fields and nearby moorland.

The route spans a distance approximately 9 miles long between the start/end of the dual carriageway at Hirwaun (National Grid Reference: E294988 N205534) and the roundabout at Dowlais Top (National Grid Reference: E307770 N208269). Chainage is measured from Hirwaun to Dowlais where it finishes at 15500.

Access to exploratory holes are via the A465 itself (roadside positions), and via Hirwaun recreation grounds and Swansea Road for the offline locations. Due to the proximity of live traffic, traffic management was required at a number of locations along the route.

A Site Location Plan presented as Figure 1, Appendix 1.

2.2. Statutory Service Information

All service information was held by Costain Ltd with the relevant plans and information made available to QG prior to commencement of the intrusive works. Standard QG procedures for breaking ground were followed and all areas were CAT scanned for presence of buried services. Costain Ltd issued a Permit to Work system for all exploratory holes.

2.3. Published Geology

The British Geological Survey (BGS) online database shows the majority of the site is underlain by superficial deposits of Glacial Till (Diamicton).

Bedrock geology underlying the proposed development route is shown to be a number of sedimentary rock formations from the South Wales Coal Measures and Marros Groups (Carboniferous Period). These include occasionally coal-bearing mudstones, siltstones and sandstones from the South Wales Lower Coal Measures, Bishopston Mudstone, and Twrch Sandstone formations. Limestone units from the Oxwich Head and Dowlais Limestone formations occupy a couple of minor sections towards the west side of Methyr Tydfil.

3. FIELDWORK

3.1. General

The fieldwork was carried out between the 1st March and 7th April 2016. Full time on site supervision and attendance by an Engineering Geologist from Quantum was undertaken on all aspects of the site works. Due to various access and setup constraints, a number of exploratory positions were changed from trial pits (initially specified) to window sample boreholes.

Various aspects of the scope as set out in the Geoenvironmental Ground Investigation Specification differ from the fieldwork that was completed. This includes a number of trial pits converted to window samples, hand-held window samples changed to (rig-driven) windowless sample boreholes and two less ground-gas/groundwater installations.

A summary of the fieldworks carried out is as follows:

- 3 No. Cable percussive boreholes (including a re-drill),
- 3 No. Hand excavated trial pits,
- 13 No. Machine excavated trial pits,
- 22 No. Window sample boreholes,
- Installation and monitoring of 8 gas and groundwater standpipes,
- In-situ Standard Penetration Testing,
- Geotechnical and geo-environmental sampling and subsequent laboratory testing,
- Geo-environmental sample headspace testing.

3.2. Exploratory Hole Locations

The exploratory hole locations were set out by Costain and agreed on site by QG in liaison with Jacobs. Final positions were surveyed to National Grid and Ordnance Datum (Newlyn), and provided to QG by Costain.

Exploratory Hole Location Plans are presented as Figures 2 to 9 in Appendix I. Approximate chainages (as given by the initial schedule), coordinates and levels are presented on the corresponding exploratory hole logs.

3.3. Cable Percussive Boreholes

Boreholes were specified at two locations along the scheme route (positions CP110 and CP117). Position CP117 encountered an obstruction at 3.0 metres below ground level (mbgl) and was therefore re-drilled, approximately 2m to the east (CP117A). Hand-dug inspection pits were dug (to 1.20m) at both borehole locations.

Light cable percussive drilling techniques were utilised to sink the boreholes to depth and recover representative bulk disturbed and small disturbed samples for geotechnical and geoenvironmental characterisation of the underlying ground conditions. Where possible, U100 samples were taken alternating with in-situ testing (detailed in section 3.7.).

Table 1 details the strata and depths at which the cable percussive boreholes were terminated. Strata descriptions and sampling depths are presented on the engineering geologist's logs in Appendix II.

Table 1: *Cable percussive boreholes termination details*

Exploratory Hole ID	Termination Depth (mbgl)	Terminating Strata	Notes/Reason for Termination
CP110	10.0	Glacial Till	Slow progress/hard drilling due to stiff cohesive and dense granular till. Terminated upon instruction by Jacobs.
CP117	3.0	Glacial Till	Refusal on large boulder, unable to progress, moved about 2m east to CP117A
CP117A	4.7	Sandstone	Bedrock reached

Boreholes CP110 and CP117A had monitoring wells installed (see section 3.6.). CP117 was backfilled with bentonite.

3.4. Trial Pits

The investigation method of trial pitting allows direct sampling of the near surface deposits for identification purposes, as well as assessment of any Made Ground or disturbed ground. Bulk, disturbed and environmental samples were taken within the soils for strata identification and laboratory testing purposes. A water sample was also taken from TP107 for laboratory testing.

The trial pits were supervised at all times by an Engineering Geologist from QG, and logged in accordance with BS 5930:2015; BS EN ISO 14688-1:2002 BS EN ISO 14688-2:2005 and BS 10175:2011. All trial pits were completed during the day with none left open overnight.

3.4.1. Hand excavated

Three trial pits (OP111, OP112, and OP113) were dug using a variety of small hand-tools beside the A465 (north side) on a stretch of road between Hirwaun and Merthyr Tydfil. All reached their target depths of 0.75, 1.00, and 1.20mbgl respectively. Strata descriptions and sampling depths are presented on the engineering geologist's logs in Appendix III.

3.4.2. Machine excavated

Thirteen trial pits were dug using a JCB 3CX at a range of locations across the site as shown by the exploratory hole location plan. These include eight on the (east-bound) stretch of dual carriageway west of Hirwaun (TP101-108); one on the north edge of the A465 between Hirwaun and Merthyr Tydfil (TP114); two on the moorland off Swansea Road (TP122 and TP125); and two off-line in farmers' fields near Hirwaun (TP157 and TP159).

Positions TP115-116, TP133-134, TP136-137, TP139-140, TP143, TP146-147, TP154, TP162, and TP165 originally specified as trial pits were converted to window sample boreholes.

Table 2 summarises the termination strata and depths for all machine excavated trial pits. Strata descriptions and sampling depths for trial pits are presented on the engineering geologist's logs in Appendix III.

Table 2: *Machine excavated trial pit terminated details*

Exploratory Hole ID	Termination Depth (mbgl)	Terminating Strata	Notes/Reason for Termination
TP101	3.4	Made Ground	Specified depth achieved
TP102	3.5	Made Ground	Specified depth achieved
TP103	3.2	Made Ground	Specified depth achieved
TP104	3.0	Made Ground	Specified depth achieved
TP105	3.1	Made Ground	Specified depth achieved
TP106	3.0	Made Ground	Specified depth achieved
TP107	2.8	Made Ground	Water ingress and unstable
TP108	3.0	Made Ground	Specified depth achieved
TP114	0.8	Sandstone	Refusal on bedrock
TP122	2.0	Glacial Till	Specified depth achieved
TP125	4.5	Glacial Till	Specified depth achieved
TP157	3.1	Glacial Till	Specified depth achieved
TP159	3.5	Made Ground	Unstable

3.5. Window Sample Boreholes

Window Sampling utilises dynamically driven sampling tubes, nominally 116mm in diameter to start with. The diameter is generally reduced with increasing depth to reduce the risk of holes self-collapsing. This technique allows a relatively undisturbed sample of soil to be taken in a plastic liner. Within competent granular-

cohesive soils the portable equipment used for Windowless Sampling is limited by the nature of the ground and robustness of the driving tool. The recovered sample liners were subsequently split, logged, and sampled in accordance with BS 5930:2015; BS EN ISO 14688-1:2002 BS EN ISO 14688-2:2005 and BS 10175:2011 by QG's Engineering Geologist.

All window sample boreholes were progressed until refusal (unless specified depth was achieved), except for the TP116 (WS) which was collapsing below 5.0m. A summary of the depths at which the window samples refused is shown in Table 3. Engineer's logs are presented in Appendix IV.

Table 3: *Window sample borehole termination details*

Exploratory Hole ID	Termination Depth (mbgl)	Terminating Strata	Notes/Reason for Termination
TP115 (WS)	2.7	Made Ground	Refusal (unknown*)
TP116 (WS)	5	Peat	Hole collapsing
TP133 (WS)	1.3	Made Ground	Refusal (unknown*)
TP134 (WS)	1.1	Glacial Till	Refusal (unknown*)
TP136 (WS)	1.1	Made Ground	Refusal (unknown*)
TP137 (WS)	1.2	Made Ground	Refusal (unknown*)
TP139 (WS)	0.8	Sandstone	Refusal (unknown*)
TP140 (WS)	1.2	Made Ground	Refusal on cobbles and boulders at 1.2mbgl
TP143 (WS)	1.3	Made Ground	Refusal (unknown*)
TP146 (WS)	1.2	Made Ground	Refusal (unknown*)
TP147 (WS)	2	Made Ground	Specified depth achieved
TP154 (WS)	1.95	Glacial Till	Refusal (unknown*)
TP162 (WS)	2.2	Glacial Till	Refusal (unknown*)
TP165 (WS)	3.6	Glacial Till	Refusal (unknown*)
WLS109	4	Sand	Specified depth achieved
WS138	1.2	Made Ground	Refusal (unknown*)
WS141	1.7	Made Ground	Refusal (unknown*)
WS144	3	Made Ground	Specified depth achieved
WS145	2	Made Ground	Specified depth achieved
WS149	1.8	Glacial Till	Refusal on suspected bedrock
WS150	1.2	Made Ground	Refusal (unknown*)
WS151	2	Made Ground	Specified depth achieved

**where window sample boreholes refuse without evidence of bedrock or an obstruction, it is likely a result of the limitation of window sampling within granular soils; particularly in dense gravels, cobbles and boulders.*

All window samples were backfilled with bentonite and surfaces replaced with topsoil/arisings, unless a monitoring well was installed (see section 3.6.).

3.6. Land Gas & Groundwater Borehole Installations

Gas and groundwater standpipes were installed within boreholes CP110, CP117A, WLS109, WS138, WS141, WS144, WS145, and WS149 (see Table 4). Return visits for monitoring were undertaken on the 21st April and 5th May 2016, the results of which are presented within Appendix V.

Table 4: *Monitoring well details*

Exploratory Hole ID	Depth to base (m)	Response Zone depth (mbgl)
CP110	10.00	2.00 – 10.00
CP117A	4.70	1.00 – 4.70
WLS109	4.00	0.50 – 4.00
WS138	1.20	0.50 – 1.20
WS141	1.70	0.50 – 1.70
WS144	3.00	0.50 – 2.25
WS145	2.00	0.50 – 2.00
WS149	1.80	0.50 – 1.80

Monitoring wells at CP110 and CP117A were also developed (by purging 3x the well volume) before water samples were taken. Bailers were used to purge the boreholes on the 12/04/16, the details of which are presented in Table 5. Water from both wells ran clear during purging.

Table 5: *Purging details*

Exploratory Hole ID	Depth to base (m)	Water level (mbgl)	Well Volume*		x3	Volume of water purged (litres)
			(m^3)	(litres)	(litres)	
CP110	10.00	2.69	0.014353	14.35	43.06	44
CP117A	4.70	0.43	0.008384	8.38	25.15	26

**well diameter assumed as width of standpipe (50mm)*

3.7. In-Situ Testing

3.7.1. Standard Penetration Testing

Standard penetration tests (SPTs) were undertaken throughout the made ground and superficial deposits within the cable percussive boreholes. Tests were alternated with U100 samples (where possible) at 1.00m intervals increasing to 1.50m intervals below 5.00mbgl.

This is a dynamic test as described in BS EN ISO 22476-3:2005 and is a measure of the density of the soil or rock. Within fine grained or cohesive soils, the test incorporates a small diameter tube (650mm length, 50mm external diameter and 35mm internal diameter) with a cutting shoe known as the 'split barrel sampler'. The sampler is forced into the soil dynamically using blows from a 63.5kg hammer dropped through 760mm. The sampler is initially advanced 150mm into the soil with seating blows, then the number of blows required to advance the sampler each 75mm increment up to a depth of 300mm is recorded. This cumulative total number of blows over the 300mm test is referred to as the "N" value. For coarse gravels and bedrock the split barrel is replaced by a 60° cone.

Results of the SPTs are detailed on the corresponding borehole logs which can be found along with the SPT calibration certificate in Appendix II.

3.8. Photoionization Detector

To assist with the scheduling of laboratory testing, the headspace for all environmental samples were tested using a MiniRAE Photoionization Detector (PID). The PID measures the concentrations of volatile organic compounds and other gases in the air (units are parts per million, ppm). Soil samples were sealed in plastic bags including room for air (headspace) and left to develop for a minimum of 20 minutes. Testing was carried out in accordance with the Geotechnical and Geoenvironmental Ground Investigation Specification, where a detailed methodology is presented.

Results of the PID testing are presented along with the logs in appendices II, III, and IV.

4. LABORATORY TESTING

4.1. General

The laboratory testing was scheduled by Jacobs and comprised a number of geotechnical and geo-environmental test suites on selected soil samples obtained during the investigation.

4.2. Geotechnical Laboratory Testing

All the geotechnical soil and chemical testing work was carried out in accordance with the procedures stipulated in the various sections of BS 1377:1990 Parts 1 - 9 *Methods of test for soils for civil engineering purposes* and to UKAS accreditation where applicable.

Two suites of geotechnical chemical testing were set out in the Geotechnical and Geoenvironmental Ground Investigation Specification (Suites 8 and 9), however less tests were scheduled than initially specified (15 and 26 no. respectively). Table 6 details parameters testing and the number of tests in each suite.

Table 6: *Geotechnical chemical testing suites*

Suite	Type of Test	Standard	Number of Tests
Suite 8 (BRE SD1)	pH of 2.5:1 water/soil extract	BS1377:1990 Part 3	70
	Water Soluble Sulphate in 2:1 water/soil extract		
	Magnesium Ion Content (if water soluble sulphate SO4 > 3.7 g/l)		
Suite 9 (supplementary – if mudstone or coal measure encountered)	Total Sulphate Content (acid soluble method)	BS1377:1990 Part 3	19
	Total Sulphur present	BS1047:1983	

Geotechnical soil testing was also scheduled by Jacobs in addition to that set out in the Geoenvironmental Ground Investigation Specification. The details of these tests, including the number of samples tested, are presented in Table 7.

Table 7: *Geotechnical soil testing*

Type of Test		Standard	Number of Tests
Moisture Content		BS1377:1990 Part 2	21
4 Point Liquid Limit and Plastic Limit		BS1377:1990 Part 2	15
Particle Size Distribution by Wet Sieve		BS1377:1990 Part 2	16
Dry Density/Moisture Content Relationship (2.5kg hammer)		BS1377:1990 Part 4	5
Calirfonia Bearing Ratio	(remoulded at 2% OMC)	BS1377:1990 Part 4	2
	(remoulded at NMC)		1
Oedometer		BS1377:1990 Part 5	1

A full set of geotechnical laboratory test certificates are provided within Appendix VI.

4.3. Geo-environmental Laboratory Testing

Various geo-environmental testing was carried out on selected soil, soil leachate, and groundwater samples obtained during the ground investigation, to enable assessment of any risks posed to human health, environment and construction materials. This varied from the initial specification with 2 more tests (each) on the groundwater suites (Suites 3 and 7), and less testing on soil and leachate suites (between 9 and 37 no. less than specified). Tables 8 (soils), 9 (leachate), and 10 (groundwater) detail the test suites undertaken.

Table 8a: *Geo-environmental soil test suite 1*

Suite 1: General Soil Suite						
Determinand	**Accreditation Status**		**Methodology**	**Detection Limit**	**Units**	**No of Tests**
Antimony	ISO17025	None	ICP-OES	<1	mg/kg	76
Arsenic	ISO17025	MCERTS	ICP-OES	<1	mg/kg	
Boron - Water Soluble	ISO17025	MCERTS	ICP-OES	<0.2	mg/kg	
Cadmium	ISO17025	MCERTS	ICP-OES	<0.2	mg/kg	
Chromium	ISO17025	MCERTS	ICP-OES	<1	mg/kg	
Chromium - Hexavalent	ISO17025	MCERTS	Skalar CFA	<4.0	mg/kg	
Copper	ISO17025	MCERTS	ICP-OES	<1	mg/kg	
Iron	ISO17025	MCERTS	ICP-OES	<40	mg/kg	
Lead	ISO17025	MCERTS	ICP-OES	<1	mg/kg	
Manganese	ISO17025	MCERTS	ICP-OES	<1	mg/kg	
Mercury	ISO17025	MCERTS	ICP-OES	<0.3	mg/kg	
Nickel	ISO17025	MCERTS	ICP-OES	<1	mg/kg	
Selenium	ISO17025	MCERTS	ICP-OES	<1	mg/kg	
Zinc	ISO17025	MCERTS	ICP-OES	<1	mg/kg	
Vanadium	ISO17025	MCERTS	ICP-OES	<1	mg/kg	
Cyanide - Total	ISO17025	MCERTS	Skalar CFA	<1	mg/kg	
Cyanide - Free	None	None	Skalar CFA	<1	mg/kg	
Thiocyanate (as SCN)	None	None	Colorimetric	<5	mg/kg	
pH	ISO17025	MCERTS	Potentiometric	+ / - 0.1	pH Units	
Ammoniacal Nitrogen	ISO17025	MCERTS	Colorimetric	< 0.5	mg/kg	
Sulphate (as SO_4) – Water Soluble (2:1)	ISO17025	MCERTS	ICP-OES	<0.005	g/l	
Sulphide	ISO17025	MCERTS	ISE	<1	mg/kg	
Sulphur - Total	None	None	ICP-OES	<100	mg/kg	
Elemental Sulphur	ISO17025	MCERTS	HPLC	<5	mg/kg	
Asbestos Screen & ID	ISO17025	None	HSG 248	NAD / Type	N/a	
TPH CWG	ISO17025	MCERTS	HS-GC-MS / GC-FID	<0.1 - <10	mg/kg	
Phenols - Total (monohydric)	ISO17025	MCERTS	Skalar CFA	<1	mg/kg	
PAH - Speciated (EPA 16)	ISO17025	MCERTS	GC-MS	<0.05 - <0.1	mg/kg	
Total Organic Carbon (TOC)	ISO17025	MCERTS	Titrimetry	<0.1	%	
Asbestos Quantification	ISO17025	None	Gravimetric	0.001	%	3

Table 8b: *Geo-environmental soil test suite 4*

Suite 4: Supplementary Tests VOC and SVOC – Triggered if VOCs detected on PID headspace tests						
Determinand	**Accreditation Status**		**Methodology**	**Detection Limit**	**Units**	**No of Tests**
SVOC EXC PAHs & TICs	ISO17025 (Depending on compound) TICs non ISO17025 & MCERTS	MCERTS (Depending on compound) TICs non ISO17025 & MCERTS	GC/MS	N/a	N/a	6
VOCs & TICs	ISO17025 (Depending on compound) TICs non ISO17025 & MCERTS	MCERTS (Depending on compound) TICs non ISO17025 & MCERTS	HS-GC/MS	N/a	N/a	

Table 8c: *Geo-environmental soil test suite 5*

Suite 5: Supplementary Tests – Triggered if Made Ground comprising Colliery Spoil is encountered						
Determinand	**Accreditation Status**		**Methodology**	**Detection Limit**	**Units**	**No of Tests**
Calorific Value	None		Bomb Calorimeter	<400	kJ/kg	3
Loss on Ignition @ 450^{o}C	ISO17025	MCERTS	Gravimetric	<0.01	%	

Table 9a: *Geo-environmental leachate suite 2*

Suite 2: General Leachate Suite						
Determinand	**Accreditation Status**		**Methodology**	**Detection Limit**	**Units**	**No of Tests**
Leachate Prep (BSEN 2:1 Extract)	None		BSEN 12457-1	-	-	76
Antimony (dissolved)	ISO 17025		ICP-OES	< 1.7	µg/l	
Arsenic (dissolved)	ISO 17025		ICP-OES	< 1.0	µg/l	
Boron (dissolved)	ISO 17025		ICP-OES	<10	µg/l	
Cadmium (dissolved)	ISO 17025		ICP-OES	< 0.1	µg/l	
Chromium (dissolved)	ISO 17025		ICP-OES	< 0.4	µg/l	
Chromium - Hexavalent (dissolved)	None		Skalar CFA	<5	µg/l	
Copper (dissolved)	ISO 17025		ICP-OES	< 0.3	µg/l	
Iron (dissolved)	ISO 17025		ICP-OES	< 0.7	µg/l	
Lead (dissolved)	ISO 17025		ICP-OES	< 1	µg/l	
Manganese (dissolved)	ISO 17025		ICP-OES	< 0.06	µg/l	
Mercury (dissolved)	ISO 17025		ICP-OES	< 0.5	µg/l	
Nickel (dissolved)	ISO 17025		ICP-OES	< 0.3	µg/l	
Selenium (dissolved)	ISO 17025		ICP-OES	< 4	µg/l	
Zinc (dissolved)	ISO 17025		ICP-OES	< 0.4	µg/l	
Cyanide - Total	ISO 17025		Skalar CFA	<10	µg/l	

Table 9a (continued): *Geo-environmental leachate suite 2*

Suite 2: General Leachate Suite						
Determinand	**Accreditation Status**		**Methodology**	**Detection Limit**	**Units**	**No of Tests**
Cyanide - Free	None		Skalar CFA	<10	µg/l	76
Sulphide	None		ISE	<5	µg/l	
pH	ISO 17025		Potentiometric	+ / - 0.1	pH units	
Ammoniacal Nitrogen	None		Discreet Analyser	<15	µg/l	
Sulphate as SO_4	ISO 17025		ICP-OES	<0.03	mg/l	

Table 9b: *Geo-environmental leachate suite 6*

Suite 6: Supplementary Leachate Tests – Triggered if VOCs detected on PID headspace tests						
Determinand	**Accreditation Status**		**Methodology**	**Detection Limit**	**Units**	**No of Tests**
VOCs & TICs	None		HS-GC/MS	N/a	N/a	3
SVOC EXC PAHs & TICs	None		GC/MS	N/a	N/a	

Table 10a: *Geo-environmental groundwater suite 3*

Suite 3: General Groundwater						
Determinand	**Accreditation Status**		**Methodology**	**Detection Limit**	**Units**	**No of Tests**
Arsenic (dissolved)	ISO17025		ICP-MS	< 0.15	µg/l	
Boron (dissolved)	ISO17025		ICP-OES	<10	µg/l	
Cadmium (dissolved)	ISO17025		ICP-MS	< 0.02	µg/l	
Chromium - Hexavalent (dissolved)	ISO17025		Skalar CFA	<5	µg/l	
Chromium - III	None		Calculation	<1	µg/l	
Chloride	ISO17025		Discreet Analyser	< 0.15	mg/l	
Copper (dissolved)	ISO17025		ICP-MS	< 0.5	µg/l	
Iron (dissolved)	ISO17025		ICP-OES	< 4	µg/l	
Lead (dissolved)	ISO17025		ICP-MS	< 0.2	µg/l	
Manganese (dissolved)	ISO17025		ICP-MS	< 0.05	µg/l	
Mercury (dissolved)	ISO17025		ICP-MS	< 0.05	µg/l	
Nickel (dissolved)	ISO17025		ICP-MS	< 0.5	µg/l	
Selenium (dissolved)	ISO17025		ICP-MS	< 0.6	µg/l	
Zinc (dissolved)	ISO17025		ICP-MS	< 0.5	µg/l	
Cyanide - Total	ISO17025		Skalar CFA	<10	µg/l	

Table 10a (continued): *Geo-environmental groundwater suite 3*

Suite 3: General Groundwater						
Determinand	**Accreditation Status**		**Methodology**	**Detection Limit**	**Units**	**No of Tests**
Cyanide - Free	ISO17025		Skalar CFA	<10	µg/l	
Thiocyanate (as SCN)	ISO17025		Discreet Analyser	< 200	µg/l	
pH	ISO17025		Potentiometric	+ / - 0.1	pH units	
Ammoniacal Nitrogen	ISO17025		Discreet Analyser	<15	µg/l	
Sulphide	None		ISE	<5	µg/l	
Sulphate as SO_4	ISO17025		ICP-OES	<0.03	mg/l	
Phosphorus (dissolved)	ISO17025		ICP-OES	<50	µg/l	
Hardness - Total (as $CaCO_3$)	ISO17025		ICP-OES & Calculation	< 1	mg$CaCO_3$/l	
Nitrate (as N)	ISO17025		Spectrophotometry	< 0.25	mg/l	
Nitrite (as N)	ISO17025		Spectrophotometry	< 25	µg/l	
Biochemical Oxygen Demand (BOD)	ISO17025		Probe	< 1	mg/l	
Chemical Oxygen Demand (COD)	ISO17025		Colorimetric	<2	mg/l	
TPH CWG UPTO C44 inc BTEX & MTBE	None		GC-MS	<10	µg/l	
Phenols - Total (monohydric)	ISO17025		Skalar CFA	< 10	µg/l	
PAH - Speciated	ISO17025		GC-MS	<0.01	µg/l	

Table 10b: *Geo-environmental groundwater suite 6*

Suite 6: Supplementary Groundwater Tests – Triggered if evidence of hydrocarbons are encountered in borehole					
Determinand	**Accreditation Status**	**Methodology**	**Detection Limit**	**Units**	**No of Tests**
SVOC EXC PAH & TICs	ISO17025 (Depending on compound) TICs non ISO17025	GC/MS	N/a	N/a	4
VOCs & TICs	ISO17025 (Depending on compound) TICs non ISO17025	HS-GC/MS	N/a	N/a	

A full set of geoenvironmental laboratory test certificates are provided within Appendix VII.

5. REFERENCES

Specification

- Geotechnical and Geoenvironmental Ground Investigation Specification (B2191100/D2-1-2/014, Revision 2) – Jacobs UK Ltd, 23/02/16

British Geological Survey:-

- British Geological Survey (BGS) online maps and lexicon database – www.bgs.co.uk

Specialist Publications:-

- British Code of Practice BS 5930:2015 *'Code of Practice for Site Investigations'*
- British Code of Practice BS 1377:1990 *'Methods of test for soils for civil engineering purposes'.*
- British Code of Practice BS 10175:2011 *'Code of Practice for Investigation of Potentially Contaminated Sites'*
- British Code of Practice BS EN ISO 14688-1:2002+A2:2013 '*Geotechnical investigation and testing. Identification and classification of soil. Identification and description'*
- British Code of Practice BS EN ISO 14688-2:2004+A2:2013 '*Geotechnical investigation and testing. Identification and classification of soil. Principles for a classification'*
- British Code of Practice BS EN ISO 22476-3:2005 '*Geotechnical investigation and testing – Field testing – Part 3: Standard penetration test'*
- Health and Safety Executive Guidance Note EH40/90
- CIRIA Report 143 (1995) *'The Standard Penetration Test (SPT): Methods and Use*'

For and on behalf of **Quantum Geotechnical Ltd,**

Written by:

G. Vernau, BEng. (Hons), F.G.S.
Engineering Geologist

14/6/16
Date

Checked by

R. McDERMOTT, B.Sc. (Hons), M.Sc., C.Geol., F.G.S.
Principal Engineering Geologist

14/6/16.
Date

Approved by:

J.E. STARK, B.Sc. (Hons), C.Geol., F.G.S.
Technical Director

14/6/16.
Date

APPENDIX I – SITE PLANS AND FIGURES

Figure 1 – Site Location Plan

Figure 2 – Exploratory Hole Location Plan Overview

Figure 3 – Exploratory Hole Location Plan (1 of 8)

Figure 4 – Exploratory Hole Location Plan (2 of 8)

Figure 5 – Exploratory Hole Location Plan (3 of 8)

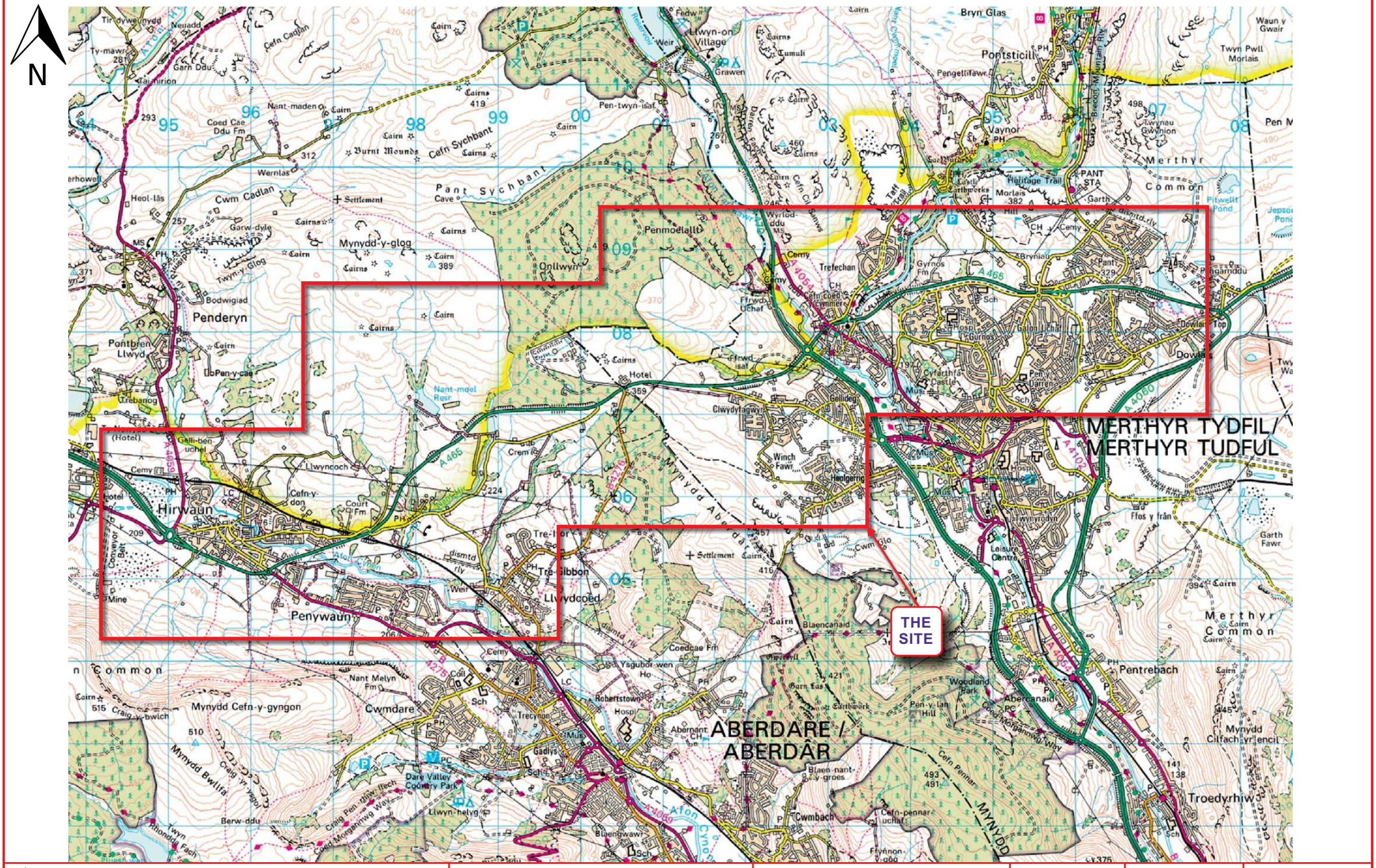
Figure 6 – Exploratory Hole Location Plan (4 of 8)

Figure 7 – Exploratory Hole Location Plan (5 of 8)

Figure 8 – Exploratory Hole Location Plan (6 of 8)

Figure 9 – Exploratory Hole Location Plan (7 of 8)

Figure 10 – Exploratory Hole Location Plan (8 of 8)



Quantum Geotechnical **Quantum Geotechnical Ltd** Bynea, Llanelli, Carmarthenshire, SA14 9ST Tel: 01554 744880 Fax: 01554 776150 E-mail: enquiries@quantum-geotech.co.uk	**A465 SECTION 5 & 6**	**SITE LOCATION PLAN**	**JOB No. G791**	**SCALE: N.T.S.**	**FIGURE 1**

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554 744880
Fax: 01554 776150
Email: enquiries@quantum-geotech.co.uk

KEY
Borehole
Trial Pit
Monitoring / Test Point
Window Sample
Dynamic Probe
Historical Hole
Sampling Point

PROJECT
A465 SECTION 5 & 6

DRAWING TITLE:
EXPLORATORY HOLE LOCATION PLAN OVERVIEW

JOB NO.	FIGURE NO.
G791	2a
DATE	SCALE
21/05/16	1:20000

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554 744880
Fax: 01554 776150
Email: enquiries@quantum-geotech.co.uk

KEY
Borehole
Trial Pit
Monitoring / Test Point
Window Sample
Dynamic Probe
Historical Hole
Sampling Point

PROJECT
A465 SECTION 5 & 6

DRAWING TITLE:
EXPLORATORY HOLE LOCATION PLAN OVERVIEW

JOB NO.	FIGURE NO.
G791	2b
DATE	SCALE
21/05/16	1:20000

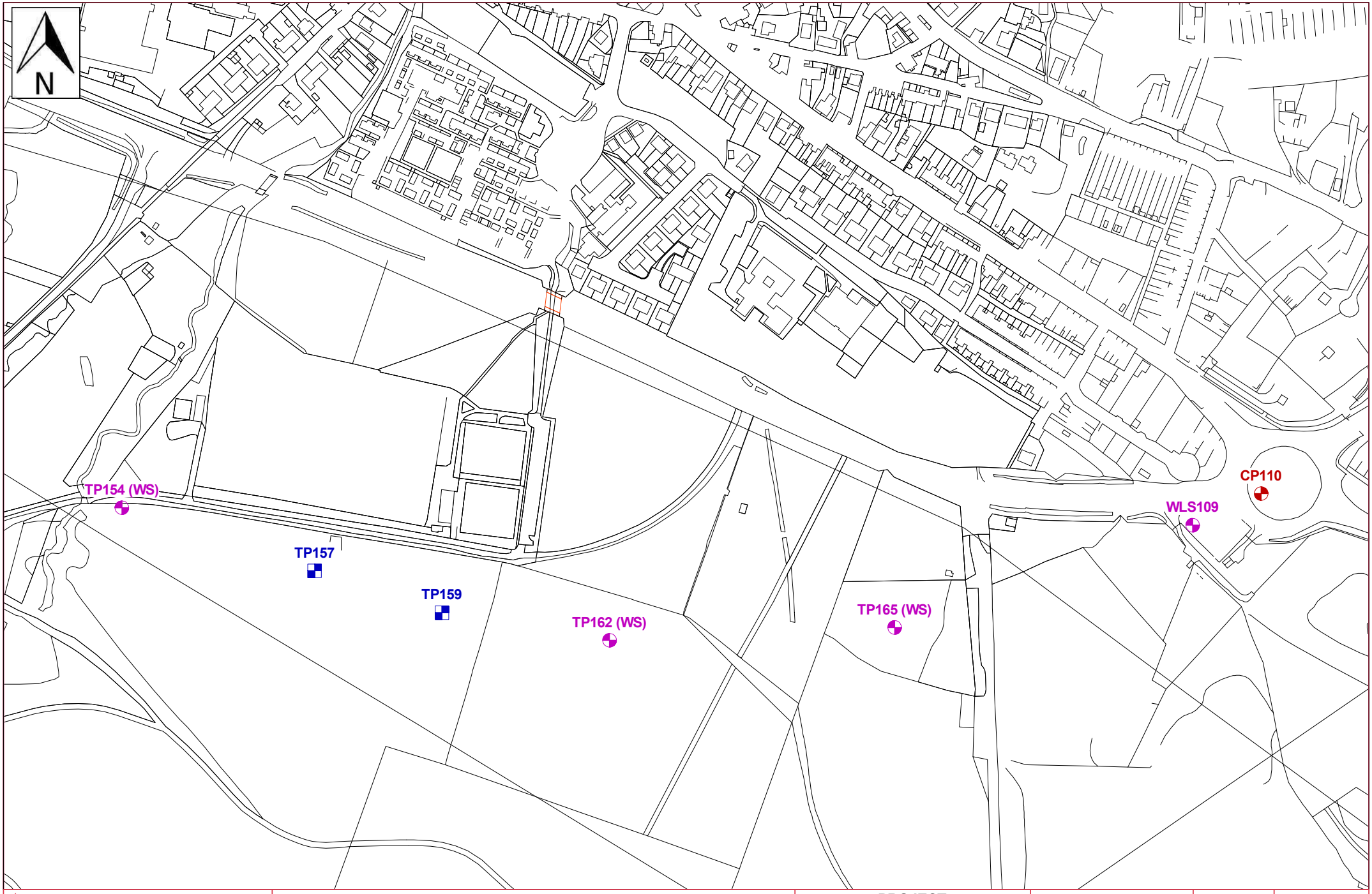
Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554 744880
Fax: 01554 776150
Email: enquiries@quantum-geotech.co.uk

KEY
Borehole
Trial Pit
Monitoring / Test Point
Window Sample
Dynamic Probe
Historical Hole
Sampling Point

PROJECT
A465 SECTION 5 & 6

DRAWING TITLE:
EXPLORATORY HOLE LOCATION PLAN (1 of 8)

JOB NO.	FIGURE NO.
G791	3
DATE	SCALE
19/05/16	1:2500



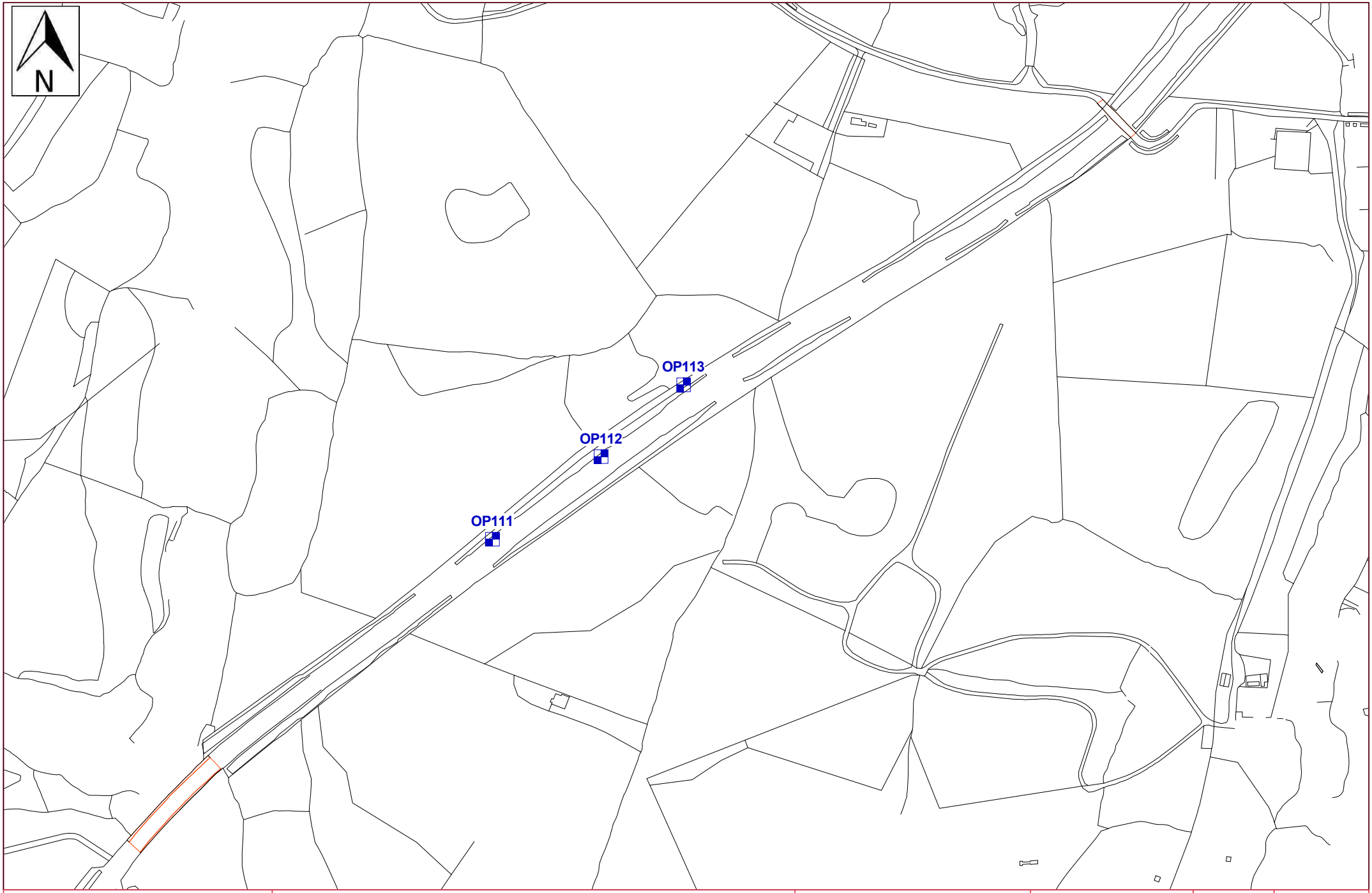
Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554 744880
Fax: 01554 776150
Email: enquiries@quantum-geotech.co.uk

KEY
Borehole
Trial Pit
Monitoring / Test Point
Window Sample
Dynamic Probe
Historical Hole
Sampling Point

PROJECT
A465 SECTION 5 & 6

DRAWING TITLE:
EXPLORATORY HOLE LOCATION PLAN (2 of 8)

JOB NO.	FIGURE NO.
G791	4
DATE	SCALE
19/05/16	1:2500



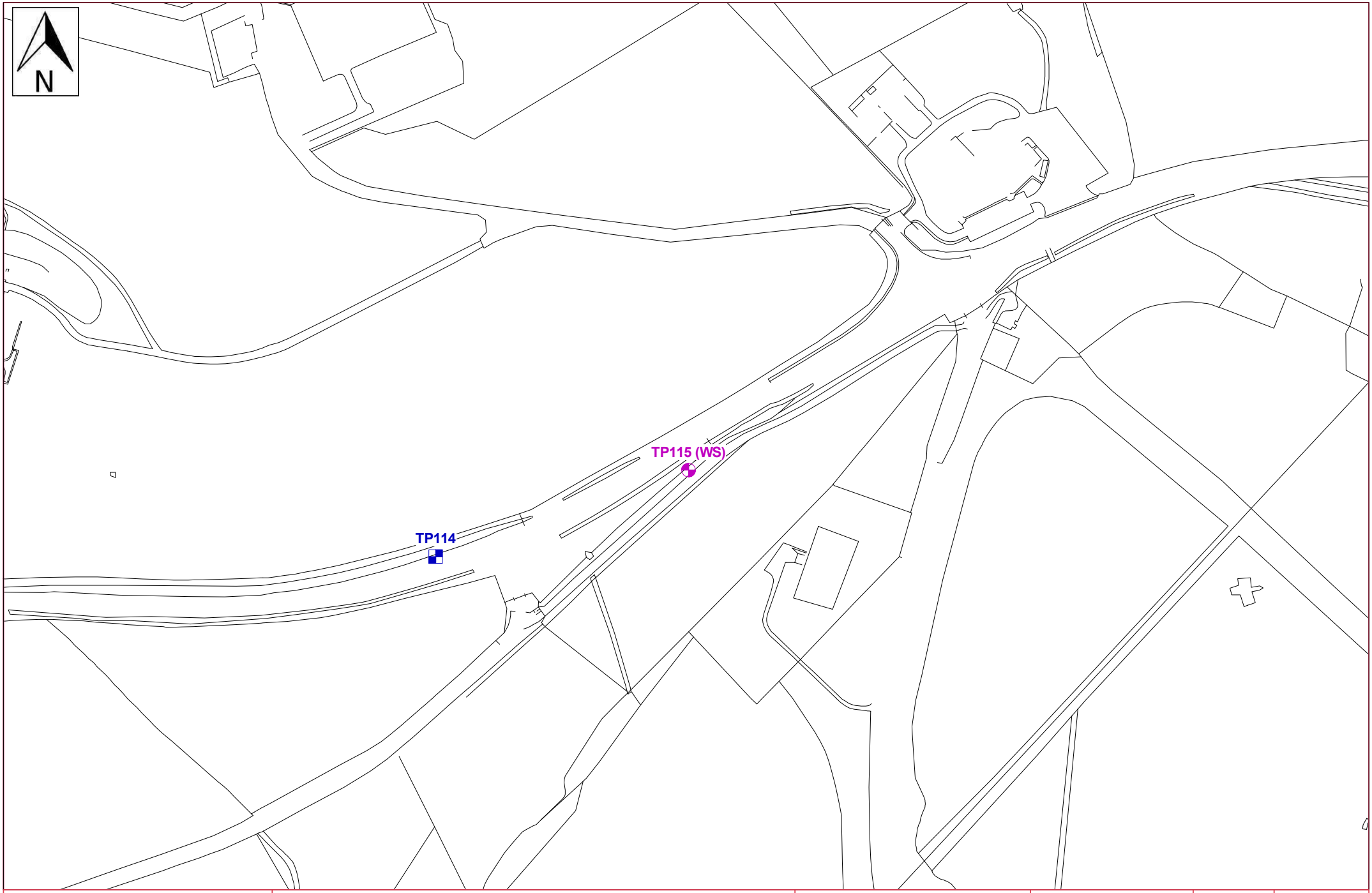
Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554 744880
Fax: 01554 776150
Email: enquiries@quantum-geotech.co.uk

KEY
Borehole
Trial Pit
Monitoring / Test Point
Window Sample
Dynamic Probe
Historical Hole
Sampling Point

PROJECT
A465 SECTION 5 & 6

DRAWING TITLE:
EXPLORATORY HOLE LOCATION PLAN (3 of 8)

JOB NO.	FIGURE NO.
G791	5
DATE	SCALE
19/05/16	1:2500



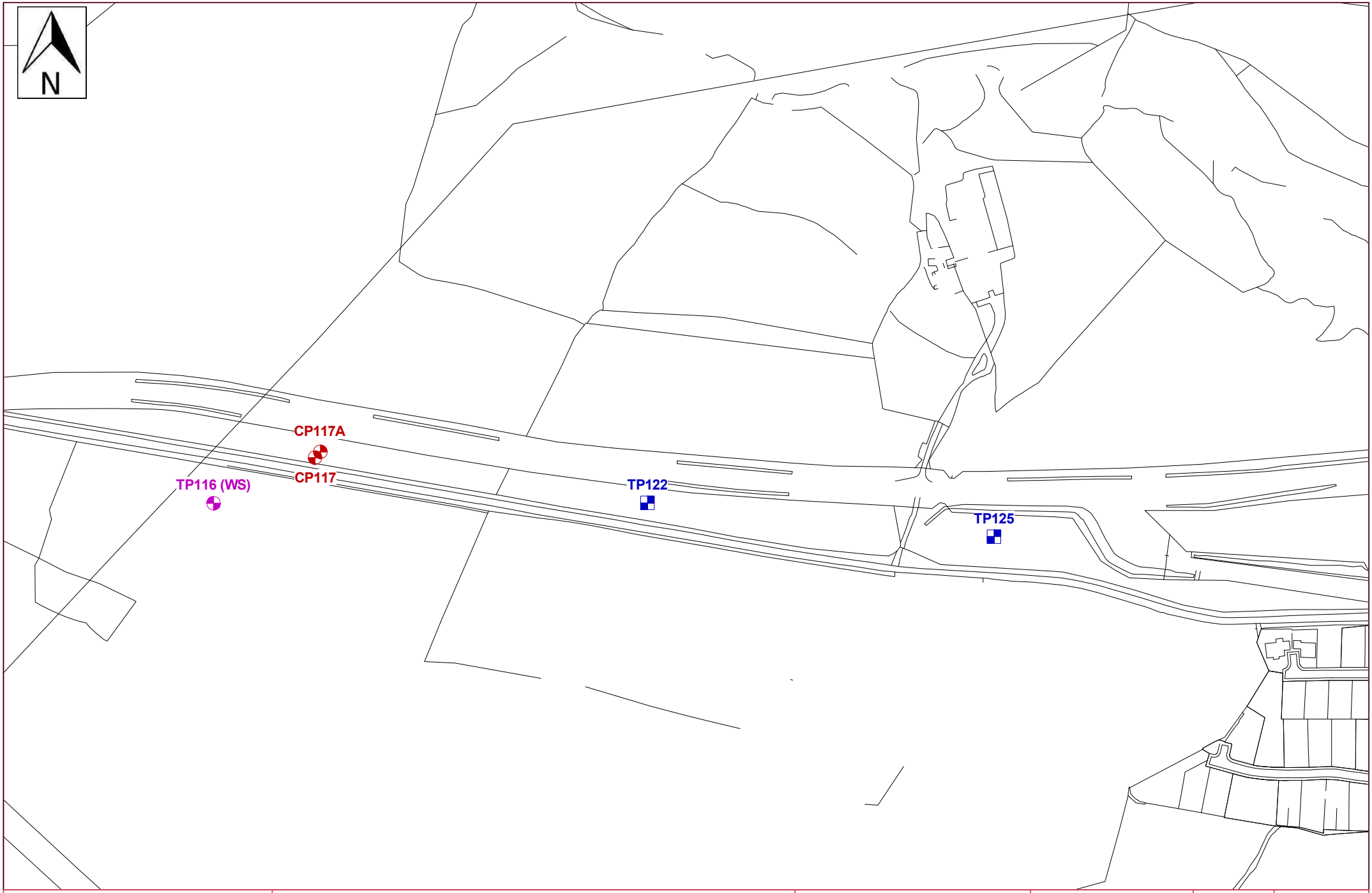
Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554 744880
Fax: 01554 776150
Email: enquiries@quantum-geotech.co.uk

KEY
Borehole
Trial Pit
Monitoring / Test Point
Window Sample
Dynamic Probe
Historical Hole
Sampling Point

PROJECT
A465 SECTION 5 & 6

DRAWING TITLE:
EXPLORATORY HOLE LOCATION PLAN (4 of 8)

JOB NO.	FIGURE NO.
G791	6
DATE	SCALE
21/05/16	1:2500



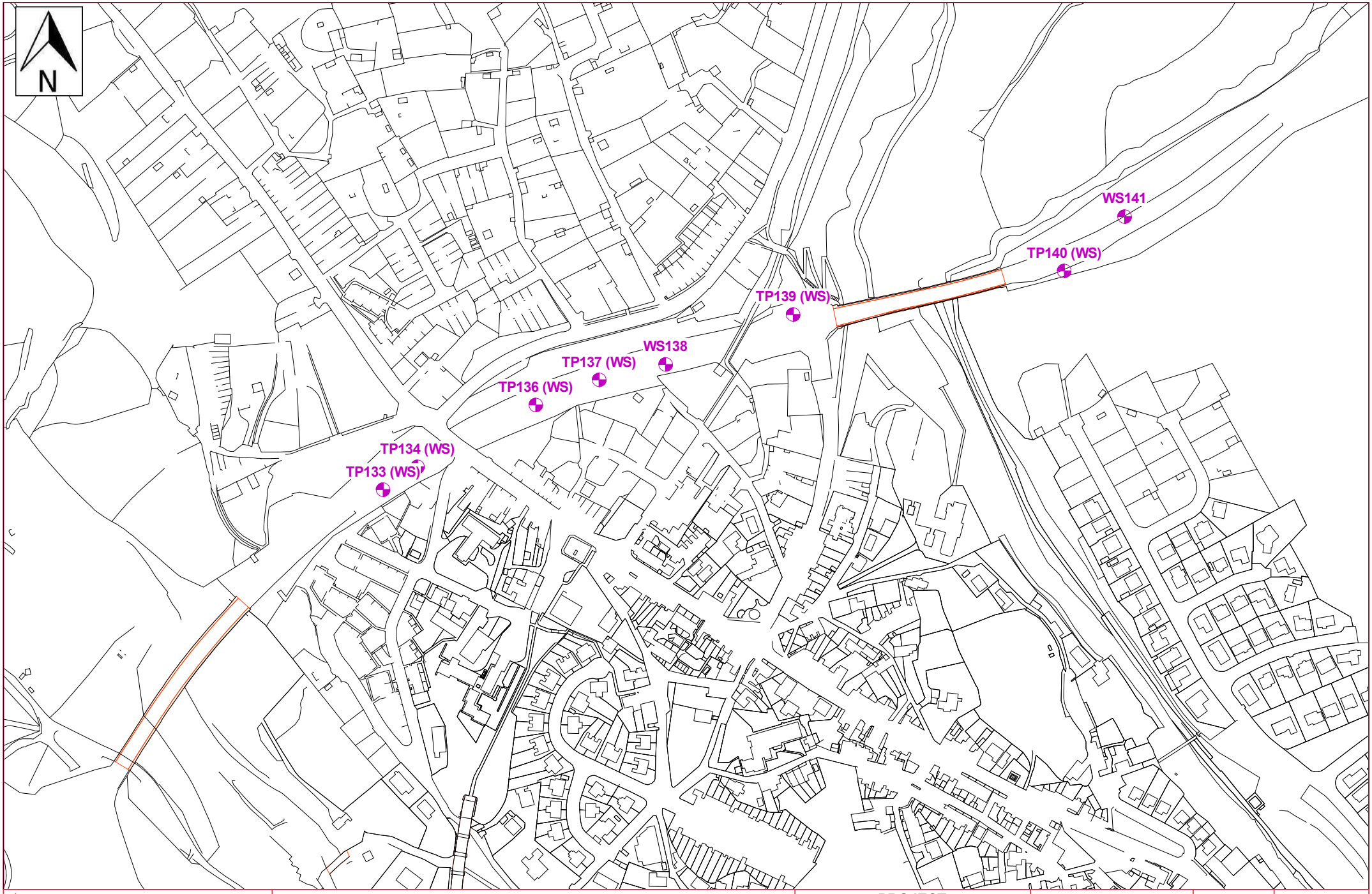
Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554 744880
Fax: 01554 776150
Email: enquiries@quantum-geotech.co.uk

KEY
Borehole
Trial Pit
Monitoring / Test Point
Window Sample
Dynamic Probe
Historical Hole
Sampling Point

PROJECT
A465 SECTION 5 & 6

DRAWING TITLE:
EXPLORATORY HOLE LOCATION PLAN (5 of 8)

JOB NO.	FIGURE NO.
G791	7
DATE	SCALE
21/05/16	1:2500



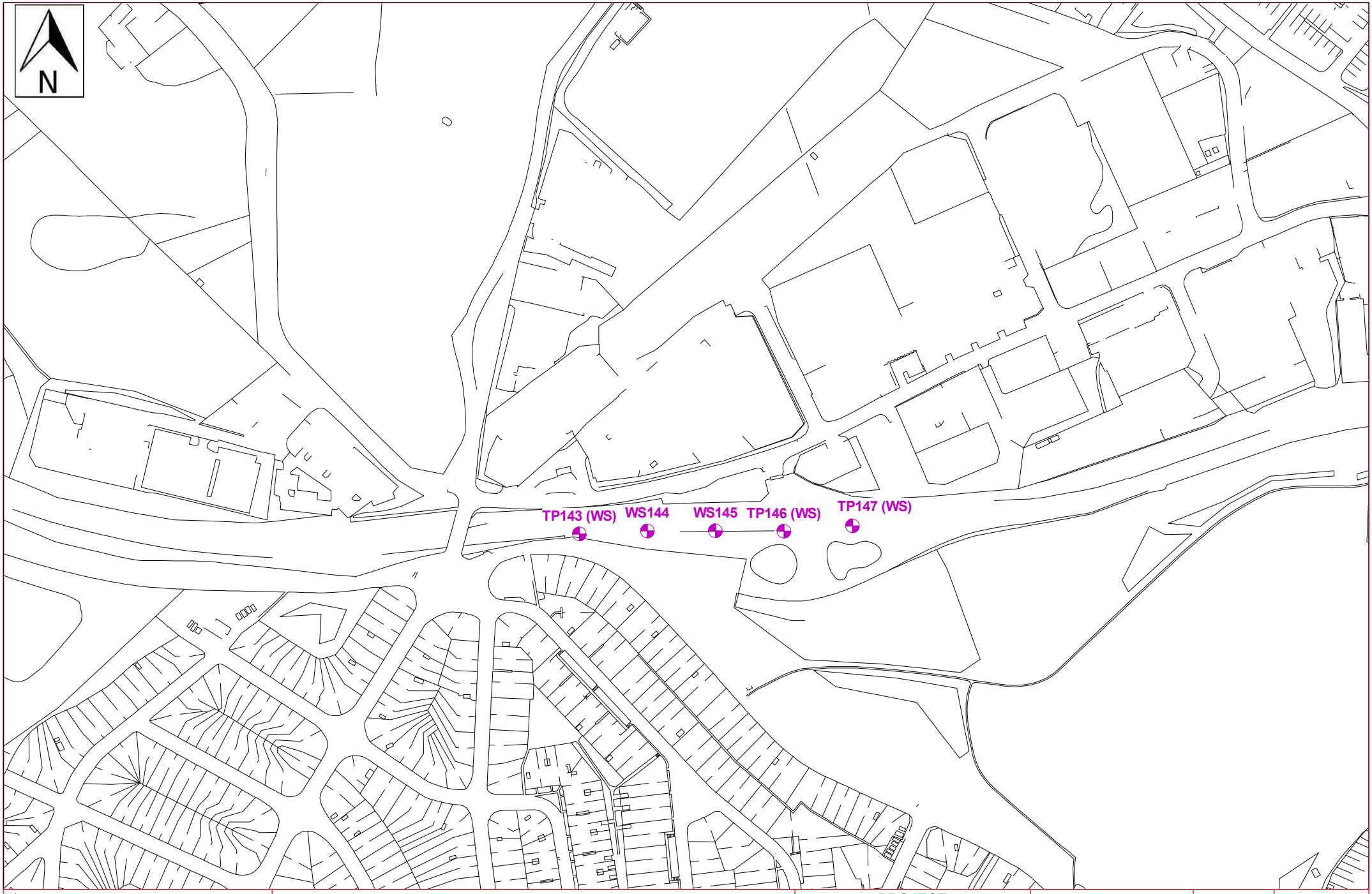
Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554 744880
Fax: 01554 776150
Email: enquiries@quantum-geotech.co.uk

KEY
Borehole
Trial Pit
Monitoring / Test Point
Window Sample
Dynamic Probe
Historical Hole
Sampling Point

PROJECT
A465 SECTION 5 & 6

DRAWING TITLE:
EXPLORATORY HOLE LOCATION PLAN (6 of 8)

JOB NO.	FIGURE NO.
G791	8
DATE	SCALE
19/05/16	1:2500



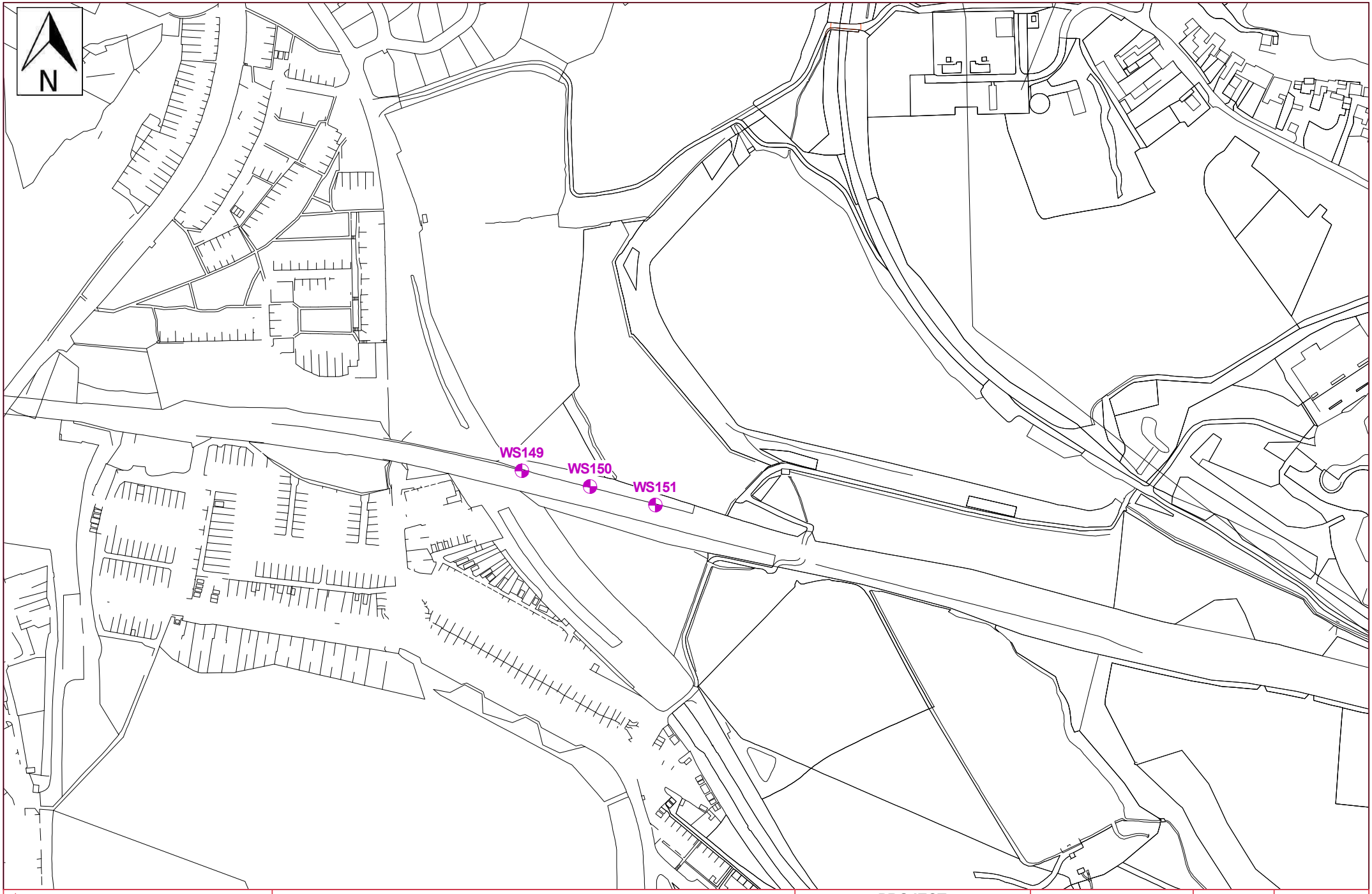
Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554 744880
Fax: 01554 776150
Email: enquiries@quantum-geotech.co.uk

KEY
Borehole
Trial Pit
Monitoring / Test Point
Window Sample
Dynamic Probe
Historical Hole
Sampling Point

PROJECT
A465 SECTION 5 & 6

DRAWING TITLE:
EXPLORATORY HOLE LOCATION PLAN (7 of 8)

JOB NO.	FIGURE NO.
G791	9
DATE	SCALE
19/05/16	1:2500



Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554 744880
Fax: 01554 776150
Email: enquiries@quantum-geotech.co.uk

KEY
Borehole
Trial Pit
Monitoring / Test Point
Window Sample
Dynamic Probe
Historical Hole
Sampling Point

PROJECT
A465 SECTION 5 & 6

DRAWING TITLE:
EXPLORATORY HOLE LOCATION PLAN (8 of 8)

JOB NO.	FIGURE NO.
G791	10
DATE	SCALE
19/05/16	1:2500

APPENDIX II – CABLE PERCUSSIVE BOREHOLE LOGS

KEY TO BOREHOLE AND TRIAL PIT LOGS

m.A.O.D. metres Above Ordnance Datum.

SAMPLE AND TEST TYPES

U	Undisturbed driven tube sample - 102mm diameter, 450mm long.
P	Undisturbed pushed piston sample - 102mm diameter, 1000mm long.
TW	Undisturbed thin walled push in sample - 100mm diameter, 750mm long.
B	Bulk disturbed sample.
BLK	Block Sample
CBR	Heavy duty undisturbed sample - 154 mm diameter (CBR mould).
D	Small disturbed sample.
LB	Large Bulk disturbed sample (for earthworks testing)
C	Core sample
W	Water sample
G	Gas sample
ES	Environmental sample (soil)
j	Jar sample
t	Tub sample
p	Pot sample
s	Small sample
v	Vial sample
S	Standard Penetration Test using split spoon sampler. (See Note).
C	Standard Penetration Test using a solid 60 degree cone. (See Note).

NOTE: Where a single value is quoted this is the N value for 300 mm penetration following a seating drive of 150 mm. Where this full penetration is not achieved the number of blows is quoted for the penetration below the seating drive eg. 63/160 mm.
Where total penetration is less than the seating drive this is indicated by a + and the number of blows for total penetration is quoted eg. +50/75 mm.

HV	Hand Vane Test. Vane undrained shear strength, c_u, quoted in kPa.
V	Borehole Vane Test. Vane undrained shear strength, c_u, quoted in kPa.
FHT/RHT	Falling / Rising Head Permeability Test.

CORE RUN DETAILS

TCR	Total Core Recovery, %
SCR	Solid Core Recovery, %
RQD	Rock Quality Designation, %
FI	Fracture Index. NI - Non intact where > 25 No. per metre length.

WATER COLUMN SYMBOLS

First water strike, second water strike etc.

Standing water level after first strike, second strike etc.

Seepage.

Quantum Geotechnical

NOTE:
Legend symbols in accordance with BS 5930 (2015)

KEY TO BOREHOLE AND TRIAL PIT LOGS

MATERIAL LEGENDS

Made Ground	Topsoil	Clay
Gravel	Sand	Silt
Peat	Boulders	Cobbles
Chalk	Conglomerate	Volcaniclastic
Asphalt	Void	Mudstone
Siltstone	Sandstone	Limestone
Ironstone	Mudstone / Siltstone	Breccia
Coal	Coral	Bedrock
Shale	Gypsum	Igneous (Coarse Grained)
Igneous (Fine Grained)	Igneous (Medium Grained)	Metamorphic (Coarse Grained)
Metamorphic (Fine Grained)	Metamorphic (Medium Grained)	

INSTALLATION / BACKFILL DETAILS

Arisings	Concrete	Bentonite cement grout
Bentonite seal	Filter	Pea Gravel
Plain pipe	Slotted pipe	Piezometer / Standpipe tip

Quantum Geotechnical

NOTE:
Legend symbols in accordance with BS 5930 (2015)

Contract : A465 Section 5 & 6

Client : Costain

Borehole No. CP110

Dates : 22/03/16 - 04/04/16

Location : Hirwaun Roundabout, Chainage - 3250

Job Number : G791

Engineer : Jacobs

Ground Level : 194.89 m A.O.D. *Level to Ordnance Datum*

Coordinates: 296171.21 E 205078.21 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No. Blows	Insitu Test Results Depth	Insitu Test Results Test Results	Strata Depth (Thickness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water	Install/ Backfill
0	0.00	D1			(0.30)	Grass over soft dark brown slightly sandy slightly gravelly slightly organic CLAY with frequent roots. Gravel is sub-rounded to sub-angular fine to coarse mudstone and quartz. (TOPSOIL)		(0.30)		
	0.00 - 0.50	B2			0.30			194.59		
	0.10	ES1				Dark brown silty gravelly SAND with low cobble content. Gravel is rounded to sub-angular fine to coarse mudstone siltstone sandstone and rare slag. Cobbles are sub-rounded quartz. (Mix of colliery spoil and re-worked natural, MADE GROUND)				
	0.50	ES2								
	0.50 - 1.20	D3								
		B4								
1	1.00	ES3			(1.60)			(1.60)		
	1.20 - 1.65	S5	1.2	SPT (S) 26 (6-3-**4-7-8-7**)						
	1.20 - 1.70	B6								
	1.70	D7								
	1.90	D8								
2	2.00	ES4	2	SPT (S) 20 (3-7-**7-5-4-4**)	1.90			192.99		
	2.00 - 2.45	S9				Brownish and bluish grey slightly clayey slightly sandy GRAVEL with low cobble content. Gravel is rounded to sub-angular mudstone. Cobbles are sub-rounded to sub-angular mudstone. (Re-worked natural, MADE GROUND)				
	2.00 - 2.50	B10								
	2.50	D11								
					(1.90)			(1.90)	1	
3	3.00	ES5	3	SPT (S) 50/80mm (3-6-**42-8/5mm**--)		2.90-3.10m: Wet silt and sand mostly lost from bulk sample				
	3.00 - 3.45	S12								
	3.00 - 3.50	B13								
	3.50	D14								
		D15								
4	4.00 - 4.50	B	4	SPT (S) 42 (4-14-**14-12-9-7**)	3.80	Dark brown slightly silty sandy GRAVEL with low cobble content. Gravel is well rounded to sub-rounded fine to coarse mudstone siltstone sandstone and quartz. Cobbles are rounded quartz. (GLACIAL TILL)		191.09		
	4.00	ES6								
	4.00 - 4.45	S16								
	4.50	D								
5	5.00	ES7	5	SPT (S) 32 (4-6-**7-7-7-11**)		5.30-5.60m: Brown laminated clay				
	5.00 - 5.45	S18								
	5.00 - 5.50	B19								
	5.50	D20								
6	6.00	ES8	6	SPT (S) 50/212mm (7-9-**14-17-19/62mm**-)						
	6.00 - 6.45	U21 - 50/0%								
	6.00 - 6.50	S22								
	6.50	B23								
		D24								
7	7.00	ES9			(6.20)			(6.20)		
	7.50	D25	7.5	SPT (S) 50/65mm (11-14/31mm-**50/65mm**---)						
	7.50 - 7.95	S26								
	7.50 - 8.00	B27								
8	8.00	ES10								
	8.50	D28								
9	9.00	ES11	9	SPT (S) 50/55mm (5-10-**50/55mm**---)						
	9.00 - 9.45	S29								
	9.00 - 9.50	B30								
10	10.00	ES12	10	SPT (S) 50/118mm (9-14-**21-29/43mm**--)	10.00	Borehole terminated upon engineer's instruction		184.89		

DRAFT

Hole Progress / Water Obs

Date / Time	H. Depth	C. Depth	Water
22/03/16 15:00	3.50	3.00	2.90
23/03/16 15:00	8.00	7.50	DRY
24/03/16 15:00	9.00	7.50	DRY
30/03/16 08:00	9.00	7.50	4.90
30/03/16 15:00	9.50	7.50	DRY
04/04/16 10:00	9.50	7.50	4.60
04/04/16 13:00	10.00	10.00	

Casing

Depth	Cas. Dia.
9.00	200mm
10.00	150mm

Groundwater

Struck	Rose To	Behaviour	Sealed
3.10	2.90		4.00

Chiselling

From	To	Hours
3.20	3.50	1:00
4.60	5.00	1:00
5.60	6.00	1:00
6.00	8.00	5:00
8.00	9.00	3:00
9.00	9.50	4:00
9.50	10.00	3:00

Equipment Used: Dando 2000 Mk2

Remarks: CAT scanned and cleared location by Costain. Inspection pit to 1.2mbgl. Installation to 10.0mbgl.

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page
C Jobson	G Vernau	1 Of 1	10.2

All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No. CP117

Dates : 06/04/16 - 06/04/16

Location : Swansea Road, Chainage - 8850

Job Number : G791

Engineer : Jacobs

Ground Level : 339.46 m A.O.D. *Level to Ordnance Datum*

Coordinates: *Approximate Co-ordinates Only* 300998.20 E 207346.70 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No. Blows	Insitu Test Results Depth	Insitu Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water	Install/ Backfill
0	0.00 - 0.30	B2			(0.20)	Grass over very soft to soft dark black very organic CLAY with abundant roots. (TOPSOIL)		(0.20)		
	0.10	D1			0.20			339.26		
	0.30	ES1				Very soft to soft light grey and brownish orange slightly silty slightly sandy slightly gravelly CLAY with low cobble content. Gravel is rounded to sub-rounded fine to coarse quartz siltstone and sandstone. Cobbles are rounded sandstone and quartz. (GLACIAL TILL)				
	0.50	D3								
	0.50 - 1.20	ES2 B4			(1.30)			(1.30)		
1	1.00	ES3								
	1.20	D5								
	1.20 - 1.55	U6 - 57/100%			1.50			337.96		
	1.70	D7				Soft to firm greyish brown and orange slightly sandy gravelly CLAY with medium cobble content low boulder content. Gravel is rounded to sub-angular fine to coarse sandstone siltstone and quartz. Cobbles and boulders are sub-rounded sandstone and quartz. (GLACIAL TILL)				
	1.70 - 2.00	B8								
2	2.00	ES4	2	SPT (S) 38 (4-7-**6-14-10-8**)						
	2.00 - 2.50	S9 B10			(1.50)			(1.50)		
	2.50	D11								
3	3.00	S12	3	SPT (S) 50/0mm (25/0mm-**50/0mm**---)	3.00	Borehole terminated at 3.00mbgl on quartz conglomerate boulder. Re-drill at CP117A.		336.46		
4										
5										
6										
7										
8										
9										

DRAFT

Hole Progress / Water Obs

Date / Time	H. Depth	C. Depth	Water
06/04/16 15:30	3.00	3.00	DRY

Casing

Depth	Cas. Dia.
3.00	150mm

Groundwater

Struck	Rose To	Behaviour	Sealed

Chiselling

From	To	Hours
2.90	3.00	1:00
3.00	3.00	0:30

Equipment Used: Dando 2000 Mk2

Remarks: Approximate coodinates are as proposed, level assumed from postiion CP117A. CAT scanned and cleared location by Costain. Inspection pit to 1.2mbgl. Back filled with bentonite. Groundwater not encountered.

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator: C Jobson | Logged By. G Vernau | Sheet No. 1 Of 1 | m Per Page 10 | All measurements in metres unless otherwise stated | AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No. CP117A

Dates : 06/04/16 - 07/04/16

Location : Swansea Road, Chainage - 8850

Job Number : G791

Engineer : Jacobs

Ground Level : 339.46 m A.O.D. *Level to Ordnance Datum*

Coordinates: 301002.07 E, 207350.93 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No. Blows	Insitu Test Results Depth	Insitu Test Results Test Results	Strata Depth (Thick-ness)	Strata Description	Legend	Red. Level A.O.D.	Water	Install/ Backfill
0					(0.30)	Grass over very soft to soft dark black very organic CLAY with abundant roots. (TOPSOIL)		(0.30)		
					0.30	Very soft to soft light grey and brownish orange slightly silty slightly sandy slightly gravelly CLAY with low cobble content. Gravel is rounded to sub-rounded fine to coarse quartz siltstone and sandstone. Cobbles are rounded sandstone and quartz. (GLACIAL TILL)		339.16		
1					(1.00)			(1.00)		
					1.30	Soft to firm becoming stiff greyish brown and orange slightly silty slightly sandy gravelly CLAY with medium cobble content and low boulder content. Gravel is rounded to sub-angular fine to coarse sandstone siltstone and quartz. Cobbles and boulders are sub-rounded sandstone. (GLACIAL TILL)		338.16		
2										
					(2.70)			(2.70)		
3	3.00 - 3.35	U1 - 111/100%								
	3.50	D2								
	3.50 - 4.00	B3								
	3.50	ES5								
4	4.00	S4	4	SPT () 50/73mm (9-16/44mm-**50/73mm**---)	4.00	3.80m: Sandstone boulder, chiseled past edge		335.46		
	4.00 - 4.50	B5			(0.70)	Weathered SANDSTONE bedrock. Recovered as light yellowish brown sandy sub-angular to angular fine to coarse sandstone gravel. (SOUTH WALES LOWER COAL MEASURES FORMATION)		(0.70)		
	4.00	ES6								
	4.50	D6	4.5	SPT () 50/75mm (25/65mm-**50**---)	4.70			334.76		
	4.50 - 4.70	ES7	4.7	SPT () 50/63mm (11-14/71mm-**50/63mm**---)		Borehole terminated on sandstone bedrock				
	4.70	S7								
		B8								
5		S9								
6										
7										
8										
9										

DRAFT

Hole Progress / Water Obs

Date / Time	H. Depth	C. Depth	Water
06/04/16 17:00	3.00	3.00	DRY
07/04/16 08:00	3.00	3.00	0.60
07/04/16 14:00	4.70	4.50	0.70

Casing

Depth	Cas. Dia.
4.50	150mm

Groundwater

Struck	Rose To	Behaviour	Sealed

Chiselling

From	To	Hours
3.80	4.00	1:00
4.00	4.50	2:00
4.50	4.70	1:00

Equipment Used: Dando 2000 Mk2

Remarks: CAT scanned and cleared location by Costain. Inspection pit to 1.2mbgl. Installation to 4.7mbgl. No groundwater strike observed.

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Jobson	G Vernau	1 Of 1	10	All measurements in metres unless otherwise stated

AGS

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

J.B. Site Investigations
Windmill Way West
Ramparts Business Park
BERWICK-upon-TWEED
TD15 1TB

SPT Hammer Ref:	JB.14
Test Date:	20/06/2015
Report Date:	25/06/2015
File Name:	JB.14.spt
Test Operator:	JORDAN

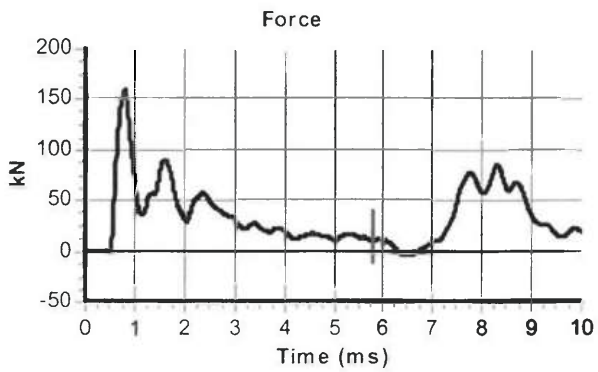
Instrumented Rod Data

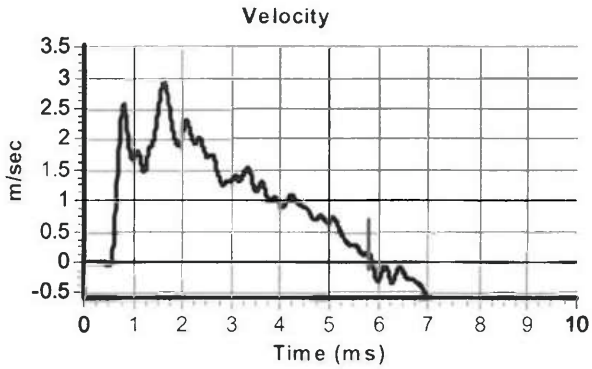
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.3
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	6454
Accelerometer No.2:	6456

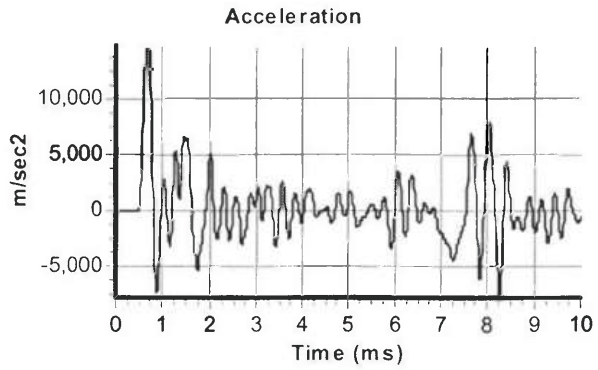
SPT Hammer Information

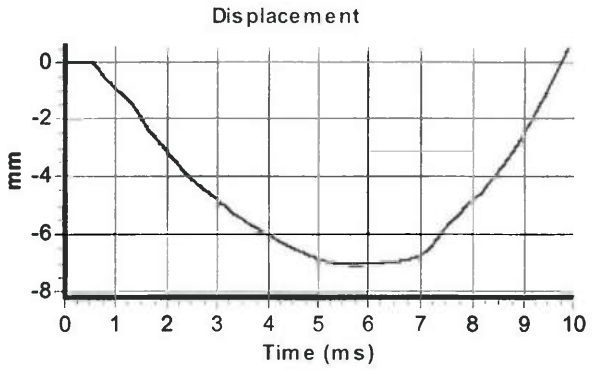
Hammer Mass m (kg):	63.0
Falling Height h (mm):	760
SPT String Length L (m):	14.3

Comments / Location









Calculations

Area of Rod A (mm2):	944
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	370

Energy Ratio E_r (%): **78**

Signed: Sandra Weston

Title: Partner

The recommended calibration interval is 12 months

SPTMAN ver.1.92 All rights reserved, Testconsult ©2010

Photoionization Detector Results
Boreholes

Position ID	Sample No.	Depth	PID reading
Position ID	Sample No.	Depth	PID reading
CP110	ES1	0.1	13.4
CP110	ES2	0.5	3.6
CP110	ES3	1.0	6.6
CP110	ES4	2.0	8.2
CP110	ES5	3.0	1.7
CP110	ES6	4.0	3.2
CP110	ES7	5.0	5.5
CP110	ES8	6.0	0.2
CP110	ES9	7.0	2.3
CP110	ES10	8.0	1.2
CP110	ES11	9.0	0
CP110	ES12	10.0	0.1
CP117	ES1	0.1	5.1
CP117	ES2	0.5	0.9
CP117	ES3	1.0	2.4
CP117	ES4	2.0	0
CP117A	ES5	3.5	0

Position ID	Sample No.	Depth	PID reading

APPENDIX III – TRIAL PIT LOGS

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No. OP111

Dates : - 16/03/16

Location : Chainage - 5750

Job Number : G791

Engineer : Jacobs

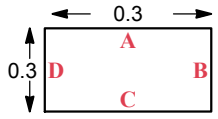
Ground Level :

Coordinates: 298158.10 E
Approximate Co-ordinates Only 206436.90 N
Co-ordinates to National Grid

m B.G.L.	Samples		Tests		Strata				WATER
	Depth	Type No.	Depth	Test Results	Depth (Thick-ness)	Description	Legend	Depth (Thick-ness)	
	0.10 -	ES1			(0.15)	Rough vegetation over brown slightly silty slightly gravelly slightly organic SAND with many rootlets. Gravel is angular to sub-angular fine to coarse sandstone and mudstone. (TOPSOIL)		(0.15)	
					0.15	Pale brown sandy slightly gravelly slightly organic CLAY with medium cobble content. Gravel is angular to sub-angular fine to coarse sandstone mudstone. Cobbles are sub-angular sandstone. (Re-worked natural, MADE GROUND)		0.15	
	0.50 -	ES2			(0.40)			(0.40)	
					0.55	Dark grey silty slightly gravelly slightly organic SAND with low cobble content. Gravel is angular to sub-angular fine to coarse sandstone mudstone. Cobbles are sub-angular sandstone. (Re-worked natural, MADE GROUND)		0.55	
	0.75 -	ES3			(0.20)			(0.20)	
					0.75	End at 0.75mbgl scheduled Depth		0.75	

DRAFT

PLAN



Groundwater: Groundwater not encountered

Stability: Stable

Shoring: None

Remarks : Moved to top of embankment adjacent to approximate coordinates. Approximately 3m above existing highway level. CAT scanned and cleared location by Costain.

Equipment Used: Various hand tools

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & A Jones	A Jones	1 Of 2	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6		Trial Pit No. OP111
Client : Costain		
Dates : - 16/03/16	Job Number : G791	Ground Level :
Location : Chainage - 5750	Engineer : Jacobs	Coordinates: 298158.10 E *Approximate Co-ordinates Only* 206436.90 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & A Jones	A Jones	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No. OP112

Dates : - 16/03/16

Location : Chainage - 5850

Job Number : G791

Engineer : Jacobs

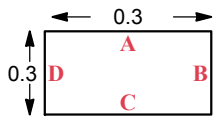
Ground Level :

Coordinates: 298237.70 E
Approximate Co-ordinates Only 206497.40 N
Co-ordinates to National Grid

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thickness)	Strata Description	Strata Legend	Strata Depth (Thickness)	WATER
	0.10 -	ES1 D2			(0.30)	Dark brown silty slightly gravelly organic SAND with many rootlets. Gravel is angular to sub-angular fine to coarse sandstone mudstone. (TOPSOIL)		*(0.30)*	
	0.30 - 0.50	B3			0.30	Soft mottled pale brown orange slightly gravelly sandy CLAY with low cobble content. Gravel is angular to sub-angular fine to coarse sandstone mudstone. Cobbles are sub-angular sandstone. (GLACIAL TILL)		0.30	
	0.50 -	D4 ES5			(0.70)			*(0.70)*	
	0.80 - 1.00	B6				...becoming gravelly from 0.8mbgl			
1	1.00 -	ES7 D8			1.00	End at 1.00mbgl scheduled depth		1.00	

DRAFT

PLAN



Groundwater: Groundwater not encountered

Stability: Stable

Shoring: None

Remarks : Moved to top of embankment adjacent to approximate coordinates. Approximately 6.5m above existing highway level. CAT scanned and cleared location by Costain.

Equipment Used: Various hand tools

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & A Jones	A Jones	1 Of 2	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6 Client : Costain		Trial Pit No. OP112
Dates : - 16/03/16 Location : Chainage - 5850	Job Number : G791 Engineer : Jacobs	Ground Level : Coordinates: 298237.70 E *Approximate Co-ordinates Only* 206497.40 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & A Jones	A Jones	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No. OP113

Dates : - 16/03/16

Location : Chainage - 5950

Job Number : G791

Engineer : Jacobs

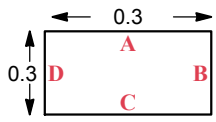
Ground Level :

Coordinates: 298298.10 E
Approximate Co-ordinates Only 206550.00 N
Co-ordinates to National Grid

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thickness)	Strata Description	Strata Legend	Strata Depth (Thickness)	WATER
	0.10 -	ES1			(0.25)	Dark brown silty slightly gravelly slightly organic SAND with many rootlets. Gravel is angular to sub-angular fine to coarse sandstone mudstone. (TOPSOIL)		*(0.25)*	
					0.25	Pale brown sandy slightly gravelly CLAY with medium cobble content. Gravel is angular to sub-angular fine to coarse sandstone mudstone. Cobbles are sub-angular sandstone. (Re-worked natural, MADE GROUND)		0.25	
	0.50 -	ES2			(0.50)			*(0.50)*	
					0.75	Greyish brown clayey slightly sandy GRAVEL with low cobble content. Gravel is angular fine to coarse sandstone. Cobbles are sub-angular sandstone. (GLACIAL TILL)		0.75	
1	1.00 -	ES3			(0.45)			*(0.45)*	
					1.20	End at 1.2m at scheduled depth		1.20	

DRAFT

PLAN



Groundwater: Groundwater not encountered

Stability: Stable

Shoring: None

Remarks : Moved to top of embankment adjacent to approximate coordinates. Approximately 4m above existing highway level. CAT scanned and cleared location by Costain.

Equipment Used: Various hand tools

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & A Jones	A Jones	1 Of 2	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6 Client : Costain		Trial Pit No. OP113
Dates : - 16/03/16 Location : Chainage - 5950	Job Number : G791 Engineer : Jacobs	Ground Level : Coordinates: 298298.10 E *Approximate Co-ordinates Only* 206550.00 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & A Jones	A Jones	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No. TP101

Dates : - 08/03/16

Location : Chainage - 1150

Job Number : G791

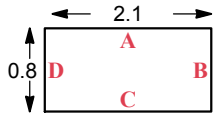
Engineer : Jacobs

Ground Level : 214.26 m A.O.D. *Level to Ordnance Datum*

Coordinates: 294620.64 E, 206014.90 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.10 -	ES1				Rough vegetation over dark grey to black slightly silty slightly sandy GRAVEL with medium cobble content. Gravel is angular to sub-rounded fine to coarse siltstone, mudstone, ironstone, some sandstone and rare fine coal. Cobbles are angular to sub-angular sandstone and siltstone. (Mix of topsoil, colliery spoil and re-worked natural, MADE GROUND)			
	0.50 -	ES2				rootlets to 0.6mbgl			
1	1.00 -	ES3				with timber blocks from 1.0mbgl			
	1.70 -	ES4			(3.40)	approximate highway level at 1.7mbgl			
2						low boulder content of angular siltstone from 2.0mbgl			
	2.70 -	ES5							
3									
					3.40	End at 3.4m at scheduled depth		210.86	

PLAN



Groundwater: Groundwater not encountered

Stability: Stable

Shoring: None

Remarks : CAT scanned and cleared location by Costain. Back filled with arisings.

Equipment Used: JCB 3CX

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	1 Of 2	5	All measurements in metres unless otherwise stated

AGS

DRAFT

Contract : A465 Section 5 & 6 Client : Costain		Trial Pit No. TP101
Dates : - 08/03/16 Location : Chainage - 1150	Job Number : G791 Engineer : Jacobs	Ground Level : 214.26 m A.O.D. *Level to Ordnance Datum* Coordinates: 294620.64 E 206014.90 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	2 Of 2		All measurements in metres unless otherwise stated

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No. TP102

Dates : - 07/03/16

Location : Chainage - 1200

Job Number : G791

Engineer : Jacobs

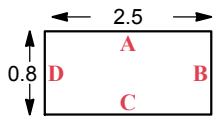
Ground Level : 212.86 m A.O.D. *Level to Ordnance Datum*

Coordinates: 294640.10 E 205987.01 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thickness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.10 -	ES1 D2			(0.15) 0.15	Grass and low vegetation over dark brown slightly silty sandy slightly organic GRAVEL with abundant roots. Gravel is sub-rounded to sub-angular fine to coarse occasionally flat mud/siltstone and sandstone. (TOPSOIL)		212.71	
	0.50 -	ES3 D4 B5				Dark grey to black silty sandy GRAVEL with medium cobble and boulder content and rare timber. Gravel is sub-rounded to sub-angular fine to coarse occasionally flat mudstone siltstone sandstone and rare coal. Cobbles and boulders are rounded to sub-angular occasional flat mudstone siltstone and ironstone. (Mix of colliery spoil and reworked natural, MADE GROUND)			
1	1.00 -	ES6 D7 B8							
					(3.35)				
2	2.00 -	ES9 D10 B11							
3	3.00 -	ES12 D13 B14			3.50	End of trial pit at 3.50mbgl, reached specified depth		209.36	

DRAFT

PLAN



Groundwater: Groundwater not encountered

Stability: Stable

Shoring: None

Remarks : CAT scanned and cleared location by Costain. Back filled with arisings.

Equipment Used: JCB 3CX

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	G Vernau	1 Of 2	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6 Client : Costain		Trial Pit No. TP102
Dates : - 07/03/16 Location : Chainage - 1200	Job Number : G791 Engineer : Jacobs	Ground Level : 212.86 m A.O.D. *Level to Ordnance Datum* Coordinates: 294640.10 E 205987.01 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	G Vernau	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No.
TP103

Dates : - 07/03/16

Location : Chainage - 1250

Job Number : G791

Engineer : Jacobs

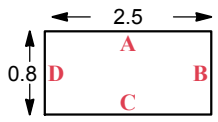
Ground Level : 214.78 m A.O.D.
Level to Ordnance Datum

Coordinates: 294673.62 E
205950.77 N
Co-ordinates to National Grid

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.05 -	ES1			(0.10) 0.10	Grass and brambles over dark brown to black silty sandy slightly organic GRAVEL with low cobble content. Gravel is sub-angular fine to coarse occasionally flat mudstone siltstone and rare coal. Cobbles are sub-rounded to sub-angular mudstone. (TOPSOIL)		214.68	
	0.50 -	ES2				Dark grey to black silty sandy GRAVEL with medium cobble and boulder content. Gravel is sub-rounded to sub-angular fine to coarse mudstone siltstone and rare coal. Cobbles and boulders are sub-rounded to sub-angular mud/siltstone. (Mix of colliery spoil and re-worked natural, MADE GROUND)			
1	1.00 -	ES3			(3.10)				
2	2.00 -	ES4							
3	3.00 -	ES5			3.20	End of trial pit at 3.20mbgl, reached target depth		211.58	

DRAFT

PLAN



Groundwater: Groundwater not encountered

Stability: Stable

Shoring: None

Remarks : CAT scanned and cleared location by Costain. Back filled with arisings.

Equipment Used: JCB 3CX

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	G Vernau	1 Of 2	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6		Trial Pit No. TP103
Client : Costain		
Dates : - 07/03/16	Job Number : G791	Ground Level : 214.78 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 1250	Engineer : Jacobs	Coordinates: 294673.62 E 205950.77 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	G Vernau	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No. TP104

Dates : - 08/03/16

Location : Chainage - 1300

Job Number : G791

Engineer : Jacobs

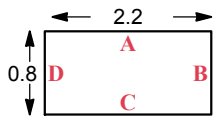
Ground Level : 213.46 m A.O.D. *Level to Ordnance Datum*

Coordinates: 294701.52 E 205908.34 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.10 -	ES1				Rough vegetation over dark grey to black slightly silty slightly sandy locally sandy GRAVEL with medium cobble content. Gravel is angular to sub-rounded fine to coarse siltstone, mudstone, ironstone and rare fine coal. Cobbles are angular to sub-rounded siltstone, mudstone, ironstone. (Mix of colliery spoil and re-worked natural, MADE GROUND)			
	0.30 - 0.40	B2							
	0.50 -	ES3				rootlets to 0.5mbgl			
	0.90 -	D4							
1	1.00 -	ES5							
	1.30 - 1.40	B6							
	1.50 -	ES7			(3.00)	approximate highway level at 1.5mbgl			
	1.90 -	D8							
2						low boulder content of sub-angular siltstone from 2.0mbgl			
	2.30 - 2.40	B9							
	2.50 -	ES10							
3	3.00 -	B11			3.00	End at 3.0m at scheduled depth		210.46	

DRAFT

PLAN



Groundwater: No Groundwater encountered

Stability: Sides collapsing slightly 0.2-1.2 and 2.0-3.0

Shoring: None

Remarks : CAT scanned and cleared location by Costain. Back filled with arisings.

Equipment Used: JCB 3CX

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	1 Of 2	5	All measurements in metres unless otherwise stated

Contract : A465 Section 5 & 6 Client : Costain		Trial Pit No. TP104
Dates : - 08/03/16 Location : Chainage - 1300	Job Number : G791 Engineer : Jacobs	Ground Level : 213.46 m A.O.D. *Level to Ordnance Datum* Coordinates: 294701.52 E 205908.34 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No. TP105

Dates : - 08/03/16

Location : Chainage - 1350

Job Number : G791

Engineer : Jacobs

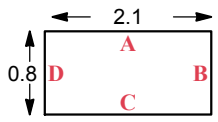
Ground Level : 212.42 m A.O.D. *Level to Ordnance Datum*

Coordinates: 294730.19 E 205868.84 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.10 -	ES1				Rough vegetation over dark grey to black slightly silty slightly sandy GRAVEL with medium cobble content,. Gravel is angular to sub-rounded fine to coarse siltstone, mudstone, ironstone and rare fine coal. Cobbles are angular to sub-rounded siltstone, mudstone, ironstone. (Mix of colliery spoil and re-worked natural, MADE GROUND)			
	0.50 -	ES2				Rubber straps at 0.2mbgl rootlets to 0.3mbgl			
1	1.00 -	ES3				low boulder content of sub-angular siltstone from 1.0mbgl			
					(3.10)				
	1.90 -	ES4				approximate highway level at 1.9mbgl becoming wetter at 2.0mbgl			
2									
	2.90 -	ES5							
3					3.10	End at 3.1m at scheduled depth		209.32	

DRAFT

PLAN



Groundwater: No Groundwater encountered

Stability: Stable

Shoring: None

Remarks : CAT scanned and cleared location by Costain. Back filled with arisings.

Equipment Used: JCB 3CX

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	1 Of 2	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6 Client : Costain		Trial Pit No. TP105
Dates : - 08/03/16 Location : Chainage - 1350	Job Number : G791 Engineer : Jacobs	Ground Level : 212.42 m A.O.D. *Level to Ordnance Datum* Coordinates: 294730.19 E 205868.84 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No. TP106

Dates : - 08/03/16

Location : Chainage - 1400

Job Number : G791

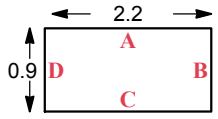
Engineer : Jacobs

Ground Level : 211.71 m A.O.D. *Level to Ordnance Datum*

Coordinates: 294762.26 E 205825.48 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.10 -	ES1				Rough vegetation over dark grey to black slightly silty slightly sandy GRAVEL with medium cobble content. Gravel is angular to sub-rounded fine to coarse siltstone, mudstone, ironstone and rare fine coal. Cobbles are angular to sub-rounded siltstone, mudstone, ironstone. (Mix of colliery spoil and re-worked natural, MADE GROUND) rootlets to 0.3mbgl			
	0.40 - 0.50	B2							
	0.50 -	ES3				low boulder content of sub-angular siltstone from 0.8mbgl			
	0.90 -	D4							
1	1.00 -	ES5							
	1.40 - 1.50	B6							
	1.50 -	ES7			(3.00)	approximate highway level at 1.5mbgl			
2	2.00 -	ES8							
		B9							
	2.50 - 2.60	B10				becoming wetter at 2.0mbgl			
3	3.00 -	ES11			3.00	End at 3.0m at scheduled depth		208.71	
		B12							

PLAN



Groundwater: Slight seepage at 2.9mbgl

Stability: Stable

Shoring: None

Remarks : CAT scanned and cleared location by Costain. Back filled with arisings.

Equipment Used: JCB 3CX

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	1 Of 2	5	All measurements in metres unless otherwise stated

AGS

DRAFT

Contract : A465 Section 5 & 6 Client : Costain		Trial Pit No. TP106
Dates : - 08/03/16 Location : Chainage - 1400	Job Number : G791 Engineer : Jacobs	Ground Level : 211.71 m A.O.D. *Level to Ordnance Datum* Coordinates: 294762.26 E 205825.48 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No.
TP107

Dates : - 09/03/16

Location : Chainage - 1450

Job Number : G791

Engineer : Jacobs

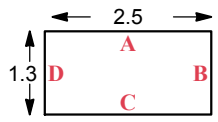
Ground Level : 210.10 m A.O.D.
Level to Ordnance Datum

Coordinates: 294790.30 E
205786.30 N
Co-ordinates to National Grid

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thickness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.10 -	ES1			(0.15)	Brown slightly silty slightly gravelly sandy slightly organic CLAY. Gravel is angular to sub-rounded fine to coarse sandstone, siltstone, mudstone. (TOPSOIL)			
					0.15	Dark grey to black slightly silty slightly sandy GRAVEL with medium cobble content and low boulder content. Gravel is angular to sub-rounded fine to coarse siltstone, mudstone, ironstone and rare fine coal. Cobbles are angular to sub-rounded siltstone, mudstone, ironstone. Boulders are sub-angular siltstone. (Mix of colliery spoil and re-worked natural, MADE GROUND)		209.95	
	0.50 -	ES2				rootlets to 0.5mbgl			
1	1.00 -	ES3							
	1.50 -	ES4				becoming wetter at 1.4mbgl			
		EW5			(2.65)				
						...with high cobble content from 1.8mbgl			
2									
	2.20 -	ES6							
	2.80 -	ES7			2.80	End at 2.8m at scheduled depth		207.30	

DRAFT

PLAN



Groundwater: Seepage from surface, Slow water ingress from 1.5mbgl

Stability: Sides collapsing from surface.

Shoring: None

Remarks : Ground level approximately equal to existing highway level. Pit dug across ditch. CAT scanned and cleared location by Costain. Backfilled with arisings.

Equipment Used: JCB 3CX

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	1 Of 2	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6 Client : Costain		Trial Pit No. TP107
Dates : - 09/03/16 Location : Chainage - 1450	Job Number : G791 Engineer : Jacobs	Ground Level : 210.10 m A.O.D. *Level to Ordnance Datum* Coordinates: 294790.30 E 205786.30 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No. TP108

Dates : - 09/03/16

Location : Chainage - 1500

Job Number : G791

Engineer : Jacobs

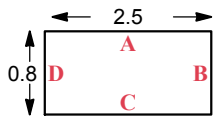
Ground Level : 209.44 m A.O.D. *Level to Ordnance Datum*

Coordinates: 294818.99 E 205745.38 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thickness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.10 -	ES1			(0.15)	Brown slightly gravelly sandy slightly organic CLAY with low cobble content of sandstone. Gravel is angular to sub-angular fine to coarse sandstone, siltstone and mudstone. (TOPSOIL)			
					0.15			209.29	
	0.50 -	ES2				Dark grey to black slightly silty slightly sandy GRAVEL with medium cobble content. Gravel is angular to sub-rounded fine to coarse siltstone, mudstone, ironstone and rare fine coal. Cobbles are angular to sub-angular siltstone, mudstone, ironstone (Mix of colliery spoil and re-worked natural, MADE GROUND) rootlets to 0.6mbgl ...with low boulder content of sub-angular siltstone from 0.7mbgl			
1	1.00 -	ES3				becoming wetter at 1.4mbgl			
					(2.85)				
						Red brick at 1.8mbgl			
2	2.00 -	ES4							
3	3.00 -	ES5			3.00	End at 3.0m at scheduled depth		206.44	

DRAFT

PLAN



Groundwater: Seepage at 0.15mbgl, 1.1mbgl & 1.6mbgl

Stability: Sides collapsing from 0.15-1.2mbgl

Shoring: None

Remarks : Approximately 0.5m below highway level. CAT scanned and cleared location by Costain. Backfilled with arisings.

Equipment Used: JCB 3CX

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	1 Of 2	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6 Client : Costain		Trial Pit No. TP108
Dates : - 09/03/16 Location : Chainage - 1500	Job Number : G791 Engineer : Jacobs	Ground Level : 209.44 m A.O.D. *Level to Ordnance Datum* Coordinates: 294818.99 E 205745.38 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No.
TP114

Dates : - 16/03/16

Location : Chainage - 7950

Job Number : G791

Engineer : Jacobs

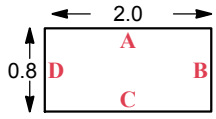
Ground Level : 338.55 m A.O.D.
Level to Ordnance Datum

Coordinates: 300126.54 E
207104.18 N
Co-ordinates to National Grid

m B.G.L.	Samples		Tests		Strata				WATER
	Depth	Type No.	Depth	Test Results	Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.	
	0.10 -	ES1			(0.25)	Rough vegetation over dark brown slightly clayey slightly gravelly slightly organic SILT with many rootlets, rope and plastic. Gravel is angular to sub-rounded fine to coarse sandstone and siltstone. (Mix of topsoil and re-worked natural, MADE GROUND)			
	0.50 -	ES2			0.25 (0.55)	Pale brown slightly clayey slightly sandy GRAVEL with low cobble content. Gravel is angular to sub-angular fine to coarse sandstone. Cobbles are sub-angular Sandstone. (GLACIAL TILL) At base of bank Rock at 0.6mbgl		338.30	
					0.80	End of hole on bedrock at 0.8mbgl		337.75	

DRAFT

PLAN



Groundwater: Groundwater not encountered

Stability: Stable

Shoring: None

Remarks : Approximately 0.5m above existing highway level. CAT scanned and cleared location by Costain. Backfilled with arisings.

Equipment Used: JCB 3CX

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	1 Of 2	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6 Client : Costain		Trial Pit No. TP114
Dates : - 16/03/16 Location : Chainage - 7950	Job Number : G791 Engineer : Jacobs	Ground Level : 338.55 m A.O.D. *Level to Ordnance Datum* Coordinates: 300126.54 E 207104.18 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No.
TP122

Dates : - 02/03/16

Location : Chainage - 9100

Job Number : G791

Engineer : Jacobs

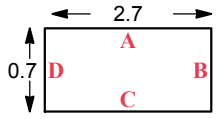
Ground Level : 325.77 m A.O.D.
Level to Ordnance Datum

Coordinates: 301241.71 E
207313.49 N
Co-ordinates to National Grid

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.10 -	ES1			(0.30)	Grass and reeds over dark grey slightly sandy slightly gravelly slightly organic CLAY with low cobble content and many rootlets. Gravel is angular to sub-angular fine to coarse sandstone, siltstone and mudstone. Cobbles are sub-rounded sandstone. (TOPSOIL)			
	0.50 -	ES2			0.30	Soft to firm pale brown orange sandy slightly gravelly CLAY. Gravel is angular to sub-angular fine to coarse Sandstone and mudstone. (GLACIAL TILL)		325.47	
1	1.00 -	ES3			(0.80)	...with low boulder content of sub-angular sandstone from 0.6mbgl			
	1.20 -	ES4			1.10	Firm grey sandy slightly gravelly CLAY with low cobble and boulder of sub-angular sandstone. Gravel is angular to sub-angular fine to coarse sandstone and mudstone. Cobbles and boulders are sub-angular sandstone. (GLACIAL TILL)		324.67	
					(0.90)	... becoming gravelly with medium cobble content of sub-angular to sub-rounded sandstone from 1.6mbgl			
2	2.00 -	ES5			2.00	Trial Pit terminated at scheduled depth of 2.0mbgl		323.77	

DRAFT

PLAN



Groundwater: Slight seepage from surface water., Slight seepage at 1.9mbgl

Stability: Stable

Shoring: None

Remarks : CAT scanned and cleared location by Costain. Back filled with arisings.

Equipment Used: JCB 3CX

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	All measurements in metres unless otherwise stated
C Davies	A Jones	1 Of 2	5	

AGS

Contract : A465 Section 5 & 6 Client : Costain		Trial Pit No. TP122
Dates : - 02/03/16 Location : Chainage - 9100	Job Number : G791 Engineer : Jacobs	Ground Level : 325.77 m A.O.D. *Level to Ordnance Datum* Coordinates: 301241.71 E 207313.49 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No.
TP125

Dates : - 01/03/16

Location : Chainage - 9150

Job Number : G791

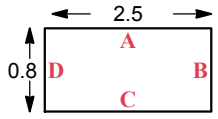
Engineer : Jacobs

Ground Level : 313.62 m A.O.D.
Level to Ordnance Datum

Coordinates: 301495.48 E
207288.81 N
Co-ordinates to National Grid

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
						Grass over soft brown silty slightly sandy slightly organic CLAY. (TOPSOIL)			
	0.10 -	ES1 D2 B3			(0.15) 0.15	Soft light greyish and orangish brown slightly clayey slightly sandy slightly gravelly SILT with low cobble content and medium boulder content. Gravel is rounded to sub-angular fine to coarse siltstone and sandstone. Cobbles and boulders are sub-angular to sub-rounded sandstone. (GLACIAL TILL)		313.47	
	0.50 -	ES4 D5 B6				0.65-1.50m: medium to high cobble content			
1	1.00 -	ES7 D8 B9			(1.35)				
					1.50	Soft to firm dark grey and brown slightly sandy gravelly CLAY with high cobble content and medium boulder content. Gravel is rounded to sub-angular fine to coarse siltstone and sandstone. Cobbles and boulders are rounded to sub-angular siltstone sandstone and quartzite. (GLACIAL TILL)		312.12	
2	1.90 -	ES10 D11 B12			(0.85)				
					2.35	Light brownish grey clayey sandy GRAVEL with low cobble content. Gravel is sub-angular to angular fine to coarse frequently flat mud/siltstone. Cobbles are angular mud/siltstone with frequent orange/red discoloration and surface staining. (GLACIAL TILL)		311.27	
3	2.50 -	ES13 D14 B15							
	3.50 -	ES16 D17 B18			(2.15)				
4									
					4.50	End of trial pit at 4.50mbgl, reached specified depth		309.12	

PLAN



Groundwater: Groundwater not encountered

Stability: Stable

Shoring: None

Remarks : CAT scanned and cleared location by Costain. Back filled with arisings.

Equipment Used: JCB 3CX

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	G Vernau	1 Of 2	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6		Trial Pit No. TP125
Client : Costain		
Dates : - 01/03/16	Job Number : G791	Ground Level : 313.62 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 9150	Engineer : Jacobs	Coordinates: 301495.48 E 207288.81 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	G Vernau	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No. TP157

Dates : - 04/03/16

Location : Chainage - 2500

Job Number : G791

Engineer : Jacobs

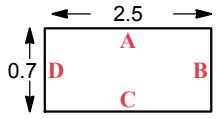
Ground Level : 214.12 m A.O.D. *Level to Ordnance Datum*

Coordinates: 295477.89 E 205021.60 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thickness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.10 -	ES1			(0.15)	Rough vegetation over brown slightly silty slightly clayey slightly sandy slightly organic GRAVEL with rootlets. Gravel is angular fine to coarse mudstone and siltstone.			
					0.15	(TOPSOIL)		213.97	
	0.40 -	B2				Grey slightly silty slightly sandy GRAVEL with rootlets. Gravel is angular fine to coarse mudstone and siltstone. (Re-worked natural, MADE GROUND)			
	0.50 -	ES3			(0.65)				
					0.80	Soft grey sandy slightly gravelly organic CLAY/SILT with some rootlets. Gravel is angular to sub-angular fine to coarse sandstone, siltstone and mudstone.		213.32	
1	1.00 -	ES5			(0.50)				
	1.10 -	D4							
	1.20 - 1.30	B6							
					1.30	Dark brown organic clayey fibrous PEAT.		212.82	
	1.40 -	ES7			(0.20)				
		D8			1.50	Grey clayey COBBLES and BOULDERS. Cobbles and boulders are sub-angular sandstone.		212.62	
					(0.20)				
					1.70	Grey sandy gravelly CLAY with low cobble content. Gravel is angular to sub-angular fine to coarse Sandstone and mudstone. Cobbles are sub-angular sandstone. (GLACIAL TILL)		212.42	
2	2.00 -	B9			(0.50)	At 2.0mbgl small pockets of brown organic clay.			
		ES10							
		D11							
					2.20	Brown slightly clayey sandy GRAVEL. Gravel is angular to sub-angular fine to coarse sandstone. (GLACIAL TILL)		211.92	
	2.50 -	ES13							
		D14							
		B15			(0.90)				
3									
					3.10	End of hole at 3.1mbgl on engineers instruction		211.02	

DRAFT

PLAN



Groundwater: Seepage at 0.8mbgl

Stability: Sides collapsing from 0.8 - 1.8mbgl

Shoring: None

Remarks : CAT scanned and cleared location by Costain. Back filled with arisings.

Equipment Used: JCB 3CX

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	1 Of 2	5	All measurements in metres unless otherwise stated

Contract : A465 Section 5 & 6 Client : Costain		Trial Pit No. TP157
Dates : - 04/03/16 Location : Chainage - 2500	Job Number : G791 Engineer : Jacobs	Ground Level : 214.12 m A.O.D. *Level to Ordnance Datum* Coordinates: 295477.89 E 205021.60 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	2 Of 2		All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Trial Pit No.
TP159

Dates : - 04/03/16

Location : Chainage - 2600

Job Number : G791

Engineer : Jacobs

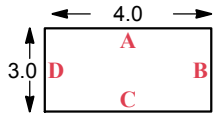
Ground Level : 217.96 m A.O.D.
Level to Ordnance Datum

Coordinates: 295571.18 E
204990.92 N
Co-ordinates to National Grid

m B.G.L.	Samples Depth	Samples Type No.	Tests Depth	Tests Test Results	Strata Depth (Thickness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	WATER
	0.10 -	ES1			(0.05) 0.05	Grass and moss over brown silty slightly gravelly slightly organic SAND with many rootlets. Gravel is angular to sub-angular fine to coarse sandstone, siltstone and mudstone. (TOPSOIL)		217.91	
	0.30 - 0.40	B2				Dark grey slightly silty slightly sandy GRAVEL with low cobble content. Gravel is angular to sub-angular fine to coarse siltstone, mudstone, ironstone and rare fine coal. Cobbles are angular to sub-angular mudstone and siltstone and rare sub-rounded sandstone. (Mix of colliery spoil and re-worked natural, MADE GROUND)			
	0.50 -	ES3							
	0.90 -	D4							
1	1.00 -	ES5							
	1.30 - 1.40	B6				with low boulder content of sub-angular siltstone from 1.5mbgl			
					(3.45)				
	1.90 -	D7							
2	2.00 -	ES8							
	2.50 -	B9							
3	3.00 -	ES10							
					3.50	End of hole at 3.5mbgl, sides collapsing from surface, area becoming unsafe to work.		214.46	

DRAFT

PLAN



Groundwater: Groundwater not encountered

Stability: Sides unstable from ground surface

Shoring: None

Remarks : CAT scanned and cleared location by Costain. Back filled with arisings.

Equipment Used: JCB 3CX

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	1 Of 2	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6 Client : Costain		Trial Pit No. TP159
Dates : - 04/03/16 Location : Chainage - 2600	Job Number : G791 Engineer : Jacobs	Ground Level : 217.96 m A.O.D. *Level to Ordnance Datum* Coordinates: 295571.18 E 204990.92 N *Co-ordinates to National Grid*

DRAFT

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
C Davies	A Jones	2 Of 2		All measurements in metres unless otherwise stated

AGS

Photoionization Detector Results
Trial Pits

Quantum Geotechnical

Position ID	Sample No.	Depth	PID reading
OP111	ES1	0.1	0
OP111	ES2	0.5	0
OP111	ES3	0.8	0.6
OP112	ES1	0.1	0
OP112	ES5	0.5	0
OP112	ES7	1.0	0
OP113	ES1	0.1	0
OP113	ES2	0.5	0
OP113	ES3	1.0	0
TP101	ES1	0.1	3.5
TP101	ES2	0.5	10.6
TP101	ES3	1.0	12.6
TP101	ES4	1.7	36.2
TP101	ES5	2.7	8.3
TP102	ES1	0.1	0.6
TP102	ES3	0.5	2
TP102	ES6	1.0	47.3
TP102	ES9	2.0	19.3
TP102	ES12	3.0	6
TP103	ES1	0.1	16.7
TP103	ES2	0.5	4.0
TP103	ES3	1.0	3.0
TP103	ES4	2.0	0.0
TP103	ES5	3.0	6.1
TP104	ES1	0.1	5.6
TP104	ES3	0.5	9.2
TP104	ES5	1.0	16.2
TP104	ES7	1.5	24.3
TP104	ES10	2.5	19.2
TP105	ES1	0.1	9.8
TP105	ES2	0.5	16.5
TP105	ES3	1.0	32.2
TP105	ES4	1.9	26.1
TP105	ES5	2.9	14.2
TP106	ES1	0.1	9.7
TP106	ES3	0.5	20.1
TP106	ES5	1.0	25.6
TP106	ES7	1.5	20.1
TP106	ES8	2.0	31.2
TP106	ES11	3.0	29.5
TP107	ES1	0.1	2.3
TP107	ES2	0.5	39.2
TP107	ES3	1.0	49.2
TP107	ES4	1.5	21.1
TP107	ES6	2.2	16.6
TP107	ES7	2.8	14.2
TP108	ES1	0.1	1.4
TP108	ES2	0.5	25.6
TP108	ES3	1.0	32.4
TP108	ES4	2.0	12.8
TP108	ES5	3.0	41.3
TP114	ES1	0.1	2.3
TP114	ES2	0.5	0.0
TP122	ES1	0.1	0.0
TP122	ES2	0.5	0.0
TP122	ES3	1.0	0
TP122	ES4	1.2	0
TP122	ES5	2.0	0
TP125	ES1	0.1	0
TP125	ES4	0.5	0.0
TP125	ES7	1.0	0.0
TP125	ES10	1.9	0
TP125	ES13	2.5	0
TP125	ES16	3.5	0
TP157	ES1	0.1	2.5
TP157	ES3	0.5	1.4
TP157	ES5	1.0	0.2
TP157	ES7	1.4	0.0
TP157	ES10	2.0	0.0
TP157	ES13	2.5	0.0
TP159	ES1	0.1	3.6
TP159	ES3	0.5	11.2
TP159	ES5	1.0	6.5
TP159	ES8	2.0	8.1
TP159	ES10	3.0	7.4

APPENDIX IV – WINDOW SAMPLE LOGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
TP115 (WS)

Dates : 11/03/16 - 11/03/16
Location : Chainage - 8050

Job Number : G791
Engineer : Jacobs

Ground Level : 346.50 m A.O.D. *Level to Ordnance Datum*
Coordinates: 300311.76 E 207167.55 N *Co-ordinates to National Grid*

m B.G.L.	Samples: Depth	Samples: Type No.	Sample Run: Diam. (mm)	Sample Run: Recovery (%)	Strata: Depth (Thick-ness)	Strata: Description	Strata: Legend	Strata: Red. Level A.O.D.	Water
0									
	0.20	ES 1				Brown silty slightly sandy slightly gravelly slightly organic CLAY with many rootlets and plastic. Gravel is angular to sub-angular fine to coarse sandstone, siltstone and mudstone. (Mix of topsoil and re-worked natural, MADE GROUND)			
	0.30	D 2			(0.50)				
					0.50	Soft to firm slightly silty slightly sandy slightly gravelly slightly organic to organic CLAY with low cobble content. Gravel is angular to sub-angular fine to medium siltstone, mudstone, and fine coal. Cobbles are sub-angular fine siltstone. (Re-worked natural, MADE GROUND)		346.00	
	0.70 - 1	B 3							
	0.80	ES 4							
1	1.00 - 2	B 5		75	(2.20)				
	1.80	ES 6							
2	2.00 - 2.6	B 7		93					
	2.70	ES 8			2.70	End of hole at 2.7mbgl, window sample refused.		343.80	
3									
4									

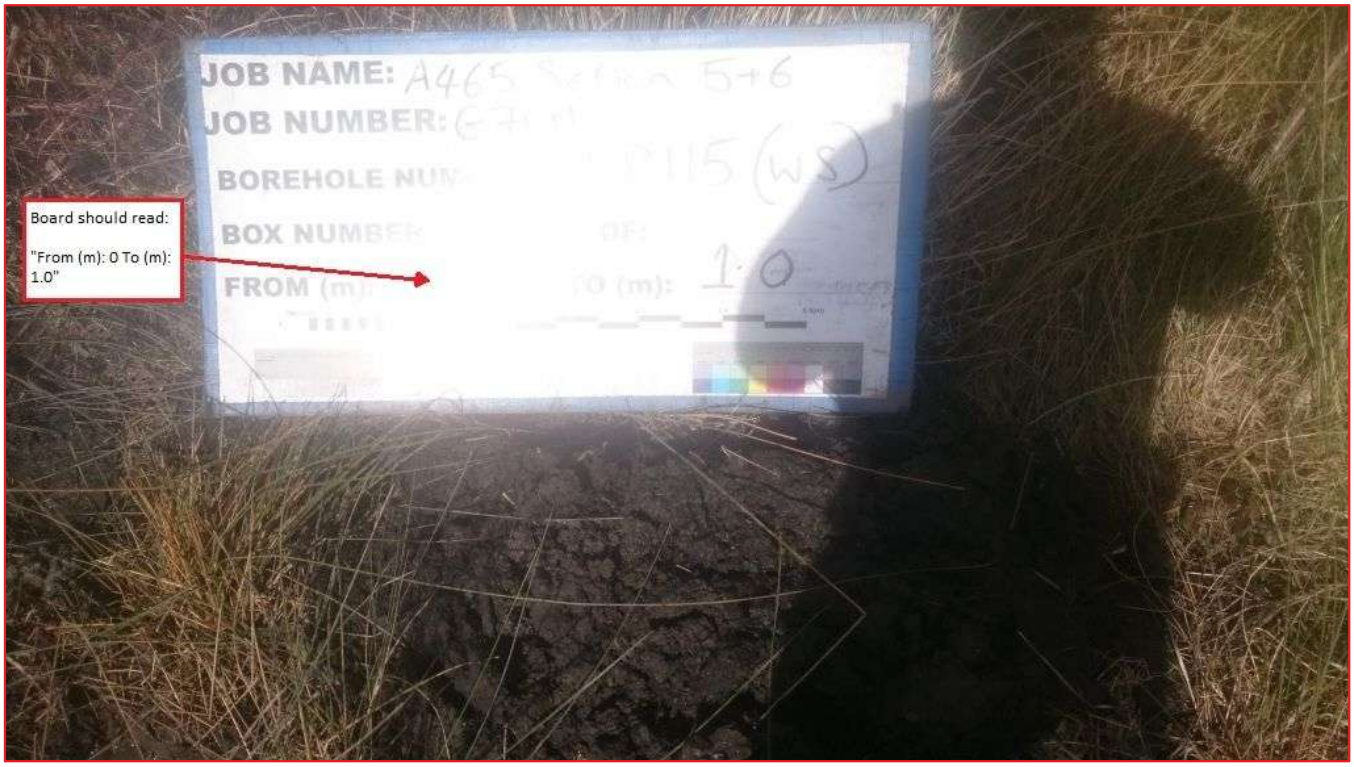
Equipment Used: Dando Terrier
Groundwater: Seepage from surface, Medium inflow at 0.5mbgl
Remarks: CAT scanned and cleared location by Costain. Inspection pit to 1.0mbgl. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

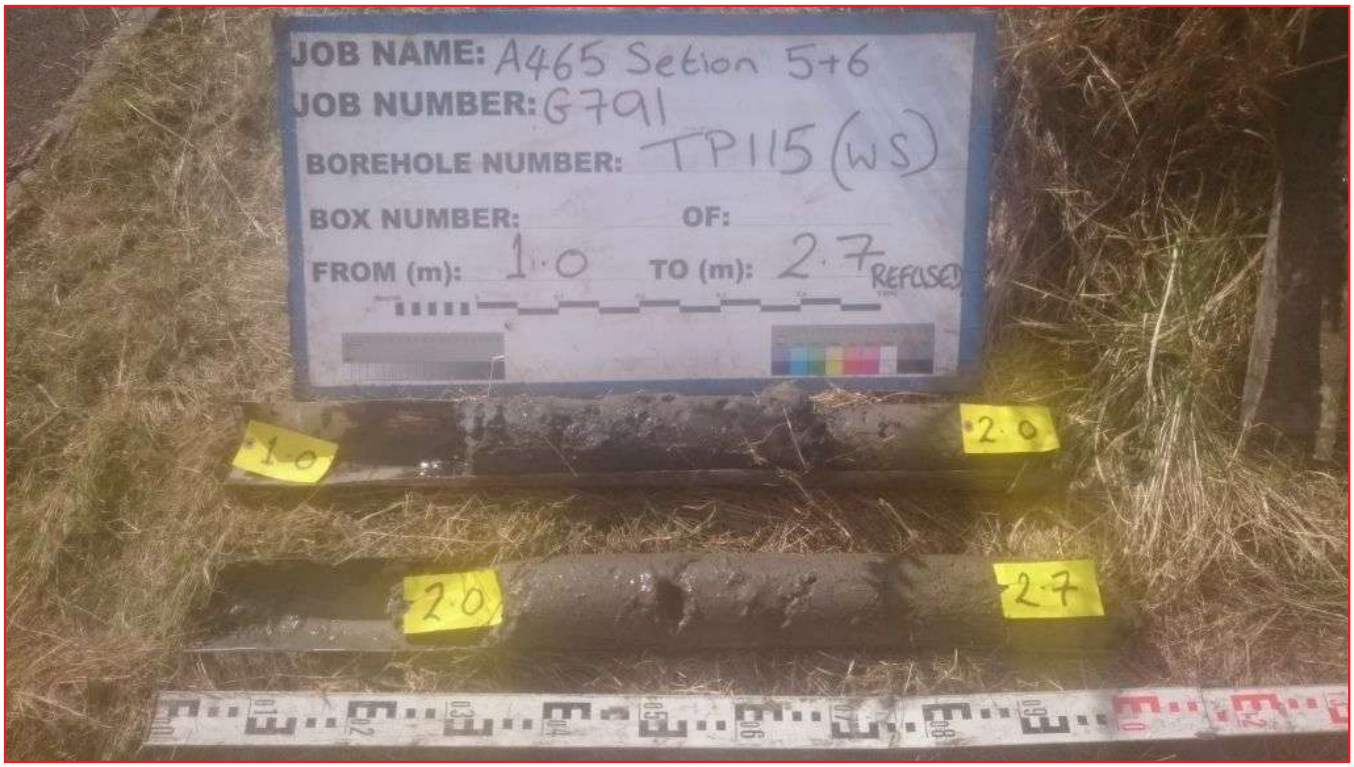
Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6 **Client : Costain**		**Borehole No.** **TP115 (WS)**
Dates : 11/03/16 - 11/03/16 Location : Chainage - 8050	Job Number : G791 Engineer : Jacobs	Ground Level : 346.50 m A.O.D. *Level to Ordnance Datum* Coordinates: 300311.76 E 207167.55 N *Co-ordinates to National Grid*





Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
TP116 (WS)

Dates : 11/03/16 - 11/03/16
Location : Chainage - 8800
Job Number : G791
Engineer : Jacobs
Ground Level : 344.37 m A.O.D. *Level to Ordnance Datum*
Coordinates: 300923.88 E 207313.27 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water
0						Moss and vegetation* over dark grey silty locally slightly silty sandy Gravel. Gravel is angular to sub-angular fine to coarse siltstone mudstone and rare fine coal. (Re-worked natural, MADE GROUND) *Moss and vegetation to 0.07mbgl			
	0.20 0.20 - 0.6	ES 1 B 4		90					
	0.75	ES 2			(0.10)	... small band soft brown silty Clay			
					0.80			343.57	
1	1.00 1.00 - 2	ES 3 B 6		90					
2	2.00 2.00 - 3	ES 5 B 13		85	(4.65)				
3	3.00 3.00 - 4	ES 7 B 8		100					
4	4.00 4.00 - 4.45	ES 9 B 10		95					
					4.65	Black clayey organic fibrous PEAT		339.72	
	4.80	D 12			(0.35)				
5	5.00	ES 11			5.00	End of hole at 5.0mbgl hole collapsing		339.37	

Equipment Used: Dando Terrier
Groundwater: Groundwater not encountered
Remarks: Ground level surveyed from from top of moss. 0.07m of dense moss overlaying soil. CAT scanned and cleared location by Costain. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	5.1	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6	**Borehole No.**
Client : Costain	**TP116 (WS)**

Dates : 11/03/16 - 11/03/16	Job Number : G791	Ground Level : 344.37 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 8800	Engineer : Jacobs	Coordinates: 300923.88 E 207313.27 N *Co-ordinates to National Grid*

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
TP133 (WS)

Dates : 18/03/16 - 18/03/16
Location : Chainage - 11050
Job Number : G791
Engineer : Jacobs
Ground Level : 226.17 m A.O.D. *Level to Ordnance Datum*
Coordinates: 302978.02 E 208028.10 N *Co-ordinates to National Grid*

m B.G.L.	Samples: Depth	Samples: Type No.	Sample Run: Diam. (mm)	Sample Run: Recovery (%)	Strata: Depth (Thick-ness)	Strata: Description	Strata: Legend	Strata: Red. Level A.O.D.	Water
0									
	0.10	ES 1			(0.15)	Brown silty slightly gravelly slightly organic SAND with many rootlets. Gravel is angular to sub-rounded fine to coarse sandstone and siltstone. (TOPSOIL)			
	0.20	ES 2			0.15			226.02	
					(0.15)	Soft grey brown slightly silty CLAY. (Re-worked natural, MADE GROUND)			
					0.30			225.87	
	0.50	ES 3		90	(0.60)	Reddish black silty slightly sandy GRAVEL with low cobble content. Gravel is angular to sub-angular fine to coarse, limestone, sandstone, siltstone, slag, clinker, glass slag, red ash and rare fine coal. Cobbles are sub-angular sandstone, siltstone and slag. (Mix of colliery spoil and re-worked natural, MADE GROUND)			
					0.90			225.27	
1	1.00	ES 4		100	(0.40)	Dark brown slightly clayey slightly sandy gravelly SILT. Gravel is angular to sub-angular fine to coarse sandstone and rare fine coal. (Re-worked natural, MADE GROUND)			
					1.30	End of hole at 1.3mbgl. Window sampler refused		224.87	
2									
3									
4									

Equipment Used: Dando Terrier
Groundwater: Groundwater not encountered
Remarks: CAT scanned and cleared location by Costain. Inspection pit to 0.5mbgl. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
TP133 (WS)

Dates : 18/03/16 - 18/03/16	Job Number : G791	Ground Level : 226.17 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 11050	Engineer : Jacobs	Coordinates: 302978.02 E 208028.10 N *Co-ordinates to National Grid*

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
TP134 (WS)

Dates : 18/03/16 - 18/03/16
Location : Chainage - 11100
Job Number : G791
Engineer : Jacobs
Ground Level : 226.38 m A.O.D. *Level to Ordnance Datum*
Coordinates: 303003.29 E 208044.85 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water
0					(0.05)	Brown silty slightly gravelly slightly organic SAND with many rootlets. Gravel is angular to sub-angular fine to coarse sandstone and mudstone. (TOPSOIL)		226.33	
	0.10	ES 1			0.05 (0.10)			226.23	
					0.15	Soft reddish brown slightly sandy gravelly CLAY. Gravel is angular to sub-angular fine to coarse sandstone and mudstone. (Re-worked natural, MADE GROUND)			
	0.50	ES 2		70	(0.65)	Reddish black silty slightly sandy GRAVEL with low cobble content. Gravel is angular to sub-angular fine to coarse, limestone, sandstone, siltstone, slag, clinker, glass slag, red ash and rare fine coal. Cobbles are sub-angular sandstone and slag. (Mix of colliery spoil and re-worked natural, MADE GROUND)			
					0.80 (0.20)			225.58	
1	1.00	ES 3		0	1.00 (0.10)	Pale reddish brown slightly sandy slightly clayey GRAVEL. Gravel is angular fine to coarse sandstone. No Recovery		225.38	
					1.10	End of hole at 1.1mbgl. Window sampler refused		225.28	
2									
3									
4									

Equipment Used: Dando Terrier
Groundwater: Groundwater not encountered
Remarks: CAT scanned and cleared location by Costain. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

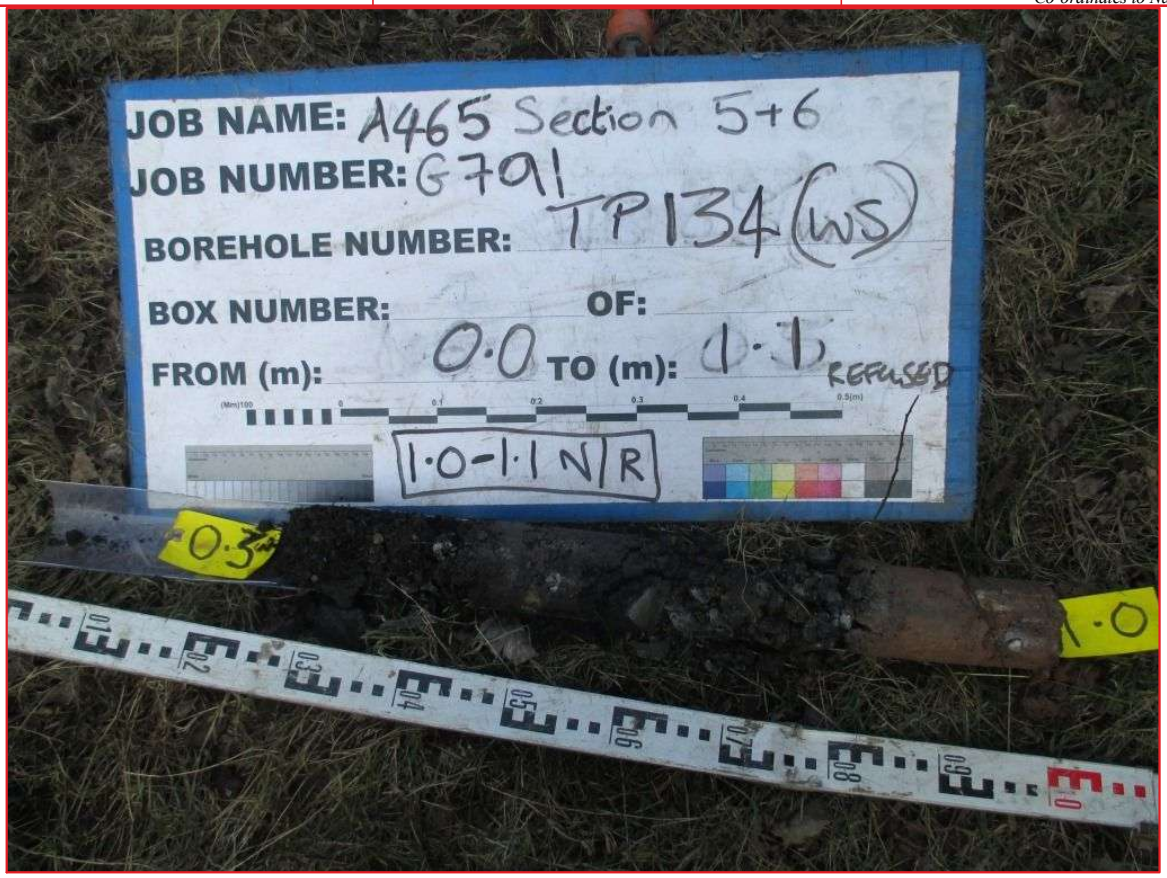
Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
TP134 (WS)

Dates : 18/03/16 - 18/03/16	Job Number : G791	Ground Level : 226.38 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 11100	Engineer : Jacobs	Coordinates: 303003.29 E 208044.85 N *Co-ordinates to National Grid*



Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
TP136 (WS)

Dates : 17/03/16 - 17/03/16
Location : Chainage - 11200
Job Number : G791
Engineer : Jacobs
Ground Level : 227.04 m A.O.D. *Level to Ordnance Datum*
Coordinates: 303089.90 E 208090.18 N *Co-ordinates to National Grid*

m B.G.L.	Samples		Sample Run		Strata				Water
	Depth	Type No.	Diam. (mm)	Recovery (%)	Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.	
0	0.10	ES 1				Black silty slightly sandy GRAVEL with low cobble content. Gravel is angular to sub-angular fine to coarse, limestone, sandstone, siltstone, slag, clinker and glass slag. Cobbles are sub-angular sandstone and slag. (Mix of colliery spoil and re-worked natural, MADE GROUND)			
	0.50	ES 2			(1.10)				
				80					
1	1.00	ES 3							
					1.10	End of hole at 1.1mbgl Refusal of Window sampler		225.94	
2									
3									
4									

Equipment Used: Dando Terrier
Groundwater: Groundwater not encountered
Remarks: CAT scanned and cleared location by Costain. Inspection pit to 0.6mbgl. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
TP136 (WS)

Dates : 17/03/16 - 17/03/16

Location : Chainage - 11200

Job Number : G791

Engineer : Jacobs

Ground Level : 227.04 m A.O.D.
Level to Ordnance Datum

Coordinates: 303089.90 E
208090.18 N
Co-ordinates to National Grid

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
TP137 (WS)

Dates : 14/03/16 - 16/03/16

Location : Chainage - 11250

Job Number : G791

Engineer : Jacobs

Ground Level : 227.33 m A.O.D.
Level to Ordnance Datum

Coordinates: 303136.31 E
208108.62 N
Co-ordinates to National Grid

m B.G.L.	Samples		Sample Run		Strata				Water
	Depth	Type No.	Diam. (mm)	Recovery (%)	Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.	
0	0.10	ES 1			(0.30)	Grass over dark brown slightly sandy slightly gravelly CLAY. Gravel is angular to sub-angular fine to coarse, slag and sandstone with plastic and many rootlets. (Mix of topsoil and re-worked natural, MADE GROUND)			
					0.30			227.03	
	0.50	ES 2			(0.90)	Grey slightly silty slightly sandy GRAVEL with low cobble content. Gravel is angular to sub-angular fine to coarse slag, clinker, limestone and sandstone. Cobbles are sub-angular slag and sandstone. (Mix of colliery spoil and re-worked natural, MADE GROUND)			
1	1.00	ES 3		85					
					1.20	End of hole at 1.2mbgl Window sampler refused		226.13	
2									
3									
4									

Equipment Used: Dando Terrier

Groundwater: Groundwater not encountered

Remarks: CAT scanned and cleared location by Costain. Inspection pit to 1.0mbgl. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
TP137 (WS)

Dates : 14/03/16 - 16/03/16

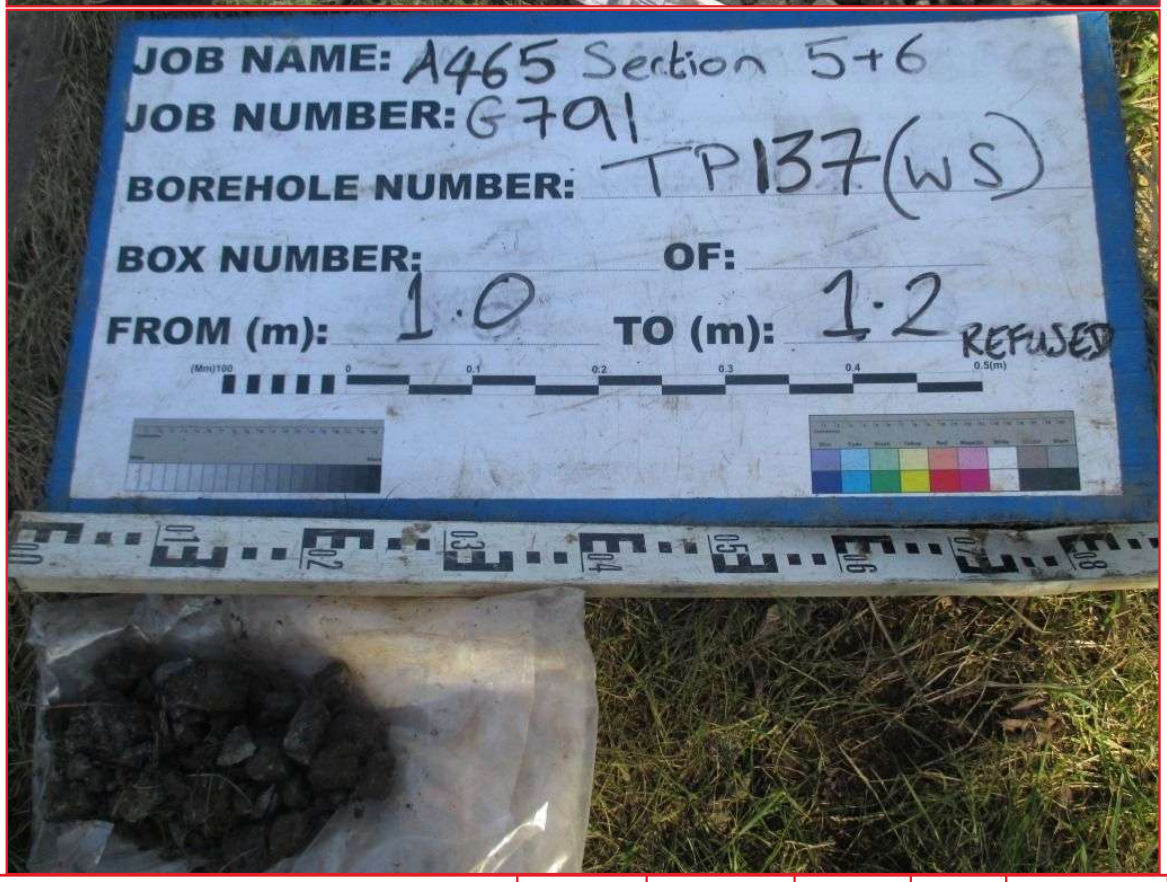
Location : Chainage - 11250

Job Number : G791

Engineer : Jacobs

Ground Level : 227.33 m A.O.D.
Level to Ordnance Datum

Coordinates: 303136.31 E
208108.62 N
Co-ordinates to National Grid



Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
TP139 (WS)

Dates : 17/03/16 - 17/03/16
Location : Chainage - 11400
Job Number : G791
Engineer : Jacobs
Ground Level : 227.64 m A.O.D. *Level to Ordnance Datum*
Coordinates: 303278.40 E 208156.45 N *Co-ordinates to National Grid*

m B.G.L.	Samples		Sample Run		Strata				Water
	Depth	Type No.	Diam. (mm)	Recovery (%)	Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.	
0	0.10	ES 1			(0.15)	Dark brown slightly silty slightly gravelly SAND with many rootlets. Gravel is sub-angular fine to coarse sandstone slag and clinker. (Mix of topsoil, colliery spoil and re-worked natural, MADE GROUND)			
	0.25	ES 2			0.15			227.49	
					(0.15)	Brown slightly silty slightly gravelly SAND. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse sandstone and slag. (Mix of colliery spoil and re-worked natural, MADE GROUND)			
				69	0.30			227.34	
	0.60	ES 3			(0.50)	White very fractured highly weathered SANDSTONE rock. Recovered as angular fine to coarse gravel.			
					0.80	End at 0.8mbgl Window sampler refused		226.84	
1									
2									
3									
4									

Equipment Used: Dando Terrier
Groundwater: Groundwater not encountered
Remarks: CAT scanned and cleared location by Costain. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	All measurements in metres unless otherwise stated
V Williams & G Llewellyn	A Jones	1 Of 1	5	

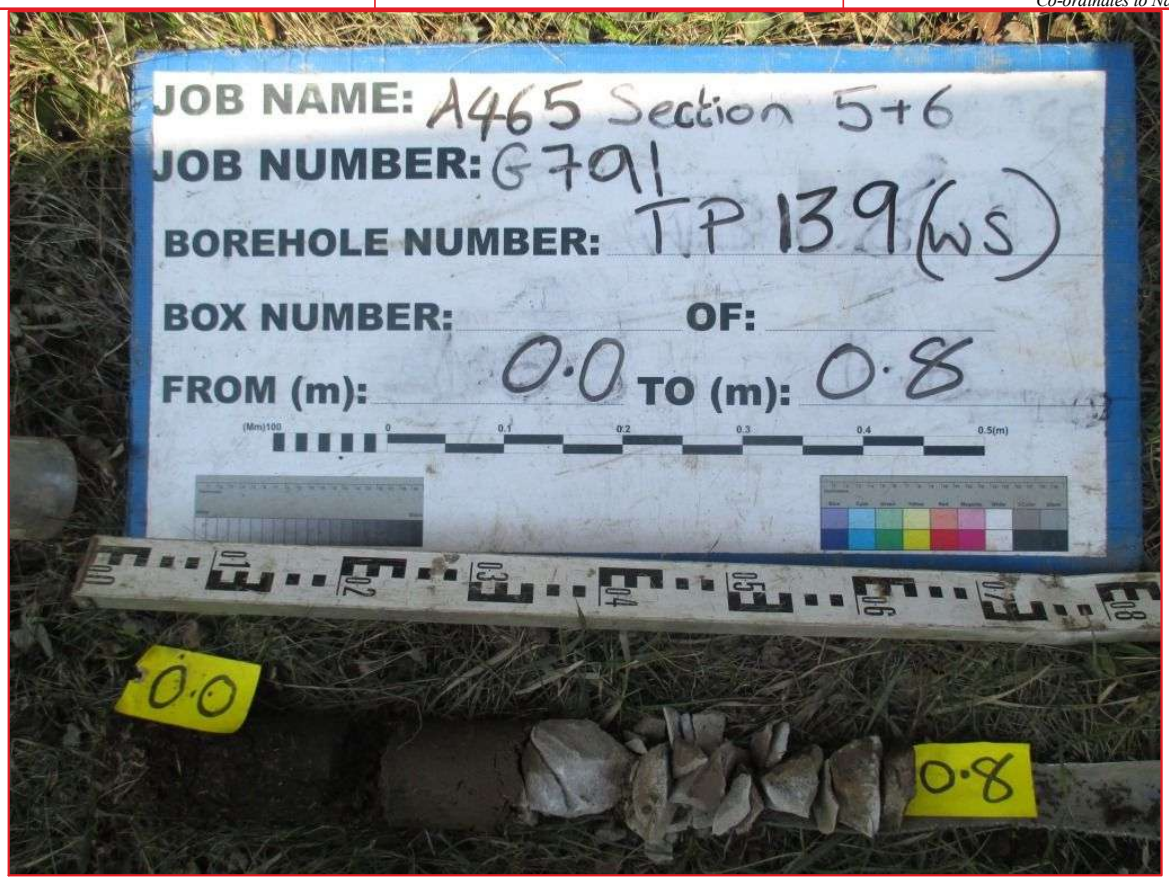
AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
TP139 (WS)

Dates : 17/03/16 - 17/03/16	Job Number : G791	Ground Level : 227.64 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 11400	Engineer : Jacobs	Coordinates: 303278.40 E 208156.45 N *Co-ordinates to National Grid*



Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
TP140 (WS)

Dates : 17/03/16 - 17/03/16
Location : Chainage - 11600
Job Number : G791
Engineer : Jacobs
Ground Level : 229.45 m A.O.D. *Level to Ordnance Datum*
Coordinates: 303476.92 E 208188.42 N *Co-ordinates to National Grid*

m B.G.L.	Samples: Depth	Samples: Type No.	Sample Run: Diam. (mm)	Sample Run: Recovery (%)	Strata: Depth (Thick-ness)	Strata: Description	Strata: Legend	Strata: Red. Level A.O.D.	Water
0					(0.05)	Dark brown slightly silty slightly gravelly slightly organic SAND with many rootlets, plastic and tin cans. Gravel is angular to sub-angular fine to coarse sandstone, siltstone and mudstone. (Mix of waste and topsoil, MADE GROUND)		229.40	
	0.10	ES 1 D 2			0.05 (0.20)				
					0.25	Soft pale brown slightly silty sandy slightly organic CLAY. (Re-worked natural, MADE GROUND)		229.20	
	0.40 - 0.6	B 5				Brown slightly clayey to clayey slightly sandy to sandy GRAVEL with high cobble content. Gravel is angular to sub-angular fine to coarse sandstone, siltstone and rare fine coal. Cobbles are sub-angular sandstone and siltstone. (Mix of colliery spoil and re-worked natural, MADE GROUND)			
	0.50	D 3 ES 4			(0.95)	...sub-angular sandstone boulder at 0.8mbgl			
1	1.00	ES 6 D 7							
					1.20	End of hole. Window sample refused on Cobbles and boulders. Unable to hand dig out.		228.25	
2									
3									
4									

Equipment Used: Hand held hydraulic sampler + jack
Groundwater: Groundwater not encountered
Remarks: CAT scanned and cleared location by Costain. Inspection pit to 1.2mbgl. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
TP140 (WS)

Dates : 17/03/16 - 17/03/16	Job Number : G791	Ground Level : 229.45 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 11600	Engineer : Jacobs	Coordinates: 303476.92 E 208188.42 N *Co-ordinates to National Grid*

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
TP143 (WS)

Dates : 21/03/16 - 21/03/16
Location : Chainage - 13900
Job Number : G791
Engineer : Jacobs
Ground Level : 319.90 m A.O.D. *Level to Ordnance Datum*
Coordinates: 305651.80 E 208460.69 N *Co-ordinates to National Grid*

m B.G.L.	Samples		Sample Run		Strata				Water
	Depth	Type No.	Diam. (mm)	Recovery (%)	Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.	
0	0.10	ES 1			(0.60)	Soft light brown becoming reddish slightly sandy gravelly slightly organic CLAY/SILT with low cobble content and occasional roots. Gravel is sub-angular to very angular siltstone slag and brick. Cobbles are sub-rounded to sub-angular slag. (Mix of waste, colliery spoil and re-worked natural, MADE GROUND)			
	0.50	ES 2							
	0.61	D 3 B 4 ES 5 D 6 B 7		100	0.60	Dark grey to black locally clayey sandy slightly organic GRAVEL with medium cobble content. Gravel is rounded to sub-angular fine to coarse mudstone slag and rare coal. Cobbles are sub-rounded to sub-angular slag. (Mix of colliery spoil and re-worked natural, MADE GROUND)		319.30	
	0.90	D 8			(0.70)				
1	1.20	ES 9		100	1.30	Window sample refused at 1.30mbgl		318.60	
2									
3									
4									

Equipment Used: Dando Terrier
Groundwater: Groundwater not encountered
Remarks: CAT scanned and cleared location by Costain. Inspection pit to 0.6mbgl. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	G Vernau	1 Of 1	5	All measurements in metres unless otherwise stated

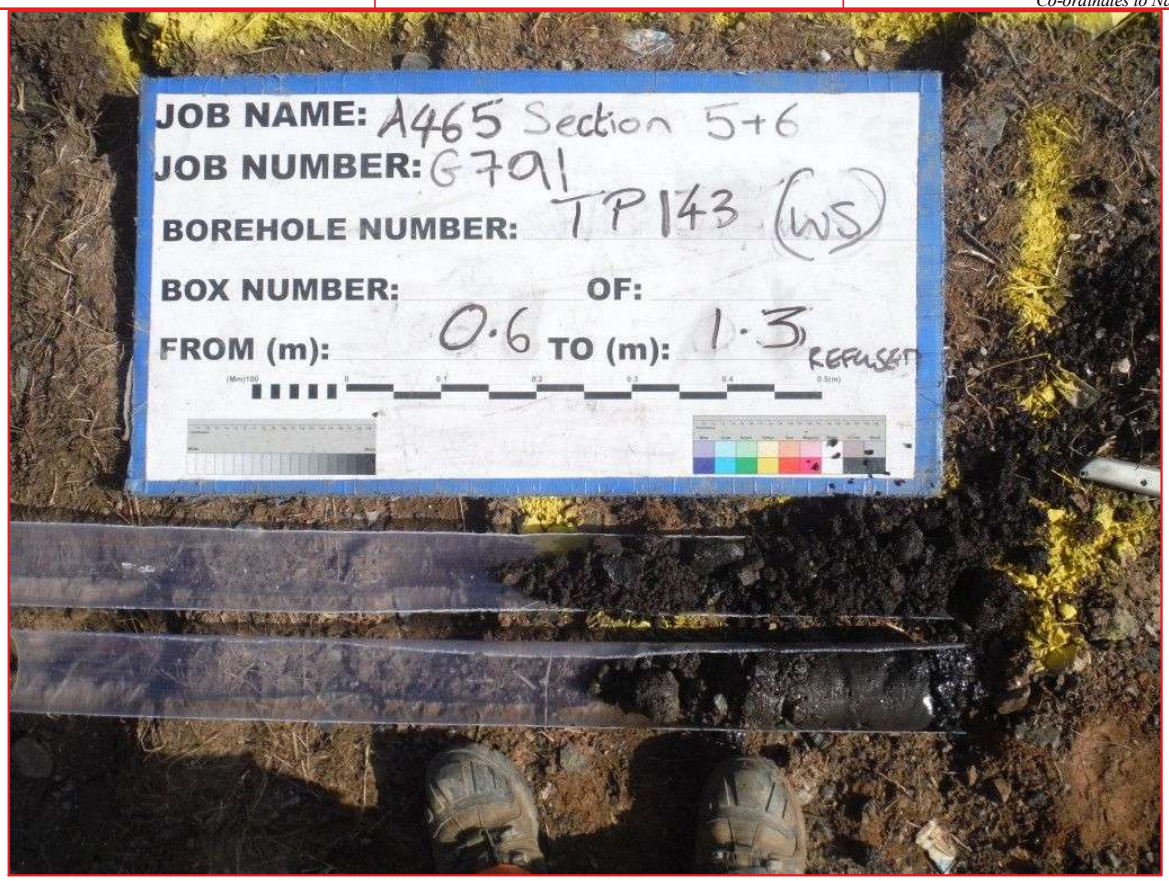
AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
TP143 (WS)

Dates : 21/03/16 - 21/03/16	Job Number : G791	Ground Level : 319.90 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 13900	Engineer : Jacobs	Coordinates: 305651.80 E 208460.69 N *Co-ordinates to National Grid*



Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	G Vernau	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
TP146 (WS)

Dates : 22/03/16 - 22/03/16
Location : Chainage - 14050
Job Number : G791
Engineer : Jacobs
Ground Level : 321.78 m A.O.D. *Level to Ordnance Datum*
Coordinates: 305801.60 E 208462.68 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water
0	0.10	ES 1			(0.15)	Brown slightly silty slightly sandy slightly gravelly slightly organic CLAY with many rootlets. Gravel is angular to sub-angular fine to coarse sandstone, siltstone and rare fine coal. (Mix of topsoil and re-worked natural, MADE GROUND)			
	0.30	ES 2			0.15			321.63	
					(0.35)	Black slightly silty slightly sandy GRAVEL. Gravel is angular to sub-angular fine to coarse sandstone, siltstone, slag, clinker and rare fine coal. (Colliery spoil, MADE GROUND)			
				95	0.50			321.28	
	0.75	ES 3			(0.50)	Brown clayey slightly sandy GRAVEL. Gravel is angular to sub-angular fine to coarse sandstone, siltstone, slag, clinker and rare fine coal. (Colliery spoil, MADE GROUND)			
1	1.10	ES 4		100	1.00			320.78	
					(0.20)	Black slightly silty slightly sandy GRAVEL. Gravel is angular to sub-angular fine to coarse sandstone, siltstone, slag, clinker and fine coal. (Colliery spoil, MADE GROUND)			
					1.20	End of hole at 1.2mbgl, window sample refused		320.58	
2									
3									
4									

Equipment Used: Dando Terrier
Groundwater: Groundwater not encountered
Remarks: CAT scanned and cleared location by Costain. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & D Pulman	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

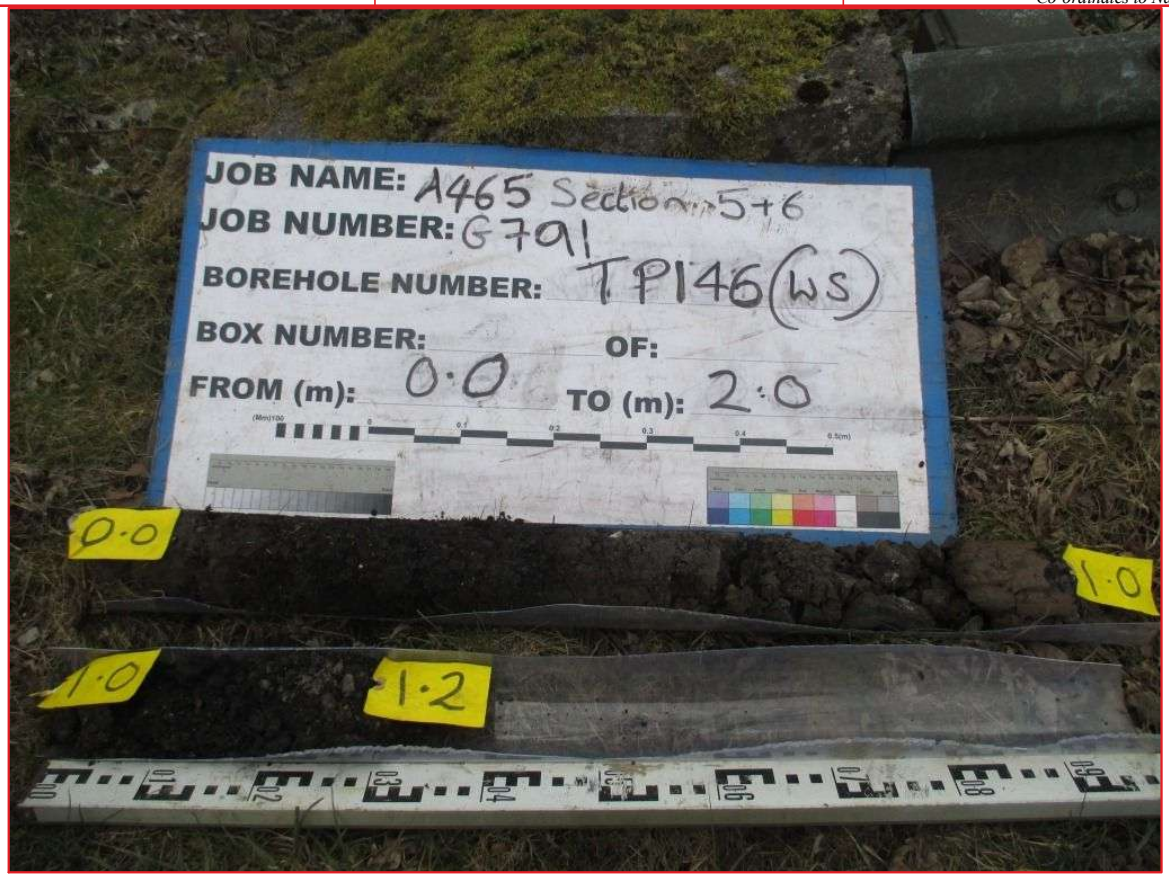
AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
TP146 (WS)

Dates : 22/03/16 - 22/03/16	Job Number : G791	Ground Level : 321.78 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 14050	Engineer : Jacobs	Coordinates: 305801.60 E 208462.68 N *Co-ordinates to National Grid*



Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & D Pulman	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
TP147 (WS)

Dates : 22/03/16 - 22/03/16
Location : Chainage - 14100
Job Number : G791
Engineer : Jacobs
Ground Level : 322.32 m A.O.D. *Level to Ordnance Datum*
Coordinates: 305851.79 E 208466.62 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water
0	0.05	ES 1			(0.10)	Brown slightly silty slightly sandy slightly gravelly organic CLAY with many rootlets. Gravel is angular to sub-angular fine to coarse sandstone, siltstone and rare fine coal. (Mix of topsoil and re-worked natural, MADE GROUND)		322.22	
	0.30	ES 2			0.10 (0.35)	Black slightly silty slightly sandy slightly organic GRAVEL. Gravel is angular to sub-angular fine to coarse sandstone, siltstone, slag, clinker and rare fine coal. (Colliery spoil, MADE GROUND)		321.87	
	0.60	ES 3		100	0.45 (0.33)	Soft dark brown slightly silty slightly sandy CLAY. (Re-worked natural, MADE GROUND)			
1	1.00	ES 4			0.78	Black slightly silty slightly sandy GRAVEL. Gravel is angular to sub-angular fine to coarse sandstone, siltstone, slag, clinker, ash and rare fine coal. (Colliery spoil, MADE GROUND)		321.54	
				95	(1.22)				
2	2.00	ES 5			2.00	End of hole at 2.0mbgl at scheduled depth		320.32	
3									
4									

Equipment Used: Dando Terrier
Groundwater: Groundwater not encountered
Remarks: CAT scanned and cleared location by Costain. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & D Pulman	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
TP147 (WS)

Dates : 22/03/16 - 22/03/16
Location : Chainage - 14100

Job Number : G791
Engineer : Jacobs

Ground Level : 322.32 m A.O.D.
Level to Ordnance Datum

Coordinates: 305851.79 E
208466.62 N
Co-ordinates to National Grid

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & D Pulman	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
TP154 (WS)

Dates : 10/03/16 - 10/03/16
Location : Chainage - 2350

Job Number : G791
Engineer : Jacobs

Ground Level : 217.23 m A.O.D.
Level to Ordnance Datum

Coordinates: 295336.70 E
205067.89 N
Co-ordinates to National Grid

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water
0	0.00	D 1			(0.08)	Grass over black slightly sandy slightly gravelly slightly organic SILT. Gravel is sub-angular fine to coarse mudstone. (TOPSOIL)			
	0.10	ES 2			0.08			217.15	
	0.50	ES 3		90	(1.07)	Black silty sandy GRAVEL with low cobble content. Gravel is sub-angular to angular fine to coarse mudstone and brick. Cobbles are sub-angular to angular mudstone. (Mix of topsoil waste and re-worked natural, MADE GROUND)			
	0.75	D 4							
	0.90	ES 5							
1	1.20	D 6 B 7		92	1.15	Soft greenish grey locally brown sandy slightly gravelly CLAY/SILT. Gravel is sub-angular to angular fine to coarse siltstone mudstone and sandstone. (GLACIAL TILL)		216.08	
	1.90	ES 8			(0.80)				
2					1.95	Window sample refused at 1.95mbgl		215.28	
3									
4									

Equipment Used: Hand held hydraulic sampler + jack
Groundwater: Groundwater not encountered
Remarks: CAT scanned and cleared location by Costain. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	G Vernau	1 Of 1	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
TP154 (WS)

Dates : 10/03/16 - 10/03/16
Location : Chainage - 2350

Job Number : G791
Engineer : Jacobs

Ground Level : 217.23 m A.O.D.
Level to Ordnance Datum

Coordinates: 295336.70 E
205067.89 N
Co-ordinates to National Grid

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	G Vernau	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
TP162 (WS)

Dates : 11/03/16 - 11/03/16
Location : Chainage - 2750

Job Number : G791
Engineer : Jacobs

Ground Level : 210.76 m A.O.D. *Level to Ordnance Datum*
Coordinates: 295693.91 E 204970.70 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water
0									
	0.10	ES 1			(0.25)	Dark brown slightly sandy slightly gravelly organic clayey PEAT, with many rootlets. Gravel is angular to sub-angular fine to coarse sandstone and siltstone.			
					0.25			210.51	
	0.50	ES 2		70		Soft to firm mottled orange grey slightly sandy slightly gravelly CLAY with low cobble content. Gravel is angular to sub-angular fine to coarse sandstone and mudstone. Cobbles are sub-angular sandstone. (GLACIAL TILL)			
					(1.15)				
1	1.00	ES 3							
	1.20	D 4							
				100	1.40	Brown clayey slightly silty slightly sandy GRAVEL with low cobble content. Gravel is angular to sub-angular fine to coarse sandstone and mudstone. Cobbles are sub-angular sandstone. (GLACIAL TILL)		209.36	
	1.80	D 5			(0.80)				
2	2.00	ES 6							
				85					
					2.20	End of hole at 2.2mbgl, Window sample refused.		208.56	
3									
4									

Equipment Used:
Groundwater: Seepage from surface, Slow water ingress at 2.0mbgl
Remarks: CAT scanned and cleared location by Costain. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

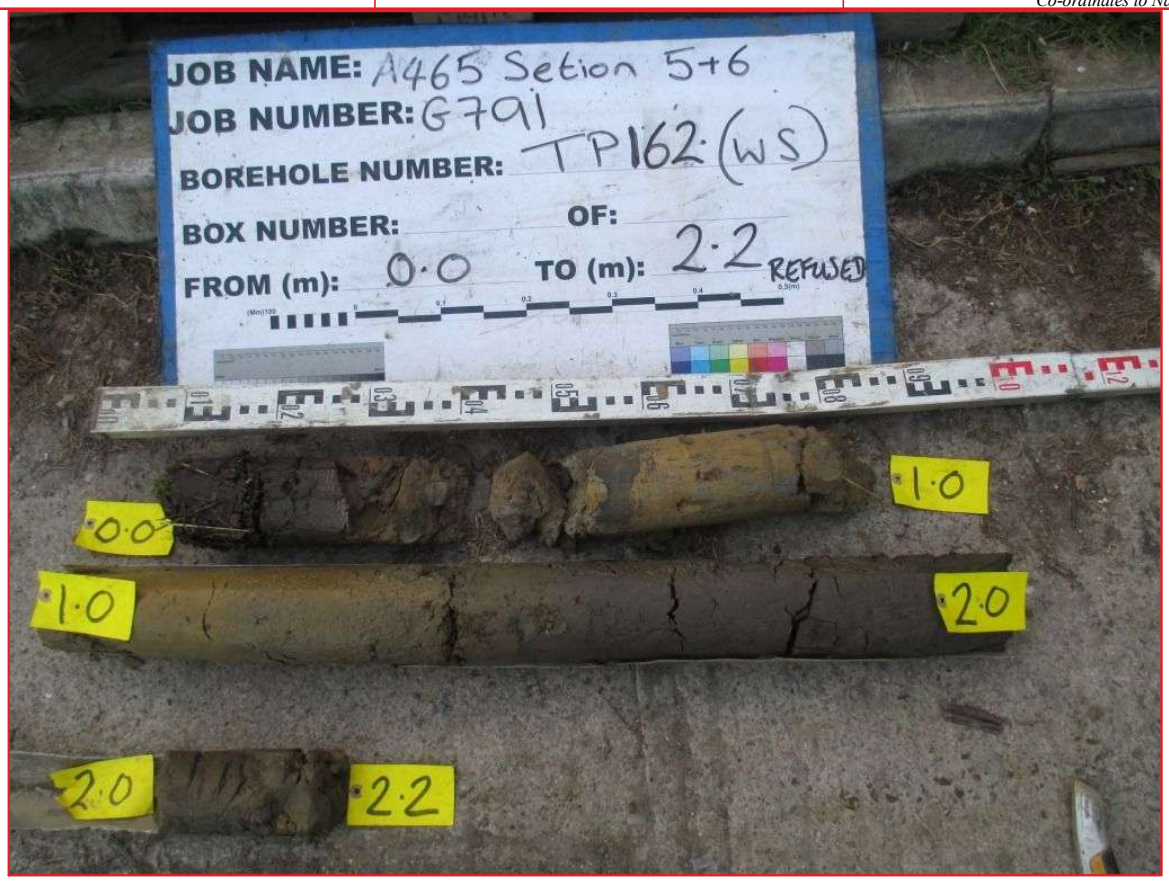
AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
TP162 (WS)

Dates : 11/03/16 - 11/03/16	Job Number : G791	Ground Level : 210.76 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 2750	Engineer : Jacobs	Coordinates: 295693.91 E 204970.70 N *Co-ordinates to National Grid*



Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
TP165 (WS)

Dates : 11/03/16 - 11/03/16
Location : Chainage - 2900

Job Number : G791
Engineer : Jacobs

Ground Level : 204.43 m A.O.D. *Level to Ordnance Datum*
Coordinates: 295902.74 E, 204980.10 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water
0	0.10	ES 1			(0.30)	Reeds and rough vegetation over soft dark brown slightly silty slightly sandy organic CLAY with many rootlets.			
	0.40	ES 2			0.30 (0.15)	Soft to firm pale brown slightly silty slightly sandy gravelly CLAY. Gravel is angular to sub-angular fine to coarse sandstone. (GLACIAL TILL)		204.13	
				45	0.45 (0.55)	No Recovery		203.98	
1					1.00	Soft to firm pale brown slightly silty slightly sandy gravelly CLAY. Gravel is angular to sub-angular fine to coarse sandstone. (GLACIAL TILL)		203.43	
	1.20	ES 3			(0.55)				
	1.30	D 4		80					
	1.70	D 6			1.55	Brown slightly clayey sandy GRAVEL. Gravel is angular to sub-angular fine to medium sandstone and mudstone. (GLACIAL TILL)		202.88	
	1.90	ES 5							
2	2.00 - 3	B 7		80	(2.05)				
	2.90	ES 8							
3				83					
	3.50	ES 9							
					3.60	End of hole at 3.6mbgl, window sample refused.		200.83	
4									

Equipment Used: Dando Terrier
Groundwater: Seepage from surface, Slow water ingress at 1.5mbgl
Remarks: CAT scanned and cleared location by Costain. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6 Client : Costain		Borehole No. TP165 (WS)
Dates : 11/03/16 - 11/03/16 Location : Chainage - 2900	Job Number : G791 Engineer : Jacobs	Ground Level : 204.43 m A.O.D. *Level to Ordnance Datum* Coordinates: 295902.74 E 204980.10 N *Co-ordinates to National Grid*

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	All measurements in metres unless otherwise stated	AGS
V Williams & G Llewellyn	A Jones	1 Of 1	2		

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No. WLS109

Dates : 21/03/16 - 21/03/16

Location : Chainage - 3200

Job Number : G791

Engineer : Jacobs

Ground Level : 196.19 m A.O.D. *Level to Ordnance Datum*

Coordinates: 296121.03 E 205055.05 N *Co-ordinates to National Grid*

m B.G.L.	Samples: Depth	Samples: Type No.	Sample Run: Diam. (mm)	Sample Run: Recovery (%)	Strata: Depth (Thick-ness)	Strata: Description	Strata: Legend	Strata: Red. Level A.O.D.	Water	Install/ Backfill
0										
	0.10	ES 1			(0.20)	Grass and low vegetation over soft dark brown slightly sandy slightly gravelly slightly organic CLAY. Gravel is rounded to sub-angular fine to coarse mudstone. (TOPSOIL)				
	0.20 - 0.65	B 6			0.20			195.99		
	0.50	ES 2		100	(0.45)	Firm dark greenish brown and black locally reddish and orange slightly sandy slightly gravelly slightly organic SILT with low cobble content. Gravel is sub-rounded to sub-angular fine to coarse slag and mudstone. Cobbles are sub-angular slag. (Mix of waste, colliery spoil and re-worked natural, MADE GROUND)				
	0.65 - 2	B 7			0.65			195.54		
1	1.00	ES 3				Firm brownish locally greyish brown sandy slightly gravelly CLAY/SILT. Gravel is sub-rounded to sub-angular fine to coarse sandstone and quartz. (Re-worked natural, MADE GROUND)				
				97	(1.45)					
2	2.00	ES 4								
	2.10 - 3	B 8			2.10	Dark brownish grey silty gravelly SAND. Gravel is sub-rounded to sub-angular fine to coarse siltstone sandstone and quartz. (ALLUVIUM)		194.09		
				86						
3	3.00	ES 5								
	3.00 - 4	B 9			(1.90)					
				90						
4					4.00	End of window sample, reached specified depth		192.19		

Equipment Used: Dando Terrier

Groundwater: Soil is wet from 2.1m down

Remarks: CAT scanned and cleared location by Costain. Installation to 4.0mbgl

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	G Vernau	1 Of 1	5	All measurements in metres unless otherwise stated

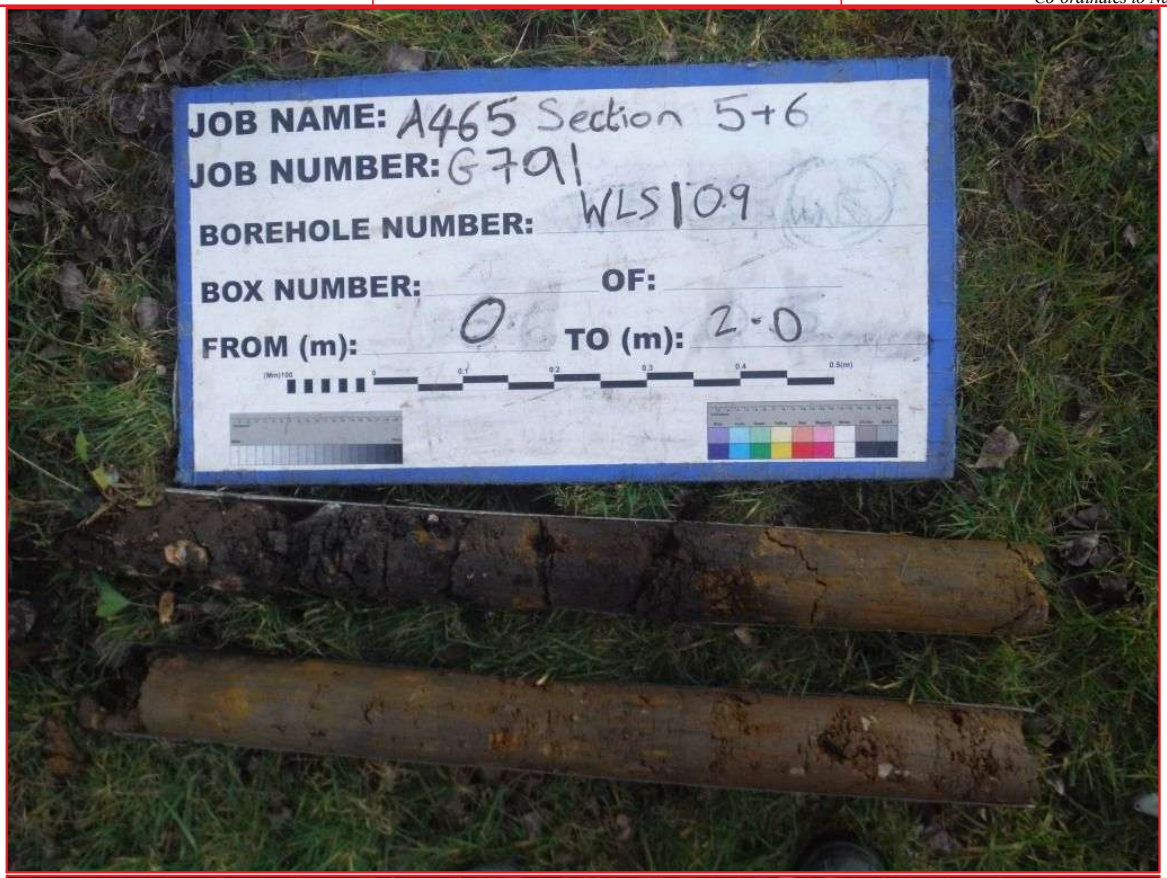
AGS

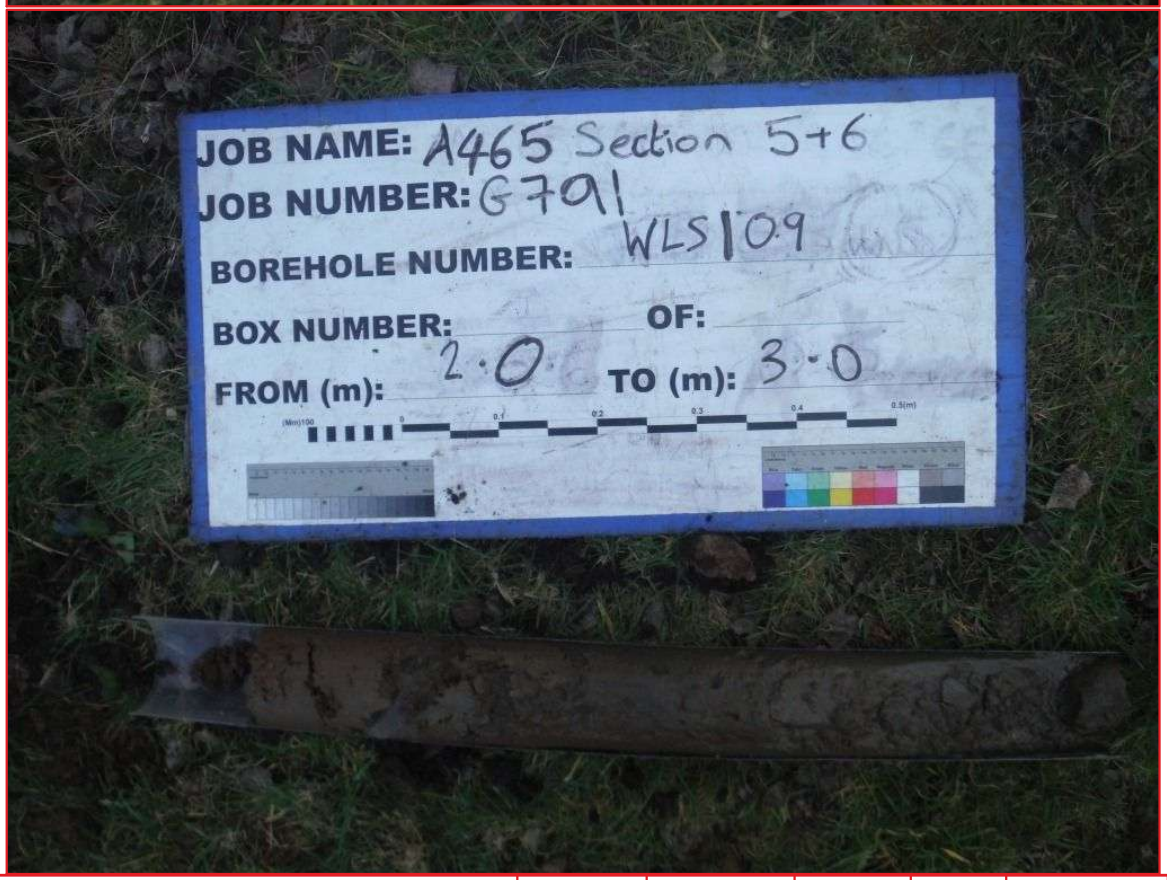
Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
WLS109

Dates : 21/03/16 - 21/03/16	Job Number : G791	Ground Level : 196.19 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 3200	Engineer : Jacobs	Coordinates: 296121.03 E 205055.05 N *Co-ordinates to National Grid*





Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	G Vernau	1 Of 2	2	All measurements in metres unless otherwise stated

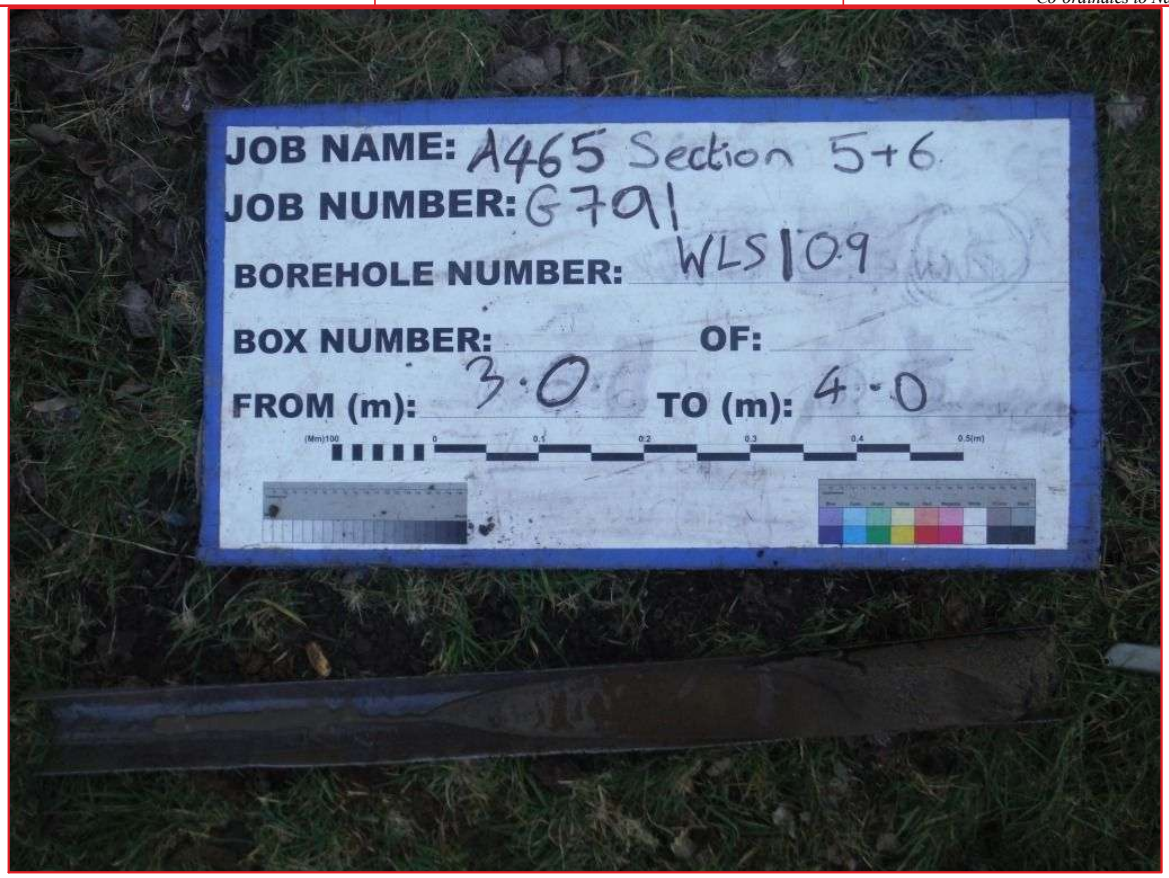
AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
WLS109

Dates : 21/03/16 - 21/03/16	Job Number : G791	Ground Level : 196.19 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 3200	Engineer : Jacobs	Coordinates: 296121.03 E 205055.05 N *Co-ordinates to National Grid*



Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	G Vernau	2 Of 2	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
WS138

Dates : 17/03/16 - 17/03/16
Location : Chainage - 11300
Job Number : G791
Engineer : Jacobs
Ground Level : 227.36 m A.O.D. *Level to Ordnance Datum*
Coordinates: 303185.01 E 208119.89 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water	Install/ Backfill
0										
	0.10	ES 1			(0.30)	Grass over dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Gravel is angular to sub-angular fine to coarse, slag and sandstone with plastic. (Mix of topsoil, waste and re-worked natural, MADE GROUND)				
					0.30	Grey slightly silty slightly sandy GRAVEL with low cobble content. Gravel is angular to sub-angular fine to coarse slag, clinker, limestone and sandstone. Cobbles are sub-angular slag and sandstone. (Mix of waste, colliery spoil and re-worked natural, MADE GROUND)		227.06		
	0.50	ES 2		93	(0.82)					
1	1.00	ES 3								
	1.20	ES 4			1.12	Brown clayey slightly sandy GRAVEL. Gravel is angular fine to coarse sandstone. (Suspected GLACIAL TILL)		226.24		
					(0.08)			226.16		
					1.20	End of hole at 1.2mbgl Window sampler refused				
2										
3										
4										

Equipment Used: Dando Terrier
Groundwater: Groundwater not encountered
Remarks: CAT scanned and cleared location by Costain. Inspection pit to 0.5mbgl. Installation to 1.2mbgl

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

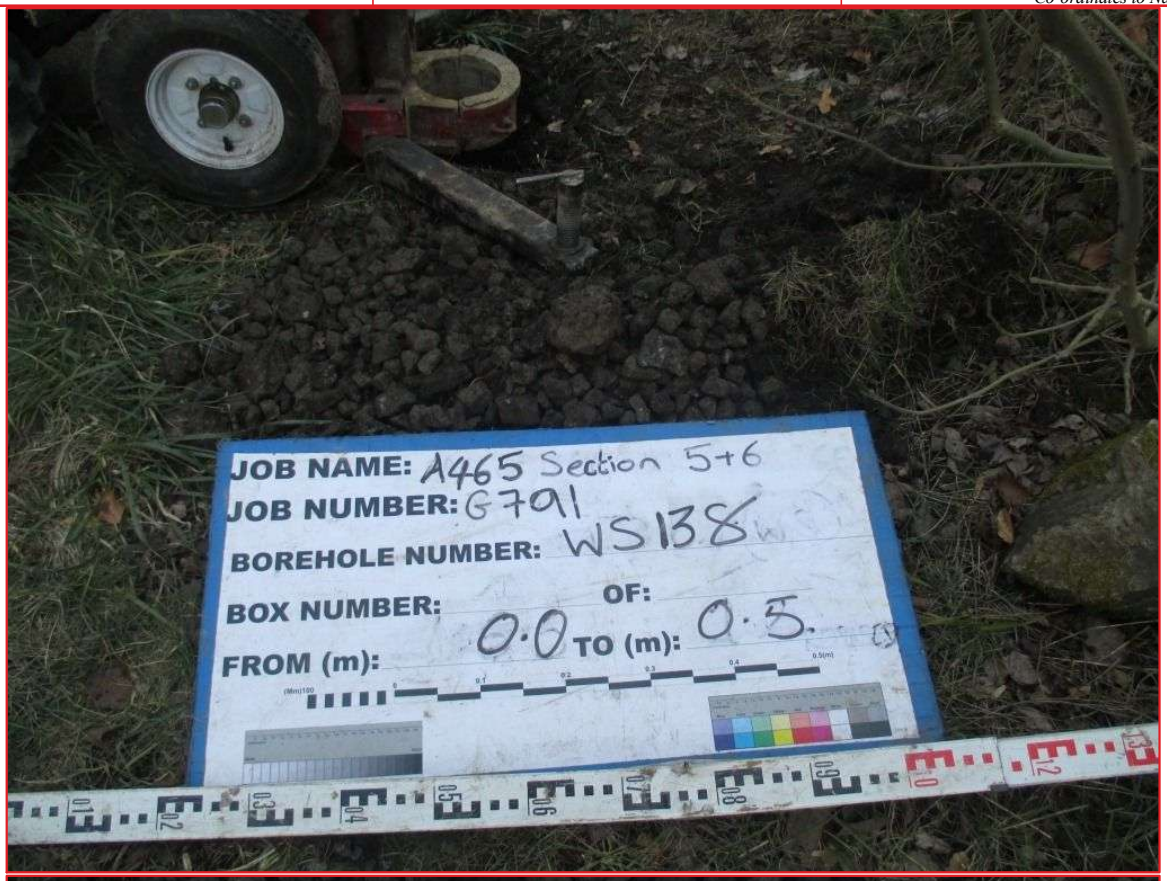
AGS

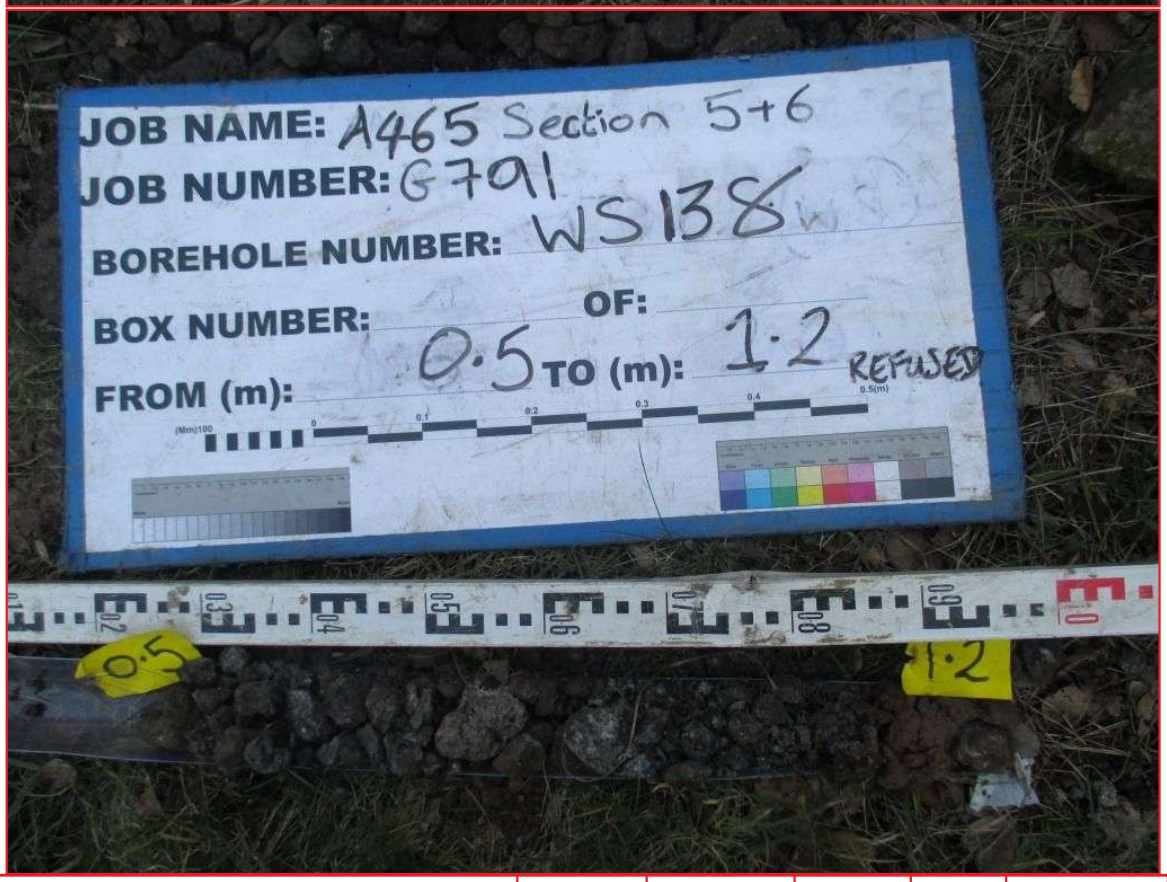
Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
WS138

Dates : 17/03/16 - 17/03/16	Job Number : G791	Ground Level : 227.36 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 11300	Engineer : Jacobs	Coordinates: 303185.01 E 208119.89 N *Co-ordinates to National Grid*





Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
WS141

Dates : 18/03/16 - 18/03/16
Location : Chainage - 11650
Job Number : G791
Engineer : Jacobs
Ground Level : 231.33 m A.O.D. *Level to Ordnance Datum*
Coordinates: 303521.18 E 208228.22 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water	Install/ Backfill
0	0.10	ES 1			(0.20)	Reddish brown slightly gravelly sandy slightly organic CLAY with many rootlets. Gravel is angular to sub-angular fine to medium mudstone and siltstone. (TOPSOIL)				
	0.25	ES 2			0.20 (0.15)	Soft to firm pale brown slightly sandy gravelly CLAY. Gravel is sandstone and siltstone. (Re-worked natural, MADE GROUND)		231.13		
	0.50	ES 3		100	0.35 (0.35)	Dark brown clayey slightly sandy GRAVEL. Gravel is angular to sub-angular fine to coarse sandstone siltstone, slag, clinker, glass slag, and rare fine coal. (Mix of colliery spoil and re-worked natural, MADE GROUND)		230.98		
	0.75	ES 4			0.70 (0.12)	Soft brown slightly sandy gravelly CLAY. Gravel is angular to sub-angular fine to coarse sandstone. (Re-worked natural, MADE GROUND)		230.63		
1	1.00	ES 5			0.82	Broken cobble 0.82-1.02m, recovered as sub-angular to angular gravel and cobbles		230.51		
				93	(0.88)	Brown and light grey to white clayey slightly sandy GRAVEL with medium cobble content. Gravel is angular to sub-angular fine to coarse sandstone and rare fine coal. Cobbles are sub-rounded sandstone. (Mix of colliery spoil and re-worked natural, MADE GROUND)				
	1.50	ES 6								
					1.70	End of hole at 1.7mbgl. Window sample refused		229.63		
2										
3										
4										

Equipment Used: Dando Terrier
Groundwater: Groundwater not encountered
Remarks: CAT scanned and cleared location by Costain. Installation to 1.7mbgl

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
WS141

Dates : 18/03/16 - 18/03/16	Job Number : G791	Ground Level : 231.33 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 11650	Engineer : Jacobs	Coordinates: 303521.18 E 208228.22 N *Co-ordinates to National Grid*

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No. WS144

Dates : 21/03/16 - 21/03/16

Location : Chainage - 13950

Job Number : G791

Engineer : Jacobs

Ground Level : 320.73 m A.O.D. *Level to Ordnance Datum*

Coordinates: 305701.60 E 208462.81 N *Co-ordinates to National Grid*

m B.G.L.	Samples		Sample Run		Strata				Water	Install/ Backfill
	Depth	Type No.	Diam. (mm)	Recovery (%)	Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.		
0										
	0.10	ES 1			(0.25)	Firm dark brown slightly sandy slightly gravelly slightly organic CLAY with medium cobble content. Gravel is well-rounded to sub-rounded fine to coarse mudstone and siltstone. Cobbles are well-rounded sandstone. (Mix of topsoil and re-worked natural, MADE GROUND)				
	0.20	D 2								
	0.30	D 3			0.25			320.48		
	0.40	D 4			(0.15)	Light yellowish brown very sandy GRAVEL. Gravel is sub-rounded to sub-angular fine to coarse sandstone and concrete. (Mix of waste and re-worked natural, MADE GROUND)				
	0.50	ES 5		90	0.40			320.33		
					(0.10)	Dark brown slightly silty sandy GRAVEL. Gravel is sub-angular to angular fine to coarse concrete and slag. (Mix of waste and re-worked natural, MADE GROUND)				
					0.50			320.23		
					(0.30)	Soft to firm dark brown slightly sandy slightly gravelly CLAY with medium cobble content. Gravel is sub-angular fine to coarse occasionally flat mudstone and siltstone. Cobbles are sub-rounded to sub-angular slag and concrete. (Mix of waste and re-worked natural, MADE GROUND)				
					0.80			319.93		
1	1.00	ES 6				Dark greyish brown silty locally slightly silty sandy GRAVEL with low to medium cobble content. Gravel is sub-rounded to sub-angular fine to coarse sandstone clinker and slag. Cobbles are sub-angular slag and sandstone. (Mix of waste and re-worked natural, MADE GROUND)				
	1.30	B 7								
				74						
					(2.20)					
2	2.00	ES 8								
				55						
3					3.00	End of window sample at 3.0mbgl specified depth		317.73		
4										

Equipment Used: Dando Terrier

Groundwater: Groundwater not encountered

Remarks: CAT scanned and cleared location by Costain. Installation to 2.25mbgl (bottom 0.75m of hole collapsed).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6 **Client : Costain**	**Borehole No.** **WS144**

Dates : 21/03/16 - 21/03/16 Location : Chainage - 13950	Job Number : G791 Engineer : Jacobs	Ground Level : 320.73 m A.O.D. *Level to Ordnance Datum* Coordinates: 305701.60 E 208462.81 N *Co-ordinates to National Grid*

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & G Llewellyn	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
WS145

Dates : 22/03/16 - 22/03/16
Location : Chainage - 14000
Job Number : G791
Engineer : Jacobs
Ground Level : 321.41 m A.O.D. *Level to Ordnance Datum*
Coordinates: 305751.43 E 208462.97 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thickness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water	Install/ Backfill
0	0.10	ES 1			(0.20)	Brown slightly silty slightly sandy slightly gravelly organic CLAY with many rootlets and rare fine coal. (Mix of topsoil and re-worked natural, MADE GROUND)				
					0.20			321.21		
	0.50	ES 2		80	(1.10)	Brown slightly silty slightly sandy gravelly CLAY with low cobble content of sandstone. Gravel is angular to sub-angular fine to coarse sandstone siltstone, clinker, slag and rare fine coal. Cobbles are angular to sub-angular sandstone and slag. (Mix of colliery spoil and re-worked natural, MADE GROUND)				
1	1.00	ES 3								
	1.30 - 2	ES 4		50	1.30	Black silty slightly sandy GRAVEL. Gravel is angular to sub-angular fine to coarse sandstone, siltstone, slag, clinker and rare fine coal. (Colliery spoil, MADE GROUND)		320.11		
					(0.70)					
2					2.00	End of hole at 2.0mbgl at scheduled Depth		319.41		
3										
4										

Equipment Used: Dando Terrier
Groundwater: Groundwater not encountered
Remarks: CAT scanned and cleared location by Costain. Installation to 2.0mbgl

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & D Pulman	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

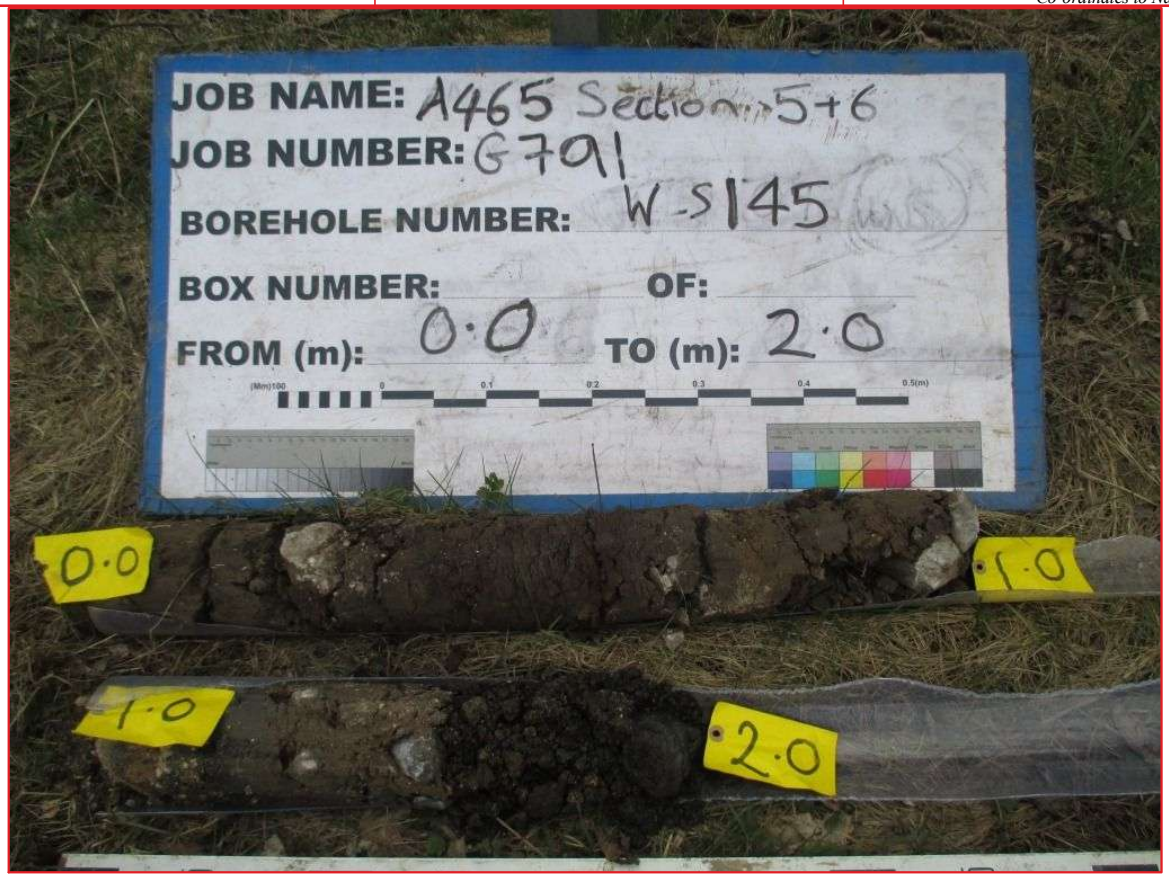
AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
WS145

Dates : 22/03/16 - 22/03/16	Job Number : G791	Ground Level : 321.41 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 14000	Engineer : Jacobs	Coordinates: 305751.43 E 208462.97 N *Co-ordinates to National Grid*



Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & D Pulman	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No.
WS149

Dates : 23/03/16 - 23/03/16
Location : Chainage - 15100
Job Number : G791
Engineer : Jacobs
Ground Level : 350.30 m A.O.D. *Level to Ordnance Datum*
Coordinates: 306846.72 E 208496.97 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water	Install/ Backfill
0	0.10	ES 1			(0.15)	Dark brown silty clayey slightly gravelly slightly organic SAND with some rootlets. Gravel is angular to sub-angular fine to medium sandstone and rare fine coal. (Mix of topsoil and re-worked natural, MADE GROUND)		350.15		
					0.15					
	0.50	ES 2		60		Dark grey slightly clayey slightly sandy GRAVEL with high cobble content. Gravel is angular to sub-angular fine to coarse sandstone, siltstone, slag, clinker, ash, and rare fine coal. Cobbles are angular to sub-angular sandstone, siltstone and slag. (Mix of colliery spoil and re-worked natural, MADE GROUND)				
					(1.35)	...with low cobble content of sandstone from 0.3mbgl				
1	1.00	ES 3								
				100		...becoming more clayey from 1.3mbgl				
	1.55	ES 4			1.50	Brown clayey slightly sandy GRAVEL. Gravel is angular to sub-rounded fine to medium sandstone.		348.80		
					(0.10)					
	1.70	ES 5			1.60	Firm to stiff grey slightly silty slightly sandy CLAY.		348.70		
					(0.20)					
					1.80	End of hole at 1.8mbgl. Window sample Refused on suspected bedrock.		348.50		
2										
3										
4										

Equipment Used: Dando Terrier
Groundwater: Groundwater not encountered
Remarks: CAT scanned and cleared location by Costain. Installation to 1.8mbgl

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & D Pulman	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

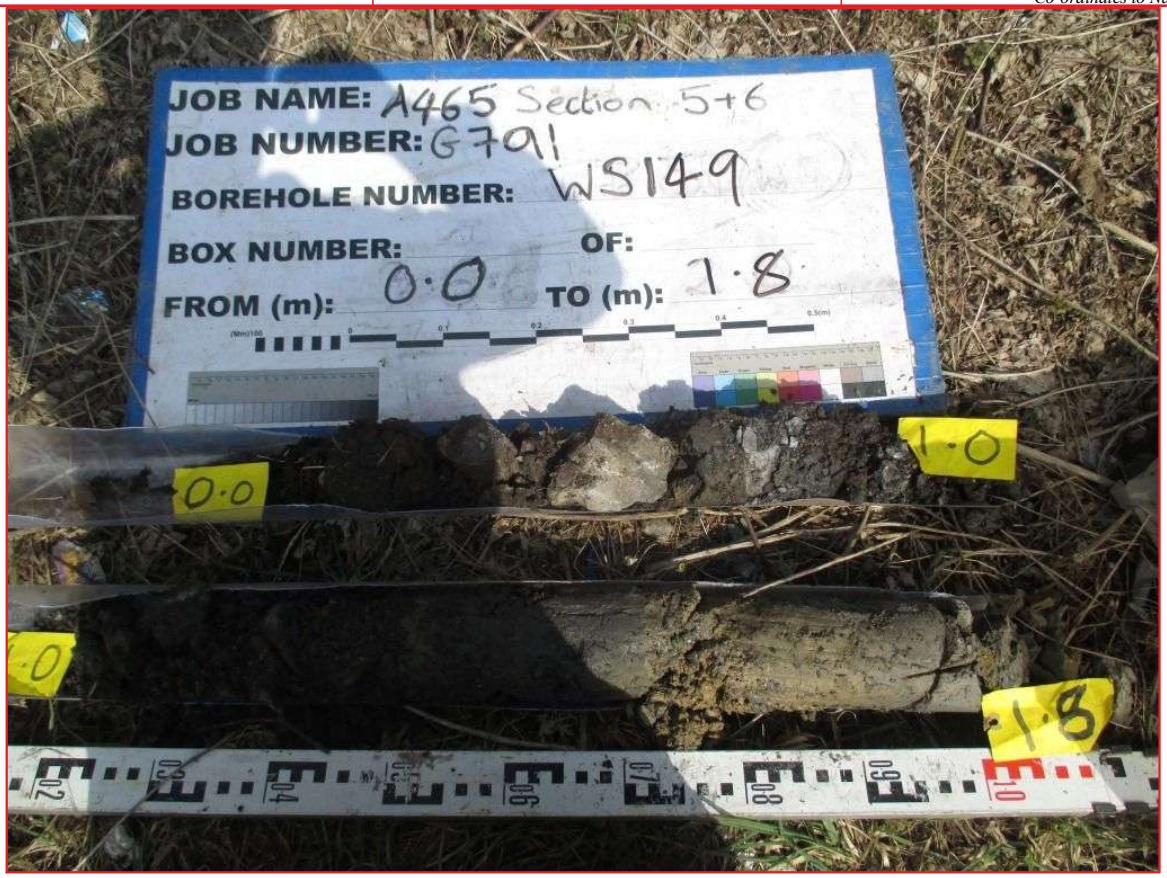
AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
WS149

Dates : 23/03/16 - 23/03/16	Job Number : G791	Ground Level : 350.30 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 15100	Engineer : Jacobs	Coordinates: 306846.72 E 208496.97 N *Co-ordinates to National Grid*



Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & D Pulman	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No. WS150

Dates : 23/03/16 - 23/03/16

Location : Chainage - 15150

Job Number : G791

Engineer : Jacobs

Ground Level : 357.97 m A.O.D. *Level to Ordnance Datum*

Coordinates: 306896.63 E 208485.37 N *Co-ordinates to National Grid*

m B.G.L.	Samples		Sample Run		Strata				Water
	Depth	Type No.	Diam. (mm)	Recovery (%)	Depth (Thick-ness)	Description	Legend	Red. Level A.O.D.	
0	0.10	ES 1			(0.35)	Dark brown silty clayey slightly gravelly slightly organic SAND with some rootlets. Gravel is angular to sub-angular fine to medium sandstone and rare fine coal. (TOPSOIL)			
	0.50	ES 2		85	0.35 (0.55)	Dark brown grey silty slightly sandy GRAVEL with low cobble content. Gravel is angular to sub-angular fine to coarse sandstone, siltstone, slag, clinker, ash, and rare fine coal. Cobbles are angular to sub-angular sandstone, siltstone and slag (Colliery spoil, MADE GROUND)		357.62	
1	1.00	ES 3		100	0.90 (0.30)	Brown slightly silty slightly sandy gravelly CLAY. Gravel is angular to sub-angular fine to coarse sandstone, siltstone, mudstone and rare fine coal. (Re-worked natural, MADE GROUND)		357.07	
					1.20	End of hole at 1.2mbgl, Window sample refused.		356.77	
2									
3									
4									

Equipment Used: Dando Terrier

Groundwater: Groundwater not encountered

Remarks: CAT scanned and cleared location by Costain. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & D Pulman	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
WS150

Dates : 23/03/16 - 23/03/16	Job Number : G791	Ground Level : 357.97 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 15150	Engineer : Jacobs	Coordinates: 306896.63 E 208485.37 N *Co-ordinates to National Grid*

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & D Pulman	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Window Sample No. WS151

Dates : 23/03/16 - 23/03/16

Location : Chainage - 15200

Job Number : G791

Engineer : Jacobs

Ground Level : 354.39 m A.O.D. *Level to Ordnance Datum*

Coordinates: 306944.54 E 208471.85 N *Co-ordinates to National Grid*

m B.G.L.	Samples Depth	Samples Type No.	Sample Run Diam. (mm)	Sample Run Recovery (%)	Strata Depth (Thick-ness)	Strata Description	Strata Legend	Strata Red. Level A.O.D.	Water
0	0.10	ES 1			(0.40)	Dark brown slightly silty slightly gravelly sandy slightly organic CLAY with some rootlets. Gravel is angular to sub-angular fine to coarse sandstone and siltstone. (TOPSOIL)			
	0.20	D 2							
	0.50	ES 3		75	0.40	Dark Brown silty slightly sandy GRAVEL. Gravel is angular to sub-angular fine to coarse sandstone, siltstone, slag, clinker and rare fine coal. (Colliery spoil, MADE GROUND)		353.99	
	0.80	D 5							
1	1.00	ES 4			(1.60)				
	1.00 - 2	B 6		75		...with low cobble content of sub-angular sandstone from 1.4mbgl			
						...becoming wet at 1.8mbgl			
2	2.00	ES 7			2.00	End of hole at 2.0mbgl at scheduled depth		352.39	
3									
4									

Equipment Used: Dando Terrier

Groundwater: Groundwater not encountered

Remarks: CAT scanned and cleared location by Costain. Backfilled with bentonite pellets and arisings/topsoil (top 0.2m).

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & D Pulman	A Jones	1 Of 1	5	All measurements in metres unless otherwise stated

AGS

Contract : A465 Section 5 & 6

Client : Costain

Borehole No.
WS151

Dates : 23/03/16 - 23/03/16	Job Number : G791	Ground Level : 354.39 m A.O.D. *Level to Ordnance Datum*
Location : Chainage - 15200	Engineer : Jacobs	Coordinates: 306944.54 E 208471.85 N *Co-ordinates to National Grid*

Quantum Geotechnical
Ty Berwig, Bynea
Llanelli, Carmarthenshire SA14 9ST
Tel: 01554744880
Fax: 01554776150
email: enquiries@quantum-geotech.co.uk

Operator:	Logged By.	Sheet No.	m Per Page	
V Williams & D Pulman	A Jones	1 Of 1	2	All measurements in metres unless otherwise stated

AGS

Photoionization Detector Results
Window Samples

Quantum Geotechnical

Position ID	Sample No.	Depth	PID reading
TP133 (WS)	ES1	0.1	15.2
TP133 (WS)	ES2	0.2	0.6
TP133 (WS)	ES3	0.5	15.2
TP133 (WS)	ES4	1.0	7.2
TP134 (WS)	ES1	0.1	3.2
TP134 (WS)	ES2	0.5	1.3
TP134 (WS)	ES3	1.0	15.2
TP136 (WS)	ES1	0.1	11.3
TP136 (WS)	ES2	0.5	16.7
TP136 (WS)	ES3	1.0	14.6
TP137 (WS)	ES1	0.1	3.4
TP137 (WS)	ES2	0.5	14.8
TP137 (WS)	ES3	1.0	20.1
TP139 (WS)	ES1	0.1	6.2
TP139 (WS)	ES2	0.3	8.3
TP139 (WS)	ES3	0.6	0
TP140 (WS)	ES1	0.1	0.9
TP140 (WS)	ES4	0.5	11.2
TP140 (WS)	ES6	1.0	16.5
TP143 (WS)	ES1	0.1	0.2
TP143 (WS)	ES2	0.5	0.0
TP143 (WS)	ES5	0.6	1.2
TP143 (WS)	ES9	1.2	0.1
TP146 (WS)	ES1	0.1	2.1
TP146 (WS)	ES2	0.3	21.1
TP146 (WS)	ES3	0.8	17.2
TP146 (WS)	ES4	1.1	32.1
TP147 (WS)	ES1	0.1	5.3
TP147 (WS)	ES2	0.3	16.5
TP147 (WS)	ES3	0.6	4.6
TP147 (WS)	ES4	1.0	36.5
TP147 (WS)	ES5	2.0	41.2
TP162 (WS)	ES1	0.1	0.2
TP162 (WS)	ES2	0.5	0.0
TP162 (WS)	ES3	1.0	0.0
TP162 (WS)	ES6	2.0	0.0
WLS109	ES1	0.1	0.0
WLS109	ES2	0.5	2.1
WLS109	ES3	1.0	0.6
WLS109	ES4	2.0	0.0
WLS109	ES5	3.0	0.5
WS138	ES1	0.1	2.1
WS138	ES2	0.5	3.4
WS138	ES3	1.0	4.2
WS138	ES4	1.2	0.2
WS141	ES1	0.1	1.2
WS141	ES2	0.3	8.2
WS141	ES3	0.5	19.2
WS141	ES4	0.8	6.3
WS141	ES5	1.0	0
WS141	ES6	1.5	5.2
WS144	ES1	0.1	0.0
WS144	ES5	0.5	1.8
WS144	ES6	1.0	0.1
WS144	ES8	2.0	0.0
WS145	ES1	0.1	4.2
WS145	ES2	0.5	9.8
WS145	ES3	1.0	13.2
WS145	ES4	1.3	24.2
WS149	ES1	0.1	3.1
WS149	ES2	0.5	11.3
WS149	ES3	1.0	8.5
WS149	ES4	1.6	0.3
WS149	ES5	1.7	0
WS150	ES1	0.1	4.3
WS150	ES2	0.5	9.6
WS150	ES3	1.0	1.9
WS151	ES1	0.1	1.2
WS151	ES3	0.5	14.2
WS151	ES4	1.0	19.6
WS151	ES7	2	19.2
WS154	ES2	0.1	3.1
WS154	ES3	0.5	1.5
WS154	ES5	0.9	0.5
WS154	ES8	1.9	0.0

APPENDIX V – GAS AND GROUNDWATER MONITORING RECORDS

LANDGAS & GROUNDWATER MONITORING RECORD SHEET

Project Name:	A465 Sections 5 & 6
Project No.:	G791
BH/TP No.:	CP110
Instruments Used:	Water Dip Meter Probe, GA2000 Gas Anaylser

Installation Date:				
GL (m.A.O.D.)	Pipe	Type	Response Zone (mbgl)	
194.885	A	50mm Standpipe	2.0-10.0	

Pipe	Date	Time	Time (secs)	Atmos Pressure	Flow	CH_4	CO_2	O_2	H_2S	CO	Water Level		HoleDepth		Remarks
				mBar	L/hr	%	%	%	ppm	ppm	mbgl	mAOD	mbgl	mAOD	
	21/04/2016	16:05			0.2						2.83	192.06	10.00	184.89	
	21/04/2016		0	1001		0.0	0.0	20.9	0.0	1.0					
	21/04/2016		30	1001		0.0	1.9	11.8	0.0	0.0					
	21/04/2016		60	1001		0.0	1.9	11.9	0.0	0.0					
	21/04/2016		120	1001		0.0	1.9	11.9	0.0	0.0					
	21/04/2016		180	1001		0.0	1.9	11.9	0.0	0.0					
	21/04/2016		240	1001		0.0	1.9	11.9	0.0	0.0					
	05/05/2016	09:55			0.0						2.90	191.99	10.00	184.89	
	05/05/2016		0	1000		0.0	0.3	15.0	0.0	0.0					
	05/05/2016		30	1000		0.0	2.6	11.3	0.0	0.0					
	05/05/2016		60	1000		0.0	2.6	11.2	0.0	0.0					
	05/05/2016		120	1000		0.0	2.6	11.1	0.0	0.0					
	05/05/2016		180	1000		0.0	2.6	11.1	0.0	0.0					
	05/05/2016		240	1000		0.0	2.6	11.1	0.0	0.0					

m.A.O.D. - metres above ordnance datum

LANDGAS & GROUNDWATER MONITORING RECORD SHEET

Project Name:	A465 Sections 5 & 6
Project No.:	G791
BH/TP No.:	CP117A
Instruments Used:	Water Dip Meter Probe, GA2000 Gas Anaylser

Installation Date:				
GL (m.A.O.D.)	Pipe	Type	Response Zone (mbgl)	
339.458	A	50mm Standpipe	1.0-4.7	

Pipe	Date	Time	Time (secs)	Atmos Pressure	Flow	CH_4	CO_2	O_2	H_2S	CO	Water Level		HoleDepth		Remarks
				mBar	L/hr	%	%	%	ppm	ppm	mbgl	mAOD	mbgl	mAOD	
	21/04/2016	15:05			0.0						0.43	339.03	4.60	334.86	
	21/04/2016		0	983		0.0	0.0	20.9	0.0	1.0					
	21/04/2016		30	983		0.0	0.1	21.0	0.0	0.0					
	21/04/2016		60	983		0.0	0.1	21.0	0.0	0.0					
	21/04/2016		120	983		0.0	0.0	21.2	0.0	0.0					
	21/04/2016		180	983		0.0	0.0	21.2	0.0	0.0					
	21/04/2016		240	983		0.0	0.0	21.2	0.0	0.0					
	05/05/2016	08:30			0.0						0.40	339.06	4.60	334.86	
	05/05/2016		0	983		0.0	0.1	21.0	0.0	0.0					
	05/05/2016		30	983		0.0	0.1	21.0	0.0	0.0					
	05/05/2016		60	983		0.0	0.1	21.0	0.0	0.0					
	05/05/2016		120	983		0.0	0.1	21.0	0.0	0.0					
	05/05/2016		180	983		0.0	0.1	21.0	0.0	0.0					
	05/05/2016		240	983		0.0	0.1	21.0	0.0	0.0					

m.A.O.D. - metres above ordnance datum

LANDGAS & GROUNDWATER MONITORING RECORD SHEET

Project Name:	A465 Sections 5 & 6
Project No.:	G791
BH/TP No.:	WLS109
Instruments Used:	Water Dip Meter Probe, GA2000 Gas Anaylser

Installation Date:				
GL (m.A.O.D.)	Pipe	Type	Response Zone (mbgl)	
196.189	A	19mm Standpipe	0.5-4.0	

Pipe	Date	Time	Time (secs)	Atmos Pressure	Flow	CH_4	CO_2	O_2	H_2S	CO	Water Level		HoleDepth		Remarks
				mBar	L/hr	%	%	%	ppm	ppm	mbgl	mAOD	mbgl	mAOD	
	21/04/2016	15:45			0.2						1.82	194.37	4.00	192.19	
	21/04/2016		0	1001		0.0	0.0	20.8	0.0	2.0					
	21/04/2016		30	1001		0.0	5.9	8.1	0.0	0.0					
	21/04/2016		60	1001		0.0	6.3	7.5	0.0	0.0					
	21/04/2016		120	1001		0.0	6.3	7.4	0.0	0.0					
	21/04/2016		180	1001		0.0	6.3	7.4	0.0	0.0					
	21/04/2016		240	1001		0.0	6.3	7.6	0.0	0.0					
	05/05/2016	09:25			0.0						2.10	194.09	4.00	192.19	
	05/05/2016		0	1000		0.0	0.1	21.1	0.0	0.0					
	05/05/2016		30	1000		0.0	6.3	11.1	0.0	0.0					
	05/05/2016		60	1000		0.0	6.9	10.0	0.0	0.0					
	05/05/2016		120	1000		0.0	7.0	9.7	0.0	0.0					
	05/05/2016		180	1000		0.0	7.0	9.7	0.0	0.0					
	05/05/2016		240	1000		0.0	7.0	9.8	0.0	0.0					
	05/05/2016		300	1000		0.0	7.0	9.8	0.0	0.0					

m.A.O.D. - metres above ordnance datum

LANDGAS & GROUNDWATER MONITORING RECORD SHEET

Project Name:	A465 Sections 5 & 6
Project No.:	G791
BH/TP No.:	WS138
Instruments Used:	Water Dip Meter Probe, GA2000 Gas Anaylser

Installation Date:				
GL (m.A.O.D.)	Pipe	Type	Response Zone (mbgl)	
227.362	A	19mm Standpipe	0.5-1.2	

Quantum Geotechnical

Pipe	Date	Time	Time (secs)	Atmos Pressure	Flow	CH_4	CO_2	O_2	H_2S	CO	Water Level		HoleDepth		Remarks
				mBar	L/hr	%	%	%	ppm	ppm	mbgl	mAOD	mbgl	mAOD	
	21/04/2016	14:00			0.0						Dry		1.20	226.16	
	21/04/2016		0	995		0.0	0.0	21.0	0.0	0.0					
	21/04/2016		30	995		0.0	0.0	21.0	0.0	0.0					
	21/04/2016		60	995		0.0	0.0	21.0	0.0	0.0					
	21/04/2016		120	995		0.0	0.0	21.0	0.0	0.0					
	21/04/2016		180	995		0.0	0.0	21.0	0.0	0.0					
	21/04/2016		240	995		0.0	0.0	21.0	0.0	0.0					
	05/05/2016	08:05			0.0						Dry		1.20	226.16	
	05/05/2016		0	1000		0.0	0.1	20.9	0.0	0.0					
	05/05/2016		30	1000		0.0	0.1	20.9	0.0	0.0					
	05/05/2016		60	1000		0.0	0.1	20.9	0.0	0.0					
	05/05/2016		120	1000		0.0	0.1	20.9	0.0	0.0					
	05/05/2016		180	1000		0.0	0.1	20.9	0.0	0.0					
	05/05/2016		240	1000		0.0	0.1	20.9	0.0	0.0					

m.A.O.D. - metres above ordnance datum

LANDGAS & GROUNDWATER MONITORING RECORD SHEET

Project Name:	A465 Sections 5 & 6
Project No.:	G791
BH/TP No.:	WS141
Instruments Used:	Water Dip Meter Probe, GA2000 Gas Anaylser

Installation Date:				
GL (m.A.O.D.)	Pipe	Type	Response Zone (mbgl)	
231.332	A	19mm Standpipe	0.5-1.7	

Pipe	Date	Time	Time (secs)	Atmos Pressure	Flow	CH_4	CO_2	O_2	H_2S	CO	Water Level		HoleDepth		Remarks
				mBar	L/hr	%	%	%	ppm	ppm	mbgl	mAOD	mbgl	mAOD	
	21/04/2016	13:35			0.0						1.72	229.61	1.70	229.63	
	21/04/2016		0	997		0.0	1.2	20.0	0.0	0.0					
	21/04/2016		30	997		0.0	1.5	19.0	0.0	0.0					
	21/04/2016		60	997		0.0	1.5	19.0	0.0	0.0					
	21/04/2016		120	997		0.0	1.5	18.9	0.0	0.0					
	21/04/2016		180	997		0.0	1.5	18.9	0.0	0.0					
	21/04/2016		240	997		0.0	1.5	18.9	0.0	0.0					
	05/05/2016	07:50			0.0						Dry		1.70	229.63	
	05/05/2016		0	996		0.0	0.1	21.1	0.0	0.0					
	05/05/2016		30	996		0.0	1.5	19.2	0.0	0.0					
	05/05/2016		60	996		0.0	1.5	18.8	0.0	0.0					
	05/05/2016		120	996		0.0	1.5	18.8	0.0	0.0					
	05/05/2016		180	996		0.0	1.5	18.8	0.0	0.0					
	05/05/2016		240	996		0.0	1.5	18.8	0.0	0.0					

m.A.O.D. - metres above ordnance datum

LANDGAS & GROUNDWATER MONITORING RECORD SHEET

Project Name:	A465 Sections 5 & 6
Project No.:	G791
BH/TP No.:	WS144
Instruments Used:	Water Dip Meter Probe, GA2000 Gas Anaylser

Installation Date:				
GL (m.A.O.D.)	Pipe	Type	Response Zone (mbgl)	
320.732	A	19mm Standpipe	0.5-2.25	

Pipe	Date	Time	Time (secs)	Atmos Pressure	Flow	CH_4	CO_2	O_2	H_2S	CO	Water Level		HoleDepth		Remarks
				mBar	L/hr	%	%	%	ppm	ppm	mbgl	mAOD	mbgl	mAOD	
	21/04/2016	13:00			0.0						Dry		2.20	318.53	
	21/04/2016		0	986		0.0	0.1	21.0	0.0	0.0					
	21/04/2016		30	986		0.0	0.5	20.4	0.0	0.0					
	21/04/2016		60	986		0.0	0.5	20.4	0.0	0.0					
	21/04/2016		120	986		0.0	0.5	20.4	0.0	0.0					
	21/04/2016		180	986		0.0	0.5	20.4	0.0	0.0					
	21/04/2016		240	986		0.0	0.5	20.4	0.0	0.0					
	05/05/2016	07:25			0.0						Dry		2.20	318.53	
	05/05/2016		0	986		0.0	0.1	21.1	0.0	0.0					
	05/05/2016		30	986		0.0	0.6	20.4	0.0	0.0					
	05/05/2016		60	986		0.0	0.6	20.4	0.0	0.0					
	05/05/2016		120	986		0.0	0.6	20.4	0.0	0.0					
	05/05/2016		180	986		0.0	0.6	20.4	0.0	0.0					
	05/05/2016		240	986		0.0	0.6	20.4	0.0	0.0					

m.A.O.D. - metres above ordnance datum

LANDGAS & GROUNDWATER MONITORING RECORD SHEET

Project Name:	A465 Sections 5 & 6
Project No.:	G791
BH/TP No.:	WS145
Instruments Used:	Water Dip Meter Probe, GA2000 Gas Anaylser

Installation Date:				
GL (m.A.O.D.)	Pipe	Type	Response Zone (mbgl)	
321.412	A	19mm Standpipe	0.5-2.0	

Pipe	Date	Time	Time (secs)	Atmos Pressure	Flow	CH_4	CO_2	O_2	H_2S	CO	Water Level		HoleDepth		Remarks
				mBar	L/hr	%	%	%	ppm	ppm	mbgl	mAOD	mbgl	mAOD	
	21/04/2016	12:50			0.1						1.90	319.51	2.00	319.41	
	21/04/2016		0	986		0.0	0.2	21.1	0.0	0.0					
	21/04/2016		30	986		0.0	0.5	20.7	0.0	0.0					
	21/04/2016		60	986		0.0	0.5	20.7	0.0	0.0					
	21/04/2016		120	986		0.0	0.4	20.8	0.0	0.0					
	21/04/2016		180	986		0.0	0.4	20.7	0.0	0.0					
	21/04/2016		240	986		0.0	0.4	20.7	0.0	0.0					
	05/05/2016	07:15			0.0						1.90	319.51	2.00	319.41	
	05/05/2016		0	986		0.0	0.1	21.1	0.0	0.0					
	05/05/2016		30	986		0.0	0.4	20.8	0.0	0.0					
	05/05/2016		60	986		0.0	0.4	20.8	0.0	0.0					
	05/05/2016		120	986		0.0	0.4	20.7	0.0	0.0					
	05/05/2016		180	986		0.0	0.4	20.7	0.0	0.0					
	05/05/2016		240	986		0.0	0.4	20.7	0.0	0.0					

m.A.O.D. - metres above ordnance datum

LANDGAS & GROUNDWATER MONITORING RECORD SHEET

Project Name:	A465 Sections 5 & 6
Project No.:	G791
BH/TP No.:	WS149
Instruments Used:	Water Dip Meter Probe, GA2000 Gas Anaylser

Installation Date:				
GL (m.A.O.D.)	Pipe	Type	Response Zone (mbgl)	
350.304	A	19mm Standpipe	0.5-1.8	

Pipe	Date	Time	Time (secs)	Atmos Pressure	Flow	CH_4	CO_2	O_2	H_2S	CO	Water Level		HoleDepth		Remarks
				mBar	L/hr	%	%	%	ppm	ppm	mbgl	mAOD	mbgl	mAOD	
	21/04/2016	12:30			0.2						1.72	348.58	1.80	348.50	
	21/04/2016		0	983		0.0	0.0	21.1	0.0	0.0					
	21/04/2016		30	983		0.0	0.0	21.2	0.0	0.0					
	21/04/2016		60	983		0.0	0.0	21.2	0.0	0.0					
	21/04/2016		120	983		0.0	0.0	21.2	0.0	0.0					
	21/04/2016		180	983		0.0	0.0	21.2	0.0	0.0					
	21/04/2016		240	983		0.0	0.0	21.2	0.0	0.0					
	05/05/2016	07:00			0.1						1.75	348.55	1.80	348.50	
	05/05/2016		0	982		0.0	0.1	21.1	0.0	0.0					
	05/05/2016		30	982		0.0	0.1	21.1	0.0	0.0					
	05/05/2016		60	982		0.0	0.1	21.1	0.0	0.0					
	05/05/2016		120	982		0.0	0.1	21.1	0.0	0.0					
	05/05/2016		180	982		0.0	0.1	21.1	0.0	0.0					
	05/05/2016		240	982		0.0	0.1	21.1	0.0	0.0					

m.A.O.D. - metres above ordnance datum

APPENDIX VI – GEOTECHNICAL LABORATORY TEST RESULTS

Laboratory Report

2788

GEO Site & Testing Services Ltd

Contract Number: 30755

Client's Reference: **G791 - GEO3**

Report Date: **17-05-2016**

Client **Dawnus Construction Limited C/O Quantum Geotechnic**
Ty Berwig
Bynea
Llanelli.
Carmarthenshire.
SA14 9ST

Contract Title: **A465 Section 5&6**

For the attention of: **Gareth Morris**

Date Received: **26-04-2016**

Date Commenced: **26-04-2016**

Date Completed: **17-05-2016**

Test Description	Qty
Moisture Content 1377 : 1990 Part 2 : 3.2 - * UKAS	21
4 Point Liquid & Plastic Limit (LL/PL) 1377 : 1990 Part 2 : 4.3 & 5.3 - * UKAS	15
PSD Wet Sieve method 1377 : 1990 Part 2 : 9.2 - * UKAS	16
Dry Den/MC (2.5kg Rammer Method 1 Litre Mould) 1377 : 1990 Part 4 : 3.3 - * UKAS	5
CBR: Remoulded Specimen and tested at top only 1377 : 1990 Part 4 : 7 - * UKAS	3
One-dimensional Consolidation 75mm or 50mm diameter specimens (5 days) 1377 : 1990 Part 5 : 3 - * UKAS	1
Disposal of Samples on Project	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced in full, without the prior written approval of the laboratory.

Approved Signatories:
Alex Wynn (Associate Director) - Benjamin Sharp (Contracts Manager) - Emma Sharp (Office Manager)
Paul Evans (Quality/Technical Manager) - Vaughan Edwards (Managing Director)

GEO Site & Testing Services Ltd
Unit 4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk

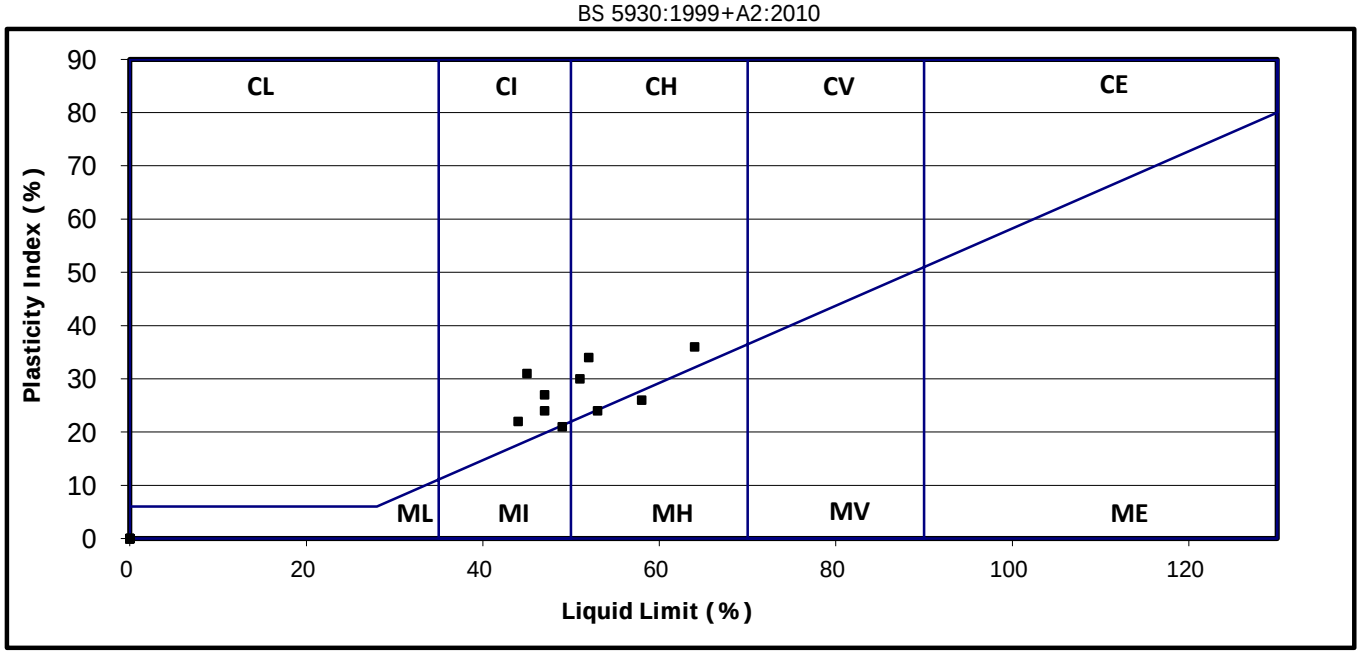
Test Report: **Method of the Determination of the plastic limit and plasticity index**
BS 1377 : Part 2 : 1990 Method 5

Client ref: G791
Location: A465 Section 5&6
Contract Number: 30755

Hole / Sample Number	Sample Type	Depth m	Moisture Content % Cl. 3.2	Liquid Limit % Cl. 4.3/4.4	Plastic Limit % Cl. 5.	Plasticity Index % Cl. 6.	% Passing .425mm	Remarks
CP110/3	D	0.50 - 1.20	11					
CP110/9	S	2.00 - 2.45	4.8					
CP110/16	S	4.00 - 4.45	8.5					
CP110/22	S	6.00 - 6.45	9.2					
CP110/26	S	7.50 - 7.95	9.4					
CP117/3	D	0.30 - 1.20	36	47	20	27	79	CI Intermediate Plasticity
CP117/7	D	1.70	12	45	14	31	64	CI Intermediate Plasticity
CP117/11	D	2.50	19	44	22	22	81	CI Intermediate Plasticity
CP117A/2	D	3.50	25	49	28	21	74	MI Intermediate Plasticity
OP112/4	D	0.50	31	64	28	36	80	CH High Plasticity
TP115 (WS)/3	B	0.70 - 1.00	39	47	23	24	91	CI Intermediate Plasticity
TP115 (WS)/7	B	2.00 - 2.60	18	52	18	34	78	CH High Plasticity
TP116 (WS)/12	D	4.80	57					
TP125/5	D	0.50	32	53	29	24	77	MH High Plasticity
TP125/8	D	1.00	42	58	32	26	82	MH High Plasticity
TP125/11	D	1.90	14	51	21	30	71	CH High Plasticity

Symbols: **NP : Non Plastic** **# : Liquid Limit and Plastic Limit Wet Sieved**

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.
BS 5930:1999+A2:2010



For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)
Date: 16.5.16

UKAS TESTING 2788

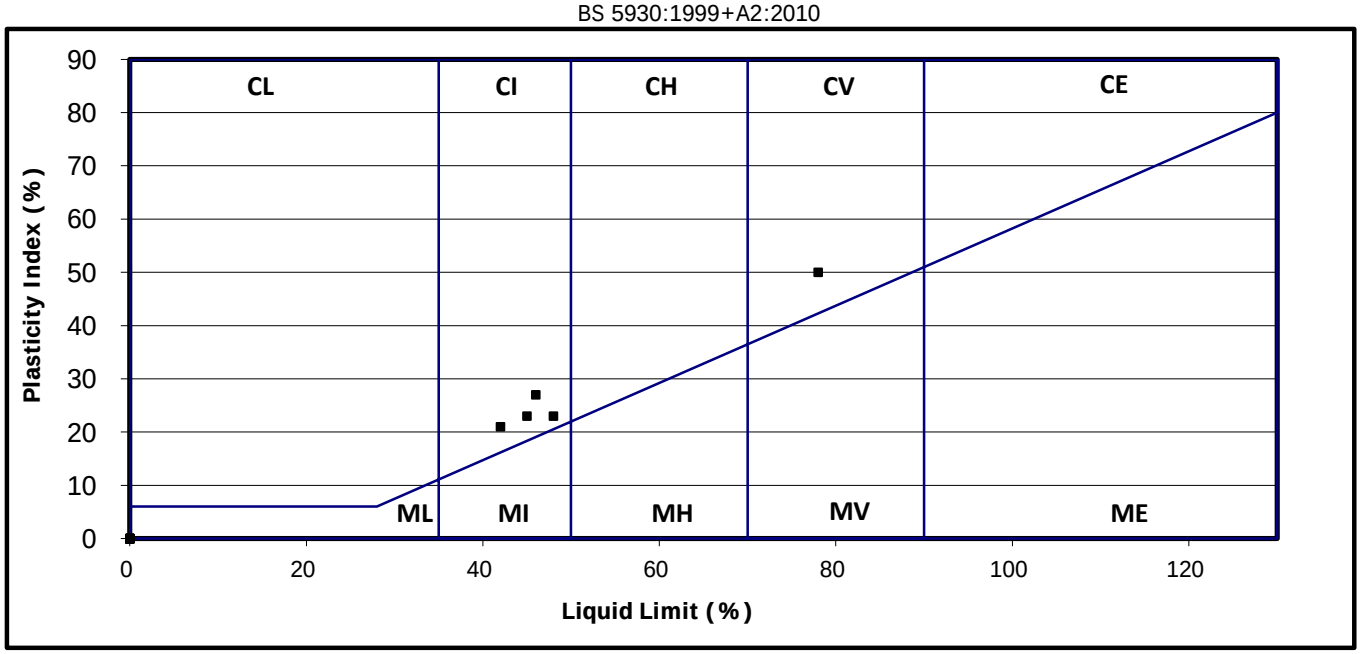
Test Report: **Method of the Determination of the plastic limit and plasticity index**
BS 1377 : Part 2 : 1990 Method 5

Client ref: G791
Location: A465 Section 5&6
Contract Number: 30755

Hole / Sample Number	Sample Type	Depth m	Moisture Content % Cl. 3.2	Liquid Limit % Cl. 4.3/4.4	Plastic Limit % Cl. 5.	Plasticity Index % Cl. 6.	% Passing .425mm	Remarks
TP157/4	D	1.10 - 1.20	64	78	28	50	78	CV Very High Plasticity
TP157/9	B	2.00 - 2.45	23	48	25	23	72	CI Intermediate Plasticity
TP162 (WS)/4	D	1.20	21	46	19	27	87	CI Intermediate Plasticity
TP165 (WS)/4	D	1.30	19	42	21	21	91	CI Intermediate Plasticity
WLS109/7	B	0.65 - 2.00	26	45	22	23	73	CI Intermediate Plasticity

Symbols: **NP : Non Plastic** **# : Liquid Limit and Plastic Limit Wet Sieved**

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.
BS 5930:1999+A2:2010



For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)
Date: 16.5.16

UKAS TESTING 2788

Test Report:

Particle Size Distribution Test
BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

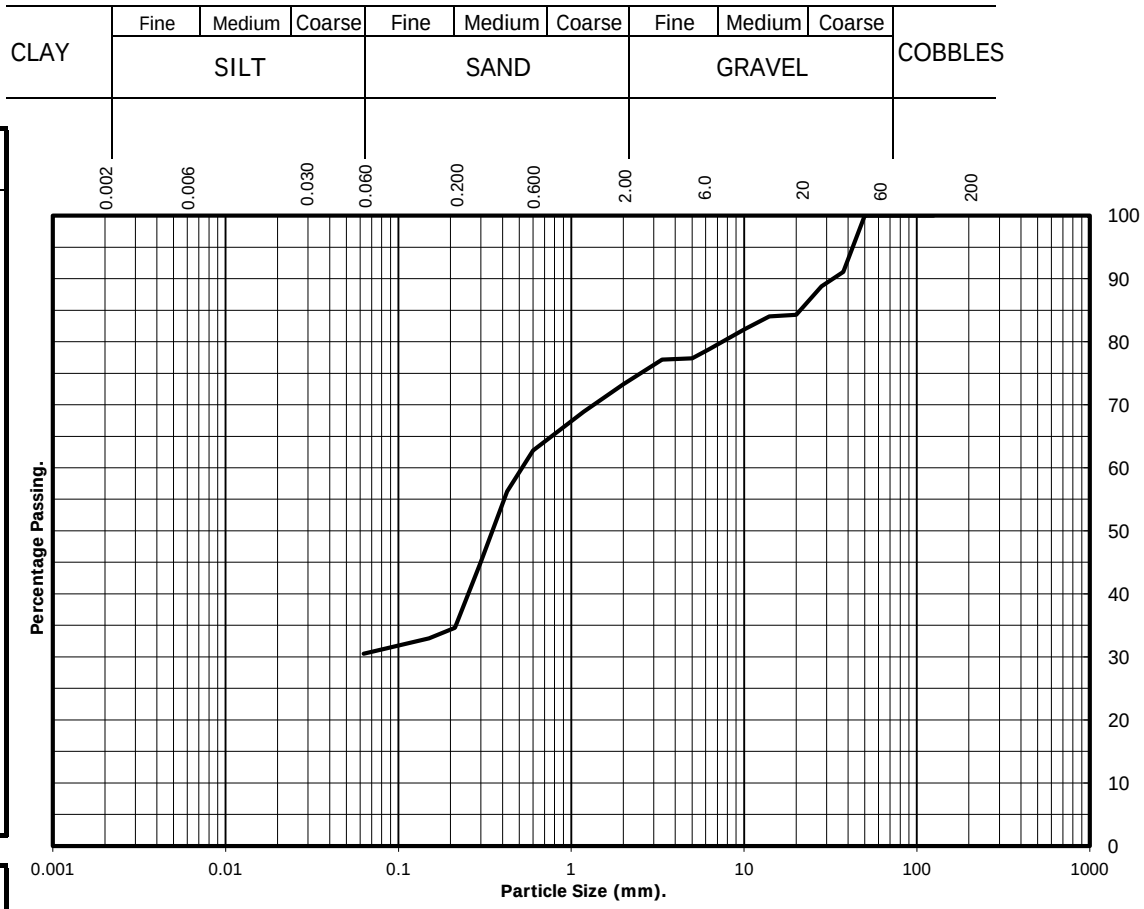
Client ref:	**G791**	**Sample Number:**	**4**
Contract Number:	**30755-**	**Depth from (m):**	**0.50**
Hole Number:	**CP110**	**Depth to (m):**	**1.20**
		Sample Type:	**B**

Location: **A465 Section 5&6**

Description: **Brown gravelly silty clayey fine to medium SAND.**

BS Test Sieve	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	91
28	89
20	84
14	84
10	82
6.3	79
5.0	77
3.35	77
2.00	73
1.18	69
0.60	63
0.425	56
0.300	45
0.212	35
0.150	33
0.063	30

Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#



	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	30	43	27	0	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 17.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report:

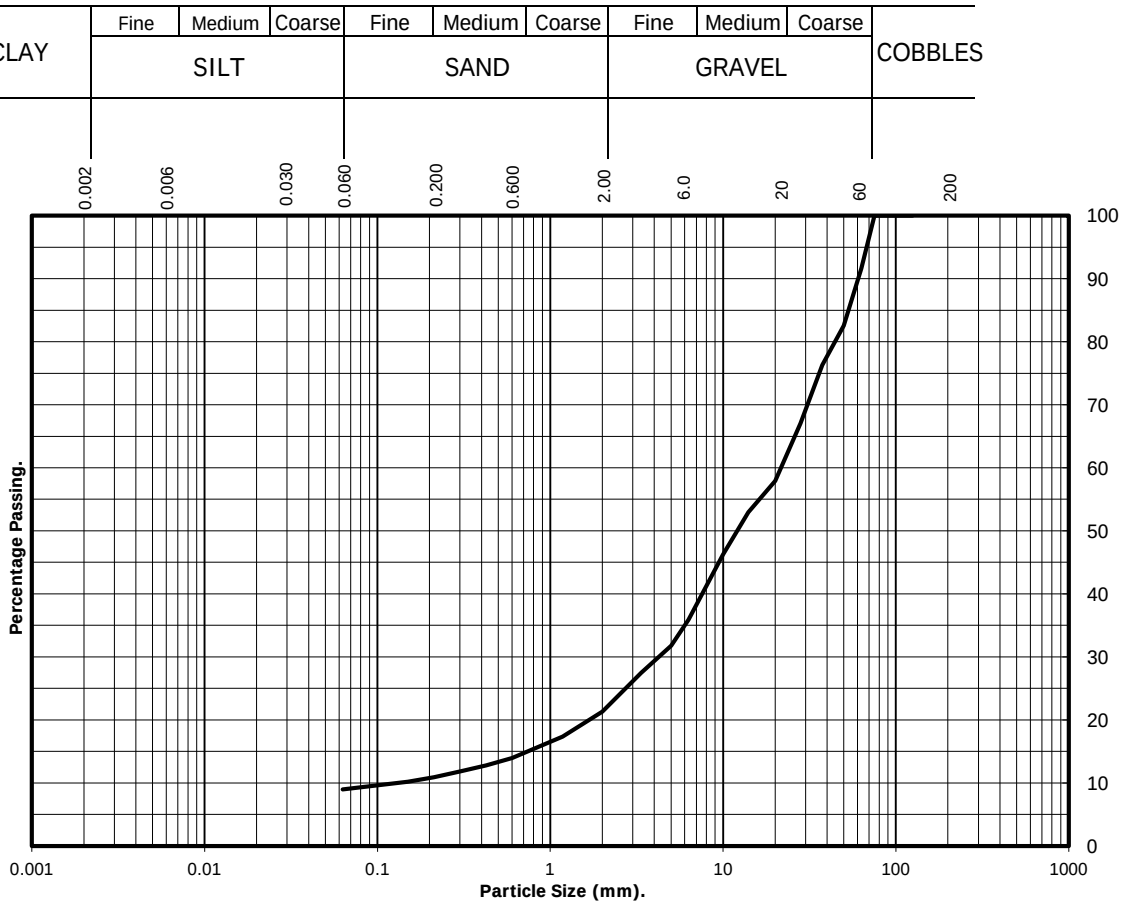
Particle Size Distribution Test
BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Client ref:	**G791**	**Sample Number:**	**10**
Contract Number:	**30755-**	**Depth from (m):**	**2.00**
Hole Number:	**CP110**	**Depth to (m):**	**2.50**
		Sample Type:	**B**

Location: **A465 Section 5&6**

Description: **Brown silty clayey sandy fine to coarse GRAVEL with few cobbles.**



BS Test Sieve	% Passing
125	100
90	100
75	100
63	92
50	83
37.5	76
28	67
20	58
14	53
10	46
6.3	36
5.0	32
3.35	27
2.00	21
1.18	17
0.60	14
0.425	13
0.300	12
0.212	11
0.150	10
0.063	9

Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	9	12	71	8	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 18.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report:

Particle Size Distribution Test
BS 1377 Part 2:1990.

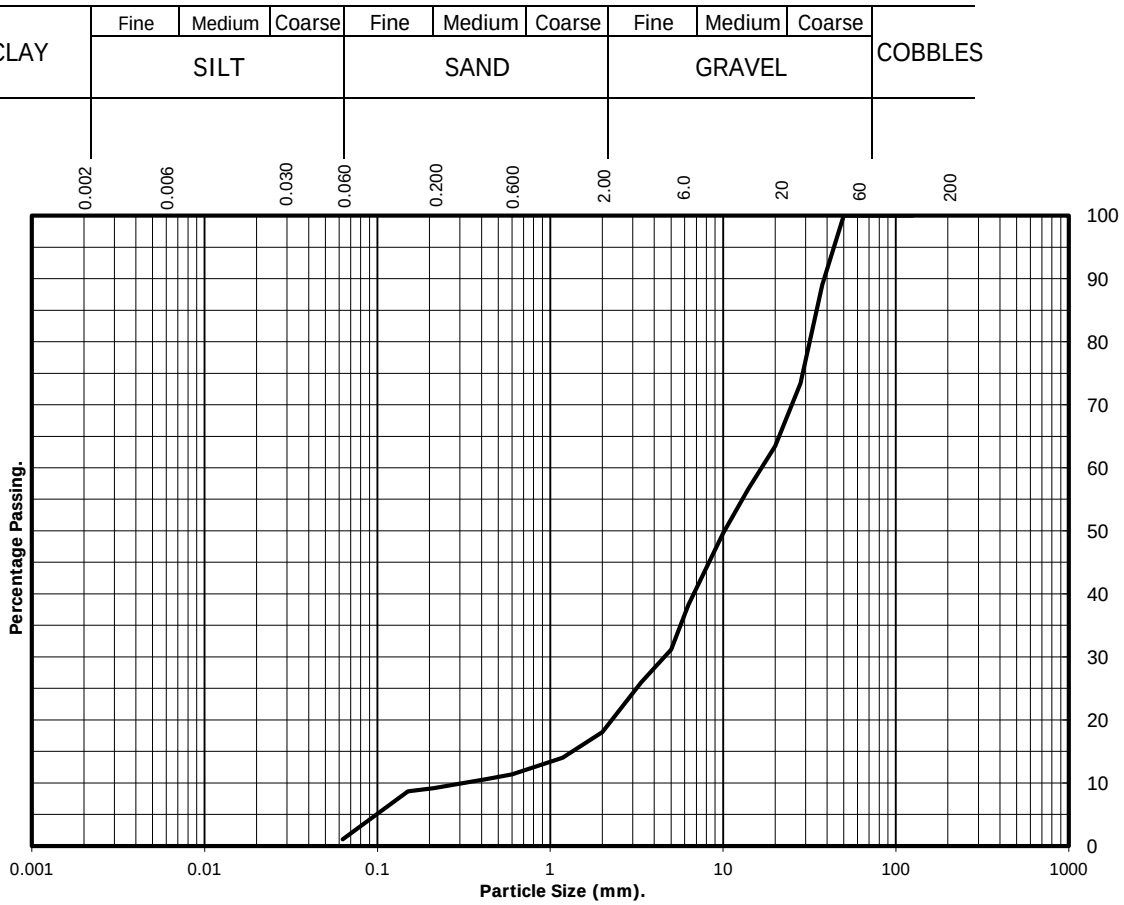
Wet Sieve, Clause 9.2

Client ref:	**G791**	**Sample Number:**	**13**
Contract Number:	**30755-**	**Depth from (m):**	**3.00**
Hole Number:	**CP110**	**Depth to (m):**	**3.50**
		Sample Type:	**B**

Location: **A465 Section 5&6**

Description: **Brown silty clayey sandy fine to coarse GRAVEL.**

BS Test Sieve	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	89
28	73
20	63
14	57
10	50
6.3	38
5.0	31
3.35	26
2.00	18
1.18	14
0.60	11
0.425	11
0.300	10
0.212	9
0.150	9
0.063	1



Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	1	17	82	0	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 18.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report:

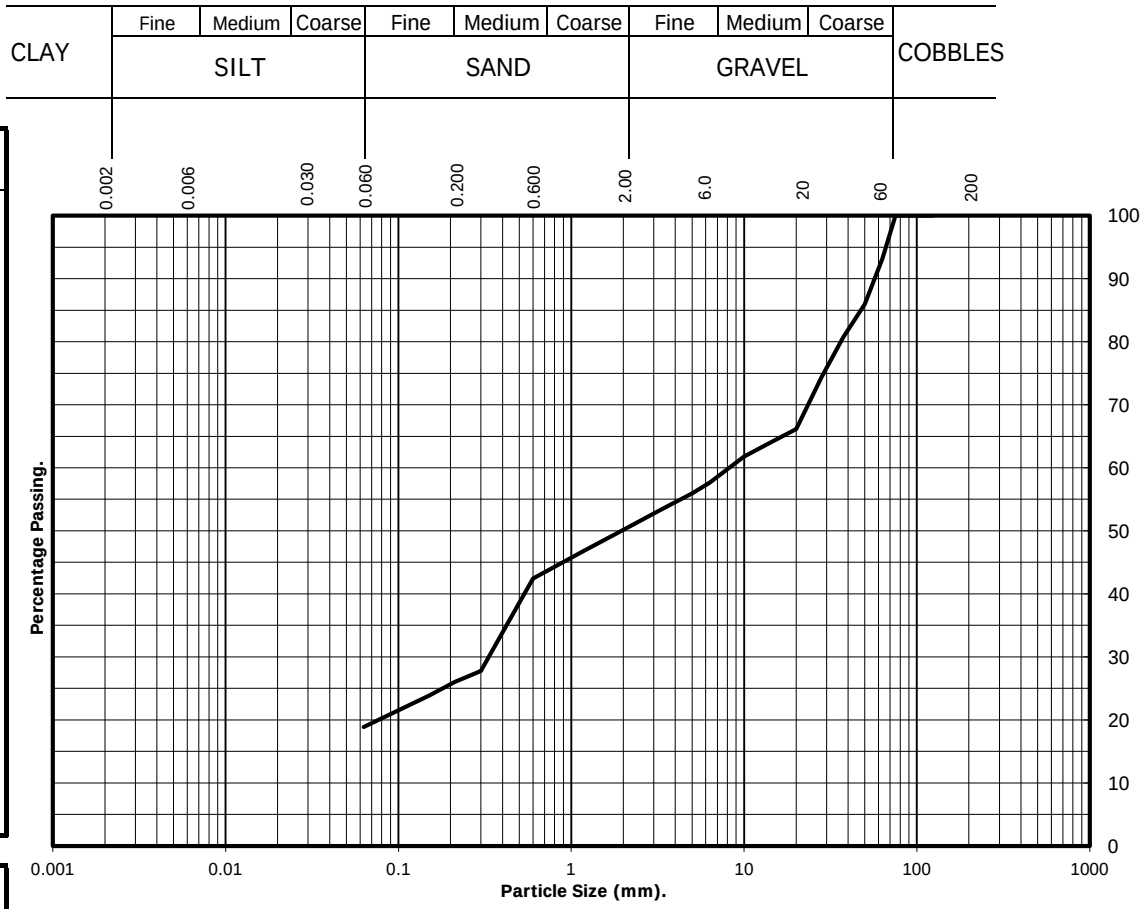
Particle Size Distribution Test
BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Client ref:	**G791**	**Sample Number:**	**N/A**
Contract Number:	**30755-**	**Depth from (m):**	**4.00**
Hole Number:	**CP110**	**Depth to (m):**	**4.50**
		Sample Type:	**B**

Location: **A465 Section 5&6**

Description: **Brown silty clayey sandy fine to coarse GRAVEL with few cobbles.**



BS Test Sieve	% Passing
125	100
90	100
75	100
63	93
50	86
37.5	81
28	74
20	66
14	64
10	62
6.3	58
5.0	56
3.35	53
2.00	50
1.18	47
0.60	42
0.425	35
0.300	28
0.212	26
0.150	24
0.063	19

Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	19	31	43	7	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 17.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report:

Particle Size Distribution Test
BS 1377 Part 2:1990.

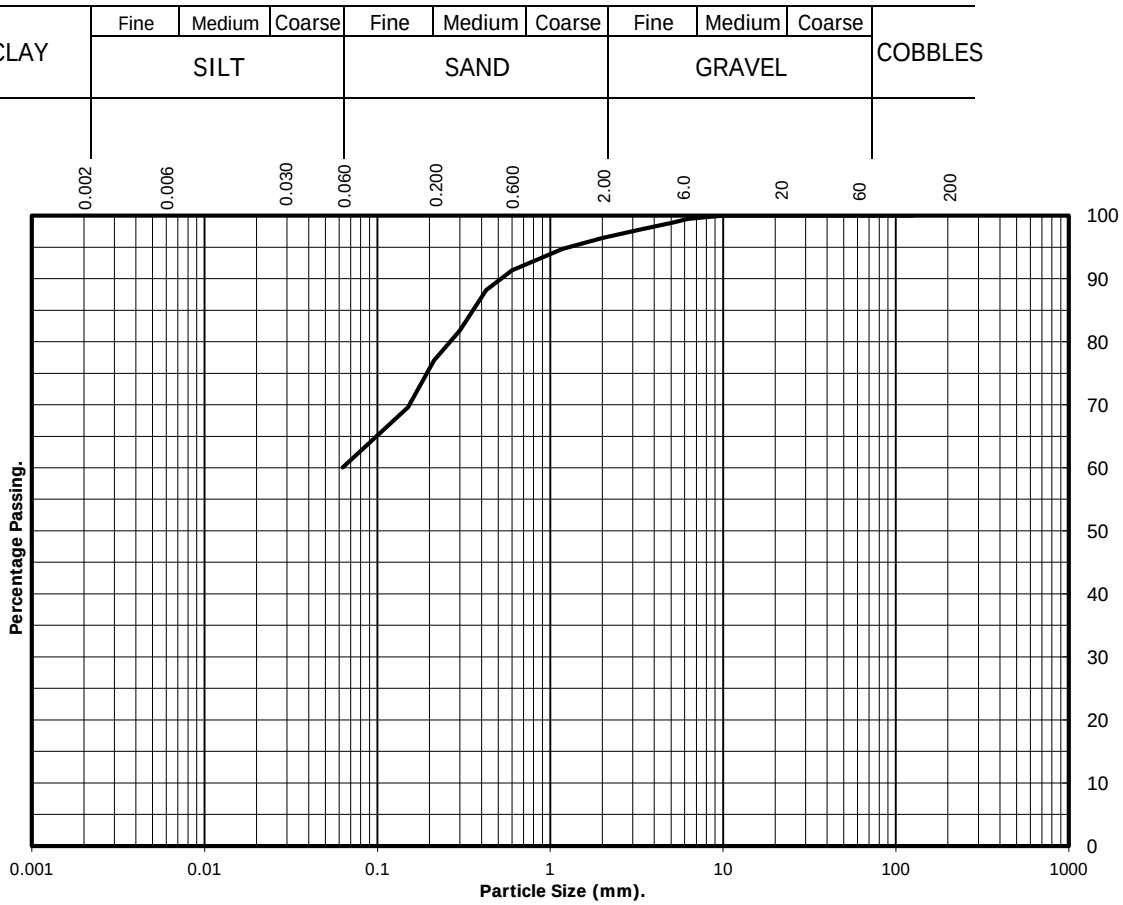
Wet Sieve, Clause 9.2

Client ref:	**G791**	**Sample Number:**	**4**
Contract Number:	**30755-**	**Depth from (m):**	**0.50**
Hole Number:	**CP117**	**Depth to (m):**	**1.20**
		Sample Type:	**B**

Location: **A465 Section 5&6**

Description: **Brown gravelly sandy fine to mediun silty CLAY.**

BS Test Sieve	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	100
28	100
20	100
14	100
10	100
6.3	100
5.0	99
3.35	98
2.00	96
1.18	95
0.60	91
0.425	88
0.300	82
0.212	77
0.150	70
0.063	60



Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	60	36	4	0	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 17.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report:

Particle Size Distribution Test
BS 1377 Part 2:1990.

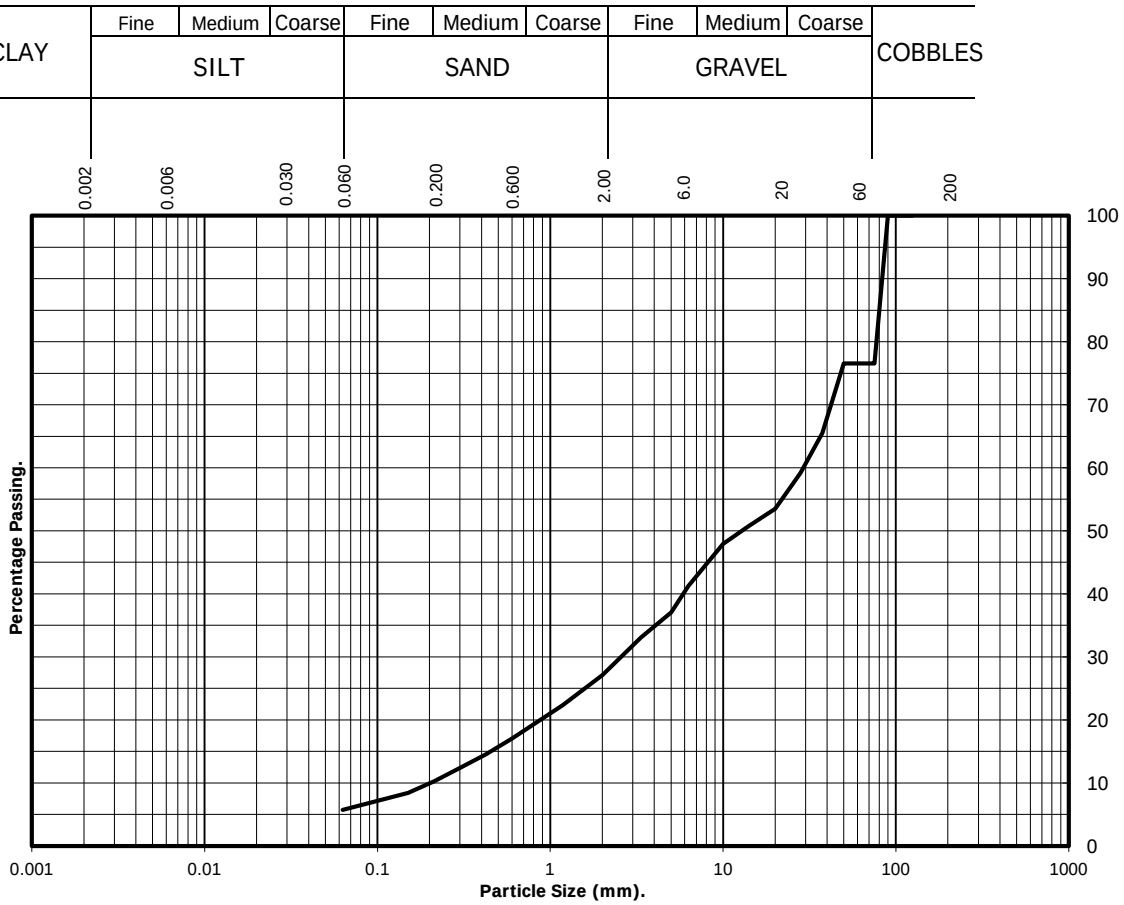
Wet Sieve, Clause 9.2

Client ref:	**G791**	**Sample Number:**	**2**
Contract Number:	**30755-**	**Depth from (m):**	**0.30**
Hole Number:	**TP104**	**Depth to (m):**	**0.40**
		Sample Type:	**B**

Location: **A465 Section 5&6**

Description: **Brown silty clayey sandy fine to coarse GRAVEL with many cobbles.**

BS Test Sieve	% Passing
125	100
90	100
75	77
63	77
50	77
37.5	65
28	59
20	54
14	51
10	48
6.3	41
5.0	37
3.35	33
2.00	27
1.18	22
0.60	17
0.425	15
0.300	12
0.212	10
0.150	8
0.063	6



Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	6	21	50	23	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 18.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report:

Particle Size Distribution Test
BS 1377 Part 2:1990.

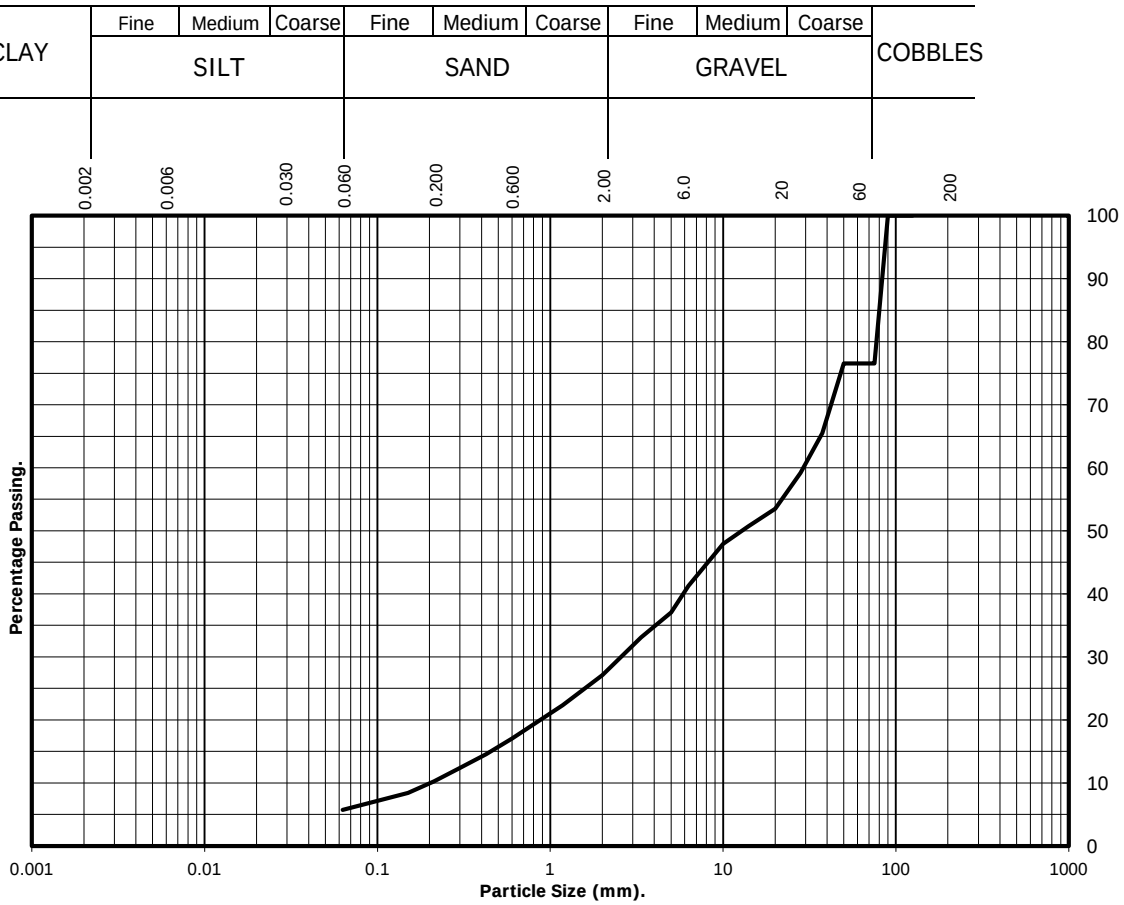
Wet Sieve, Clause 9.2

Client ref:	**G791**	**Sample Number:**	**2**
Contract Number:	**30755-**	**Depth from (m):**	**0.30**
Hole Number:	**TP104**	**Depth to (m):**	**0.40**
		Sample Type:	**B**

Location: **A465 Section 5&6**

Description: **Brown silty clayey sandy fine to coarse GRAVEL with many cobbles.**

BS Test Sieve	% Passing
125	100
90	100
75	77
63	77
50	77
37.5	65
28	59
20	54
14	51
10	48
6.3	41
5.0	37
3.35	33
2.00	27
1.18	22
0.60	17
0.425	15
0.300	12
0.212	10
0.150	8
0.063	6



Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	6	21	50	23	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 18.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report:

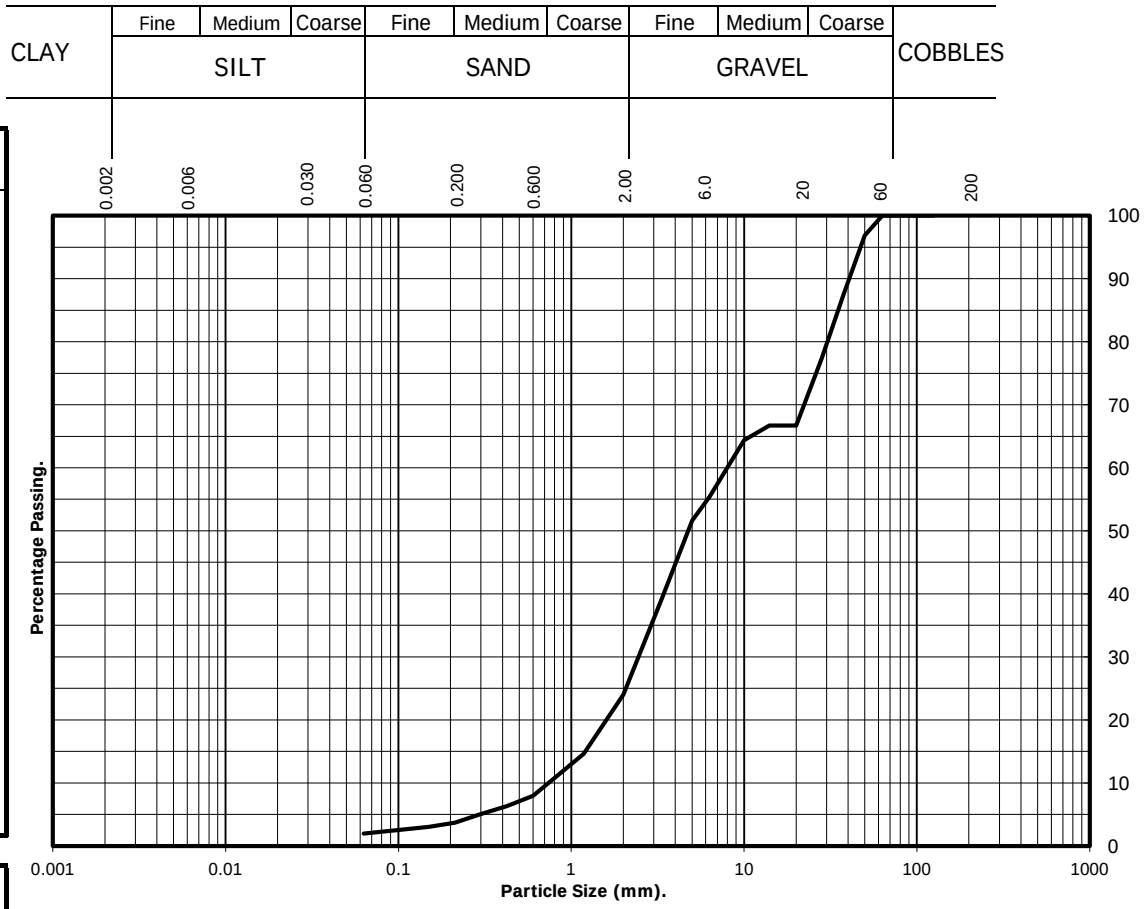
Particle Size Distribution Test
BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Client ref:	**G791**	**Sample Number:**	**6**
Contract Number:	**30755-**	**Depth from (m):**	**1.00**
Hole Number:	**TP116 (WS**	**Depth to (m):**	**2.00**
		Sample Type:	**B**

Location: **A465 Section 5&6**

Description: **Brown silty clayey sandy fine to coarse GRAVEL.**



BS Test Sieve	% Passing
125	100
90	100
75	100
63	100
50	97
37.5	87
28	77
20	67
14	67
10	64
6.3	55
5.0	52
3.35	39
2.00	24
1.18	15
0.60	8
0.425	6
0.300	5
0.212	4
0.150	3
0.063	2

Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	2	22	76	0	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 17.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report:

Particle Size Distribution Test
BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Client ref:	**G791**	**Sample Number:**	**8**
Contract Number:	**30755-**	**Depth from (m):**	**3.00**
Hole Number:	**TP116 (WS**	**Depth to (m):**	**4.00**
		Sample Type:	**B**

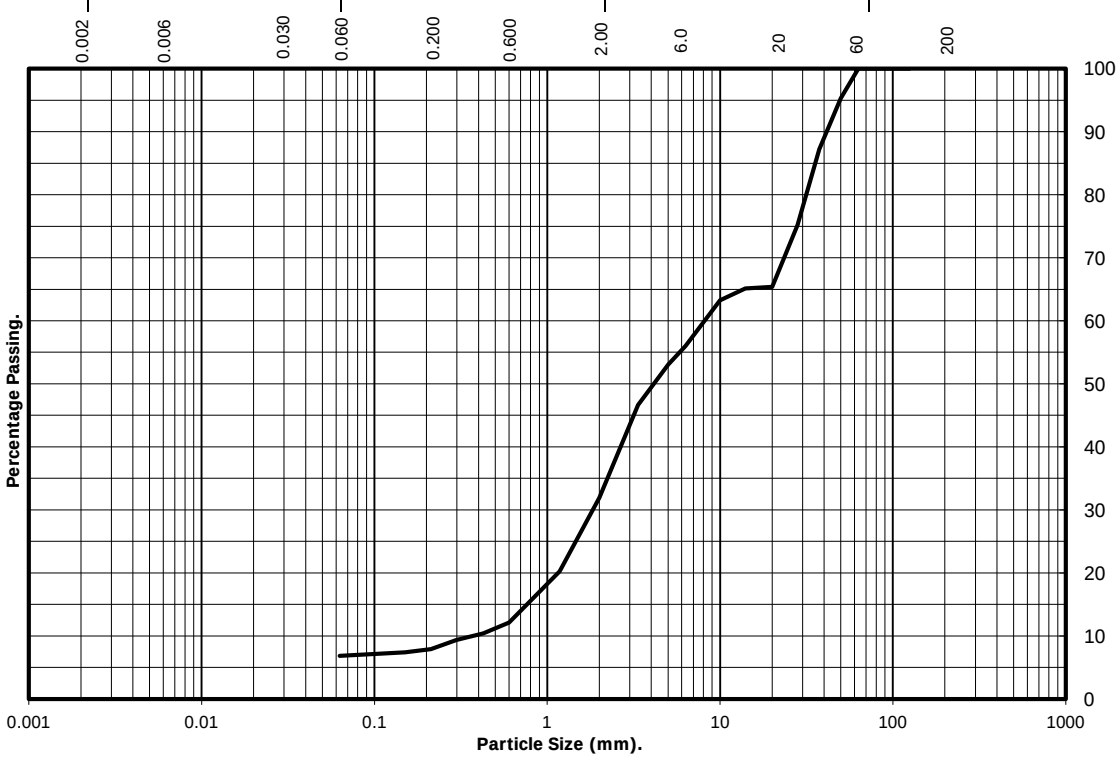
Location: **A465 Section 5&6**

Description: **Brown silty clayey sandy fine to coarse GRAVEL.**

CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			

BS Test Sieve	% Passing
125	100
90	100
75	100
63	100
50	95
37.5	87
28	75
20	65
14	65
10	63
6.3	56
5.0	53
3.35	47
2.00	32
1.18	20
0.60	12
0.425	10
0.300	9
0.212	8
0.150	7
0.063	7

Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#



	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	7	25	68	0	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 17.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report:

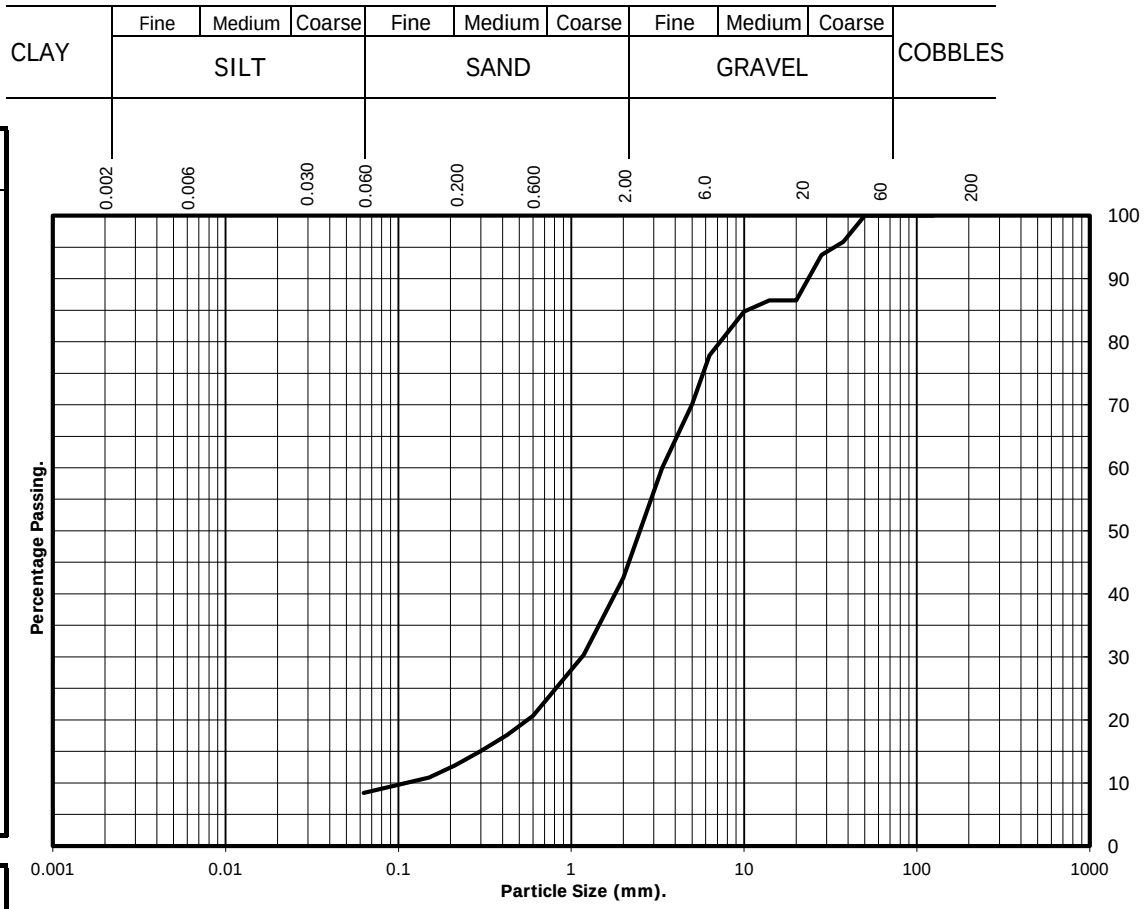
Particle Size Distribution Test
BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Client ref:	**G791**	**Sample Number:**	**11**
Contract Number:	**30755-**	**Depth from (m):**	**4.00**
Hole Number:	**TP116 (WS**	**Depth to (m):**	**4.45**
		Sample Type:	**B**

Location: **A465 Section 5&6**

Description: **Brown silty clayey sandy fine to coarse GRAVEL.**



BS Test Sieve	% Passing
125	100
90	100
75	100
63	100
50	100
37.5	96
28	94
20	87
14	87
10	85
6.3	78
5.0	70
3.35	60
2.00	43
1.18	30
0.60	21
0.425	18
0.300	15
0.212	13
0.150	11
0.063	8

Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	8	35	57	0	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 17.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report:

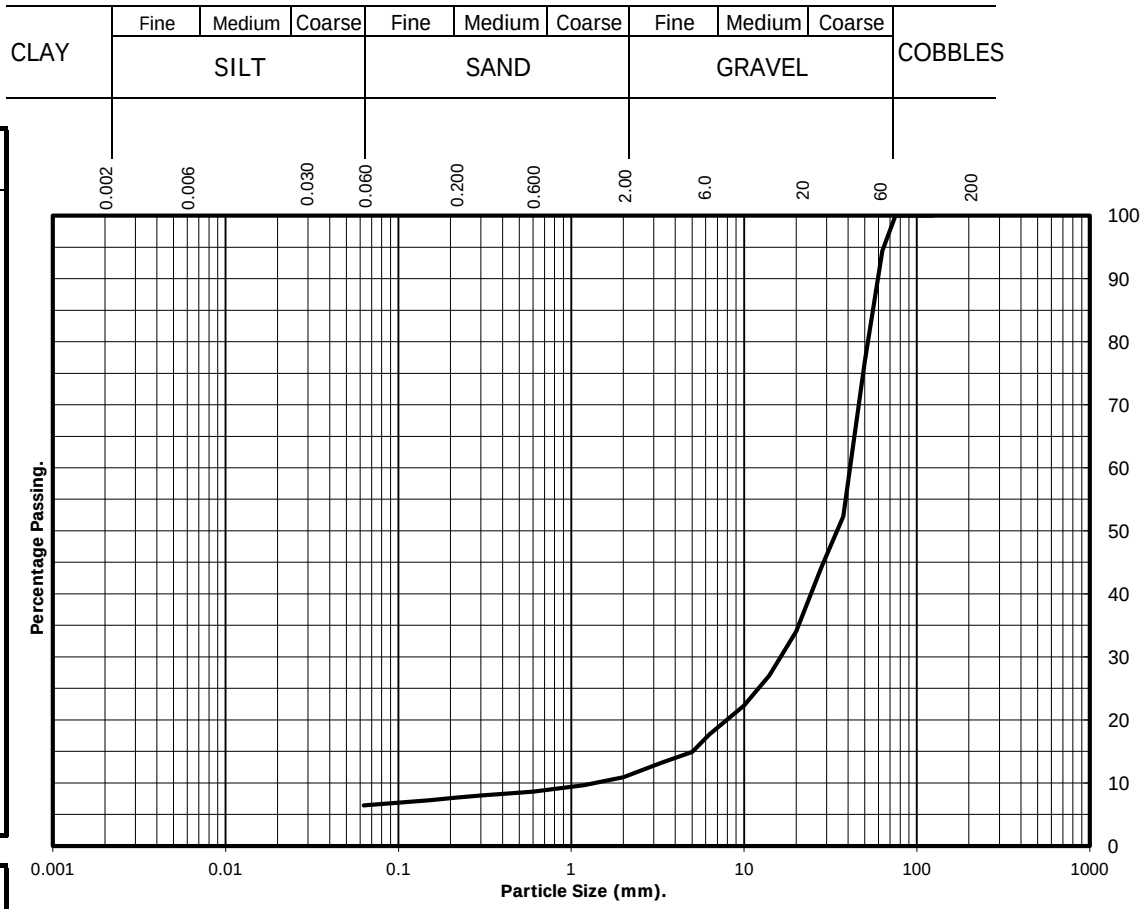
Particle Size Distribution Test
BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Client ref:	**G791**	**Sample Number:**	**15**
Contract Number:	**30755-**	**Depth from (m):**	**2.50**
Hole Number:	**TP125**	**Depth to (m):**	**N/A**
		Sample Type:	**B**

Location: **A465 Section 5&6**

Description: **Brown sandy silty clayey fine to coarse GRAVEL with few cobbles.**



BS Test Sieve	% Passing
125	100
90	100
75	100
63	94
50	77
37.5	52
28	44
20	34
14	27
10	22
6.3	18
5.0	15
3.35	13
2.00	11
1.18	10
0.60	9
0.425	8
0.300	8
0.212	8
0.150	7
0.063	6

Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	6	5	83	6	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 18.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report:

Particle Size Distribution Test
BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

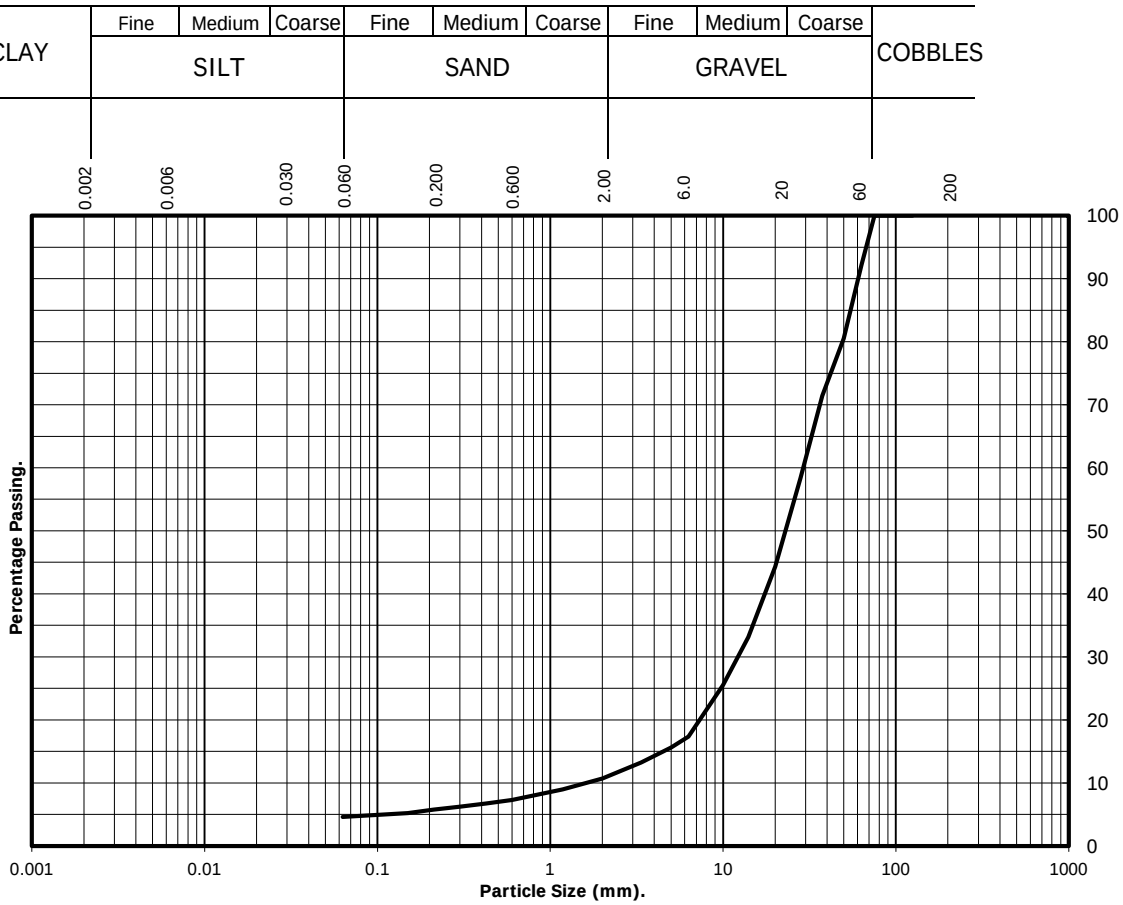
Client ref:	**G791**	**Sample Number:**	**18**
Contract Number:	**30755-**	**Depth from (m):**	**3.50**
Hole Number:	**TP125**	**Depth to (m):**	**N/A**
		Sample Type:	**B**

Location: **A465 Section 5&6**

Description: **Brown silty clayey sandy fine to coarse GRAVEL with few cobbles.**

BS Test Sieve	% Passing
125	100
90	100
75	100
63	92
50	81
37.5	71
28	58
20	44
14	33
10	26
6.3	17
5.0	16
3.35	13
2.00	11
1.18	9
0.60	7
0.425	7
0.300	6
0.212	6
0.150	5
0.063	5

Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#



	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	5	6	81	8	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 17.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report:

Particle Size Distribution Test
BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

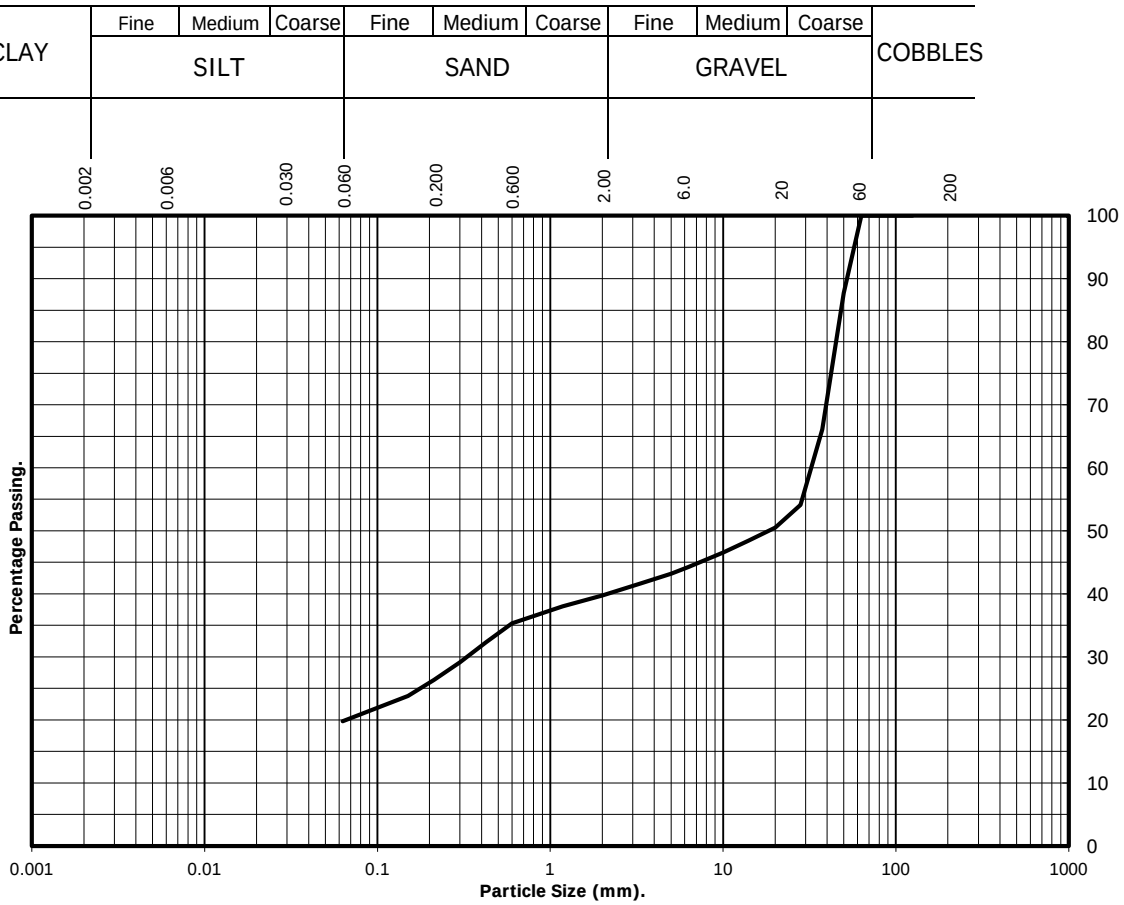
Client ref:	**G791**	**Sample Number:**	**5**
Contract Number:	**30755-**	**Depth from (m):**	**0.40**
Hole Number:	**TP140**	**Depth to (m):**	**0.60**
		Sample Type:	**B**

Location: **A465 Section 5&6**

Description: **Brown silty clayey sandy fine to coarse GRAVEL.**

BS Test Sieve	% Passing
125	100
90	100
75	100
63	100
50	88
37.5	66
28	54
20	50
14	48
10	47
6.3	44
5.0	43
3.35	42
2.00	40
1.18	38
0.60	35
0.425	32
0.300	29
0.212	26
0.150	24
0.063	20

Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#



	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	20	20	60	0	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 17.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report:

Particle Size Distribution Test
BS 1377 Part 2:1990.

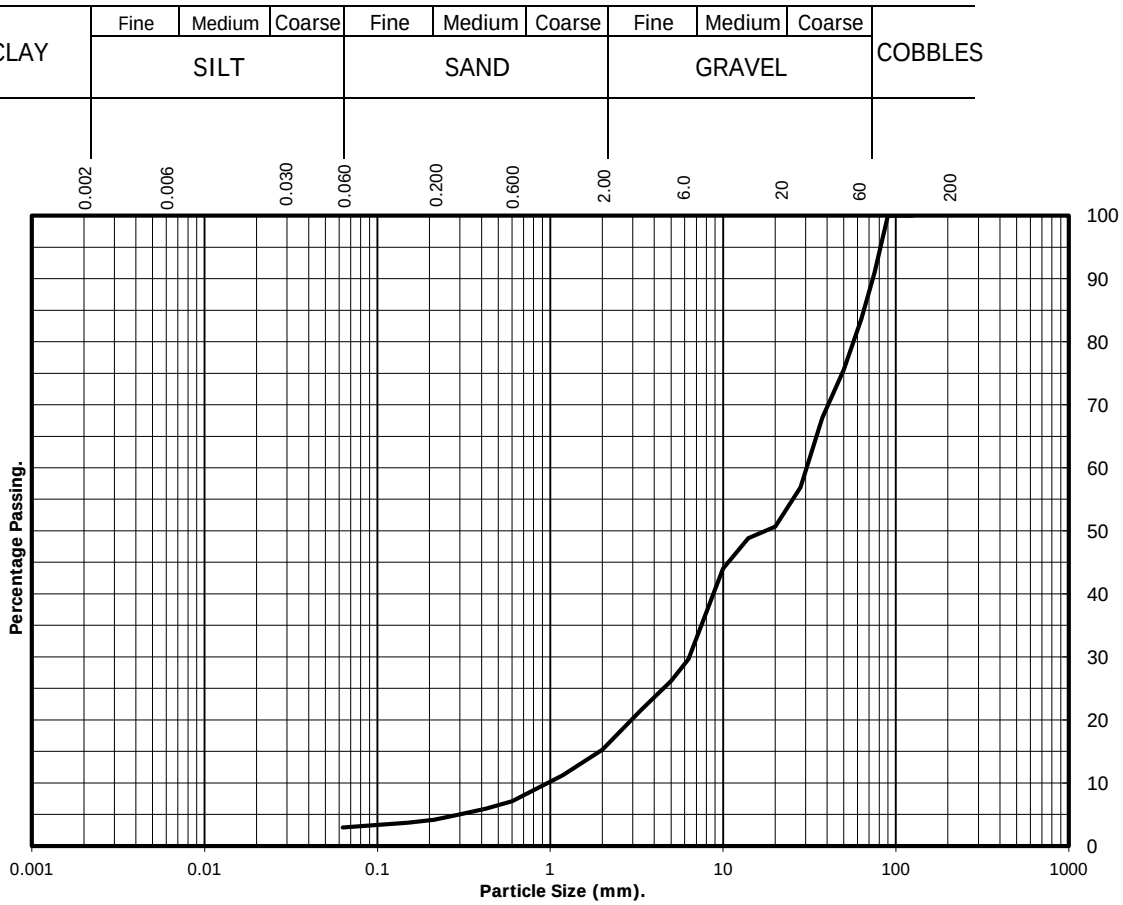
Wet Sieve, Clause 9.2

Client ref:	**G791**	**Sample Number:**	**6**
Contract Number:	**30755-**	**Depth from (m):**	**1.30**
Hole Number:	**TP159**	**Depth to (m):**	**1.40**
		Sample Type:	**B**

Location: **A465 Section 5&6**

Description: **Brown silty clayey sandy fine to coarse GRAVEL with many cobbles.**

BS Test Sieve	% Passing
125	100
90	100
75	91
63	84
50	76
37.5	68
28	57
20	51
14	49
10	44
6.3	30
5.0	26
3.35	22
2.00	15
1.18	11
0.60	7
0.425	6
0.300	5
0.212	4
0.150	4
0.063	3



Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	3	12	69	16	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 17.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report:

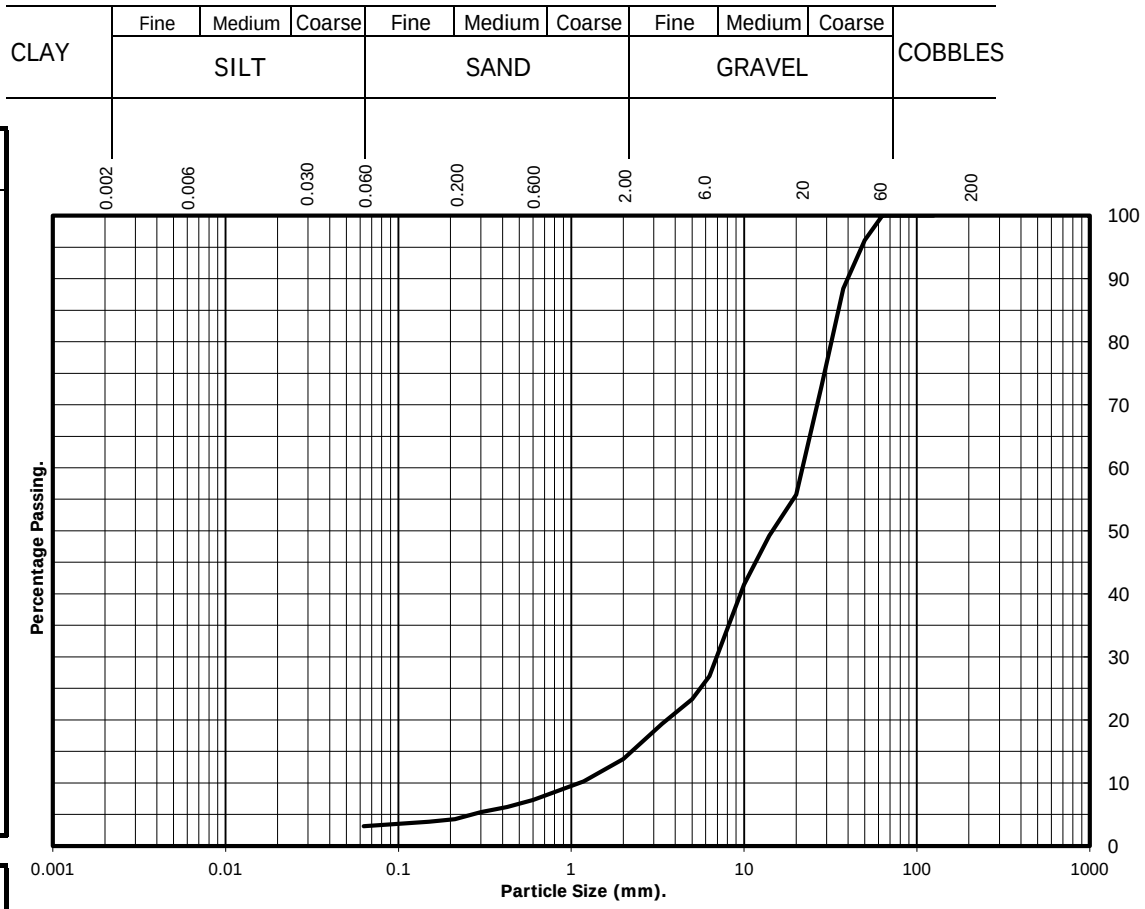
Particle Size Distribution Test
BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Client ref:	**G791**	**Sample Number:**	**9**
Contract Number:	**30755-**	**Depth from (m):**	**2.50**
Hole Number:	**TP159**	**Depth to (m):**	**n/a**
		Sample Type:	**B**

Location: **A465 Section 5&6**

Description: **Brown silty clayey sandy fine to coarse GRAVEL**



BS Test Sieve	% Passing
125	100
90	100
75	100
63	100
50	96
37.5	88
28	73
20	56
14	49
10	41
6.3	27
5.0	23
3.35	19
2.00	14
1.18	10
0.60	7
0.425	6
0.300	5
0.212	4
0.150	4
0.063	3

Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	3	11	86	0	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 17.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report:

Particle Size Distribution Test
BS 1377 Part 2:1990.

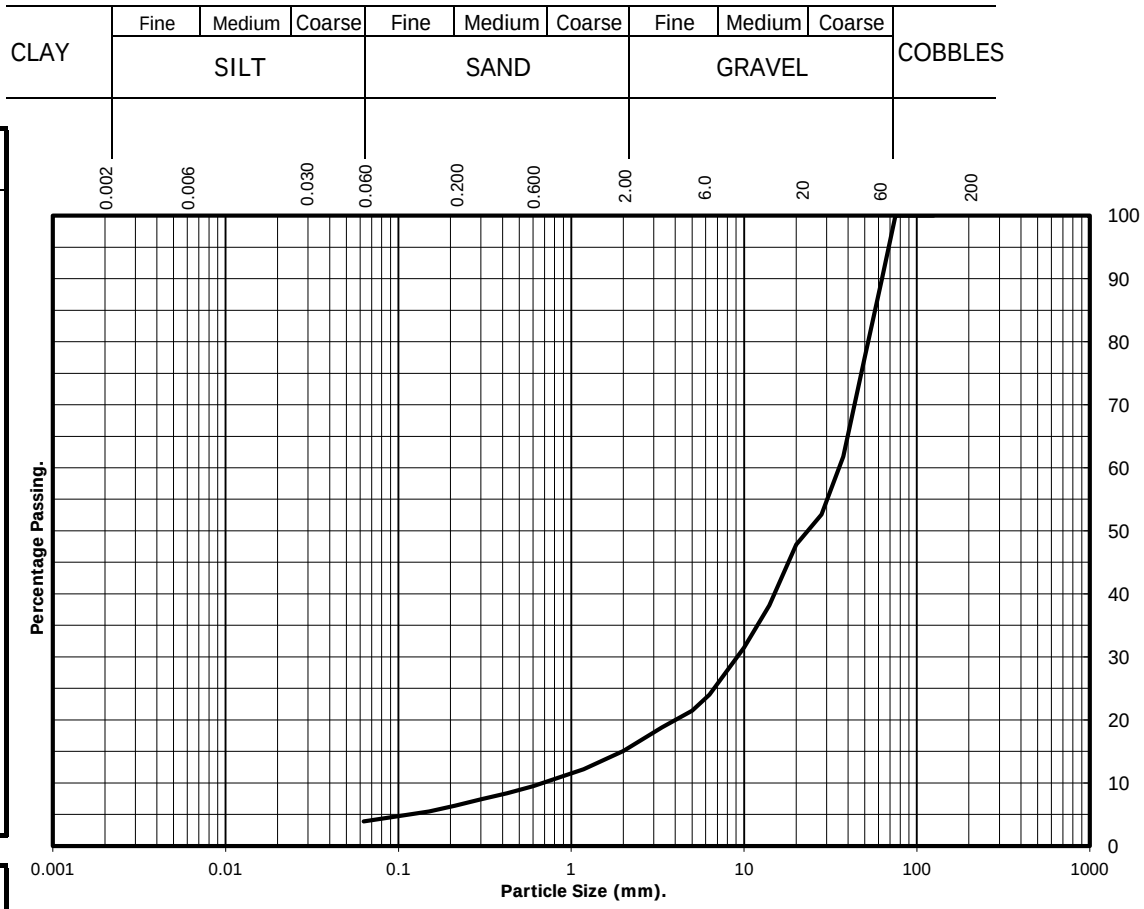
Wet Sieve, Clause 9.2

Client ref:	**G791**	**Sample Number:**	**7**
Contract Number:	**30755-**	**Depth from (m):**	**1.30**
Hole Number:	**WS144**	**Depth to (m):**	**N/A**
		Sample Type:	**B**

Location: **A465 Section 5&6**

Description: **Brown silty clayey sandy fine to coarse GRAVEL with few cobbles.**

BS Test Sieve	% Passing
125	100
90	100
75	100
63	90
50	78
37.5	62
28	53
20	48
14	38
10	31
6.3	24
5.0	21
3.35	19
2.00	15
1.18	12
0.60	9
0.425	8
0.300	7
0.212	6
0.150	5
0.063	4



Particle Diameter	% Passing
0.02	#
0.006	#
0.002	#

	Silt and Clay	Sand	Gravel	Cobbles	Soil Fraction
	4	11	75	10	Total Percentage

Remarks:

#- not determined

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

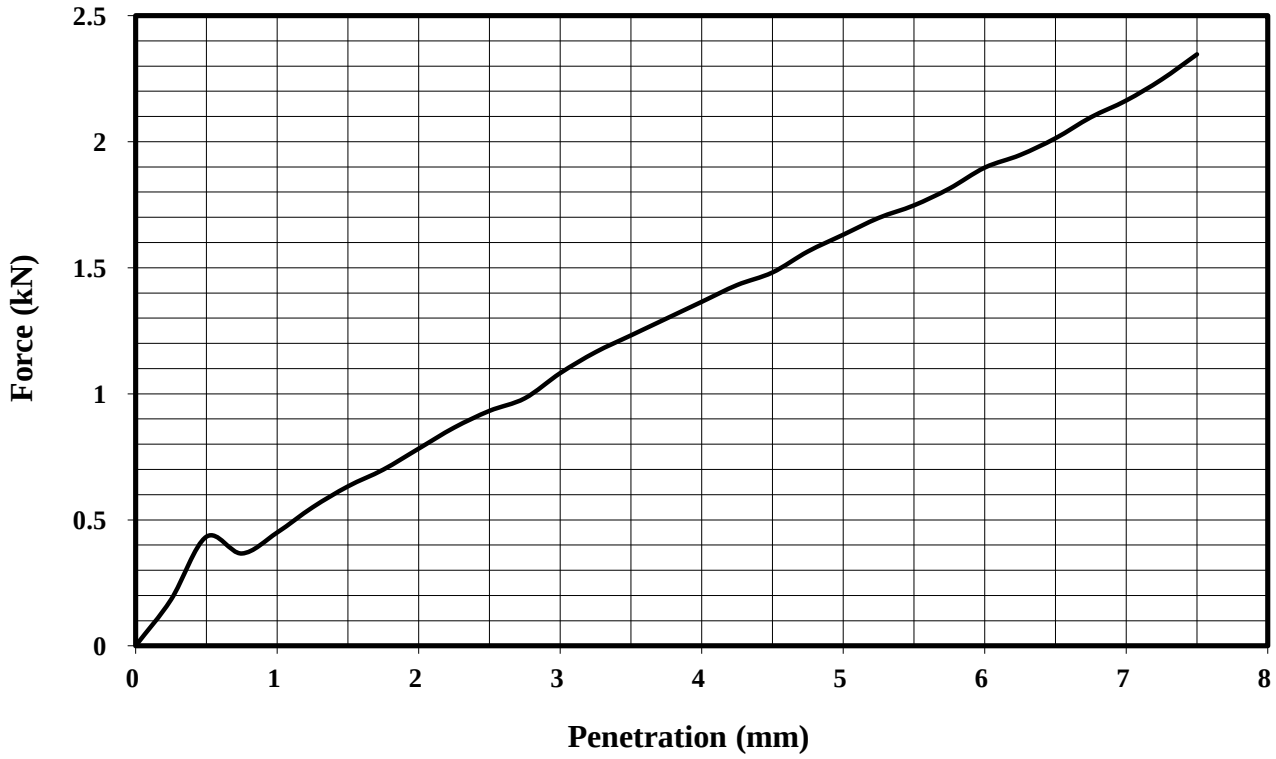
Date: 18.5.16

GSTL
GEO SITE & TESTING SERVICES LTD

UKAS TESTING
2788

Test Report: **Determination of the California Bearing Ratio**
BS 1377: Part 4: 1990 Clause 7

Client ref:	**G791**
Location:	**A465 Section 5&6**
Contract Number:	**30755-**
Sample Type:	**B**
Hole Number:	**CP117 (+2% OMC)**
Sample Number:	**11**
Depth (m):	**2.00 - 2.50**
Description:	**Greyish brown gravelly silty CLAY.**



Initial Sample Conditions		Test Conditions		**Method of Compaction:**
				2.5kg Rammer
Moisture Content:	**13**	Surcharge Kg:	**2.0**	Final Moisture Content %
Bulk Density Mg/m3:	**1.35**	Soaking Time (hrs):		Sample Top **13**
Dry Density Mg/m3:	**1.20**	Swelling mm:		Sample Bottom **13**
C.B.R. Value %	Sample Top	**8.15**		
Percentage retained on 20mm BS test sieve:	**20**	Remarks:		

Checked By:
Emma Sharp (Office Manager)

Approved By:
Paul Evans (Quality Manager

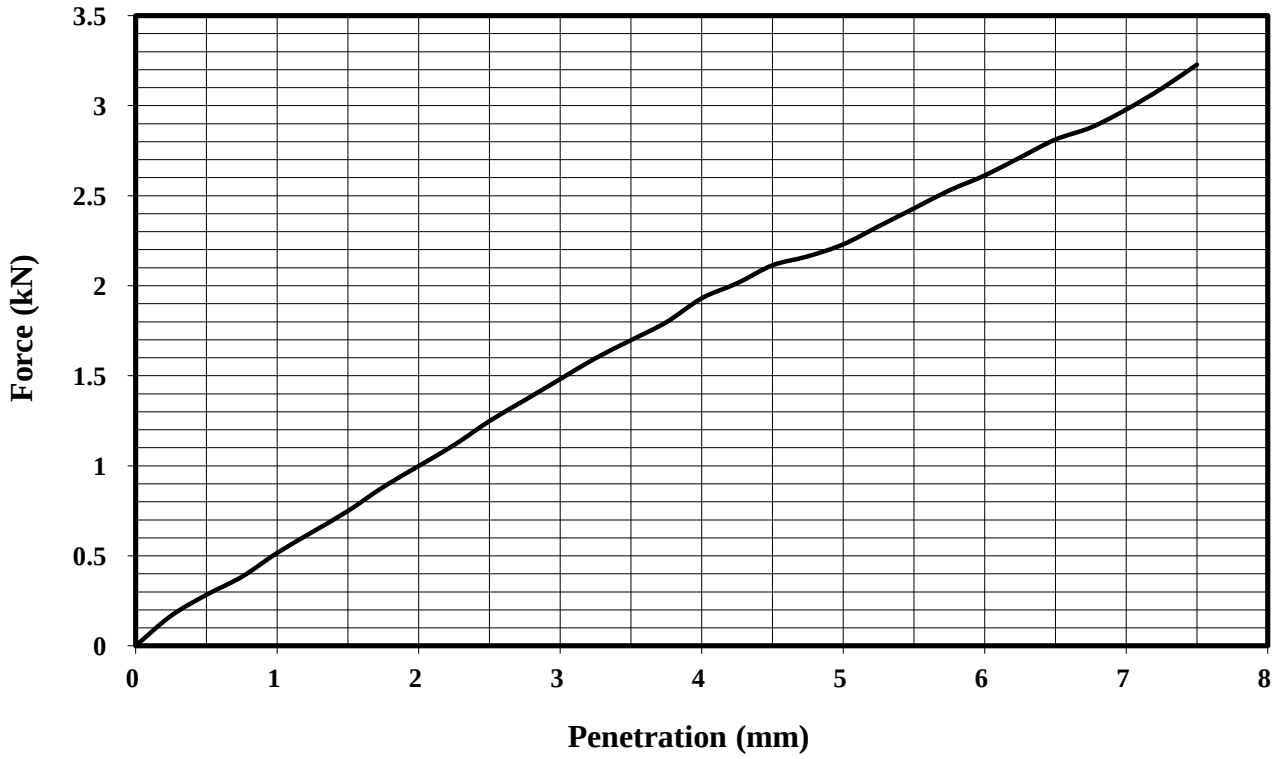
GSTL
GEO Site & Testing Services Limited

Date Approved: 16.5.16

UKAS TESTING
2788

Test Report: **Determination of the California Bearing Ratio**
BS 1377: Part 4: 1990 Clause 7

Client ref:	**G791**
Location:	**A465 Section 5&6**
Contract Number:	**30755-**
Sample Type:	**B**
Hole Number:	**TP125 (+2% OMC)**
Sample Number:	**9**
Depth (m):	**0.50 - N/A**
Description:	**Greyish brown gravelly silty CLAY.**



Initial Sample Conditions		Test Conditions		**Method of Compaction:**
				2.5kg Rammer
Moisture Content:	**17**	Surcharge Kg:	**2.0**	Final Moisture Content %
Bulk Density Mg/m3:	**1.29**	Soaking Time (hrs):		Sample Top **17**
Dry Density Mg/m3:	**1.10**	Swelling mm:		Sample Bottom **17**
C.B.R. Value %	Sample Top	**11.15**		
Percentage retained on 20mm BS test sieve:		**11**	Remarks:	

Checked By:
Emma Sharp (Office Manager)

Approved By:
Paul Evans (Quality Manager

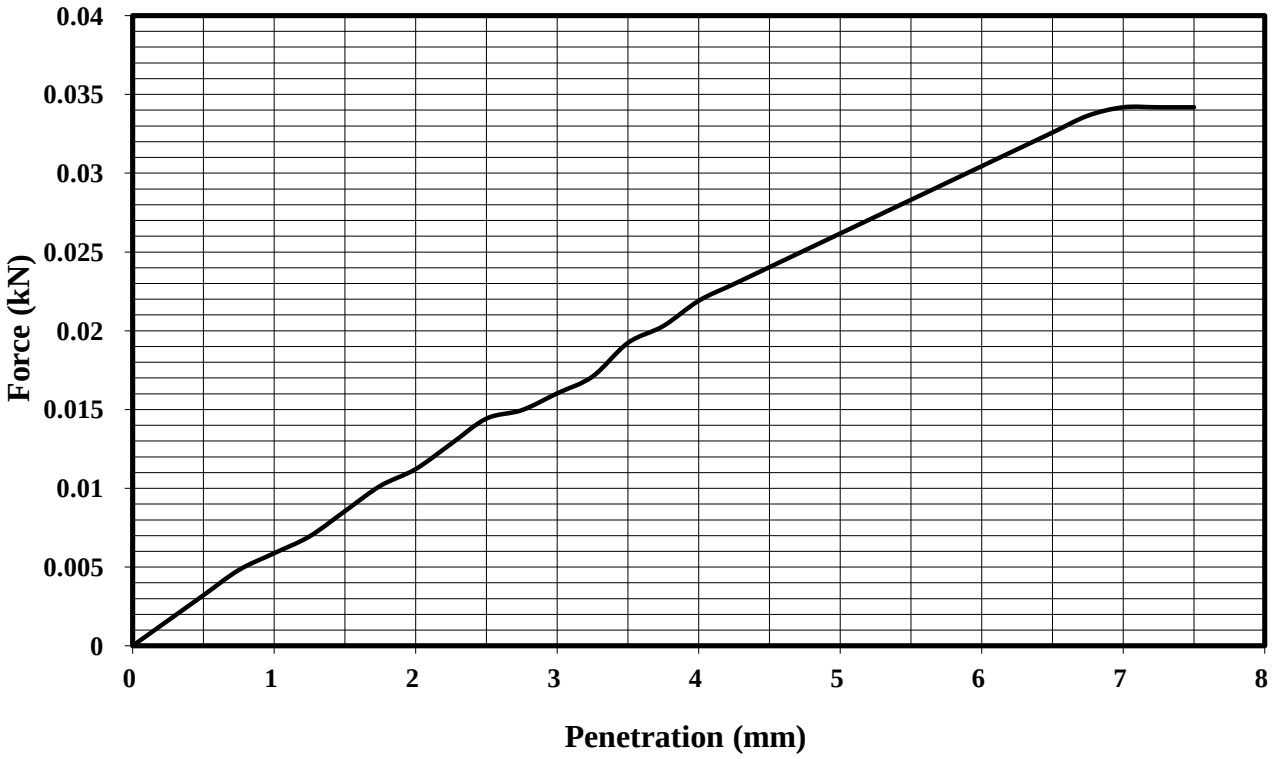
GSTL
GEO Site & Testing Services Limited

Date Approved: 16.5.16

UKAS TESTING
2788

Test Report: **Determination of the California Bearing Ratio**
BS 1377: Part 4: 1990 Clause 7

Client ref:	**G791**
Location:	**A465 Section 5&6**
Contract Number:	**30755-**
Sample Type:	**B**
Hole Number:	**TP157 (Remoulded at NMC)**
Sample Number:	**9**
Depth (m):	**2.00 - N/A**
Description:	**Greyish brown gravelly silty CLAY.**



Initial Sample Conditions		Test Conditions		**Method of Compaction:**
				2.5kg Rammer
Moisture Content:	**26**	Surcharge Kg:	**2.0**	Final Moisture Content %
Bulk Density Mg/m3:	**1.93**	Soaking Time (hrs):		Sample Top **26**
Dry Density Mg/m3:	**1.53**	Swelling mm:		Sample Bottom **26**
C.B.R. Value %	Sample Top	**0.13**		
Percentage retained on 20mm BS test sieve:	**15**	Remarks:		

Checked By:
Emma Sharp (Office Manager)

Approved By:
Paul Evans (Quality Manager

GSTL
GEO Site & Testing Services Limited

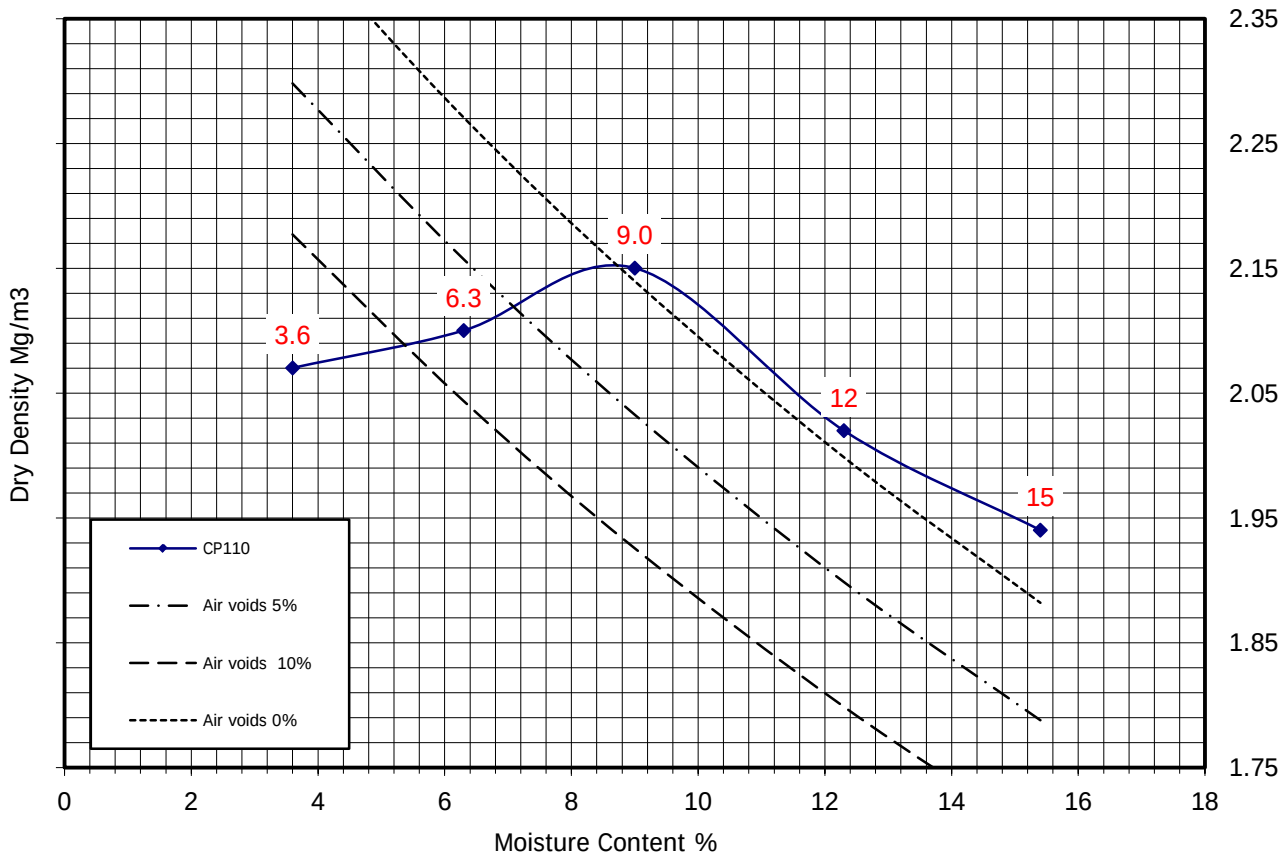
Date Approved: 16.5.16

UKAS TESTING
2788

Dry Density / Moisture Content Relationship

BS 1377:Part 4:1990

Client ref:	**G791**		
Location:	**A465 Section 5&6**		
Contract Number:	**30755-**		
Hole Number:	**CP110**		
Sample Number:	**N/A**		
Depth (m):	**4.00**	**-**	**4.50**
Sample Type:	**B**		



Compaction Point:	**1**	**2**	**3**	**4**	**5**
Moisture Content:	3.6	6.3	9.0	12.3	15.4
Bulk Density (Mg/m^3):	2.14	2.23	2.34	2.27	2.24
Dry Density (Mg/m^3):	2.07	2.10	2.15	2.02	1.94

Initial Moisture Content:	**12**	Method of Compaction:	**2.5kg Rammer**
Particle Density (Mg/m^3):	**2.65 Assumed**	Material Retained on 37.5 mm Test Sieve (%):	**3**
Maximum Dry Density (mg/m^3):	**2.15**	Material Retained on 20.0 mm Test Sieve (%):	**8.9**
Optimum Moisture Content (%):	**9.0**	Sample Preparation Clause:	**3.2.4.1**

Remarks:

GSTL
GEO Site & Testing Services Limited

Checked By:
Emma Sharp

Approved By:
Paul Evans

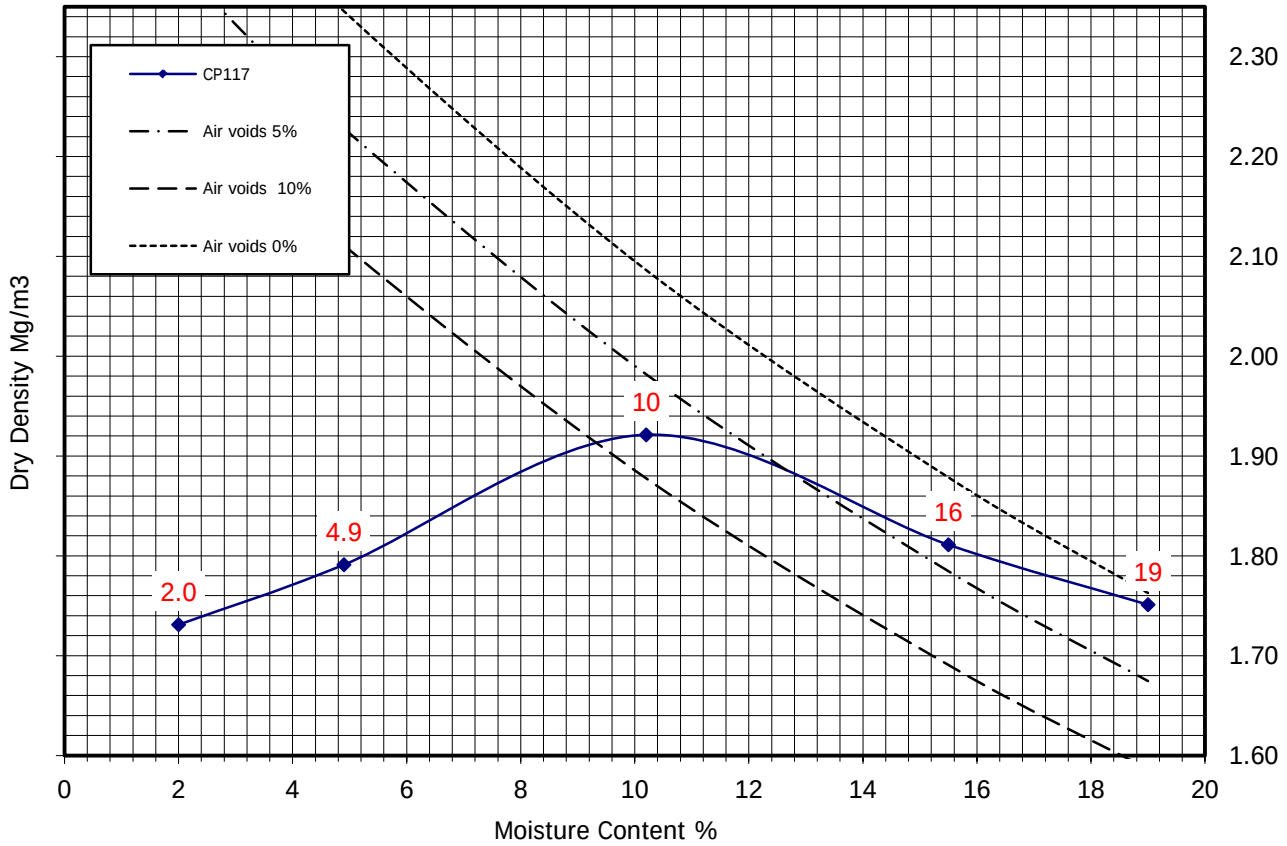
Date Approved: 16.5.16

UKAS TESTING
2788

Dry Density / Moisture Content Relationship

BS 1377:Part 4:1990

Client ref:	**G791**		
Location:	**A465 Section 5&6**		
Contract Number:	**30755-**		
Hole Number:	**CP117**		
Sample Number:	**8**		
Depth (m):	**1.70**	**-**	**2.00**
Sample Type:	**B**		



Compaction Point:	**1**	**2**	**3**	**4**	**5**
Moisture Content:	2.0	4.9	10	15.5	19.0
Bulk Density (Mg/m^3):	1.77	1.88	2.12	2.09	2.08
Dry Density (Mg/m^3):	1.73	1.79	1.92	1.81	1.75

Initial Moisture Content:	**19**	Method of Compaction:	**2.5kg Rammer**
Particle Density (Mg/m^3):	**2.65 Assumed**	Material Retained on 37.5 mm Test Sieve (%):	**0**
Maximum Dry Density (mg/m^3):	**1.92**	Material Retained on 20.0 mm Test Sieve (%):	**11.5**
Optimum Moisture Content (%):	**10**	Sample Preparation Clause:	**3.2.4.1**

Remarks:

GSTL
GEO Site & Testing Services Limited

Checked By:
Emma Sharp

Approved By:
Paul Evans

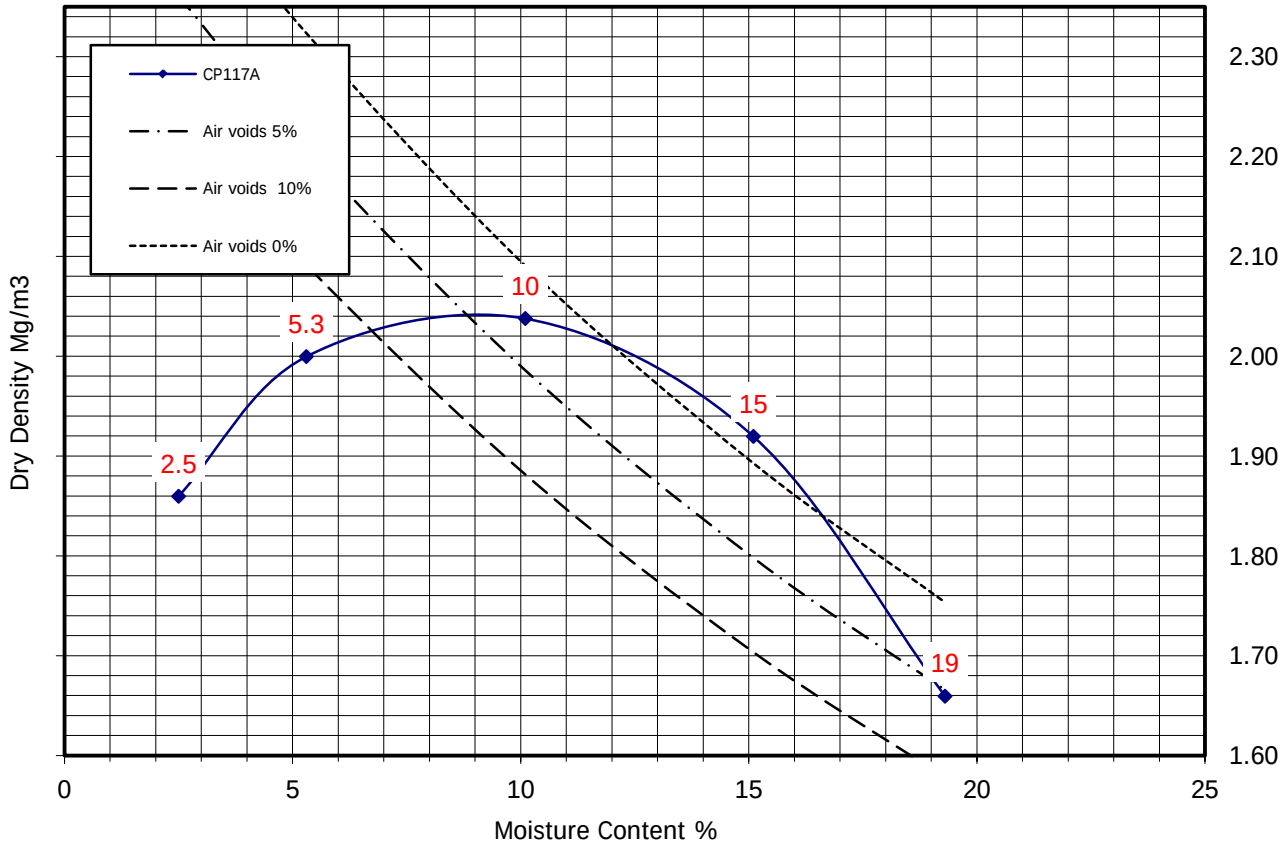
Date Approved: **16.5.16**

UKAS TESTING
2788

Dry Density / Moisture Content Relationship

BS 1377:Part 4:1990

Client ref:	**G791**
Location:	**A465 Section 5&6**
Contract Number:	**30755-**
Hole Number:	**CP117A**
Sample Number:	**3**
Depth (m):	**3.50 - 4**
Sample Type:	**B**



Compaction Point:	1	2	3	4	5
Moisture Content:	2.5	5.3	10	15.1	19.3
Bulk Density (Mg/m^3):	1.91	2.11	2.24	2.21	1.98
Dry Density (Mg/m^3):	1.86	2.00	2.04	1.92	1.66

Initial Moisture Content:	**19**	Method of Compaction:	**2.5kg Rammer**
Particle Density (Mg/m^3):	**2.65 Assumed**	Material Retained on 37.5 mm Test Sieve (%):	**4.8**
Maximum Dry Density (mg/m^3):	**2.04**	Material Retained on 20.0 mm Test Sieve (%):	**13.8**
Optimum Moisture Content (%):	**10**	Sample Preparation Clause:	**3.2.4.1**

Remarks:

GSTL
GEO Site & Testing Services Limited

Checked By:
Emma Sharp

Approved By:
Paul Evans

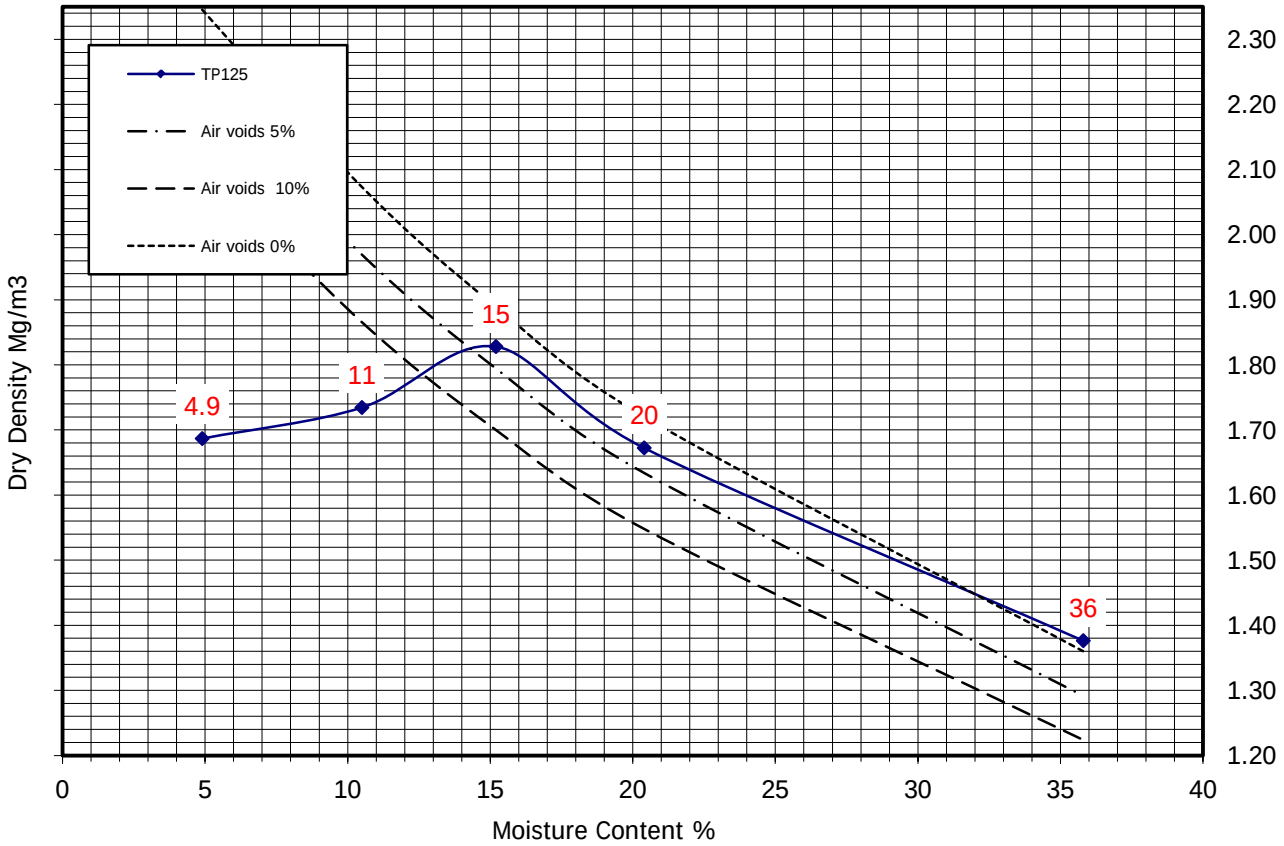
Date Approved: 16.5.16

UKAS TESTING
2788

Dry Density / Moisture Content Relationship

BS 1377:Part 4:1990

Client ref:	**G791**		
Location:	**A465 Section 5&6**		
Contract Number:	**30755-**		
Hole Number:	**TP125**		
Sample Number:	**6**		
Depth (m):	**0.50**	**-**	**N/A**
Sample Type:	**B**		



Compaction Point:	1	2	3	4	5
Moisture Content:	4.9	11	15	20.4	35.8
Bulk Density (Mg/m^3):	1.77	1.92	2.11	2.01	1.87
Dry Density (Mg/m^3):	1.69	1.73	1.83	1.67	1.38

Initial Moisture Content:	**36**	Method of Compaction:	**2.5kg Rammer**
Particle Density (Mg/m^3):	**2.65 Assumed**	Material Retained on 37.5 mm Test Sieve (%):	**0**
Maximum Dry Density (mg/m^3):	**1.83**	Material Retained on 20.0 mm Test Sieve (%):	**1.2**
Optimum Moisture Content (%):	**15**	Sample Preparation Clause:	**3.2.4.1**

Remarks:

GSTL
GEO Site & Testing Services Limited

Checked By:
Emma Sharp

Approved By:
Paul Evans

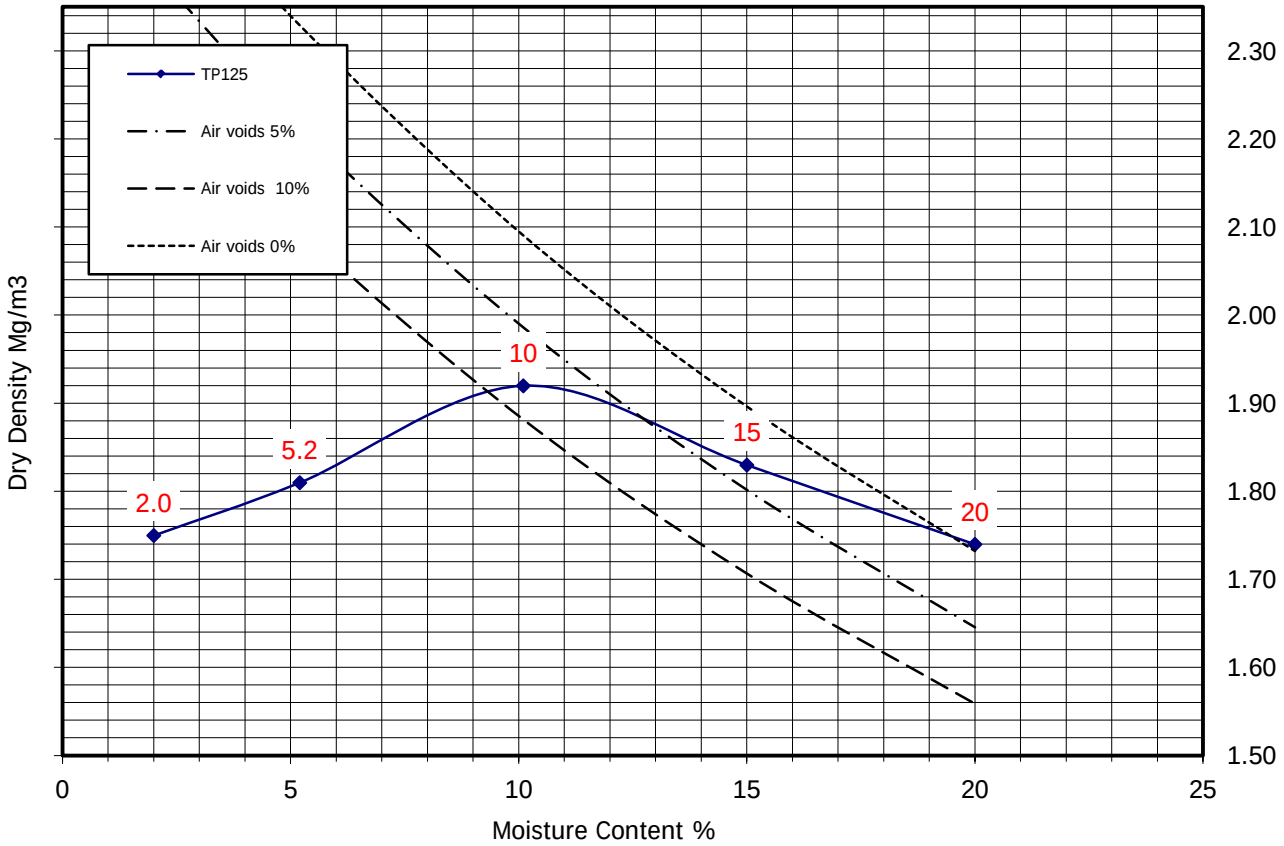
Date Approved: 16.5.16

UKAS TESTING
2788

Dry Density / Moisture Content Relationship

BS 1377:Part 4:1990

Client ref:	**G791**		
Location:	**A465 Section 5&6**		
Contract Number:	**30755-**		
Hole Number:	**TP125**		
Sample Number:	**12**		
Depth (m):	**1.90**	**-**	**N/A**
Sample Type:	**B**		



Compaction Point:	1	2	3	4	5
Moisture Content:	2.0	5.2	10	15.0	20.0
Bulk Density (Mg/m^3):	1.78	1.90	2.11	2.10	2.09
Dry Density (Mg/m^3):	1.75	1.81	1.92	1.83	1.74

Initial Moisture Content:	**20**	Method of Compaction:	**2.5kg Rammer**
Particle Density (Mg/m^3):	**2.65 Assumed**	Material Retained on 37.5 mm Test Sieve (%):	**0**
Maximum Dry Density (mg/m^3):	**1.92**	Material Retained on 20.0 mm Test Sieve (%):	**12.3**
Optimum Moisture Content (%):	**10**	Sample Preparation Clause:	**3.2.4.1**

Remarks:

GSTL
GEO Site & Testing Services Limited

Checked By:
Emma Sharp

Approved By:
Paul Evans

Date Approved: 16.5.16

UKAS TESTING
2788

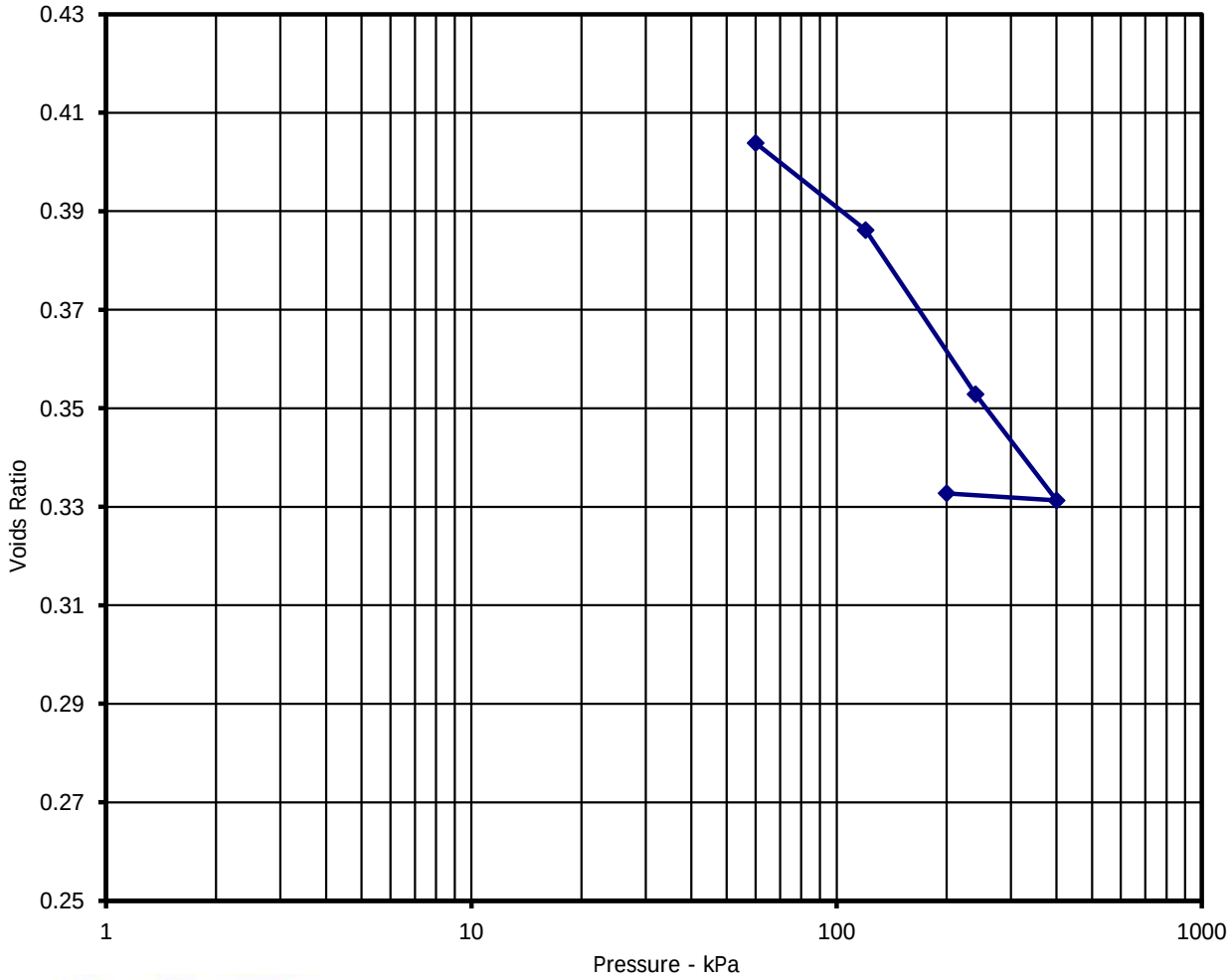
Test Report: ONE DIMENSIONAL CONSOLIDATION

BS1377: Part 5: 1990

Client ref: **G791**

Location: **A465 Section 5&6**
Contract Number: **30755-**
Hole/Sample Number: **CP17A/1**
Depth (m) : **3.00 - 3.45**
Sample Type: **U**
Description : **Brown gravelly silty CLAY.**

Initial Conditions		Pressure Range			Mv	Cv	Method of time fitting used
Moisture Content (%):	18	kPa			m2/MN	m2/yr	Cv Calculated using t90
Bulk Density (Mg/m3):	2.14	0	-	60	0.66	2.3	Nominal Laboratory Temperature
Dry Density (Mg/m3):	1.81	60	-	120	0.21	3.9	
Voids Ratio:	0.4616	120	-	240	0.2	6.1	Location of specimen with sample
Degree of saturation:	103.4	240	-	400	0.1	4.50	top
Height (mm):	19.92	400	-	200	0.0055	9.8	Remarks:
Diameter (mm)	75.08						
Particle Density (Mg/m3	2.65						
Assumed							



GSTL
GEO SITE & TESTING SERVICES LTD

Checked by
Emma Williams (Office Manager)

Approved by
Paul Evans (Quailty Manager)

Date approved: 17-05-16

UKAS TESTING
2788

APPENDIX VII – GEO-ENVIRONMENTAL LABORATORY TEST RESULTS

Gareth Morris
Quantum Laboratories
Quantum Geotechnical
Ty Berwig
Bynea
Llanelli
Carmarthenshire
SA14 9ST

t: 01554 744880

e: GarethMorris@quantum-geotech.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Combined Report : Sections 5 & 6 of the A465

Replaces Combined Report : Sections 5 & 6 of the A465 issue 1

Project / Site name:	A465 - Section 5&6	**Samples received on:**	04/03/2016
Your job number:	G791	**Samples instructed on:**	07/03/2016
Your order number:		**Analysis completed by:**	15/03/2016
Report Issue Number:	2	**Report issued on:**	18/05/2016
Samples Analysed:	72 leachate samples - 73 soil samples & 3 water samples		

Signed:

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				545000	545001	545046	545047	548316	548317	548318	548319
Sample Reference				TP125	TP125	TP122	TP122	TP157	TP157	TP157	TP159
Sample Number				0.50	2.50	1	3	3	5	7	1
Depth (m)				None Supplied	None Supplied	0.10	1.00	0.50	1.00	1.40	0.10
Date Sampled				01/03/2016	01/03/2016	02/03/2016	02/03/2016	04/03/2016	04/03/2016	04/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	27	8.8	40	14	3.3	22	71	7.3
Total mass of sample received	kg	0.001	NONE	1.6	1.5	1.2	1.7	1.5	1.6	1.0	1.6
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-	-	-	-
General Inorganics											
pH	pH Units	N/A	MCERTS	5.0	6.8	5.3	7.4	7.7	4.7	4.7	6.8
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	-	-	-	-	90	-	-	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.018	0.0068	0.063	0.027	0.014	0.058	0.017	0.015
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0	1.6	1.0	< 1.0	12	< 1.0	< 1.0
Elemental Sulphur	mg/kg	5	MCERTS	< 5.0	< 5.0	9.1	5.1	< 5.0	200	19	< 5.0
Total Sulphur	mg/kg	50	NONE	130	< 50	520	140	79	610	1600	120
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	2.7	28	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.7	0.3	3.9	0.3	0.2	1.9	8.6	0.4
Loss on Ignition @ 450°C	%	0.2	MCERTS	-	-	-	-	-	-	-	-
Calorific Value (Subcontracted)	MJ/Kg	0.01	NONE	-	-	-	-	-	-	-	-
Total Phenols											
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs											
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	11	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	7.6	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	3.5	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.92	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	4.0	< 0.05
Total PAH											
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60	26.6	< 1.60
Heavy Metals / Metalloids											
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.7	2.2	1.1	1.8	< 1.0	2.2	2.2	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.0	7.9	32	11	2.9	11	19	11
Boron (water soluble)	mg/kg	0.2	MCERTS	0.8	0.5	0.6	0.4	< 0.2	0.8	0.7	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.4	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	15	23	10	16	26	12	3.2	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	11	34	23	23	70	22	9.0	51
Iron (aqua regia extractable)	mg/kg	40	MCERTS	53000	50000	12000	36000	35000	25000	41000	33000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	16	12	74	19	17	17	13	30
Manganese (aqua regia extractable)	mg/kg	1	MCERTS	61	1200	210	640	460	230	120	690
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	45	8.5	28	46	25	13	41
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.2	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	22	24	18	19	23	20	8.8	20
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	23	93	53	46	110	62	6.6	100
Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0	9.0	7.9	9.1	5.8	< 5.0	9.0

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				545000	545001	545046	545047	548316	548317	548318	548319
Sample Reference				TP125	TP125	TP122	TP122	TP157	TP157	TP157	TP159
Sample Number				0.50	2.50	1	3	3	5	7	1
Depth (m)				None Supplied	None Supplied	0.10	1.00	0.50	1.00	1.40	0.10
Date Sampled				01/03/2016	01/03/2016	02/03/2016	02/03/2016	04/03/2016	04/03/2016	04/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Monoaromatics											
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons											
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.1	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	3.5	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	29	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10	36	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10	51	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10	56	< 10

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				545000	545001	545046	545047	548316	548317	548318	548319
Sample Reference				TP125	TP125	TP122	TP122	TP157	TP157	TP157	TP159
Sample Number				0.50	2.50	1	3	3	5	7	1
Depth (m)				None Supplied	None Supplied	0.10	1.00	0.50	1.00	1.40	0.10
Date Sampled				01/03/2016	01/03/2016	02/03/2016	02/03/2016	04/03/2016	04/03/2016	04/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs											
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Chloroethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
1,1-Dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Bromodichloromethane	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Tribromomethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Isopropylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
tert-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
sec-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				545000	545001	545046	545047	548316	548317	548318	548319
Sample Reference				TP125	TP125	TP122	TP122	TP157	TP157	TP157	TP159
Sample Number				0.50	2.50	1	3	3	5	7	1
Depth (m)				None Supplied	None Supplied	0.10	1.00	0.50	1.00	1.40	0.10
Date Sampled				01/03/2016	01/03/2016	02/03/2016	02/03/2016	04/03/2016	04/03/2016	04/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs TICs											
VOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
VOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				545000	545001	545046	545047	548316	548317	548318	548319
Sample Reference				TP125	TP125	TP122	TP122	TP157	TP157	TP157	TP159
Sample Number				0.50	2.50	1	3	3	5	7	1
Depth (m)				None Supplied	None Supplied	0.10	1.00	0.50	1.00	1.40	0.10
Date Sampled				01/03/2016	01/03/2016	02/03/2016	02/03/2016	04/03/2016	04/03/2016	04/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs											
Aniline	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				545000	545001	545046	545047	548316	548317	548318	548319
Sample Reference				TP125	TP125	TP122	TP122	TP157	TP157	TP157	TP159
Sample Number				0.50	2.50	1	3	3	5	7	1
Depth (m)				None Supplied	None Supplied	0.10	1.00	0.50	1.00	1.40	0.10
Date Sampled				01/03/2016	01/03/2016	02/03/2016	02/03/2016	04/03/2016	04/03/2016	04/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs TICs											
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548320	548321	548322	548323	548324	548325	548326	548327
Sample Reference				TP159	TP159	TP102	TP102	TP103	TP103	TP101	TP104
Sample Number				5	10	1	3	3	5	2	7
Depth (m)				1.00	3.00	0.10	0.50	1.00	2.00	0.50	1.50
Date Sampled				04/03/2016	04/03/2016	07/03/2016	07/03/2016	07/03/2016	07/03/2016	08/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	3.7	3.6	24	9.8	8.5	6.3	7.9	7.2
Total mass of sample received	kg	0.001	NONE	1.6	1.8	1.1	1.4	1.7	1.6	1.8	1.6
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-	-	-	-
General Inorganics											
pH	pH Units	N/A	MCERTS	7.5	7.6	6.9	5.9	6.7	7.0	7.8	7.8
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	130	170	-	850	600	440	510	310
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.015	0.018	0.19	0.057	0.055	0.057	0.071	0.051
Sulphide	mg/kg	1	MCERTS	3.4	2.2	7.5	1.0	3.7	6.8	12	6.4
Elemental Sulphur	mg/kg	5	MCERTS	< 5.0	< 5.0	26	18	10	7.9	5.0	< 5.0
Total Sulphur	mg/kg	50	NONE	490	270	2000	2400	1900	3300	1600	2400
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.3	0.2	4.7	1.5	1.2	1.1	1.2	1.1
Loss on Ignition @ 450°C	%	0.2	MCERTS	-	-	-	-	-	8.7	-	-
Calorific Value (Subcontracted)	MJ/Kg	0.01	NONE	-	-	-	-	-	7.69	-	-
Total Phenols											
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs											
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.49	0.45	0.54	0.43	0.38	0.47
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.90	0.72	0.74	0.59	0.62	0.65
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.13	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.86	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.70	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.44	0.33	0.26	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.75	0.10	0.18	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.56	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.62	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.49	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.32	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.42	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH											
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	6.68	1.60	1.72	< 1.60	< 1.60	< 1.60
Heavy Metals / Metalloids											
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	1.6	3.4	2.7	2.4	2.4	2.9	2.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5.0	6.1	22	31	30	46	24	17
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	1.2	1.9	0.3	0.7	0.8	< 0.2	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.3	< 0.2	0.3	0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	25	9.9	4.3	3.9	5.4	4.0	5.6
Copper (aqua regia extractable)	mg/kg	1	MCERTS	48	46	57	75	82	66	70	86
Iron (aqua regia extractable)	mg/kg	40	MCERTS	34000	32000	18000	20000	18000	23000	16000	20000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	16	15	83	45	54	42	33	40
Manganese (aqua regia extractable)	mg/kg	1	MCERTS	490	400	670	390	570	770	400	620
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	48	47	36	48	56	66	59	51
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	1.7	2.9	2.1	2.8	1.7	2.6
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	21	21	20	11	10	13	9.7	25
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100	110	170	64	87	81	86	61
Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	13	69	11	12	20	38	32

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				548320	548321	548322	548323	548324	548325	548326	548327
Sample Reference				TP159	TP159	TP102	TP102	TP103	TP103	TP101	TP104
Sample Number				5	10	1	3	3	5	2	7
Depth (m)				1.00	3.00	0.10	0.50	1.00	2.00	0.50	1.50
Date Sampled				04/03/2016	04/03/2016	07/03/2016	07/03/2016	07/03/2016	07/03/2016	08/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Monoaromatics											
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	22	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	24	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	11	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	14	< 10	< 10	< 10	< 10	< 10

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				548320	548321	548322	548323	548324	548325	548326	548327
Sample Reference				TP159	TP159	TP102	TP102	TP103	TP103	TP101	TP104
Sample Number				5	10	1	3	3	5	2	7
Depth (m)				1.00	3.00	0.10	0.50	1.00	2.00	0.50	1.50
Date Sampled				04/03/2016	04/03/2016	07/03/2016	07/03/2016	07/03/2016	07/03/2016	08/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs											
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Chloroethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
1,1-Dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Bromodichloromethane	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Tribromomethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Isopropylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
tert-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
sec-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				548320	548321	548322	548323	548324	548325	548326	548327
Sample Reference				TP159	TP159	TP102	TP102	TP103	TP103	TP101	TP104
Sample Number				5	10	1	3	3	5	2	7
Depth (m)				1.00	3.00	0.10	0.50	1.00	2.00	0.50	1.50
Date Sampled				04/03/2016	04/03/2016	07/03/2016	07/03/2016	07/03/2016	07/03/2016	08/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs TICs											
VOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
VOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548320	548321	548322	548323	548324	548325	548326	548327
Sample Reference				TP159	TP159	TP102	TP102	TP103	TP103	TP101	TP104
Sample Number				5	10	1	3	3	5	2	7
Depth (m)				1.00	3.00	0.10	0.50	1.00	2.00	0.50	1.50
Date Sampled				04/03/2016	04/03/2016	07/03/2016	07/03/2016	07/03/2016	07/03/2016	08/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs											
Aniline	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548320	548321	548322	548323	548324	548325	548326	548327
Sample Reference				TP159	TP159	TP102	TP102	TP103	TP103	TP101	TP104
Sample Number				5	10	1	3	3	5	2	7
Depth (m)				1.00	3.00	0.10	0.50	1.00	2.00	0.50	1.50
Date Sampled				04/03/2016	04/03/2016	07/03/2016	07/03/2016	07/03/2016	07/03/2016	08/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs TICs											
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548328	548329	548330	548331	549415	549416	549417	549418
Sample Reference				TP105	TP105	TP106	TP106	TP107	TP107	TP108	TP108
Sample Number				2	5	1	11	2	6	1	5
Depth (m)				0.50	2.90	0.10	3.00	0.50	2.20	0.10	3.00
Date Sampled				08/03/2016	08/03/2016	08/03/2016	08/03/2016	09/03/2016	09/03/2016	09/03/2016	09/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	6.3	6.5	14	5.8	9.1	7.6	32	6.5
Total mass of sample received	kg	0.001	NONE	1.7	1.8	1.5	2.0	1.7	1.9	0.49	1.8
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-	-	-	-
General Inorganics											
pH	pH Units	N/A	MCERTS	7.4	7.9	7.9	8.0	6.8	7.2	5.9	8.5
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	250	400	270	580	-	-	-	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.040	0.12	0.043	0.10	0.017	0.029	0.0089	0.12
Sulphide	mg/kg	1	MCERTS	6.0	12	3.0	6.7	< 1.0	3.5	< 1.0	29
Elemental Sulphur	mg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	7.5	7.5	6.8	< 5.0	12
Total Sulphur	mg/kg	50	NONE	2100	4000	1600	2300	560	720	370	3000
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	< 0.5	1.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.7
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.1	1.1	1.0	1.1	1.1	0.9	3.0	0.8
Loss on Ignition @ 450°C	%	0.2	MCERTS	9.0	-	-	-	-	-	-	-
Calorific Value (Subcontracted)	MJ/Kg	0.01	NONE	7.01	-	-	-	-	-	-	-
Total Phenols											
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs											
Naphthalene	mg/kg	0.05	MCERTS	0.40	0.48	0.43	0.43	0.32	0.75	< 0.05	0.55
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	0.57	0.63	0.60	0.56	0.38	0.70	< 0.10	0.65
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH											
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60
Heavy Metals / Metalloids											
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	3.5	1.4	1.7	1.7	2.1	1.5	2.5	2.8
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	17	16	19	14	8.3	32	22
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	< 0.2	< 0.2	0.9	0.4	0.2	0.3	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.3	0.2	< 0.2	< 0.2	< 0.2	0.5	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	5.7	3.8	3.6	4.8	5.2	10	15	4.6
Copper (aqua regia extractable)	mg/kg	1	MCERTS	56	59	66	64	57	47	31	59
Iron (aqua regia extractable)	mg/kg	40	MCERTS	56000	23000	13000	17000	13000	9800	20000	15000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	20	23	30	26	28	18	57	25
Manganese (aqua regia extractable)	mg/kg	1	MCERTS	1600	480	400	590	480	340	850	360
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	58	52	53	53	41	41	17	45
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	1.9	2.8	< 1.0	2.8
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	20	11	9.4	11	11	11	22	11
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	67	89	94	82	82	72	90	90
Magnesium (water soluble)	mg/kg	5	NONE	17	36	24	39	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548328	548329	548330	548331	549415	549416	549417	549418
Sample Reference				TP105	TP105	TP106	TP106	TP107	TP107	TP108	TP108
Sample Number				2	5	1	11	2	6	1	5
Depth (m)				0.50	2.90	0.10	3.00	0.50	2.20	0.10	3.00
Date Sampled				08/03/2016	08/03/2016	08/03/2016	08/03/2016	09/03/2016	09/03/2016	09/03/2016	09/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Monoaromatics											
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				548328	548329	548330	548331	549415	549416	549417	549418
Sample Reference				TP105	TP105	TP106	TP106	TP107	TP107	TP108	TP108
Sample Number				2	5	1	11	2	6	1	5
Depth (m)				0.50	2.90	0.10	3.00	0.50	2.20	0.10	3.00
Date Sampled				08/03/2016	08/03/2016	08/03/2016	08/03/2016	09/03/2016	09/03/2016	09/03/2016	09/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs											
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Chloroethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
1,1-Dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Bromodichloromethane	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Tribromomethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Isopropylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
tert-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
sec-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548328	548329	548330	548331	549415	549416	549417	549418
Sample Reference				TP105	TP105	TP106	TP106	TP107	TP107	TP108	TP108
Sample Number				2	5	1	11	2	6	1	5
Depth (m)				0.50	2.90	0.10	3.00	0.50	2.20	0.10	3.00
Date Sampled				08/03/2016	08/03/2016	08/03/2016	08/03/2016	09/03/2016	09/03/2016	09/03/2016	09/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs TICs											
VOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
VOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548328	548329	548330	548331	549415	549416	549417	549418
Sample Reference				TP105	TP105	TP106	TP106	TP107	TP107	TP108	TP108
Sample Number				2	5	1	11	2	6	1	5
Depth (m)				0.50	2.90	0.10	3.00	0.50	2.20	0.10	3.00
Date Sampled				08/03/2016	08/03/2016	08/03/2016	08/03/2016	09/03/2016	09/03/2016	09/03/2016	09/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs											
Aniline	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548328	548329	548330	548331	549415	549416	549417	549418
Sample Reference				TP105	TP105	TP106	TP106	TP107	TP107	TP108	TP108
Sample Number				2	5	1	11	2	6	1	5
Depth (m)				0.50	2.90	0.10	3.00	0.50	2.20	0.10	3.00
Date Sampled				08/03/2016	08/03/2016	08/03/2016	08/03/2016	09/03/2016	09/03/2016	09/03/2016	09/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs TICs											
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549419	549420	549421	549422	549423	549424	549425	549426
Sample Reference				TP116 (WS)	TP116 (WS)	TP116 (WS)	TP116 (WS)	TP115 (WS)	TP115 (WS)	TP115 (WS)	TP165 (WS)
Sample Number				1	5	9	11	1	4	8	1
Depth (m)				0.10	2.00	4.00	5.00	0.20	0.80	2.70	0.10
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	4.3	6.1	4.9	74	18	40	13	22
Total mass of sample received	kg	0.001	NONE	2.0	1.8	1.1	0.98	1.5	2.0	2.0	1.4
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-	-	-	-
General Inorganics											
pH	pH Units	N/A	MCERTS	6.6	6.2	7.6	5.5	8.5	7.0	7.5	5.5
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	-	240	-	-	-	-	-	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.011	0.017	0.061	0.065	0.051	0.22	0.0093	0.0083
Sulphide	mg/kg	1	MCERTS	1.2	< 1.0	< 1.0	3.8	42	130	1.1	1.0
Elemental Sulphur	mg/kg	5	MCERTS	47	56	38	11	22	180	< 5.0	7.8
Total Sulphur	mg/kg	50	NONE	170	210	820	3200	840	2000	150	170
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	11	< 0.5	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.2	0.1	0.3	6.7	2.3	8.0	0.2	1.3
Loss on Ignition @ 450°C	%	0.2	MCERTS	-	4.0	-	-	-	-	-	-
Calorific Value (Subcontracted)	MJ/Kg	0.01	NONE	-	< 0.120	-	-	-	-	-	-
Total Phenols											
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs											
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.14	< 0.05	0.16	1.1	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.26	7.3	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.44	4.7	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.58	6.3	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.28	< 0.10	4.7	37	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	1.3	12	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.47	< 0.10	12	120	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.30	< 0.10	8.9	85	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.31	< 0.10	7.7	80	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.35	< 0.05	6.5	97	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.37	< 0.10	12	180	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.23	< 0.10	3.0	250	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.21	< 0.10	7.3	89	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	5.0	72	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	1.9	34	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	4.5	73	< 0.05	< 0.05
Total PAH											
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	2.66	< 1.60	75.8	1150	< 1.60	< 1.60
Heavy Metals / Metalloids											
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.4	2.6	3.3	< 1.0	1.3	2.6	2.3	1.3
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	3.5	8.3	13	7.8	20	12	8.8	3.8
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	< 0.2	0.4	1.0	0.5	1.3	< 0.2	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.2	0.5	2.6	0.4	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	24	23	2.4	8.3	24	18	15
Copper (aqua regia extractable)	mg/kg	1	MCERTS	58	55	61	22	52	79	27	8.2
Iron (aqua regia extractable)	mg/kg	40	MCERTS	31000	34000	33000	15000	12000	31000	31000	17000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	19	25	24	24	50	330	24	15
Manganese (aqua regia extractable)	mg/kg	1	MCERTS	260	250	370	710	460	1300	360	410
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	44	45	50	15	14	29	32	8.9
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	2.0	< 1.0	1.1	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	22	23	22	11	19	61	19	22
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	96	120	22	70	470	74	36
Magnesium (water soluble)	mg/kg	5	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549419	549420	549421	549422	549423	549424	549425	549426
Sample Reference				TP116 (WS)	TP116 (WS)	TP116 (WS)	TP116 (WS)	TP115 (WS)	TP115 (WS)	TP115 (WS)	TP165 (WS)
Sample Number				1	5	9	11	1	4	8	1
Depth (m)				0.10	2.00	4.00	5.00	0.20	0.80	2.70	0.10
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Monoaromatics											
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	5.1	< 2.0	10	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	20	< 8.0	100	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	220	42	1000	20	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	250	45	1100	22	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	4.1	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	4.2	6.6	100	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	45	74	900	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	360	230	2700	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	410	310	3700	< 10	< 10

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549419	549420	549421	549422	549423	549424	549425	549426
Sample Reference				TP116 (WS)	TP116 (WS)	TP116 (WS)	TP116 (WS)	TP115 (WS)	TP115 (WS)	TP115 (WS)	TP165 (WS)
Sample Number				1	5	9	11	1	4	8	1
Depth (m)				0.10	2.00	4.00	5.00	0.20	0.80	2.70	0.10
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs											
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
Chloroethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
1,1-Dichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	< 1.0	-	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	< 1.0	-	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	-	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
Bromodichloromethane	µg/kg	1	NONE	-	< 1.0	-	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	< 1.0	-	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
Tribromomethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
Isopropylbenzene	µg/kg	1	NONE	-	< 1.0	-	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	< 1.0	-	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	< 1.0	-	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
tert-Butylbenzene	µg/kg	1	NONE	-	< 1.0	-	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
sec-Butylbenzene	µg/kg	1	NONE	-	< 1.0	-	-	-	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
Butylbenzene	µg/kg	1	NONE	-	< 1.0	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	< 1.0	-	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	< 1.0	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				549419	549420	549421	549422	549423	549424	549425	549426
Sample Reference				TP116 (WS)	TP116 (WS)	TP116 (WS)	TP116 (WS)	TP115 (WS)	TP115 (WS)	TP115 (WS)	TP165 (WS)
Sample Number				1	5	9	11	1	4	8	1
Depth (m)				0.10	2.00	4.00	5.00	0.20	0.80	2.70	0.10
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs TICs											
VOCs TICs Compound Name		N/A	NONE	-	None Detected	-	-	-	-	-	-
VOC % Match	%	N/A	NONE	-	0	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549419	549420	549421	549422	549423	549424	549425	549426
Sample Reference				TP116 (WS)	TP116 (WS)	TP116 (WS)	TP116 (WS)	TP115 (WS)	TP115 (WS)	TP115 (WS)	TP165 (WS)
Sample Number				1	5	9	11	1	4	8	1
Depth (m)				0.10	2.00	4.00	5.00	0.20	0.80	2.70	0.10
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs											
Aniline	mg/kg	0.1	NONE	-	< 0.1	-	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2	-	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	< 0.05	-	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2	-	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	-	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1	-	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1	-	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	< 0.1	-	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	< 0.3	-	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	< 0.3	-	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	< 0.05	-	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	< 0.10	-	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549419	549420	549421	549422	549423	549424	549425	549426
Sample Reference				TP116 (WS)	TP116 (WS)	TP116 (WS)	TP116 (WS)	TP115 (WS)	TP115 (WS)	TP115 (WS)	TP165 (WS)
Sample Number				1	5	9	11	1	4	8	1
Depth (m)				0.10	2.00	4.00	5.00	0.20	0.80	2.70	0.10
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs TICs											
SVOCs TICs Compound Name		N/A	NONE	-	Benzenesulfonamide, N-butyl-☐	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	97	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	1H-Cycloprop[e]azulene, decahydro-1,1,7-trimethyl-4-methylene-, [1aR-(1a.alpha.,4a.beta.,7.alpha.,7a.beta.,7b.alpha.)]-☐	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	95	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	10,18-Bisnorabieta-8,11,13-triene☐	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	94	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	Pentadecane☐	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	93	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	Diisooctyl adipate☐	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	92	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	Undecane☐	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	90	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549427	553585	553586	553587	553588	553589	553590	553591
Sample Reference				TP165 (WS)	TP162 (WS)	TP162 (WS)	TP137 (WS)	TP137 (WS)	OP111	OP111	OP112
Sample Number				2	1	6	2	3	2	3	1
Depth (m)				1.20	0.10	2.00	0.50	1.00	0.50	0.75	0.10
Date Sampled				11/03/2016	11/03/2016	11/03/2016	14/03/2016	14/03/2016	15/03/2016	15/03/2016	15/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	12	52	9.1	5.9	6.6	21	27	50
Total mass of sample received	kg	0.001	NONE	2.0	1.1	1.9	1.8	1.7	1.6	1.6	1.2
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-	-	-	-
General Inorganics											
pH	pH Units	N/A	MCERTS	5.5	4.7	5.7	10.7	11.2	5.6	5.3	4.3
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	1	1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	7.3	< 5.0	< 5.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	-	-	-	-	7900	-	-	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0069	0.062	0.063	0.51	0.20	0.021	0.019	0.020
Sulphide	mg/kg	1	MCERTS	< 1.0	7.6	46	970	700	3.5	13	6.9
Elemental Sulphur	mg/kg	5	MCERTS	< 5.0	36	15	670	740	< 5.0	< 5.0	11
Total Sulphur	mg/kg	50	NONE	52	1200	160	4100	6000	270	490	870
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	< 0.5	0.9	< 0.5	< 0.5	< 0.5	0.8	0.7	7.3
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.3	0.8	0.8	0.8	0.8	1.9	4.4	9.3
Loss on Ignition @ 450°C	%	0.2	MCERTS	-	-	-	-	-	-	-	-
Calorific Value (Subcontracted)	MJ/Kg	0.01	NONE	-	-	-	-	-	-	-	-
Total Phenols											
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	2.2	< 1.0	< 1.0	< 1.0	1.2	1.7	5.4
Speciated PAHs											
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.19	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.29	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.26	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	0.45	< 0.10	2.0	0.79	0.45	0.34	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.49	0.14	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.62	< 0.10	3.7	1.4	0.83	0.62	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	0.49	< 0.10	2.7	1.0	0.66	0.51	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	0.47	< 0.10	2.1	0.86	0.47	0.40	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.61	< 0.05	2.6	1.1	0.58	0.44	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.64	< 0.10	3.4	1.3	0.69	0.65	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.35	< 0.10	1.3	0.57	0.44	0.26	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	0.40	< 0.10	2.4	0.76	0.51	0.45	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	0.25	< 0.10	1.4	0.48	0.33	0.24	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.31	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.30	< 0.05	1.5	0.57	0.36	0.30	< 0.05
Total PAH											
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	4.77	< 1.60	24.5	8.88	5.32	4.21	< 1.60
Heavy Metals / Metalloids											
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.1	3.4	2.3	3.1	4.5	1.4	1.2	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.2	64	6.9	6.5	4.5	8.2	15	18
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	0.3	0.6	2.5	2.9	0.6	0.9	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	1.0	< 0.2	< 0.2	< 0.2	< 0.2	0.4	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	15	15	11	330	310	13	20	5.9
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	110	24	20	20	22	34	42
Iron (aqua regia extractable)	mg/kg	40	MCERTS	39000	42000	43000	43000	77000	18000	20000	3400
Lead (aqua regia extractable)	mg/kg	1	MCERTS	11	190	12	19	5.5	36	52	67
Manganese (aqua regia extractable)	mg/kg	1	MCERTS	370	1400	450	12000	10000	510	510	12
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	20	26	6.8	11	11	18	3.3
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	2.5	< 1.0	5.5	6.2	< 1.0	< 1.0	1.4
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	22	27	20	770	340	20	32	7.5
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	59	160	64	27	18	43	63	12
Magnesium (water soluble)	mg/kg	5	NONE	-	12	5.1	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				549427	553585	553586	553587	553588	553589	553590	553591
Sample Reference				TP165 (WS)	TP162 (WS)	TP162 (WS)	TP137 (WS)	TP137 (WS)	OP111	OP111	OP112
Sample Number				2	1	6	2	3	2	3	1
Depth (m)				1.20	0.10	2.00	0.50	1.00	0.50	0.75	0.10
Date Sampled				11/03/2016	11/03/2016	11/03/2016	14/03/2016	14/03/2016	15/03/2016	15/03/2016	15/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Monoaromatics											
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons											
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	12	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	53	< 8.0	9.2	< 8.0	9.3	< 8.0	18
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	66	< 10	< 10	< 10	< 10	< 10	20
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	3.1	< 2.0	< 2.0	< 2.0	2.7
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	14	< 10	< 10	< 10	10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	26	< 10	55	13	< 10	< 10	72
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	29	< 10	72	18	< 10	< 10	85

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549427	553585	553586	553587	553588	553589	553590	553591
Sample Reference				TP165 (WS)	TP162 (WS)	TP162 (WS)	TP137 (WS)	TP137 (WS)	OP111	OP111	OP112
Sample Number				2	1	6	2	3	2	3	1
Depth (m)				1.20	0.10	2.00	0.50	1.00	0.50	0.75	0.10
Date Sampled				11/03/2016	11/03/2016	11/03/2016	14/03/2016	14/03/2016	15/03/2016	15/03/2016	15/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs											
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Chloroethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
1,1-Dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Bromodichloromethane	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Tribromomethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Isopropylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
tert-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
sec-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				549427	553585	553586	553587	553588	553589	553590	553591
Sample Reference				TP165 (WS)	TP162 (WS)	TP162 (WS)	TP137 (WS)	TP137 (WS)	OP111	OP111	OP112
Sample Number				2	1	6	2	3	2	3	1
Depth (m)				1.20	0.10	2.00	0.50	1.00	0.50	0.75	0.10
Date Sampled				11/03/2016	11/03/2016	11/03/2016	14/03/2016	14/03/2016	15/03/2016	15/03/2016	15/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs TICs											
VOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
VOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549427	553585	553586	553587	553588	553589	553590	553591
Sample Reference				TP165 (WS)	TP162 (WS)	TP162 (WS)	TP137 (WS)	TP137 (WS)	OP111	OP111	OP112
Sample Number				2	1	6	2	3	2	3	1
Depth (m)				1.20	0.10	2.00	0.50	1.00	0.50	0.75	0.10
Date Sampled				11/03/2016	11/03/2016	11/03/2016	14/03/2016	14/03/2016	15/03/2016	15/03/2016	15/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs											
Aniline	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549427	553585	553586	553587	553588	553589	553590	553591
Sample Reference				TP165 (WS)	TP162 (WS)	TP162 (WS)	TP137 (WS)	TP137 (WS)	OP111	OP111	OP112
Sample Number				2	1	6	2	3	2	3	1
Depth (m)				1.20	0.10	2.00	0.50	1.00	0.50	0.75	0.10
Date Sampled				11/03/2016	11/03/2016	11/03/2016	14/03/2016	14/03/2016	15/03/2016	15/03/2016	15/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs TICs											
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553592	553593	553594	553595	553596	553597	553598	553599
Sample Reference				OP112	OP113	OP113	TP114	TP114	TP140 (WS)	TP140 (WS)	WS138
Sample Number				7	2	3	1	2	1	4	2
Depth (m)				1.00	0.50	1.00	0.10	0.50	0.10	0.50	0.50
Date Sampled				15/03/2016	15/03/2016	15/03/2016	16/03/2016	16/03/2016	17/03/2016	17/03/2016	17/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	21	19	13	23	7.0	26	13	5.0
Total mass of sample received	kg	0.001	NONE	2.0	1.7	2.0	1.6	2.0	1.5	1.4	1.8
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-	-	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-	-	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-	-	-	< 0.001
General Inorganics											
pH	pH Units	N/A	MCERTS	4.5	4.8	4.8	7.3	7.6	8.1	9.5	11.6
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Thiocyanate as SCN	mg/kg	5	NONE	16	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	-	-	-	-	-	-	-	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.012	0.011	0.029	0.026	0.0093	0.035	0.069	0.55
Sulphide	mg/kg	1	MCERTS	3.0	6.7	9.4	240	3.4	5.8	37	1000
Elemental Sulphur	mg/kg	5	MCERTS	8.9	< 5.0	14	5.9	< 5.0	9.9	21	1000
Total Sulphur	mg/kg	50	NONE	180	210	250	2300	< 50	350	260	8200
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	< 0.5	0.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.6	0.9	0.6	3.5	0.5	2.1	1.0	0.3
Loss on Ignition @ 450°C	%	0.2	MCERTS	-	-	-	-	-	-	-	-
Calorific Value (Subcontracted)	MJ/Kg	0.01	NONE	-	-	-	-	-	-	-	-
Total Phenols											
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	2.3	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs											
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.24	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.19	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	1.0	< 0.10	1.3	0.58	0.78
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.16	< 0.10	0.20	0.13	0.20
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	2.1	< 0.10	2.0	1.0	1.3
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	1.7	< 0.10	1.5	0.79	0.87
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	1.4	< 0.10	0.95	0.57	0.74
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	1.8	< 0.05	1.4	0.72	0.89
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	2.8	< 0.10	1.4	0.69	0.93
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.95	< 0.10	0.80	0.35	0.49
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	1.8	< 0.10	1.1	0.50	0.63
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	1.1	< 0.10	0.63	0.25	0.39
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.21	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	1.4	< 0.05	0.70	0.32	0.41
Total PAH											
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	16.4	< 1.60	12.4	5.91	7.62
Heavy Metals / Metalloids											
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	1.7	1.6	1.4	1.7	1.2	2.6	< 1.0	4.6
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.6	7.2	8.9	12	3.1	14	9.8	< 1.0
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	1.2	0.5	1.6	0.2	2.4	0.5	4.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.4	< 0.2	< 0.2	0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	17	21	57	4.5	36	14	370
Copper (aqua regia extractable)	mg/kg	1	MCERTS	25	20	31	25	19	26	25	14
Iron (aqua regia extractable)	mg/kg	40	MCERTS	33000	28000	31000	23000	29000	35000	16000	72000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	16	15	26	65	16	49	43	1.9
Manganese (aqua regia extractable)	mg/kg	1	MCERTS	44	110	170	2900	240	750	480	14000
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	9.9	22	9.6	19	28	16	6.2
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	5.7
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	20	24	23	100	10	48	21	650
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	30	29	39	120	45	130	52	8.8
Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	-	< 5.0	9.6	< 5.0	7.2	< 5.0	< 5.0

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				553592	553593	553594	553595	553596	553597	553598	553599
Sample Reference				OP112	OP113	OP113	TP114	TP114	TP140 (WS)	TP140 (WS)	WS138
Sample Number				7	2	3	1	2	1	4	2
Depth (m)				1.00	0.50	1.00	0.10	0.50	0.10	0.50	0.50
Date Sampled				15/03/2016	15/03/2016	15/03/2016	16/03/2016	16/03/2016	17/03/2016	17/03/2016	17/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Monoaromatics											
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	3.4	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	41	< 8.0	24	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	48	< 10	27	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	2.9	< 2.0	2.4	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	14	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	44	< 10	18	< 10	19
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	61	< 10	29	12	25

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553592	553593	553594	553595	553596	553597	553598	553599
Sample Reference				OP112	OP113	OP113	TP114	TP114	TP140 (WS)	TP140 (WS)	WS138
Sample Number				7	2	3	1	2	1	4	2
Depth (m)				1.00	0.50	1.00	0.10	0.50	0.10	0.50	0.50
Date Sampled				15/03/2016	15/03/2016	15/03/2016	16/03/2016	16/03/2016	17/03/2016	17/03/2016	17/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs											
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
Chloroethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
1,1-Dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	-	-	< 1.0	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	-	-	-	< 1.0	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-	-	< 1.0	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
Bromodichloromethane	µg/kg	1	NONE	-	-	-	-	-	-	< 1.0	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
Tetrachloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	-	-	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
Tribromomethane	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
o-Xylene	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
Isopropylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	< 1.0	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-	-	< 1.0	-
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-	-	< 1.0	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
tert-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	< 1.0	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
sec-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	< 1.0	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	< 1.0	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-	-	< 1.0	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	< 1.0	-
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	-	-	-	< 1.0	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	-	-	< 1.0	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				553592	553593	553594	553595	553596	553597	553598	553599
Sample Reference				OP112	OP113	OP113	TP114	TP114	TP140 (WS)	TP140 (WS)	WS138
Sample Number				7	2	3	1	2	1	4	2
Depth (m)				1.00	0.50	1.00	0.10	0.50	0.10	0.50	0.50
Date Sampled				15/03/2016	15/03/2016	15/03/2016	16/03/2016	16/03/2016	17/03/2016	17/03/2016	17/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs TICs											
VOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	None Detected	-
VOC % Match	%	N/A	NONE	-	-	-	-	-	-	0	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553592	553593	553594	553595	553596	553597	553598	553599
Sample Reference				OP112	OP113	OP113	TP114	TP114	TP140 (WS)	TP140 (WS)	WS138
Sample Number				7	2	3	1	2	1	4	2
Depth (m)				1.00	0.50	1.00	0.10	0.50	0.10	0.50	0.50
Date Sampled				15/03/2016	15/03/2016	15/03/2016	16/03/2016	16/03/2016	17/03/2016	17/03/2016	17/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs											
Aniline	mg/kg	0.1	NONE	-	-	-	-	-	-	< 0.1	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-	-	< 0.2	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-	-	< 0.1	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-	-	< 0.2	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	< 0.2	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	< 0.1	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	< 0.2	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-	-	< 0.1	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	< 0.3	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-	-	< 0.05	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	< 0.3	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-	-	< 0.2	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-	-	< 0.2	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	< 0.3	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	< 0.3	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-	-	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	< 0.3	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	< 0.05	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	< 0.3	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-	-	< 0.1	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	< 0.1	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-	-	< 0.1	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-	-	< 0.1	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-	-	< 0.2	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-	-	< 0.1	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	< 0.1	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-	-	< 0.1	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	< 0.1	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	< 0.10	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	< 0.10	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	< 0.2	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-	-	< 0.2	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-	-	< 0.3	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-	-	< 0.2	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-	-	< 0.2	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	< 0.10	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	< 0.3	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-	-	< 0.2	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	< 0.3	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	0.58	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	0.13	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-	-	< 0.3	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-	-	< 0.2	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-	-	< 0.3	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	1.0	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	0.79	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-	-	< 0.3	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	0.57	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	0.72	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	0.69	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	0.35	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	0.50	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	0.25	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	< 0.10	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	0.32	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553592	553593	553594	553595	553596	553597	553598	553599
Sample Reference				OP112	OP113	OP113	TP114	TP114	TP140 (WS)	TP140 (WS)	WS138
Sample Number				7	2	3	1	2	1	4	2
Depth (m)				1.00	0.50	1.00	0.10	0.50	0.10	0.50	0.50
Date Sampled				15/03/2016	15/03/2016	15/03/2016	16/03/2016	16/03/2016	17/03/2016	17/03/2016	17/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs TICs											
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	Dibenzo[def,mno]chrysene☐	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	95	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	Benzenesulfonamide, N-butyl-☐	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	94	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	Benzo[b]naphtho[2,3-d]thiophene☐	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	93	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553600	553601	553602	553603	555899	555900	555901	555902
Sample Reference				WS138	TP136 (WS)	TP136 (WS)	TP139 (WS)	TP143 (WS)	TP143 (WS)	WS144	WS144
Sample Number				3	1	2	2	2	9	1	6
Depth (m)				1.00	0.10	0.50	0.25	0.50	1.20	0.10	1.00
Date Sampled				17/03/2016	17/03/2016	17/03/2016	17/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	4.1	3.1	4.1	6.2	18	18	16	5.1
Total mass of sample received	kg	0.001	NONE	1.8	2.0	2.0	1.4	1.8	2.0	1.6	1.5
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	-	-	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	-	-	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	-	-	-	-	-	-	-
General Inorganics											
pH	pH Units	N/A	MCERTS	11.3	9.2	8.9	8.6	8.4	9.6	8.8	9.1
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	-	-	1000	-	-	-	-	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.9	0.027	0.20	0.029	0.050	0.38	0.16	0.095
Sulphide	mg/kg	1	MCERTS	2700	1100	1100	29	22	2.2	19	790
Elemental Sulphur	mg/kg	5	MCERTS	940	15	73	16	6.6	550	7.9	41
Total Sulphur	mg/kg	50	NONE	10000	3400	6300	170	1100	3100	790	6100
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	3.8	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.3	0.5	0.8	0.3	1.1	2.2	2.4	0.7
Loss on Ignition @ 450°C	%	0.2	MCERTS	-	-	-	-	-	-	-	-
Calorific Value (Subcontracted)	MJ/Kg	0.01	NONE	-	-	-	-	-	-	-	-
Total Phenols											
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs											
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.23	0.19	< 0.05	< 0.05	0.51	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.22	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.54	0.29	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.70	0.26	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	0.40	0.74	0.45	< 0.10	0.92	4.1	2.1	0.81
Anthracene	mg/kg	0.1	MCERTS	< 0.10	0.11	< 0.10	< 0.10	0.16	0.79	0.43	0.55
Fluoranthene	mg/kg	0.1	MCERTS	0.77	1.2	0.85	< 0.10	2.2	9.2	4.4	4.0
Pyrene	mg/kg	0.1	MCERTS	0.52	0.89	0.65	< 0.10	1.7	6.7	3.3	3.4
Benzo(a)anthracene	mg/kg	0.1	MCERTS	0.47	0.71	0.54	< 0.10	1.3	4.9	2.9	2.4
Chrysene	mg/kg	0.05	MCERTS	0.51	0.92	0.73	< 0.05	1.5	7.3	2.8	2.3
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	0.65	1.1	0.77	< 0.10	1.6	9.4	3.6	2.5
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.24	0.46	0.35	< 0.10	0.88	4.0	1.4	1.1
Benzo(a)pyrene	mg/kg	0.1	MCERTS	0.41	0.71	0.50	< 0.10	1.0	6.7	2.5	1.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.30	0.49	0.32	< 0.10	1.2	6.3	1.6	1.1
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.28	1.3	0.46	0.28
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.30	0.55	0.41	< 0.05	1.3	9.2	1.8	1.2
Total PAH											
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	4.57	8.02	5.76	< 1.60	14.0	71.7	27.6	21.6
Heavy Metals / Metalloids											
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	2.3	2.8	1.9	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	2.5	< 1.0	< 1.0	5.7	14	12	13	5.8
Boron (water soluble)	mg/kg	0.2	MCERTS	5.7	0.9	0.5	1.1	2.3	0.9	1.4	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.9	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	29	36	8.6	27	42	20	69
Copper (aqua regia extractable)	mg/kg	1	MCERTS	13	19	19	23	39	58	45	27
Iron (aqua regia extractable)	mg/kg	40	MCERTS	8000	13000	29000	9300	110000	57000	69000	93000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	22	14	26	59	100	56	13
Manganese (aqua regia extractable)	mg/kg	1	MCERTS	4900	3200	4900	360	2200	4200	1100	5100
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	5.1	6.9	12	8.7	24	14	18	13
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	5.7	< 1.0	< 1.0	< 1.0	< 1.0	2.5	< 1.0	1.3
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	91	54	69	12	40	88	32	130
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	10	31	23	35	120	180	85	29
Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0	12	< 5.0	14	10	9.8	11

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553600	553601	553602	553603	555899	555900	555901	555902
Sample Reference				WS138	TP136 (WS)	TP136 (WS)	TP139 (WS)	TP143 (WS)	TP143 (WS)	WS144	WS144
Sample Number				3	1	2	2	2	9	1	6
Depth (m)				1.00	0.10	0.50	0.25	0.50	1.20	0.10	1.00
Date Sampled				17/03/2016	17/03/2016	17/03/2016	17/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Monoaromatics											
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons											
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	1.4	7.3	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	5.1	200	4.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	420	9.5	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	29	650	31	17
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	42	1300	45	20
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.8	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	3.8	120	< 2.0	7.1
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10	350	17	27
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	19	21	12	< 10	< 10	500	48	61
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	28	30	18	< 10	21	980	67	95

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				553600	553601	553602	553603	555899	555900	555901	555902
Sample Reference				WS138	TP136 (WS)	TP136 (WS)	TP139 (WS)	TP143 (WS)	TP143 (WS)	WS144	WS144
Sample Number				3	1	2	2	2	9	1	6
Depth (m)				1.00	0.10	0.50	0.25	0.50	1.20	0.10	1.00
Date Sampled				17/03/2016	17/03/2016	17/03/2016	17/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs											
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
Chloroethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
1,1-Dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	-	< 1.0	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	-	< 1.0	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
Bromodichloromethane	µg/kg	1	NONE	-	-	< 1.0	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	< 1.0	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
Tribromomethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
Isopropylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	-	< 1.0	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	-	< 1.0	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
tert-Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
sec-Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	-	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	-	< 1.0	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				553600	553601	553602	553603	555899	555900	555901	555902
Sample Reference				WS138	TP136 (WS)	TP136 (WS)	TP139 (WS)	TP143 (WS)	TP143 (WS)	WS144	WS144
Sample Number				3	1	2	2	2	9	1	6
Depth (m)				1.00	0.10	0.50	0.25	0.50	1.20	0.10	1.00
Date Sampled				17/03/2016	17/03/2016	17/03/2016	17/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs TICs											
VOCs TICs Compound Name		N/A	NONE	-	-	None Detected	-	-	-	-	-
VOC % Match	%	N/A	NONE	-	-	0	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553600	553601	553602	553603	555899	555900	555901	555902
Sample Reference				WS138	TP136 (WS)	TP136 (WS)	TP139 (WS)	TP143 (WS)	TP143 (WS)	WS144	WS144
Sample Number				3	1	2	2	2	9	1	6
Depth (m)				1.00	0.10	0.50	0.25	0.50	1.20	0.10	1.00
Date Sampled				17/03/2016	17/03/2016	17/03/2016	17/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs											
Aniline	mg/kg	0.1	NONE	-	-	< 0.1	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	0.19	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	< 0.1	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	0.45	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	0.85	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	0.65	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	0.54	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	0.73	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	0.77	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	0.35	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	0.50	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	0.32	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	0.41	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553600	553601	553602	553603	555899	555900	555901	555902
Sample Reference				WS138	TP136 (WS)	TP136 (WS)	TP139 (WS)	TP143 (WS)	TP143 (WS)	WS144	WS144
Sample Number				3	1	2	2	2	9	1	6
Depth (m)				1.00	0.10	0.50	0.25	0.50	1.20	0.10	1.00
Date Sampled				17/03/2016	17/03/2016	17/03/2016	17/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs TICs											
SVOCs TICs Compound Name		N/A	NONE	-	-	Benzenesulfonamide, N-butyl-□	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	97	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	3,5,6-Trimethyl-p-quinone, 2-(2,5-dioxotetrahydrofuran-3-yl)thio-□	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	90	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555903	555904	555905	555906	555907	555908	555909	555910
Sample Reference				WLS109	WLS109	CP110	CP110	CP110	CP110	WS151	WS150
Sample Number				2	4	1	3	5	7	3	2
Depth (m)				0.50	2.00	0.10	1.00	3.00	5.00	0.50	0.50
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	19	9.2	32	10	11	8.0	5.4	6.0
Total mass of sample received	kg	0.001	NONE	1.7	1.5	1.2	1.8	1.8	1.8	1.9	1.8
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-	-	-	-
General Inorganics											
pH	pH Units	N/A	MCERTS	6.8	5.6	6.1	7.5	8.2	8.7	9.2	8.6
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	390	-	-	-	120	140	470	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.018	0.0094	0.025	0.018	0.014	0.014	0.096	0.15
Sulphide	mg/kg	1	MCERTS	1.2	< 1.0	< 1.0	1.5	1.8	6.9	1800	430
Elemental Sulphur	mg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	7.1	< 5.0	40	88
Total Sulphur	mg/kg	50	NONE	370	< 50	550	140	380	140	7200	5000
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	< 0.5	< 0.5	1.7	< 0.5	< 0.5	< 0.5	< 0.5	1.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.6	0.2	3.8	0.8	0.4	0.2	0.6	0.6
Loss on Ignition @ 450°C	%	0.2	MCERTS	-	-	-	-	-	-	-	-
Calorific Value (Subcontracted)	MJ/Kg	0.01	NONE	-	-	-	-	-	-	-	-
Total Phenols											
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	1.2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs											
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.29
Phenanthrene	mg/kg	0.1	MCERTS	0.29	< 0.10	0.65	< 0.10	< 0.10	< 0.10	< 0.10	2.7
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.0
Fluoranthene	mg/kg	0.1	MCERTS	0.27	< 0.10	1.1	< 0.10	< 0.10	< 0.10	< 0.10	2.8
Pyrene	mg/kg	0.1	MCERTS	0.17	< 0.10	0.83	< 0.10	< 0.10	< 0.10	< 0.10	1.7
Benzo(a)anthracene	mg/kg	0.1	MCERTS	0.14	< 0.10	0.67	< 0.10	< 0.10	< 0.10	< 0.10	1.3
Chrysene	mg/kg	0.05	MCERTS	0.25	< 0.05	0.82	< 0.05	< 0.05	< 0.05	< 0.05	1.3
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	1.3	< 0.10	< 0.10	< 0.10	< 0.10	0.83
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.35	< 0.10	< 0.10	< 0.10	< 0.10	0.42
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.68	< 0.10	< 0.10	< 0.10	< 0.10	0.40
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.57	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.61	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH											
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	7.58	< 1.60	< 1.60	< 1.60	< 1.60	12.9
Heavy Metals / Metalloids											
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	1.2	< 1.0	1.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	20	6.7	18	8.6	6.5	6.9	2.8	7.0
Boron (water soluble)	mg/kg	0.2	MCERTS	1.2	0.6	1.9	1.8	1.3	1.3	1.8	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	11	15	13	13	26	11	43	120
Copper (aqua regia extractable)	mg/kg	1	MCERTS	30	16	26	21	42	21	16	28
Iron (aqua regia extractable)	mg/kg	40	MCERTS	54000	78000	39000	84000	91000	48000	37000	80000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	49	11	81	17	18	11	< 1.0	7.8
Manganese (aqua regia extractable)	mg/kg	1	MCERTS	190	240	310	500	760	960	7700	8200
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	24	14	19	47	17	8.4	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	4.0	3.9
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	16	17	24	21	23	12	91	250
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	46	46	120	48	110	31	28	31
Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0	5.1	6.0	< 5.0	< 5.0	8.1	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555903	555904	555905	555906	555907	555908	555909	555910
Sample Reference				WLS109	WLS109	CP110	CP110	CP110	CP110	WS151	WS150
Sample Number				2	4	1	3	5	7	3	2
Depth (m)				0.50	2.00	0.10	1.00	3.00	5.00	0.50	0.50
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Monoaromatics											
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	22	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	24	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	3.7	< 2.0	< 2.0	< 2.0	< 2.0	4.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	12	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	35	< 10	< 10	< 10	< 10	26
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	52	< 10	< 10	< 10	< 10	40

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				555903	555904	555905	555906	555907	555908	555909	555910
Sample Reference				WLS109	WLS109	CP110	CP110	CP110	CP110	WS151	WS150
Sample Number				2	4	1	3	5	7	3	2
Depth (m)				0.50	2.00	0.10	1.00	3.00	5.00	0.50	0.50
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs											
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Chloroethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
1,1-Dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Bromodichloromethane	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Tribromomethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Isopropylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
tert-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
sec-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555903	555904	555905	555906	555907	555908	555909	555910
Sample Reference				WLS109	WLS109	CP110	CP110	CP110	CP110	WS151	WS150
Sample Number				2	4	1	3	5	7	3	2
Depth (m)				0.50	2.00	0.10	1.00	3.00	5.00	0.50	0.50
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs TICs											
VOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
VOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				555903	555904	555905	555906	555907	555908	555909	555910
Sample Reference				WLS109	WLS109	CP110	CP110	CP110	CP110	WS151	WS150
Sample Number				2	4	1	3	5	7	3	2
Depth (m)				0.50	2.00	0.10	1.00	3.00	5.00	0.50	0.50
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs											
Aniline	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555903	555904	555905	555906	555907	555908	555909	555910
Sample Reference				WLS109	WLS109	CP110	CP110	CP110	CP110	WS151	WS150
Sample Number				2	4	1	3	5	7	3	2
Depth (m)				0.50	2.00	0.10	1.00	3.00	5.00	0.50	0.50
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs TICs											
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555911	555912	555913	555914	555915	556205	562979	562980
Sample Reference				WS150	WS149	WS145	TP146 (WS)	TP147 (WS)	TP102	CP110	CP117
Sample Number				3	1	2	1	2	ES6	11	2
Depth (m)				1.00	0.10	0.50	0.10	0.30	1.00	9.00	0.50
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	07/03/2016	15/04/2016	15/04/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	11	22	12	28	19	4.7	11	25
Total mass of sample received	kg	0.001	NONE	1.9	1.2	1.7	1.3	1.5	1.6	2.0	1.5
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	Amosite	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	Not-detected	Detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	< 0.001	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	< 0.001	-	-	-	-
General Inorganics											
pH	pH Units	N/A	MCERTS	8.1	7.9	8.1	7.1	7.6	7.7	8.0	6.3
Total Cyanide	mg/kg	1	MCERTS	-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	-	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Thiocyanate as SCN	mg/kg	5	NONE	-	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	-	-	-	-	-	-	-	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.049	0.028	0.023	0.015	0.028	0.064	0.0084	0.013
Sulphide	mg/kg	1	MCERTS	-	20	62	3.9	1.9	12	< 1.0	< 1.0
Elemental Sulphur	mg/kg	5	MCERTS	-	< 5.0	< 5.0	< 5.0	-	8.0	< 5.0	< 5.0
Total Sulphur	mg/kg	50	NONE	-	710	820	1000	1700	2300	< 50	96
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	-	0.6	< 0.5	3.9	< 0.5	< 0.5	< 0.5	< 0.5
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	4.1	1.6	4.0	4.0	1.3	0.2	0.5
Loss on Ignition @ 450°C	%	0.2	MCERTS	-	-	-	-	-	-	-	-
Calorific Value (Subcontracted)	MJ/Kg	0.01	NONE	-	-	-	-	-	-	-	-
Total Phenols											
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs											
Naphthalene	mg/kg	0.05	MCERTS	-	0.24	< 0.05	0.33	0.53	1.4	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	-	2.1	< 0.10	1.5	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	-	1.5	< 0.10	1.1	< 0.10	0.22	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	-	11	0.50	7.6	0.88	1.3	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	-	1.7	< 0.10	1.4	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	-	18	0.90	13	0.21	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	-	14	0.67	10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	11	0.58	8.7	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	-	12	0.57	8.1	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	17	0.76	12	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	6.2	0.25	3.7	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	13	0.45	7.4	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	7.7	0.28	5.1	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	1.9	< 0.10	1.6	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	9.3	0.30	5.9	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH											
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	-	128	5.26	87.3	1.62	2.83	< 1.60	< 1.60
Heavy Metals / Metalloids											
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	-	2.7	1.8	2.4	6.0	1.2	1.6	1.7
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	13	18	21	44	22	4.2	9.5
Boron (water soluble)	mg/kg	0.2	MCERTS	-	2.5	1.0	3.8	1.6	0.5	< 0.2	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	0.5	< 0.2	0.4	0.8	0.3	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	-	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	28	22	28	21	7.2	28	12
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	63	47	110	190	57	10	6.6
Iron (aqua regia extractable)	mg/kg	40	MCERTS	-	50000	57000	88000	180000	24000	23000	30000
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	170	51	150	240	28	8.2	15
Manganese (aqua regia extractable)	mg/kg	1	MCERTS	-	1300	1400	1700	2800	590	200	150
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	22	19	33	40	48	17	7.7
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	1.8	1.7	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	28	40	44	55	14	10	26
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	320	72	260	750	59	32	14
Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	19	8.8	11	13	29	12	< 5.0

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				555911	555912	555913	555914	555915	556205	562979	562980
Sample Reference				WS150	WS149	WS145	TP146 (WS)	TP147 (WS)	TP102	CP110	CP117
Sample Number				3	1	2	1	2	ES6	11	2
Depth (m)				1.00	0.10	0.50	0.10	0.30	1.00	9.00	0.50
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	07/03/2016	15/04/2016	15/04/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
Monoaromatics											
Benzene	ug/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons											
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	< 2.0	2.6	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	170	< 8.0	99	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	180	< 10	110	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	2.1	< 1.0	1.8	< 1.0	2.8	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	8.4	< 2.0	6.4	< 2.0	2.2	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	61	< 10	55	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	490	10	160	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	560	17	220	< 10	15	< 10	< 10

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				555911	555912	555913	555914	555915	556205	562979	562980
Sample Reference				WS150	WS149	WS145	TP146 (WS)	TP147 (WS)	TP102	CP110	CP117
Sample Number				3	1	2	1	2	ES6	11	2
Depth (m)				1.00	0.10	0.50	0.10	0.30	1.00	9.00	0.50
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	07/03/2016	15/04/2016	15/04/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs											
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
Chloroethane	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
1,1-Dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	-	< 1.0	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	-	-	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-	< 1.0	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
Bromodichloromethane	µg/kg	1	NONE	-	-	-	-	-	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	-	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
Tribromomethane	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
Isopropylbenzene	µg/kg	1	NONE	-	-	-	-	-	< 1.0	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
tert-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
sec-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	< 1.0	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
Butylbenzene	µg/kg	1	NONE	-	-	-	-	-	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	-	-	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	-	< 1.0	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				555911	555912	555913	555914	555915	556205	562979	562980
Sample Reference				WS150	WS149	WS145	TP146 (WS)	TP147 (WS)	TP102	CP110	CP117
Sample Number				3	1	2	1	2	ES6	11	2
Depth (m)				1.00	0.10	0.50	0.10	0.30	1.00	9.00	0.50
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	07/03/2016	15/04/2016	15/04/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
VOCs TICs											
VOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	None Detected	-	-
VOC % Match	%	N/A	NONE	-	-	-	-	-	0	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				555911	555912	555913	555914	555915	556205	562979	562980
Sample Reference				WS150	WS149	WS145	TP146 (WS)	TP147 (WS)	TP102	CP110	CP117
Sample Number				3	1	2	1	2	ES6	11	2
Depth (m)				1.00	0.10	0.50	0.10	0.30	1.00	9.00	0.50
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	07/03/2016	15/04/2016	15/04/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs											
Aniline	mg/kg	0.1	NONE	-	-	-	-	-	< 0.1	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-	< 0.2	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.1	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-	< 0.2	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-	< 0.2	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.1	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-	< 0.2	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.1	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-	< 0.3	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-	< 0.05	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	< 0.3	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-	< 0.2	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-	< 0.2	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-	< 0.3	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-	< 0.3	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-	< 0.3	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	< 0.3	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-	1.4	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-	< 0.3	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-	< 0.1	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.1	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-	< 0.1	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.1	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-	< 0.2	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-	0.9	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.1	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.1	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.1	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.10	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.10	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-	< 0.2	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-	< 0.2	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-	< 0.3	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-	< 0.2	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-	< 0.2	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-	0.22	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	< 0.3	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-	< 0.2	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-	< 0.3	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-	1.3	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.10	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-	< 0.3	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-	< 0.2	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-	< 0.3	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.10	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.10	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-	< 0.3	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.10	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-	< 0.05	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.10	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.10	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.10	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.10	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-	< 0.10	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-	< 0.05	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555911	555912	555913	555914	555915	556205	562979	562980
Sample Reference				WS150	WS149	WS145	TP146 (WS)	TP147 (WS)	TP102	CP110	CP117
Sample Number				3	1	2	1	2	ES6	11	2
Depth (m)				1.00	0.10	0.50	0.10	0.30	1.00	9.00	0.50
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016	07/03/2016	15/04/2016	15/04/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**								
SVOCs TICs											
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	9-Octadecenamide, (Z)-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	95	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	Benzocycloheptatriene	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	90	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				562981		
Sample Reference				CP117		
Sample Number				4		
Depth (m)				2.00		
Date Sampled				15/04/2016		
Time Taken				None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1		
Moisture Content	%	N/A	NONE	16		
Total mass of sample received	kg	0.001	NONE	1.8		
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-		
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected		
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-		
Asbestos Quantification Total	%	0.001	ISO 17025	-		
General Inorganics						
pH	pH Units	N/A	MCERTS	8.1		
Total Cyanide	mg/kg	1	MCERTS	< 1		
Free Cyanide	mg/kg	1	MCERTS	< 1		
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0		
Total Sulphate as SO_4	mg/kg	50	MCERTS	-		
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.016		
Sulphide	mg/kg	1	MCERTS	< 1.0		
Elemental Sulphur	mg/kg	5	MCERTS	< 5.0		
Total Sulphur	mg/kg	50	NONE	78		
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	< 0.5		
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.4		
Loss on Ignition @ 450°C	%	0.2	MCERTS	-		
Calorific Value (Subcontracted)	MJ/Kg	0.01	NONE	-		
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0		
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	< 0.05		
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10		
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10		
Fluorene	mg/kg	0.1	MCERTS	< 0.10		
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10		
Anthracene	mg/kg	0.1	MCERTS	< 0.10		
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10		
Pyrene	mg/kg	0.1	MCERTS	< 0.10		
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10		
Chrysene	mg/kg	0.05	MCERTS	< 0.05		
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10		
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10		
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10		
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10		
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05		
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60		
Heavy Metals / Metalloids						
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	1.2		
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.8		
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	16		
Iron (aqua regia extractable)	mg/kg	40	MCERTS	23000		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	18		
Manganese (aqua regia extractable)	mg/kg	1	MCERTS	180		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0		
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	16		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	40		
Magnesium (water soluble)	mg/kg	5	NONE	6.1		

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				562981		
Sample Reference				CP117		
Sample Number				4		
Depth (m)				2.00		
Date Sampled				15/04/2016		
Time Taken				None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Monoaromatics						
Benzene	ug/kg	1	MCERTS	< 1.0		
Toluene	µg/kg	1	MCERTS	< 1.0		
Ethylbenzene	µg/kg	1	MCERTS	< 1.0		
p & m-xylene	µg/kg	1	MCERTS	< 1.0		
o-xylene	µg/kg	1	MCERTS	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0		

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10		

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10		

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				562981		
Sample Reference				CP117		
Sample Number				4		
Depth (m)				2.00		
Date Sampled				15/04/2016		
Time Taken				None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
VOCs						
Chloromethane	µg/kg	1	ISO 17025	-		
Chloroethane	µg/kg	1	ISO 17025	-		
Bromomethane	µg/kg	1	ISO 17025	-		
Vinyl Chloride	µg/kg	1	ISO 17025	-		
Trichlorofluoromethane	µg/kg	1	ISO 17025	-		
1,1-Dichloroethene	µg/kg	1	MCERTS	-		
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-		
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-		
1,1-Dichloroethane	µg/kg	1	MCERTS	-		
2,2-Dichloropropane	µg/kg	1	NONE	-		
Trichloromethane	µg/kg	1	MCERTS	-		
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-		
1,2-Dichloroethane	µg/kg	1	MCERTS	-		
1,1-Dichloropropene	µg/kg	1	NONE	-		
Trans-1,2-dichloroethene	µg/kg	1	NONE	-		
Benzene	µg/kg	1	MCERTS	-		
Tetrachloromethane	µg/kg	1	MCERTS	-		
1,2-Dichloropropane	µg/kg	1	MCERTS	-		
Trichloroethene	µg/kg	1	MCERTS	-		
Dibromomethane	µg/kg	1	MCERTS	-		
Bromodichloromethane	µg/kg	1	NONE	-		
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-		
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-		
Toluene	µg/kg	1	MCERTS	-		
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-		
1,3-Dichloropropane	µg/kg	1	ISO 17025	-		
Dibromochloromethane	µg/kg	1	ISO 17025	-		
Tetrachloroethene	µg/kg	1	MCERTS	-		
1,2-Dibromoethane	µg/kg	1	ISO 17025	-		
Chlorobenzene	µg/kg	1	MCERTS	-		
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-		
Ethylbenzene	µg/kg	1	MCERTS	-		
p & m-Xylene	µg/kg	1	MCERTS	-		
Styrene	µg/kg	1	MCERTS	-		
Tribromomethane	µg/kg	1	MCERTS	-		
o-Xylene	µg/kg	1	MCERTS	-		
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-		
Isopropylbenzene	µg/kg	1	NONE	-		
Bromobenzene	µg/kg	1	MCERTS	-		
n-Propylbenzene	µg/kg	1	ISO 17025	-		
2-Chlorotoluene	µg/kg	1	NONE	-		
4-Chlorotoluene	µg/kg	1	NONE	-		
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-		
tert-Butylbenzene	µg/kg	1	NONE	-		
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-		
sec-Butylbenzene	µg/kg	1	NONE	-		
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-		
p-Isopropyltoluene	µg/kg	1	ISO 17025	-		
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-		
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-		
Butylbenzene	µg/kg	1	NONE	-		
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-		
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-		
Hexachlorobutadiene	µg/kg	1	NONE	-		
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-		

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				562981		
Sample Reference				CP117		
Sample Number				4		
Depth (m)				2.00		
Date Sampled				15/04/2016		
Time Taken				None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
VOCs TICs						
VOCs TICs Compound Name		N/A	NONE	-		
VOC % Match	%	N/A	NONE	-		

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Lab Sample Number				562981		
Sample Reference				CP117		
Sample Number				4		
Depth (m)				2.00		
Date Sampled				15/04/2016		
Time Taken				None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
SVOCs						
Aniline	mg/kg	0.1	NONE	-		
Phenol	mg/kg	0.2	ISO 17025	-		
2-Chlorophenol	mg/kg	0.1	MCERTS	-		
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-		
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-		
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-		
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-		
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-		
2-Methylphenol	mg/kg	0.3	MCERTS	-		
Hexachloroethane	mg/kg	0.05	MCERTS	-		
Nitrobenzene	mg/kg	0.3	MCERTS	-		
4-Methylphenol	mg/kg	0.2	NONE	-		
Isophorone	mg/kg	0.2	MCERTS	-		
2-Nitrophenol	mg/kg	0.3	MCERTS	-		
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-		
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-		
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-		
Naphthalene	mg/kg	0.05	MCERTS	-		
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-		
4-Chloroaniline	mg/kg	0.1	NONE	-		
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-		
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-		
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-		
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-		
2-Methylnaphthalene	mg/kg	0.1	NONE	-		
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-		
Dimethylphthalate	mg/kg	0.1	MCERTS	-		
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-		
Acenaphthylene	mg/kg	0.1	MCERTS	-		
Acenaphthene	mg/kg	0.1	MCERTS	-		
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-		
Dibenzofuran	mg/kg	0.2	MCERTS	-		
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-		
Diethyl phthalate	mg/kg	0.2	MCERTS	-		
4-Nitroaniline	mg/kg	0.2	MCERTS	-		
Fluorene	mg/kg	0.1	MCERTS	-		
Azobenzene	mg/kg	0.3	MCERTS	-		
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-		
Hexachlorobenzene	mg/kg	0.3	MCERTS	-		
Phenanthrene	mg/kg	0.1	MCERTS	-		
Anthracene	mg/kg	0.1	MCERTS	-		
Carbazole	mg/kg	0.3	MCERTS	-		
Dibutyl phthalate	mg/kg	0.2	MCERTS	-		
Anthraquinone	mg/kg	0.3	MCERTS	-		
Fluoranthene	mg/kg	0.1	MCERTS	-		
Pyrene	mg/kg	0.1	MCERTS	-		
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-		
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-		
Chrysene	mg/kg	0.05	MCERTS	-		
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-		
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-		
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-		
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-		
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-		

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465
Project / Site name: A465 - Section 5&6

Lab Sample Number				562981		
Sample Reference				CP117		
Sample Number				4		
Depth (m)				2.00		
Date Sampled				15/04/2016		
Time Taken				None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
SVOCs TICs						
SVOCs TICs Compound Name		N/A	NONE	-		
SVOC % Match	%	N/A	NONE	-		
SVOCs TICs Compound Name		N/A	NONE	-		
SVOC % Match	%	N/A	NONE	-		
SVOCs TICs Compound Name		N/A	NONE	-		
SVOC % Match	%	N/A	NONE	-		
SVOCs TICs Compound Name		N/A	NONE	-		
SVOC % Match	%	N/A	NONE	-		
SVOCs TICs Compound Name		N/A	NONE	-		
SVOC % Match	%	N/A	NONE	-		
SVOCs TICs Compound Name		N/A	NONE	-		
SVOC % Match	%	N/A	NONE	-		

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report sections 5 & 6 of the A465
Project / Site name: A465 Section 5&6 GI
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

"The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
553599	WS138	0.50	145	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
553600	WS138	1.00	149	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
555914	TP146 (WS)	0.10	132	Loose Fibres	**Amosite**	< 0.001	**< 0.001**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549428	562985	562986		
Sample Reference				TP107	CP110	CP117		
Sample Number				5	1	1		
Depth (m)				1.50	2.69	0.43		
Date Sampled				09/03/2016	15/04/2016	15/04/2016		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	-	7.5	7.6		
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10		
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10		
Thiocyanate as SCN	µg/l	200	ISO 17025	< 200	< 200	< 200		
Sulphate as SO_4	µg/l	45	ISO 17025	32200	8050	8950		
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0		
Chloride	mg/l	0.15	ISO 17025	17	50	19		
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	-	160	120		
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	-	0.89	4.23		
Nitrate as N	mg/l	0.01	ISO 17025	0.27	0.26	0.43		
Nitrate as NO_3	mg/l	0.05	ISO 17025	1.22	-	-		
Nitrite as N	µg/l	1	ISO 17025	28	4.0	540		
Nitrite as NO_2	µg/l	5	ISO 17025	92	-	-		
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	790	7.8	15		
BOD (Biochemical Oxygen Demand)	mg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Hardness - Total	mgCaCO3/l	1	ISO 17025	106	205	153		
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10		
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	1.86	< 0.01	< 0.01		
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Fluorene	µg/l	0.01	ISO 17025	0.33	< 0.01	< 0.01		
Phenanthrene	µg/l	0.01	ISO 17025	2.80	< 0.01	< 0.01		
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Fluoranthene	µg/l	0.01	ISO 17025	0.29	< 0.01	< 0.01		
Pyrene	µg/l	0.01	ISO 17025	0.25	< 0.01	< 0.01		
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01		
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	NONE	5.53	< 0.16	< 0.16		

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549428	562985	562986		
Sample Reference				TP107	CP110	CP117		
Sample Number				5	1	1		
Depth (m)				1.50	2.69	0.43		
Date Sampled				09/03/2016	15/04/2016	15/04/2016		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	0.4	ISO 17025	0.6	0.6	0.9		
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.30	1.26	0.59		
Boron (dissolved)	µg/l	10	ISO 17025	27	29	< 10		
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	< 0.02		
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0		
Chromium (III)	µg/l	1	NONE	< 1.0	5.3	4.2		
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	5.3	4.2		
Copper (dissolved)	µg/l	0.5	ISO 17025	2.1	2.7	5.5		
Iron (dissolved)	mg/l	0.004	ISO 17025	0.069	0.76	0.22		
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	0.3		
Manganese (dissolved)	µg/l	0.05	ISO 17025	1.8	780	110		
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05		
Nickel (dissolved)	µg/l	0.5	ISO 17025	8.3	3.7	3.4		
Phosphorus (dissolved)	µg/l	20	ISO 17025	< 20.0	29.8	< 20.0		
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6	1.9		
Zinc (dissolved)	µg/l	0.5	ISO 17025	6.2	3.6	2.3		
Calcium (dissolved)	mg/l	0.012	ISO 17025	20	56	56		
Magnesium (dissolved)	mg/l	0.005	ISO 17025	13	16	3.4		
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0		
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aliphatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic >C35 - C44	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10		
TPH-CWG - Aromatic (C5 - C44)	µg/l	10	NONE	< 10	< 10	< 10		

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549428	562985	562986		
Sample Reference				TP107	CP110	CP117		
Sample Number				5	1	1		
Depth (m)				1.50	2.69	0.43		
Date Sampled				09/03/2016	15/04/2016	15/04/2016		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Chloroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Bromomethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Vinyl Chloride	µg/l	1	NONE	-	< 1.0	< 1.0		
Trichlorofluoromethane	µg/l	1	NONE	-	< 1.0	< 1.0		
1,1-Dichloroethene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,1-Dichloroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
2,2-Dichloropropane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Trichloromethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,1,1-Trichloroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,2-Dichloroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,1-Dichloropropene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Benzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Tetrachloromethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,2-Dichloropropane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Trichloroethene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Dibromomethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Bromodichloromethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Toluene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,1,2-Trichloroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,3-Dichloropropane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Dibromochloromethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Tetrachloroethene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,2-Dibromoethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Chlorobenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Ethylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
p & m-Xylene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Styrene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Tribromomethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
o-Xylene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Isopropylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Bromobenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
n-Propylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
2-Chlorotoluene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
4-Chlorotoluene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
tert-Butylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
sec-Butylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,3-Dichlorobenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
p-Isopropyltoluene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,2-Dichlorobenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,4-Dichlorobenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Butylbenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
Hexachlorobutadiene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	-	< 1.0	< 1.0		

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549428	562985	562986		
Sample Reference				TP107	CP110	CP117		
Sample Number				5	1	1		
Depth (m)				1.50	2.69	0.43		
Date Sampled				09/03/2016	15/04/2016	15/04/2016		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		10	NONE	-	None Detected	None Detected		
VOC % Match	%	10	NONE	-	0	0		

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549428	562985	562986		
Sample Reference				TP107	CP110	CP117		
Sample Number				5	1	1		
Depth (m)				1.50	2.69	0.43		
Date Sampled				09/03/2016	15/04/2016	15/04/2016		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Phenol	µg/l	0.05	NONE	-	< 0.05	< 0.05		
2-Chlorophenol	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	< 0.05	< 0.05		
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	< 0.05	< 0.05		
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	< 0.05	< 0.05		
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	< 0.05	< 0.05		
2-Methylphenol	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Hexachloroethane	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Nitrobenzene	µg/l	0.05	NONE	-	< 0.05	< 0.05		
4-Methylphenol	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Isophorone	µg/l	0.05	NONE	-	< 0.05	< 0.05		
2-Nitrophenol	µg/l	0.05	NONE	-	< 0.05	< 0.05		
2,4-Dimethylphenol	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	< 0.05	< 0.05		
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Naphthalene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01		
2,4-Dichlorophenol	µg/l	0.05	NONE	-	< 0.05	< 0.05		
4-Chloroaniline	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Hexachlorobutadiene	µg/l	0.05	NONE	-	< 0.05	< 0.05		
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	< 0.05	< 0.05		
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	< 0.05	< 0.05		
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	< 0.05	< 0.05		
2-Methylnaphthalene	µg/l	0.05	NONE	-	< 0.05	< 0.05		
2-Chloronaphthalene	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Dimethylphthalate	µg/l	0.05	NONE	-	< 0.05	< 0.05		
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Acenaphthylene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01		
Acenaphthene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01		
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Dibenzofuran	µg/l	0.05	NONE	-	< 0.05	< 0.05		
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Diethyl phthalate	µg/l	0.05	NONE	-	< 0.05	< 0.05		
4-Nitroaniline	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Fluorene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01		
Azobenzene	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Hexachlorobenzene	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Phenanthrene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01		
Anthracene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01		
Carbazole	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Dibutyl phthalate	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Anthraquinone	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Fluoranthene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01		
Pyrene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01		
Butyl benzyl phthalate	µg/l	0.05	NONE	-	< 0.05	< 0.05		
Benzo(a)anthracene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01		
Chrysene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01		
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01		
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01		
Benzo(a)pyrene	µg/l	0.01	ISO 17025	-	< 0.01	< 0.01		
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	-	< 0.01	< 0.01		
Dibenz(a,h)anthracene	µg/l	0.01	NONE	-	< 0.01	< 0.01		
Benzo(ghi)perylene	µg/l	0.01	NONE	-	< 0.01	< 0.01		

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549428	562985	562986		
Sample Reference				TP107	CP110	CP117		
Sample Number				5	1	1		
Depth (m)				1.50	2.69	0.43		
Date Sampled				09/03/2016	15/04/2016	15/04/2016		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	None Detected	None Detected		
SVOC % Match	%	N/A	NONE	-	0	0		

U/S = Unsuitable Sample I/S = Insufficient Sample

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				545002	545003	545048	545049	548332
Sample Reference				TP125	TP125	TP122	TP122	TP157
Sample Number				0.50	2.50	1	3	3
Depth (m)				None Supplied	None Supplied	0.10	1.00	0.50
Date Sampled				01/03/2016	01/03/2016	02/03/2016	02/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.3	7.0	6.8	6.7	9.6
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	3850	3850	4760	4780	592
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	26	59	26	38
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
Arsenic (dissolved)	µg/l	1.1	ISO 17025	1.6	< 1.1	12	< 1.1	2.6
Boron (dissolved)	µg/l	10	ISO 17025	< 10	13	11	< 10	< 10
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	3.8	1.5	2.6	< 0.4	0.8
Copper (dissolved)	µg/l	0.7	ISO 17025	3.2	2.1	5.9	2.0	5.1
Iron (dissolved)	mg/l	0.004	ISO 17025	11	1.1	3.0	0.076	0.37
Lead (dissolved)	µg/l	1	ISO 17025	6.2	9.4	17	2.1	< 1.0
Manganese (dissolved)	µg/l	0.06	ISO 17025	6.1	180	100	1.4	17
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	2.7	3.0	3.4	0.8	2.0
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	21	6.2	25	13	7.2

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				545002	545003	545048	545049	548332
Sample Reference				TP125	TP125	TP122	TP122	TP157
Sample Number				0.50	2.50	1	3	3
Depth (m)				None Supplied	None Supplied	0.10	1.00	0.50
Date Sampled				01/03/2016	01/03/2016	02/03/2016	02/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	NONE	-	-	-	-	-
Chloroethane	µg/l	1	NONE	-	-	-	-	-
Bromomethane	µg/l	1	NONE	-	-	-	-	-
Vinyl Chloride	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethane	µg/l	1	NONE	-	-	-	-	-
2,2-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloromethane	µg/l	1	NONE	-	-	-	-	-
1,1,1-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloroethane	µg/l	1	NONE	-	-	-	-	-
1,1-Dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
Benzene	µg/l	1	NONE	-	-	-	-	-
Tetrachloromethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloroethene	µg/l	1	NONE	-	-	-	-	-
Dibromomethane	µg/l	1	NONE	-	-	-	-	-
Bromodichloromethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Toluene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,3-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Dibromochloromethane	µg/l	1	NONE	-	-	-	-	-
Tetrachloroethene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/l	1	NONE	-	-	-	-	-
Chlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Ethylbenzene	µg/l	1	NONE	-	-	-	-	-
p & m-xylene	µg/l	1	NONE	-	-	-	-	-
Styrene	µg/l	1	NONE	-	-	-	-	-
Tribromomethane	µg/l	1	NONE	-	-	-	-	-
o-xylene	µg/l	1	NONE	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Isopropylbenzene	µg/l	1	NONE	-	-	-	-	-
Bromobenzene	µg/l	1	NONE	-	-	-	-	-
N-Propylbenzene	µg/l	1	NONE	-	-	-	-	-
2-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
4-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Tert-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Sec-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,3-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
P-Isopropyltoluene	µg/l	1	NONE	-	-	-	-	-
1,2-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,4-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.1	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				545002	545003	545048	545049	548332
Sample Reference				TP125	TP125	TP122	TP122	TP157
Sample Number				0.50	2.50	1	3	3
Depth (m)				None Supplied	None Supplied	0.10	1.00	0.50
Date Sampled				01/03/2016	01/03/2016	02/03/2016	02/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
Compound Name		10	NONE	-	-	-	-	-
Compound % Match	%	10	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				545002	545003	545048	545049	548332
Sample Reference				TP125	TP125	TP122	TP122	TP157
Sample Number				0.50	2.50	1	3	3
Depth (m)				None Supplied	None Supplied	0.10	1.00	0.50
Date Sampled				01/03/2016	01/03/2016	02/03/2016	02/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	-	-	-	-
Phenol	µg/l	0.05	NONE	-	-	-	-	-
2-Chlorophenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	-	-	-	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	-	-	-	-
2-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Hexachloroethane	µg/l	0.05	NONE	-	-	-	-	-
Nitrobenzene	µg/l	0.05	NONE	-	-	-	-	-
4-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Isophorone	µg/l	0.05	NONE	-	-	-	-	-
2-Nitrophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4-Dimethylphenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Naphthalene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
4-Chloroaniline	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.05	NONE	-	-	-	-	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2-Methylnaphthalene	µg/l	0.05	NONE	-	-	-	-	-
2-Chloronaphthalene	µg/l	0.05	NONE	-	-	-	-	-
Dimethylphthalate	µg/l	0.05	NONE	-	-	-	-	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Acenaphthylene	µg/l	0.01	NONE	-	-	-	-	-
Acenaphthene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Dibenzofuran	µg/l	0.05	NONE	-	-	-	-	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Diethyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
4-Nitroaniline	µg/l	0.05	NONE	-	-	-	-	-
Fluorene	µg/l	0.01	NONE	-	-	-	-	-
Azobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobenzene	µg/l	0.02	NONE	-	-	-	-	-
Phenanthrene	µg/l	0.01	NONE	-	-	-	-	-
Anthracene	µg/l	0.01	NONE	-	-	-	-	-
Carbazole	µg/l	0.05	NONE	-	-	-	-	-
Dibutyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Anthraquinone	µg/l	0.05	NONE	-	-	-	-	-
Fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Pyrene	µg/l	0.01	NONE	-	-	-	-	-
Butyl benzyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Benzo(a)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Chrysene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(b)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(k)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(a)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Dibenz(a,h)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(ghi)perylene	µg/l	0.01	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				545002	545003	545048	545049	548332
Sample Reference				TP125	TP125	TP122	TP122	TP157
Sample Number				0.50	2.50	1	3	3
Depth (m)				None Supplied	None Supplied	0.10	1.00	0.50
Date Sampled				01/03/2016	01/03/2016	02/03/2016	02/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
Compound Name		N/A	NONE	-	-	-	-	-
Compound % Match	%	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548333	548334	548335	548336	548337
Sample Reference				TP157	TP157	TP159	TP159	TP159
Sample Number				5	7	1	5	10
Depth (m)				1.00	1.40	0.10	1.00	3.00
Date Sampled				04/03/2016	04/03/2016	04/03/2016	04/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	9.1	8.9	8.9	8.8	8.8
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	15400	4910	651	796	2810
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ammoniacal Nitrogen as N	µg/l	15	NONE	780	1900	48	33	45
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
Arsenic (dissolved)	µg/l	1.1	ISO 17025	8.1	3.8	1.2	3.0	1.2
Boron (dissolved)	µg/l	10	ISO 17025	25	29	< 10	< 10	11
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.6	< 0.4	2.6	1.3	2.5
Copper (dissolved)	µg/l	0.7	ISO 17025	1.5	1.3	3.7	5.4	2.4
Iron (dissolved)	mg/l	0.004	ISO 17025	3.7	0.49	1.0	0.44	0.93
Lead (dissolved)	µg/l	1	ISO 17025	1.0	< 1.0	1.9	2.0	1.3
Manganese (dissolved)	µg/l	0.06	ISO 17025	220	8.5	26	11	20
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	5.0	0.8	2.6	0.8	1.6
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	9.5	< 0.4	4.9	1.6	4.0

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548333	548334	548335	548336	548337
Sample Reference				TP157	TP157	TP159	TP159	TP159
Sample Number				5	7	1	5	10
Depth (m)				1.00	1.40	0.10	1.00	3.00
Date Sampled				04/03/2016	04/03/2016	04/03/2016	04/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	NONE	-	-	-	-	-
Chloroethane	µg/l	1	NONE	-	-	-	-	-
Bromomethane	µg/l	1	NONE	-	-	-	-	-
Vinyl Chloride	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethane	µg/l	1	NONE	-	-	-	-	-
2,2-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloromethane	µg/l	1	NONE	-	-	-	-	-
1,1,1-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloroethane	µg/l	1	NONE	-	-	-	-	-
1,1-Dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
Benzene	µg/l	1	NONE	-	-	-	-	-
Tetrachloromethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloroethene	µg/l	1	NONE	-	-	-	-	-
Dibromomethane	µg/l	1	NONE	-	-	-	-	-
Bromodichloromethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Toluene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,3-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Dibromochloromethane	µg/l	1	NONE	-	-	-	-	-
Tetrachloroethene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/l	1	NONE	-	-	-	-	-
Chlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Ethylbenzene	µg/l	1	NONE	-	-	-	-	-
p & m-xylene	µg/l	1	NONE	-	-	-	-	-
Styrene	µg/l	1	NONE	-	-	-	-	-
Tribromomethane	µg/l	1	NONE	-	-	-	-	-
o-xylene	µg/l	1	NONE	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Isopropylbenzene	µg/l	1	NONE	-	-	-	-	-
Bromobenzene	µg/l	1	NONE	-	-	-	-	-
N-Propylbenzene	µg/l	1	NONE	-	-	-	-	-
2-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
4-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Tert-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Sec-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,3-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
P-Isopropyltoluene	µg/l	1	NONE	-	-	-	-	-
1,2-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,4-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.1	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548333	548334	548335	548336	548337
Sample Reference				TP157	TP157	TP159	TP159	TP159
Sample Number				5	7	1	5	10
Depth (m)				1.00	1.40	0.10	1.00	3.00
Date Sampled				04/03/2016	04/03/2016	04/03/2016	04/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
Compound Name		10	NONE	-	-	-	-	-
Compound % Match	%	10	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548333	548334	548335	548336	548337
Sample Reference				TP157	TP157	TP159	TP159	TP159
Sample Number				5	7	1	5	10
Depth (m)				1.00	1.40	0.10	1.00	3.00
Date Sampled				04/03/2016	04/03/2016	04/03/2016	04/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	-	-	-	-
Phenol	µg/l	0.05	NONE	-	-	-	-	-
2-Chlorophenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	-	-	-	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	-	-	-	-
2-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Hexachloroethane	µg/l	0.05	NONE	-	-	-	-	-
Nitrobenzene	µg/l	0.05	NONE	-	-	-	-	-
4-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Isophorone	µg/l	0.05	NONE	-	-	-	-	-
2-Nitrophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4-Dimethylphenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Naphthalene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
4-Chloroaniline	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.05	NONE	-	-	-	-	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2-Methylnaphthalene	µg/l	0.05	NONE	-	-	-	-	-
2-Chloronaphthalene	µg/l	0.05	NONE	-	-	-	-	-
Dimethylphthalate	µg/l	0.05	NONE	-	-	-	-	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Acenaphthylene	µg/l	0.01	NONE	-	-	-	-	-
Acenaphthene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Dibenzofuran	µg/l	0.05	NONE	-	-	-	-	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Diethyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
4-Nitroaniline	µg/l	0.05	NONE	-	-	-	-	-
Fluorene	µg/l	0.01	NONE	-	-	-	-	-
Azobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobenzene	µg/l	0.02	NONE	-	-	-	-	-
Phenanthrene	µg/l	0.01	NONE	-	-	-	-	-
Anthracene	µg/l	0.01	NONE	-	-	-	-	-
Carbazole	µg/l	0.05	NONE	-	-	-	-	-
Dibutyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Anthraquinone	µg/l	0.05	NONE	-	-	-	-	-
Fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Pyrene	µg/l	0.01	NONE	-	-	-	-	-
Butyl benzyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Benzo(a)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Chrysene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(b)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(k)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(a)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Dibenz(a,h)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(ghi)perylene	µg/l	0.01	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548333	548334	548335	548336	548337
Sample Reference				TP157	TP157	TP159	TP159	TP159
Sample Number				5	7	1	5	10
Depth (m)				1.00	1.40	0.10	1.00	3.00
Date Sampled				04/03/2016	04/03/2016	04/03/2016	04/03/2016	04/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
Compound Name		N/A	NONE	-	-	-	-	-
Compound % Match	%	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548338	548339	548340	548341	548342
Sample Reference				TP102	TP102	TP103	TP103	TP101
Sample Number				1	3	3	5	2
Depth (m)				0.10	0.50	1.00	2.00	0.50
Date Sampled				07/03/2016	07/03/2016	07/03/2016	07/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	8.7	8.4	8.5	8.5	8.3
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	784	10900	10800	13300	12800
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ammoniacal Nitrogen as N	µg/l	15	NONE	41	32	41	74	52
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
Arsenic (dissolved)	µg/l	1.1	ISO 17025	1.4	3.2	< 1.1	1.3	1.2
Boron (dissolved)	µg/l	10	ISO 17025	< 10	18	< 10	< 10	< 10
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.1	1.7	< 0.4	0.5	0.8
Copper (dissolved)	µg/l	0.7	ISO 17025	1.3	11	< 0.7	< 0.7	3.3
Iron (dissolved)	mg/l	0.004	ISO 17025	0.44	1.0	0.033	0.053	0.26
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	8.4	< 1.0	< 1.0	< 1.0
Manganese (dissolved)	µg/l	0.06	ISO 17025	13	65	1.7	2.1	3.1
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	0.5	8.9	< 0.3	< 0.3	2.4
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	1.3	17	1.1	< 0.4	2.8

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548338	548339	548340	548341	548342
Sample Reference				TP102	TP102	TP103	TP103	TP101
Sample Number				1	3	3	5	2
Depth (m)				0.10	0.50	1.00	2.00	0.50
Date Sampled				07/03/2016	07/03/2016	07/03/2016	07/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	NONE	-	-	-	-	-
Chloroethane	µg/l	1	NONE	-	-	-	-	-
Bromomethane	µg/l	1	NONE	-	-	-	-	-
Vinyl Chloride	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethane	µg/l	1	NONE	-	-	-	-	-
2,2-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloromethane	µg/l	1	NONE	-	-	-	-	-
1,1,1-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloroethane	µg/l	1	NONE	-	-	-	-	-
1,1-Dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
Benzene	µg/l	1	NONE	-	-	-	-	-
Tetrachloromethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloroethene	µg/l	1	NONE	-	-	-	-	-
Dibromomethane	µg/l	1	NONE	-	-	-	-	-
Bromodichloromethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Toluene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,3-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Dibromochloromethane	µg/l	1	NONE	-	-	-	-	-
Tetrachloroethene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/l	1	NONE	-	-	-	-	-
Chlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Ethylbenzene	µg/l	1	NONE	-	-	-	-	-
p & m-xylene	µg/l	1	NONE	-	-	-	-	-
Styrene	µg/l	1	NONE	-	-	-	-	-
Tribromomethane	µg/l	1	NONE	-	-	-	-	-
o-xylene	µg/l	1	NONE	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Isopropylbenzene	µg/l	1	NONE	-	-	-	-	-
Bromobenzene	µg/l	1	NONE	-	-	-	-	-
N-Propylbenzene	µg/l	1	NONE	-	-	-	-	-
2-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
4-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Tert-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Sec-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,3-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
P-Isopropyltoluene	µg/l	1	NONE	-	-	-	-	-
1,2-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,4-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.1	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548338	548339	548340	548341	548342
Sample Reference				TP102	TP102	TP103	TP103	TP101
Sample Number				1	3	3	5	2
Depth (m)				0.10	0.50	1.00	2.00	0.50
Date Sampled				07/03/2016	07/03/2016	07/03/2016	07/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
Compound Name		10	NONE	-	-	-	-	-
Compound % Match	%	10	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548338	548339	548340	548341	548342
Sample Reference				TP102	TP102	TP103	TP103	TP101
Sample Number				1	3	3	5	2
Depth (m)				0.10	0.50	1.00	2.00	0.50
Date Sampled				07/03/2016	07/03/2016	07/03/2016	07/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	-	-	-	-
Phenol	µg/l	0.05	NONE	-	-	-	-	-
2-Chlorophenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	-	-	-	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	-	-	-	-
2-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Hexachloroethane	µg/l	0.05	NONE	-	-	-	-	-
Nitrobenzene	µg/l	0.05	NONE	-	-	-	-	-
4-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Isophorone	µg/l	0.05	NONE	-	-	-	-	-
2-Nitrophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4-Dimethylphenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Naphthalene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
4-Chloroaniline	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.05	NONE	-	-	-	-	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2-Methylnaphthalene	µg/l	0.05	NONE	-	-	-	-	-
2-Chloronaphthalene	µg/l	0.05	NONE	-	-	-	-	-
Dimethylphthalate	µg/l	0.05	NONE	-	-	-	-	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Acenaphthylene	µg/l	0.01	NONE	-	-	-	-	-
Acenaphthene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Dibenzofuran	µg/l	0.05	NONE	-	-	-	-	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Diethyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
4-Nitroaniline	µg/l	0.05	NONE	-	-	-	-	-
Fluorene	µg/l	0.01	NONE	-	-	-	-	-
Azobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobenzene	µg/l	0.02	NONE	-	-	-	-	-
Phenanthrene	µg/l	0.01	NONE	-	-	-	-	-
Anthracene	µg/l	0.01	NONE	-	-	-	-	-
Carbazole	µg/l	0.05	NONE	-	-	-	-	-
Dibutyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Anthraquinone	µg/l	0.05	NONE	-	-	-	-	-
Fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Pyrene	µg/l	0.01	NONE	-	-	-	-	-
Butyl benzyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Benzo(a)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Chrysene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(b)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(k)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(a)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Dibenz(a,h)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(ghi)perylene	µg/l	0.01	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548338	548339	548340	548341	548342
Sample Reference				TP102	TP102	TP103	TP103	TP101
Sample Number				1	3	3	5	2
Depth (m)				0.10	0.50	1.00	2.00	0.50
Date Sampled				07/03/2016	07/03/2016	07/03/2016	07/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
Compound Name		N/A	NONE	-	-	-	-	-
Compound % Match	%	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548343	548344	548345	548346	548347
Sample Reference				TP104	TP105	TP105	TP106	TP106
Sample Number				7	2	5	1	11
Depth (m)				1.50	0.50	2.90	0.10	3.00
Date Sampled				08/03/2016	08/03/2016	08/03/2016	08/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	8.3	8.3	8.2	8.3	8.3
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	12700	21300	48200	6540	26300
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ammoniacal Nitrogen as N	µg/l	15	NONE	89	60	470	52	63
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
Arsenic (dissolved)	µg/l	1.1	ISO 17025	< 1.1	< 1.1	1.2	2.9	2.8
Boron (dissolved)	µg/l	10	ISO 17025	< 10	< 10	27	14	17
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	< 0.4	0.5	< 0.4	1.3	0.8
Copper (dissolved)	µg/l	0.7	ISO 17025	1.3	1.6	2.3	0.9	2.1
Iron (dissolved)	mg/l	0.004	ISO 17025	0.045	0.078	0.046	0.17	0.12
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Manganese (dissolved)	µg/l	0.06	ISO 17025	1.7	2.6	2.5	2.5	3.4
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	< 0.3	2.8	5.6	1.1	0.9
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	14	< 4.0	4.7
Zinc (dissolved)	µg/l	0.4	ISO 17025	0.5	1.7	4.6	1.7	0.8

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548343	548344	548345	548346	548347
Sample Reference				TP104	TP105	TP105	TP106	TP106
Sample Number				7	2	5	1	11
Depth (m)				1.50	0.50	2.90	0.10	3.00
Date Sampled				08/03/2016	08/03/2016	08/03/2016	08/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	NONE	-	-	-	-	-
Chloroethane	µg/l	1	NONE	-	-	-	-	-
Bromomethane	µg/l	1	NONE	-	-	-	-	-
Vinyl Chloride	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethane	µg/l	1	NONE	-	-	-	-	-
2,2-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloromethane	µg/l	1	NONE	-	-	-	-	-
1,1,1-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloroethane	µg/l	1	NONE	-	-	-	-	-
1,1-Dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
Benzene	µg/l	1	NONE	-	-	-	-	-
Tetrachloromethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloroethene	µg/l	1	NONE	-	-	-	-	-
Dibromomethane	µg/l	1	NONE	-	-	-	-	-
Bromodichloromethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Toluene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,3-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Dibromochloromethane	µg/l	1	NONE	-	-	-	-	-
Tetrachloroethene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/l	1	NONE	-	-	-	-	-
Chlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Ethylbenzene	µg/l	1	NONE	-	-	-	-	-
p & m-xylene	µg/l	1	NONE	-	-	-	-	-
Styrene	µg/l	1	NONE	-	-	-	-	-
Tribromomethane	µg/l	1	NONE	-	-	-	-	-
o-xylene	µg/l	1	NONE	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Isopropylbenzene	µg/l	1	NONE	-	-	-	-	-
Bromobenzene	µg/l	1	NONE	-	-	-	-	-
N-Propylbenzene	µg/l	1	NONE	-	-	-	-	-
2-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
4-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Tert-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Sec-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,3-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
P-Isopropyltoluene	µg/l	1	NONE	-	-	-	-	-
1,2-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,4-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.1	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548343	548344	548345	548346	548347
Sample Reference				TP104	TP105	TP105	TP106	TP106
Sample Number				7	2	5	1	11
Depth (m)				1.50	0.50	2.90	0.10	3.00
Date Sampled				08/03/2016	08/03/2016	08/03/2016	08/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
Compound Name		10	NONE	-	-	-	-	-
Compound % Match	%	10	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548343	548344	548345	548346	548347
Sample Reference				TP104	TP105	TP105	TP106	TP106
Sample Number				7	2	5	1	11
Depth (m)				1.50	0.50	2.90	0.10	3.00
Date Sampled				08/03/2016	08/03/2016	08/03/2016	08/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	-	-	-	-
Phenol	µg/l	0.05	NONE	-	-	-	-	-
2-Chlorophenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	-	-	-	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	-	-	-	-
2-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Hexachloroethane	µg/l	0.05	NONE	-	-	-	-	-
Nitrobenzene	µg/l	0.05	NONE	-	-	-	-	-
4-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Isophorone	µg/l	0.05	NONE	-	-	-	-	-
2-Nitrophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4-Dimethylphenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Naphthalene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
4-Chloroaniline	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.05	NONE	-	-	-	-	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2-Methylnaphthalene	µg/l	0.05	NONE	-	-	-	-	-
2-Chloronaphthalene	µg/l	0.05	NONE	-	-	-	-	-
Dimethylphthalate	µg/l	0.05	NONE	-	-	-	-	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Acenaphthylene	µg/l	0.01	NONE	-	-	-	-	-
Acenaphthene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Dibenzofuran	µg/l	0.05	NONE	-	-	-	-	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Diethyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
4-Nitroaniline	µg/l	0.05	NONE	-	-	-	-	-
Fluorene	µg/l	0.01	NONE	-	-	-	-	-
Azobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobenzene	µg/l	0.02	NONE	-	-	-	-	-
Phenanthrene	µg/l	0.01	NONE	-	-	-	-	-
Anthracene	µg/l	0.01	NONE	-	-	-	-	-
Carbazole	µg/l	0.05	NONE	-	-	-	-	-
Dibutyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Anthraquinone	µg/l	0.05	NONE	-	-	-	-	-
Fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Pyrene	µg/l	0.01	NONE	-	-	-	-	-
Butyl benzyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Benzo(a)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Chrysene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(b)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(k)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(a)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Dibenz(a,h)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(ghi)perylene	µg/l	0.01	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				548343	548344	548345	548346	548347
Sample Reference				TP104	TP105	TP105	TP106	TP106
Sample Number				7	2	5	1	11
Depth (m)				1.50	0.50	2.90	0.10	3.00
Date Sampled				08/03/2016	08/03/2016	08/03/2016	08/03/2016	08/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
Compound Name		N/A	NONE	-	-	-	-	-
Compound % Match	%	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549429	549430	549431	549432	549433
Sample Reference				TP107	TP107	TP108	TP108	TP116 (WS)
Sample Number				2	6	1	5	1
Depth (m)				0.50	2.20	0.10	3.00	0.10
Date Sampled				09/03/2016	09/03/2016	09/03/2016	09/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.7	7.4	7.5	7.7	8.5
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	2430	6400	3800	58500	3070
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	38	26	190	< 15
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	20	< 1.7
Arsenic (dissolved)	µg/l	1.1	ISO 17025	< 1.1	< 1.1	5.9	5.3	< 1.1
Boron (dissolved)	µg/l	10	ISO 17025	< 10	14	16	37	< 10
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	0.18	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.0	1.0	1.7	1.7	0.8
Copper (dissolved)	µg/l	0.7	ISO 17025	3.2	5.4	8.2	3.5	< 0.7
Iron (dissolved)	mg/l	0.004	ISO 17025	0.25	0.18	1.9	0.19	0.28
Lead (dissolved)	µg/l	1	ISO 17025	2.6	4.0	9.2	1.6	3.0
Manganese (dissolved)	µg/l	0.06	ISO 17025	4.4	8.0	67	3.9	4.9
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	1.9	1.6	2.1	5.1	1.0
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	24	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	17	14	12	2.8	9.3

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549429	549430	549431	549432	549433
Sample Reference				TP107	TP107	TP108	TP108	TP116 (WS)
Sample Number				2	6	1	5	1
Depth (m)				0.50	2.20	0.10	3.00	0.10
Date Sampled				09/03/2016	09/03/2016	09/03/2016	09/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	NONE	-	-	-	-	-
Chloroethane	µg/l	1	NONE	-	-	-	-	-
Bromomethane	µg/l	1	NONE	-	-	-	-	-
Vinyl Chloride	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethane	µg/l	1	NONE	-	-	-	-	-
2,2-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloromethane	µg/l	1	NONE	-	-	-	-	-
1,1,1-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloroethane	µg/l	1	NONE	-	-	-	-	-
1,1-Dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
Benzene	µg/l	1	NONE	-	-	-	-	-
Tetrachloromethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloroethene	µg/l	1	NONE	-	-	-	-	-
Dibromomethane	µg/l	1	NONE	-	-	-	-	-
Bromodichloromethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Toluene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,3-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Dibromochloromethane	µg/l	1	NONE	-	-	-	-	-
Tetrachloroethene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/l	1	NONE	-	-	-	-	-
Chlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Ethylbenzene	µg/l	1	NONE	-	-	-	-	-
p & m-xylene	µg/l	1	NONE	-	-	-	-	-
Styrene	µg/l	1	NONE	-	-	-	-	-
Tribromomethane	µg/l	1	NONE	-	-	-	-	-
o-xylene	µg/l	1	NONE	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Isopropylbenzene	µg/l	1	NONE	-	-	-	-	-
Bromobenzene	µg/l	1	NONE	-	-	-	-	-
N-Propylbenzene	µg/l	1	NONE	-	-	-	-	-
2-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
4-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Tert-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Sec-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,3-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
P-Isopropyltoluene	µg/l	1	NONE	-	-	-	-	-
1,2-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,4-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.1	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549429	549430	549431	549432	549433
Sample Reference				TP107	TP107	TP108	TP108	TP116 (WS)
Sample Number				2	6	1	5	1
Depth (m)				0.50	2.20	0.10	3.00	0.10
Date Sampled				09/03/2016	09/03/2016	09/03/2016	09/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
Compound Name		10	NONE	-	-	-	-	-
Compound % Match	%	10	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549429	549430	549431	549432	549433
Sample Reference				TP107	TP107	TP108	TP108	TP116 (WS)
Sample Number				2	6	1	5	1
Depth (m)				0.50	2.20	0.10	3.00	0.10
Date Sampled				09/03/2016	09/03/2016	09/03/2016	09/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	-	-	-	-
Phenol	µg/l	0.05	NONE	-	-	-	-	-
2-Chlorophenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	-	-	-	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	-	-	-	-
2-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Hexachloroethane	µg/l	0.05	NONE	-	-	-	-	-
Nitrobenzene	µg/l	0.05	NONE	-	-	-	-	-
4-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Isophorone	µg/l	0.05	NONE	-	-	-	-	-
2-Nitrophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4-Dimethylphenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Naphthalene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
4-Chloroaniline	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.05	NONE	-	-	-	-	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2-Methylnaphthalene	µg/l	0.05	NONE	-	-	-	-	-
2-Chloronaphthalene	µg/l	0.05	NONE	-	-	-	-	-
Dimethylphthalate	µg/l	0.05	NONE	-	-	-	-	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Acenaphthylene	µg/l	0.01	NONE	-	-	-	-	-
Acenaphthene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Dibenzofuran	µg/l	0.05	NONE	-	-	-	-	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Diethyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
4-Nitroaniline	µg/l	0.05	NONE	-	-	-	-	-
Fluorene	µg/l	0.01	NONE	-	-	-	-	-
Azobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobenzene	µg/l	0.02	NONE	-	-	-	-	-
Phenanthrene	µg/l	0.01	NONE	-	-	-	-	-
Anthracene	µg/l	0.01	NONE	-	-	-	-	-
Carbazole	µg/l	0.05	NONE	-	-	-	-	-
Dibutyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Anthraquinone	µg/l	0.05	NONE	-	-	-	-	-
Fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Pyrene	µg/l	0.01	NONE	-	-	-	-	-
Butyl benzyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Benzo(a)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Chrysene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(b)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(k)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(a)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Dibenz(a,h)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(ghi)perylene	µg/l	0.01	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549429	549430	549431	549432	549433
Sample Reference				TP107	TP107	TP108	TP108	TP116 (WS)
Sample Number				2	6	1	5	1
Depth (m)				0.50	2.20	0.10	3.00	0.10
Date Sampled				09/03/2016	09/03/2016	09/03/2016	09/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
Compound Name		N/A	NONE	-	-	-	-	-
Compound % Match	%	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549434	549435	549436	549437	549438
Sample Reference				TP116 (WS)	TP116 (WS)	TP116 (WS)	TP115 (WS)	TP115 (WS)
Sample Number				5	9	11	1	4
Depth (m)				2.00	4.00	5.00	0.20	0.80
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	8.1	7.9	7.5	7.1	7.0
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	6520	6360	4440	7550	31200
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ammoniacal Nitrogen as N	µg/l	15	NONE	19	19	890	99	21
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	< 1.7	15
Arsenic (dissolved)	µg/l	1.1	ISO 17025	< 1.1	< 1.1	12	3.2	5.5
Boron (dissolved)	µg/l	10	ISO 17025	14	11	37	10	26
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.7	3.4	< 0.4	1.2	< 0.4
Copper (dissolved)	µg/l	0.7	ISO 17025	2.0	3.3	0.8	5.9	3.2
Iron (dissolved)	mg/l	0.004	ISO 17025	0.57	1.0	0.22	0.32	0.043
Lead (dissolved)	µg/l	1	ISO 17025	9.3	10	2.9	4.2	9.1
Manganese (dissolved)	µg/l	0.06	ISO 17025	12	11	96	4.2	180
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	3.0	9.3	0.5	1.5	1.0
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	26	24	6.2	11	10

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549434	549435	549436	549437	549438
Sample Reference				TP116 (WS)	TP116 (WS)	TP116 (WS)	TP115 (WS)	TP115 (WS)
Sample Number				5	9	11	1	4
Depth (m)				2.00	4.00	5.00	0.20	0.80
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	NONE	< 1.0	-	-	-	-
Chloroethane	µg/l	1	NONE	< 1.0	-	-	-	-
Bromomethane	µg/l	1	NONE	< 1.0	-	-	-	-
Vinyl Chloride	µg/l	1	NONE	< 1.0	-	-	-	-
1,1-dichloroethene	µg/l	1	NONE	< 1.0	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	NONE	< 1.0	-	-	-	-
Cis-1,2-dichloroethene	µg/l	1	NONE	< 1.0	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	NONE	< 1.0	-	-	-	-
1,1-dichloroethane	µg/l	1	NONE	< 1.0	-	-	-	-
2,2-Dichloropropane	µg/l	1	NONE	< 1.0	-	-	-	-
Trichloromethane	µg/l	1	NONE	< 1.0	-	-	-	-
1,1,1-Trichloroethane	µg/l	1	NONE	< 1.0	-	-	-	-
1,2-dichloroethane	µg/l	1	NONE	< 1.0	-	-	-	-
1,1-Dichloropropene	µg/l	1	NONE	< 1.0	-	-	-	-
Trans-1,2-dichloroethene	µg/l	1	NONE	< 1.0	-	-	-	-
Benzene	µg/l	1	NONE	< 1.0	-	-	-	-
Tetrachloromethane	µg/l	1	NONE	< 1.0	-	-	-	-
1,2-dichloropropane	µg/l	1	NONE	< 1.0	-	-	-	-
Trichloroethene	µg/l	1	NONE	< 1.0	-	-	-	-
Dibromomethane	µg/l	1	NONE	< 1.0	-	-	-	-
Bromodichloromethane	µg/l	1	NONE	< 1.0	-	-	-	-
Cis-1,3-dichloropropene	µg/l	1	NONE	< 1.0	-	-	-	-
Trans-1,3-dichloropropene	µg/l	1	NONE	< 1.0	-	-	-	-
Toluene	µg/l	1	NONE	< 1.0	-	-	-	-
1,1,2-Trichloroethane	µg/l	1	NONE	< 1.0	-	-	-	-
1,3-Dichloropropane	µg/l	1	NONE	< 1.0	-	-	-	-
Dibromochloromethane	µg/l	1	NONE	< 1.0	-	-	-	-
Tetrachloroethene	µg/l	1	NONE	< 1.0	-	-	-	-
1,2-Dibromoethane	µg/l	1	NONE	< 1.0	-	-	-	-
Chlorobenzene	µg/l	1	NONE	< 1.0	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	1	NONE	< 1.0	-	-	-	-
Ethylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
p & m-xylene	µg/l	1	NONE	< 1.0	-	-	-	-
Styrene	µg/l	1	NONE	< 1.0	-	-	-	-
Tribromomethane	µg/l	1	NONE	< 1.0	-	-	-	-
o-xylene	µg/l	1	NONE	< 1.0	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	1	NONE	< 1.0	-	-	-	-
Isopropylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
Bromobenzene	µg/l	1	NONE	< 1.0	-	-	-	-
N-Propylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
2-Chlorotoluene	µg/l	1	NONE	< 1.0	-	-	-	-
4-Chlorotoluene	µg/l	1	NONE	< 1.0	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
Tert-Butylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
Sec-Butylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
1,3-dichlorobenzene	µg/l	1	NONE	< 1.0	-	-	-	-
P-Isopropyltoluene	µg/l	1	NONE	< 1.0	-	-	-	-
1,2-dichlorobenzene	µg/l	1	NONE	< 1.0	-	-	-	-
1,4-dichlorobenzene	µg/l	1	NONE	< 1.0	-	-	-	-
Butylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	1	NONE	< 1.0	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	1	NONE	< 1.0	-	-	-	-
Hexachlorobutadiene	µg/l	0.1	NONE	< 0.1	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	1	NONE	< 1.0	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549434	549435	549436	549437	549438
Sample Reference				TP116 (WS)	TP116 (WS)	TP116 (WS)	TP115 (WS)	TP115 (WS)
Sample Number				5	9	11	1	4
Depth (m)				2.00	4.00	5.00	0.20	0.80
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
Compound Name		10	NONE	None Detected	-	-	-	-
Compound % Match	%	10	NONE	0	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549434	549435	549436	549437	549438
Sample Reference				TP116 (WS)	TP116 (WS)	TP116 (WS)	TP115 (WS)	TP115 (WS)
Sample Number				5	9	11	1	4
Depth (m)				2.00	4.00	5.00	0.20	0.80
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	-	-	-	-
Phenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	-	-	-	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	-	-	-	-
2-Methylphenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
Hexachloroethane	µg/l	0.05	NONE	< 0.05	-	-	-	-
Nitrobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
4-Methylphenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
Isophorone	µg/l	0.05	NONE	< 0.05	-	-	-	-
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Naphthalene	µg/l	0.01	NONE	< 0.01	-	-	-	-
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	-	-	-	-
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	-	-	-	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	-	-	-	-
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	-	-	-	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Acenaphthylene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Acenaphthene	µg/l	0.01	NONE	< 0.01	-	-	-	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Dibenzofuran	µg/l	0.05	NONE	< 0.05	-	-	-	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	-	-	-	-
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	-	-	-	-
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	-	-	-	-
Fluorene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Azobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	-	-	-	-
Hexachlorobenzene	µg/l	0.02	NONE	< 0.02	-	-	-	-
Phenanthrene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Anthracene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Carbazole	µg/l	0.05	NONE	< 0.05	-	-	-	-
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	-	-	-	-
Anthraquinone	µg/l	0.05	NONE	< 0.05	-	-	-	-
Fluoranthene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Pyrene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	-	-	-	-
Benzo(a)anthracene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Chrysene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Benzo(b)fluoranthene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Benzo(k)fluoranthene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Benzo(a)pyrene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549434	549435	549436	549437	549438
Sample Reference				TP116 (WS)	TP116 (WS)	TP116 (WS)	TP115 (WS)	TP115 (WS)
Sample Number				5	9	11	1	4
Depth (m)				2.00	4.00	5.00	0.20	0.80
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
Compound Name		N/A	NONE	None Detected	-	-	-	-
Compound % Match	%	N/A	NONE	0	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549439	549440	549441	553604	553605
Sample Reference				TP115 (WS)	TP165 (WS)	TP165 (WS)	TP162 (WS)	TP162 (WS)
Sample Number				8	1	3	1	6
Depth (m)				2.70	0.10	1.20	0.10	2.00
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.3	7.7	7.7	8.0	8.1
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	2050	3490	2480	3830	1320
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ammoniacal Nitrogen as N	µg/l	15	NONE	26	< 15	60	26	17
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
Arsenic (dissolved)	µg/l	1.1	ISO 17025	2.1	1.6	< 1.1	< 1.1	< 1.1
Boron (dissolved)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	0.29	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.8	0.8	1.1	1.0	1.6
Copper (dissolved)	µg/l	0.7	ISO 17025	1.0	0.8	1.2	3.2	< 0.7
Iron (dissolved)	mg/l	0.004	ISO 17025	0.70	0.34	0.60	0.85	0.95
Lead (dissolved)	µg/l	1	ISO 17025	6.8	2.7	4.3	7.4	5.9
Manganese (dissolved)	µg/l	0.06	ISO 17025	220	54	19	65	78
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	0.9	1.1	1.4	3.4	2.2
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	16	6.0	5.3	50	2.7

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549439	549440	549441	553604	553605
Sample Reference				TP115 (WS)	TP165 (WS)	TP165 (WS)	TP162 (WS)	TP162 (WS)
Sample Number				8	1	3	1	6
Depth (m)				2.70	0.10	1.20	0.10	2.00
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	NONE	-	-	-	-	-
Chloroethane	µg/l	1	NONE	-	-	-	-	-
Bromomethane	µg/l	1	NONE	-	-	-	-	-
Vinyl Chloride	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethane	µg/l	1	NONE	-	-	-	-	-
2,2-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloromethane	µg/l	1	NONE	-	-	-	-	-
1,1,1-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloroethane	µg/l	1	NONE	-	-	-	-	-
1,1-Dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
Benzene	µg/l	1	NONE	-	-	-	-	-
Tetrachloromethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloroethene	µg/l	1	NONE	-	-	-	-	-
Dibromomethane	µg/l	1	NONE	-	-	-	-	-
Bromodichloromethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Toluene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,3-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Dibromochloromethane	µg/l	1	NONE	-	-	-	-	-
Tetrachloroethene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/l	1	NONE	-	-	-	-	-
Chlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Ethylbenzene	µg/l	1	NONE	-	-	-	-	-
p & m-xylene	µg/l	1	NONE	-	-	-	-	-
Styrene	µg/l	1	NONE	-	-	-	-	-
Tribromomethane	µg/l	1	NONE	-	-	-	-	-
o-xylene	µg/l	1	NONE	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Isopropylbenzene	µg/l	1	NONE	-	-	-	-	-
Bromobenzene	µg/l	1	NONE	-	-	-	-	-
N-Propylbenzene	µg/l	1	NONE	-	-	-	-	-
2-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
4-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Tert-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Sec-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,3-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
P-Isopropyltoluene	µg/l	1	NONE	-	-	-	-	-
1,2-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,4-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.1	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549439	549440	549441	553604	553605
Sample Reference				TP115 (WS)	TP165 (WS)	TP165 (WS)	TP162 (WS)	TP162 (WS)
Sample Number				8	1	3	1	6
Depth (m)				2.70	0.10	1.20	0.10	2.00
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
Compound Name		10	NONE	-	-	-	-	-
Compound % Match	%	10	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549439	549440	549441	553604	553605
Sample Reference				TP115 (WS)	TP165 (WS)	TP165 (WS)	TP162 (WS)	TP162 (WS)
Sample Number				8	1	3	1	6
Depth (m)				2.70	0.10	1.20	0.10	2.00
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	-	-	-	-
Phenol	µg/l	0.05	NONE	-	-	-	-	-
2-Chlorophenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	-	-	-	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	-	-	-	-
2-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Hexachloroethane	µg/l	0.05	NONE	-	-	-	-	-
Nitrobenzene	µg/l	0.05	NONE	-	-	-	-	-
4-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Isophorone	µg/l	0.05	NONE	-	-	-	-	-
2-Nitrophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4-Dimethylphenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Naphthalene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
4-Chloroaniline	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.05	NONE	-	-	-	-	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2-Methylnaphthalene	µg/l	0.05	NONE	-	-	-	-	-
2-Chloronaphthalene	µg/l	0.05	NONE	-	-	-	-	-
Dimethylphthalate	µg/l	0.05	NONE	-	-	-	-	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Acenaphthylene	µg/l	0.01	NONE	-	-	-	-	-
Acenaphthene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Dibenzofuran	µg/l	0.05	NONE	-	-	-	-	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Diethyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
4-Nitroaniline	µg/l	0.05	NONE	-	-	-	-	-
Fluorene	µg/l	0.01	NONE	-	-	-	-	-
Azobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobenzene	µg/l	0.02	NONE	-	-	-	-	-
Phenanthrene	µg/l	0.01	NONE	-	-	-	-	-
Anthracene	µg/l	0.01	NONE	-	-	-	-	-
Carbazole	µg/l	0.05	NONE	-	-	-	-	-
Dibutyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Anthraquinone	µg/l	0.05	NONE	-	-	-	-	-
Fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Pyrene	µg/l	0.01	NONE	-	-	-	-	-
Butyl benzyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Benzo(a)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Chrysene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(b)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(k)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(a)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Dibenz(a,h)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(ghi)perylene	µg/l	0.01	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				549439	549440	549441	553604	553605
Sample Reference				TP115 (WS)	TP165 (WS)	TP165 (WS)	TP162 (WS)	TP162 (WS)
Sample Number				8	1	3	1	6
Depth (m)				2.70	0.10	1.20	0.10	2.00
Date Sampled				11/03/2016	11/03/2016	11/03/2016	11/03/2016	11/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
Compound Name		N/A	NONE	-	-	-	-	-
Compound % Match	%	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553606	553607	553608	553609	553610
Sample Reference				TP137 (WS)	TP137 (WS)	OP111	OP111	OP112
Sample Number				2	3	2	3	1
Depth (m)				0.50	1.00	0.50	0.75	0.10
Date Sampled				14/03/2016	14/03/2016	15/03/2016	15/03/2016	15/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.4	7.9	7.7	7.6	7.6
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	15300	6920	8380	8520	4560
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	70	190	160	320
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	2.6	< 1.7
Arsenic (dissolved)	µg/l	1.1	ISO 17025	3.0	< 1.1	< 1.1	< 1.1	8.1
Boron (dissolved)	µg/l	10	ISO 17025	20	< 10	21	17	< 10
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	0.17	0.18	0.20
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.2	2.0	1.2	0.9	1.4
Copper (dissolved)	µg/l	0.7	ISO 17025	4.6	5.6	7.3	4.0	17
Iron (dissolved)	mg/l	0.004	ISO 17025	0.20	5.2	1.4	0.53	0.23
Lead (dissolved)	µg/l	1	ISO 17025	15	3.2	11	16	16
Manganese (dissolved)	µg/l	0.06	ISO 17025	9.5	6.5	150	90	9.1
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	1.3	5.6	2.5	11	2.5
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	12	17	5.7	13	32

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553606	553607	553608	553609	553610
Sample Reference				TP137 (WS)	TP137 (WS)	OP111	OP111	OP112
Sample Number				2	3	2	3	1
Depth (m)				0.50	1.00	0.50	0.75	0.10
Date Sampled				14/03/2016	14/03/2016	15/03/2016	15/03/2016	15/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	NONE	-	-	-	-	-
Chloroethane	µg/l	1	NONE	-	-	-	-	-
Bromomethane	µg/l	1	NONE	-	-	-	-	-
Vinyl Chloride	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethane	µg/l	1	NONE	-	-	-	-	-
2,2-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloromethane	µg/l	1	NONE	-	-	-	-	-
1,1,1-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloroethane	µg/l	1	NONE	-	-	-	-	-
1,1-Dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
Benzene	µg/l	1	NONE	-	-	-	-	-
Tetrachloromethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloroethene	µg/l	1	NONE	-	-	-	-	-
Dibromomethane	µg/l	1	NONE	-	-	-	-	-
Bromodichloromethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Toluene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,3-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Dibromochloromethane	µg/l	1	NONE	-	-	-	-	-
Tetrachloroethene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/l	1	NONE	-	-	-	-	-
Chlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Ethylbenzene	µg/l	1	NONE	-	-	-	-	-
p & m-xylene	µg/l	1	NONE	-	-	-	-	-
Styrene	µg/l	1	NONE	-	-	-	-	-
Tribromomethane	µg/l	1	NONE	-	-	-	-	-
o-xylene	µg/l	1	NONE	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Isopropylbenzene	µg/l	1	NONE	-	-	-	-	-
Bromobenzene	µg/l	1	NONE	-	-	-	-	-
N-Propylbenzene	µg/l	1	NONE	-	-	-	-	-
2-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
4-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Tert-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Sec-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,3-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
P-Isopropyltoluene	µg/l	1	NONE	-	-	-	-	-
1,2-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,4-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.1	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553606	553607	553608	553609	553610
Sample Reference				TP137 (WS)	TP137 (WS)	OP111	OP111	OP112
Sample Number				2	3	2	3	1
Depth (m)				0.50	1.00	0.50	0.75	0.10
Date Sampled				14/03/2016	14/03/2016	15/03/2016	15/03/2016	15/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
Compound Name		10	NONE	-	-	-	-	-
Compound % Match	%	10	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553606	553607	553608	553609	553610
Sample Reference				TP137 (WS)	TP137 (WS)	OP111	OP111	OP112
Sample Number				2	3	2	3	1
Depth (m)				0.50	1.00	0.50	0.75	0.10
Date Sampled				14/03/2016	14/03/2016	15/03/2016	15/03/2016	15/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	-	-	-	-
Phenol	µg/l	0.05	NONE	-	-	-	-	-
2-Chlorophenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	-	-	-	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	-	-	-	-
2-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Hexachloroethane	µg/l	0.05	NONE	-	-	-	-	-
Nitrobenzene	µg/l	0.05	NONE	-	-	-	-	-
4-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Isophorone	µg/l	0.05	NONE	-	-	-	-	-
2-Nitrophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4-Dimethylphenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Naphthalene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
4-Chloroaniline	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.05	NONE	-	-	-	-	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2-Methylnaphthalene	µg/l	0.05	NONE	-	-	-	-	-
2-Chloronaphthalene	µg/l	0.05	NONE	-	-	-	-	-
Dimethylphthalate	µg/l	0.05	NONE	-	-	-	-	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Acenaphthylene	µg/l	0.01	NONE	-	-	-	-	-
Acenaphthene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Dibenzofuran	µg/l	0.05	NONE	-	-	-	-	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Diethyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
4-Nitroaniline	µg/l	0.05	NONE	-	-	-	-	-
Fluorene	µg/l	0.01	NONE	-	-	-	-	-
Azobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobenzene	µg/l	0.02	NONE	-	-	-	-	-
Phenanthrene	µg/l	0.01	NONE	-	-	-	-	-
Anthracene	µg/l	0.01	NONE	-	-	-	-	-
Carbazole	µg/l	0.05	NONE	-	-	-	-	-
Dibutyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Anthraquinone	µg/l	0.05	NONE	-	-	-	-	-
Fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Pyrene	µg/l	0.01	NONE	-	-	-	-	-
Butyl benzyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Benzo(a)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Chrysene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(b)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(k)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(a)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Dibenz(a,h)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(ghi)perylene	µg/l	0.01	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553606	553607	553608	553609	553610
Sample Reference				TP137 (WS)	TP137 (WS)	OP111	OP111	OP112
Sample Number				2	3	2	3	1
Depth (m)				0.50	1.00	0.50	0.75	0.10
Date Sampled				14/03/2016	14/03/2016	15/03/2016	15/03/2016	15/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
Compound Name		N/A	NONE	-	-	-	-	-
Compound % Match	%	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553611	553612	553613	553614	553615
Sample Reference				OP112	OP113	OP113	TP114	TP114
Sample Number				7	2	3	1	2
Depth (m)				1.00	0.50	1.00	0.10	0.50
Date Sampled				15/03/2016	15/03/2016	15/03/2016	16/03/2016	16/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.2	7.6	7.6	7.3	7.7
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	21400	6930	12100	5670	2210
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ammoniacal Nitrogen as N	µg/l	15	NONE	27	50	69	48	< 15
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
Arsenic (dissolved)	µg/l	1.1	ISO 17025	2.0	1.2	< 1.1	< 1.1	< 1.1
Boron (dissolved)	µg/l	10	ISO 17025	29	18	< 10	22	< 10
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.3	4.7	1.3	1.4	1.3
Copper (dissolved)	µg/l	0.7	ISO 17025	3.6	4.9	< 0.7	7.5	1.9
Iron (dissolved)	mg/l	0.004	ISO 17025	0.19	5.9	0.44	0.96	1.5
Lead (dissolved)	µg/l	1	ISO 17025	26	6.7	9.4	11	3.5
Manganese (dissolved)	µg/l	0.06	ISO 17025	13	9.9	9.7	20	7.7
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	0.5	4.8	4.8	2.2	1.3
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	12	7.1	11	15	2.9

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553611	553612	553613	553614	553615
Sample Reference				OP112	OP113	OP113	TP114	TP114
Sample Number				7	2	3	1	2
Depth (m)				1.00	0.50	1.00	0.10	0.50
Date Sampled				15/03/2016	15/03/2016	15/03/2016	16/03/2016	16/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	NONE	-	-	-	-	-
Chloroethane	µg/l	1	NONE	-	-	-	-	-
Bromomethane	µg/l	1	NONE	-	-	-	-	-
Vinyl Chloride	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethane	µg/l	1	NONE	-	-	-	-	-
2,2-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloromethane	µg/l	1	NONE	-	-	-	-	-
1,1,1-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloroethane	µg/l	1	NONE	-	-	-	-	-
1,1-Dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
Benzene	µg/l	1	NONE	-	-	-	-	-
Tetrachloromethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloroethene	µg/l	1	NONE	-	-	-	-	-
Dibromomethane	µg/l	1	NONE	-	-	-	-	-
Bromodichloromethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Toluene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,3-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Dibromochloromethane	µg/l	1	NONE	-	-	-	-	-
Tetrachloroethene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/l	1	NONE	-	-	-	-	-
Chlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Ethylbenzene	µg/l	1	NONE	-	-	-	-	-
p & m-xylene	µg/l	1	NONE	-	-	-	-	-
Styrene	µg/l	1	NONE	-	-	-	-	-
Tribromomethane	µg/l	1	NONE	-	-	-	-	-
o-xylene	µg/l	1	NONE	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Isopropylbenzene	µg/l	1	NONE	-	-	-	-	-
Bromobenzene	µg/l	1	NONE	-	-	-	-	-
N-Propylbenzene	µg/l	1	NONE	-	-	-	-	-
2-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
4-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Tert-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Sec-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,3-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
P-Isopropyltoluene	µg/l	1	NONE	-	-	-	-	-
1,2-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,4-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.1	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553611	553612	553613	553614	553615
Sample Reference				OP112	OP113	OP113	TP114	TP114
Sample Number				7	2	3	1	2
Depth (m)				1.00	0.50	1.00	0.10	0.50
Date Sampled				15/03/2016	15/03/2016	15/03/2016	16/03/2016	16/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
Compound Name		10	NONE	-	-	-	-	-
Compound % Match	%	10	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553611	553612	553613	553614	553615
Sample Reference				OP112	OP113	OP113	TP114	TP114
Sample Number				7	2	3	1	2
Depth (m)				1.00	0.50	1.00	0.10	0.50
Date Sampled				15/03/2016	15/03/2016	15/03/2016	16/03/2016	16/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	-	-	-	-
Phenol	µg/l	0.05	NONE	-	-	-	-	-
2-Chlorophenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	-	-	-	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	-	-	-	-
2-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Hexachloroethane	µg/l	0.05	NONE	-	-	-	-	-
Nitrobenzene	µg/l	0.05	NONE	-	-	-	-	-
4-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Isophorone	µg/l	0.05	NONE	-	-	-	-	-
2-Nitrophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4-Dimethylphenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Naphthalene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
4-Chloroaniline	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.05	NONE	-	-	-	-	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2-Methylnaphthalene	µg/l	0.05	NONE	-	-	-	-	-
2-Chloronaphthalene	µg/l	0.05	NONE	-	-	-	-	-
Dimethylphthalate	µg/l	0.05	NONE	-	-	-	-	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Acenaphthylene	µg/l	0.01	NONE	-	-	-	-	-
Acenaphthene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Dibenzofuran	µg/l	0.05	NONE	-	-	-	-	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Diethyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
4-Nitroaniline	µg/l	0.05	NONE	-	-	-	-	-
Fluorene	µg/l	0.01	NONE	-	-	-	-	-
Azobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobenzene	µg/l	0.02	NONE	-	-	-	-	-
Phenanthrene	µg/l	0.01	NONE	-	-	-	-	-
Anthracene	µg/l	0.01	NONE	-	-	-	-	-
Carbazole	µg/l	0.05	NONE	-	-	-	-	-
Dibutyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Anthraquinone	µg/l	0.05	NONE	-	-	-	-	-
Fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Pyrene	µg/l	0.01	NONE	-	-	-	-	-
Butyl benzyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Benzo(a)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Chrysene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(b)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(k)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(a)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Dibenz(a,h)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(ghi)perylene	µg/l	0.01	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553611	553612	553613	553614	553615
Sample Reference				OP112	OP113	OP113	TP114	TP114
Sample Number				7	2	3	1	2
Depth (m)				1.00	0.50	1.00	0.10	0.50
Date Sampled				15/03/2016	15/03/2016	15/03/2016	16/03/2016	16/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
Compound Name		N/A	NONE	-	-	-	-	-
Compound % Match	%	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553616	553617	553618	553619	553620
Sample Reference				TP140 (WS)	TP140 (WS)	WS138	WS138	TP136 (WS)
Sample Number				1	4	2	3	1
Depth (m)				0.10	0.50	0.50	1.00	0.10
Date Sampled				17/03/2016	17/03/2016	17/03/2016	17/03/2016	17/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.3	7.2	7.4	9.1	8.7
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	4060	3080	18000	222000	10800
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ammoniacal Nitrogen as N	µg/l	15	NONE	24	28	19	< 15	42
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
Arsenic (dissolved)	µg/l	1.1	ISO 17025	< 1.1	2.3	4.8	< 1.1	1.3
Boron (dissolved)	µg/l	10	ISO 17025	28	27	28	80	11
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	0.18	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.7	1.6	2.0	1.3	2.4
Copper (dissolved)	µg/l	0.7	ISO 17025	3.5	2.6	4.2	4.0	2.6
Iron (dissolved)	mg/l	0.004	ISO 17025	2.1	1.9	0.37	0.026	0.33
Lead (dissolved)	µg/l	1	ISO 17025	14	12	28	9.0	10
Manganese (dissolved)	µg/l	0.06	ISO 17025	4.1	4.5	30	14	16
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	2.4	3.7	0.9	1.4	1.1
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	6.1	6.4	14	1.9	13

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553616	553617	553618	553619	553620
Sample Reference				TP140 (WS)	TP140 (WS)	WS138	WS138	TP136 (WS)
Sample Number				1	4	2	3	1
Depth (m)				0.10	0.50	0.50	1.00	0.10
Date Sampled				17/03/2016	17/03/2016	17/03/2016	17/03/2016	17/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	NONE	-	< 1.0	-	-	-
Chloroethane	µg/l	1	NONE	-	< 1.0	-	-	-
Bromomethane	µg/l	1	NONE	-	< 1.0	-	-	-
Vinyl Chloride	µg/l	1	NONE	-	< 1.0	-	-	-
1,1-dichloroethene	µg/l	1	NONE	-	< 1.0	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	NONE	-	< 1.0	-	-	-
Cis-1,2-dichloroethene	µg/l	1	NONE	-	< 1.0	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	NONE	-	< 1.0	-	-	-
1,1-dichloroethane	µg/l	1	NONE	-	< 1.0	-	-	-
2,2-Dichloropropane	µg/l	1	NONE	-	< 1.0	-	-	-
Trichloromethane	µg/l	1	NONE	-	< 1.0	-	-	-
1,1,1-Trichloroethane	µg/l	1	NONE	-	< 1.0	-	-	-
1,2-dichloroethane	µg/l	1	NONE	-	< 1.0	-	-	-
1,1-Dichloropropene	µg/l	1	NONE	-	< 1.0	-	-	-
Trans-1,2-dichloroethene	µg/l	1	NONE	-	< 1.0	-	-	-
Benzene	µg/l	1	NONE	-	< 1.0	-	-	-
Tetrachloromethane	µg/l	1	NONE	-	< 1.0	-	-	-
1,2-dichloropropane	µg/l	1	NONE	-	< 1.0	-	-	-
Trichloroethene	µg/l	1	NONE	-	< 1.0	-	-	-
Dibromomethane	µg/l	1	NONE	-	< 1.0	-	-	-
Bromodichloromethane	µg/l	1	NONE	-	< 1.0	-	-	-
Cis-1,3-dichloropropene	µg/l	1	NONE	-	< 1.0	-	-	-
Trans-1,3-dichloropropene	µg/l	1	NONE	-	< 1.0	-	-	-
Toluene	µg/l	1	NONE	-	< 1.0	-	-	-
1,1,2-Trichloroethane	µg/l	1	NONE	-	< 1.0	-	-	-
1,3-Dichloropropane	µg/l	1	NONE	-	< 1.0	-	-	-
Dibromochloromethane	µg/l	1	NONE	-	< 1.0	-	-	-
Tetrachloroethene	µg/l	1	NONE	-	< 1.0	-	-	-
1,2-Dibromoethane	µg/l	1	NONE	-	< 1.0	-	-	-
Chlorobenzene	µg/l	1	NONE	-	< 1.0	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	1	NONE	-	< 1.0	-	-	-
Ethylbenzene	µg/l	1	NONE	-	< 1.0	-	-	-
p & m-xylene	µg/l	1	NONE	-	< 1.0	-	-	-
Styrene	µg/l	1	NONE	-	< 1.0	-	-	-
Tribromomethane	µg/l	1	NONE	-	< 1.0	-	-	-
o-xylene	µg/l	1	NONE	-	< 1.0	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	1	NONE	-	< 1.0	-	-	-
Isopropylbenzene	µg/l	1	NONE	-	< 1.0	-	-	-
Bromobenzene	µg/l	1	NONE	-	< 1.0	-	-	-
N-Propylbenzene	µg/l	1	NONE	-	< 1.0	-	-	-
2-Chlorotoluene	µg/l	1	NONE	-	< 1.0	-	-	-
4-Chlorotoluene	µg/l	1	NONE	-	< 1.0	-	-	-
1,3,5-Trimethylbenzene	µg/l	1	NONE	-	< 1.0	-	-	-
Tert-Butylbenzene	µg/l	1	NONE	-	< 1.0	-	-	-
1,2,4-Trimethylbenzene	µg/l	1	NONE	-	< 1.0	-	-	-
Sec-Butylbenzene	µg/l	1	NONE	-	< 1.0	-	-	-
1,3-dichlorobenzene	µg/l	1	NONE	-	< 1.0	-	-	-
P-Isopropyltoluene	µg/l	1	NONE	-	< 1.0	-	-	-
1,2-dichlorobenzene	µg/l	1	NONE	-	< 1.0	-	-	-
1,4-dichlorobenzene	µg/l	1	NONE	-	< 1.0	-	-	-
Butylbenzene	µg/l	1	NONE	-	< 1.0	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	1	NONE	-	< 1.0	-	-	-
1,2,4-Trichlorobenzene	µg/l	1	NONE	-	< 1.0	-	-	-
Hexachlorobutadiene	µg/l	0.1	NONE	-	< 0.1	-	-	-
1,2,3-Trichlorobenzene	µg/l	1	NONE	-	< 1.0	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553616	553617	553618	553619	553620
Sample Reference				TP140 (WS)	TP140 (WS)	WS138	WS138	TP136 (WS)
Sample Number				1	4	2	3	1
Depth (m)				0.10	0.50	0.50	1.00	0.10
Date Sampled				17/03/2016	17/03/2016	17/03/2016	17/03/2016	17/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
Compound Name		10	NONE	-	None Detected	-	-	-
Compound % Match	%	10	NONE	-	0	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553616	553617	553618	553619	553620
Sample Reference				TP140 (WS)	TP140 (WS)	WS138	WS138	TP136 (WS)
Sample Number				1	4	2	3	1
Depth (m)				0.10	0.50	0.50	1.00	0.10
Date Sampled				17/03/2016	17/03/2016	17/03/2016	17/03/2016	17/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	< 0.05	-	-	-
Phenol	µg/l	0.05	NONE	-	< 0.05	-	-	-
2-Chlorophenol	µg/l	0.05	NONE	-	< 0.05	-	-	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	< 0.05	-	-	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	< 0.05	-	-	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	< 0.05	-	-	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	< 0.05	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	< 0.05	-	-	-
2-Methylphenol	µg/l	0.05	NONE	-	< 0.05	-	-	-
Hexachloroethane	µg/l	0.05	NONE	-	< 0.05	-	-	-
Nitrobenzene	µg/l	0.05	NONE	-	< 0.05	-	-	-
4-Methylphenol	µg/l	0.05	NONE	-	< 0.05	-	-	-
Isophorone	µg/l	0.05	NONE	-	< 0.05	-	-	-
2-Nitrophenol	µg/l	0.05	NONE	-	< 0.05	-	-	-
2,4-Dimethylphenol	µg/l	0.05	NONE	-	< 0.05	-	-	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	< 0.05	-	-	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	< 0.05	-	-	-
Naphthalene	µg/l	0.01	NONE	-	< 0.01	-	-	-
2,4-Dichlorophenol	µg/l	0.05	NONE	-	< 0.05	-	-	-
4-Chloroaniline	µg/l	0.05	NONE	-	< 0.05	-	-	-
Hexachlorobutadiene	µg/l	0.05	NONE	-	< 0.05	-	-	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	< 0.05	-	-	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	< 0.05	-	-	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	< 0.05	-	-	-
2-Methylnaphthalene	µg/l	0.05	NONE	-	< 0.05	-	-	-
2-Chloronaphthalene	µg/l	0.05	NONE	-	< 0.05	-	-	-
Dimethylphthalate	µg/l	0.05	NONE	-	< 0.05	-	-	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	< 0.05	-	-	-
Acenaphthylene	µg/l	0.01	NONE	-	< 0.01	-	-	-
Acenaphthene	µg/l	0.01	NONE	-	< 0.01	-	-	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	< 0.05	-	-	-
Dibenzofuran	µg/l	0.05	NONE	-	< 0.05	-	-	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	< 0.05	-	-	-
Diethyl phthalate	µg/l	0.05	NONE	-	< 0.05	-	-	-
4-Nitroaniline	µg/l	0.05	NONE	-	< 0.05	-	-	-
Fluorene	µg/l	0.01	NONE	-	< 0.01	-	-	-
Azobenzene	µg/l	0.05	NONE	-	< 0.05	-	-	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	< 0.05	-	-	-
Hexachlorobenzene	µg/l	0.02	NONE	-	< 0.02	-	-	-
Phenanthrene	µg/l	0.01	NONE	-	< 0.01	-	-	-
Anthracene	µg/l	0.01	NONE	-	< 0.01	-	-	-
Carbazole	µg/l	0.05	NONE	-	< 0.05	-	-	-
Dibutyl phthalate	µg/l	0.05	NONE	-	< 0.05	-	-	-
Anthraquinone	µg/l	0.05	NONE	-	< 0.05	-	-	-
Fluoranthene	µg/l	0.01	NONE	-	< 0.01	-	-	-
Pyrene	µg/l	0.01	NONE	-	< 0.01	-	-	-
Butyl benzyl phthalate	µg/l	0.05	NONE	-	< 0.05	-	-	-
Benzo(a)anthracene	µg/l	0.01	NONE	-	< 0.01	-	-	-
Chrysene	µg/l	0.01	NONE	-	< 0.01	-	-	-
Benzo(b)fluoranthene	µg/l	0.01	NONE	-	< 0.01	-	-	-
Benzo(k)fluoranthene	µg/l	0.01	NONE	-	< 0.01	-	-	-
Benzo(a)pyrene	µg/l	0.01	NONE	-	< 0.01	-	-	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	-	< 0.01	-	-	-
Dibenz(a,h)anthracene	µg/l	0.01	NONE	-	< 0.01	-	-	-
Benzo(ghi)perylene	µg/l	0.01	NONE	-	< 0.01	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553616	553617	553618	553619	553620
Sample Reference				TP140 (WS)	TP140 (WS)	WS138	WS138	TP136 (WS)
Sample Number				1	4	2	3	1
Depth (m)				0.10	0.50	0.50	1.00	0.10
Date Sampled				17/03/2016	17/03/2016	17/03/2016	17/03/2016	17/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
Compound Name		N/A	NONE	-	None Detected	-	-	-
Compound % Match	%	N/A	NONE	-	0	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553621	553622	555916	555917	555918
Sample Reference				TP136 (WS)	TP139 (WS)	TP143 (WS)	TP143 (WS)	WS144
Sample Number				2	2	2	9	1
Depth (m)				0.50	0.25	0.50	1.20	0.10
Date Sampled				17/03/2016	17/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	8.7	8.4	8.3	8.5	8.4
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	2180	5040	10100	109000	5720
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ammoniacal Nitrogen as N	µg/l	15	NONE	51	24	23	24	47
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	11	< 1.7
Arsenic (dissolved)	µg/l	1.1	ISO 17025	2.7	< 1.1	< 1.1	10	3.0
Boron (dissolved)	µg/l	10	ISO 17025	< 10	18	24	74	21
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.4	1.2	1.2	< 0.4	< 0.4
Copper (dissolved)	µg/l	0.7	ISO 17025	4.1	7.3	11	10	11
Iron (dissolved)	mg/l	0.004	ISO 17025	0.40	0.55	0.13	0.19	0.35
Lead (dissolved)	µg/l	1	ISO 17025	7.2	10	12	35	7.8
Manganese (dissolved)	µg/l	0.06	ISO 17025	23	17	2.5	13	3.2
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	1.3	1.4	0.4	0.6	0.4
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	8.1	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	12	10	< 0.4	< 0.4	< 0.4

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553621	553622	555916	555917	555918
Sample Reference				TP136 (WS)	TP139 (WS)	TP143 (WS)	TP143 (WS)	WS144
Sample Number				2	2	2	9	1
Depth (m)				0.50	0.25	0.50	1.20	0.10
Date Sampled				17/03/2016	17/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	NONE	< 1.0	-	-	-	-
Chloroethane	µg/l	1	NONE	< 1.0	-	-	-	-
Bromomethane	µg/l	1	NONE	< 1.0	-	-	-	-
Vinyl Chloride	µg/l	1	NONE	< 1.0	-	-	-	-
1,1-dichloroethene	µg/l	1	NONE	< 1.0	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	NONE	< 1.0	-	-	-	-
Cis-1,2-dichloroethene	µg/l	1	NONE	< 1.0	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	NONE	< 1.0	-	-	-	-
1,1-dichloroethane	µg/l	1	NONE	< 1.0	-	-	-	-
2,2-Dichloropropane	µg/l	1	NONE	< 1.0	-	-	-	-
Trichloromethane	µg/l	1	NONE	< 1.0	-	-	-	-
1,1,1-Trichloroethane	µg/l	1	NONE	< 1.0	-	-	-	-
1,2-dichloroethane	µg/l	1	NONE	< 1.0	-	-	-	-
1,1-Dichloropropene	µg/l	1	NONE	< 1.0	-	-	-	-
Trans-1,2-dichloroethene	µg/l	1	NONE	< 1.0	-	-	-	-
Benzene	µg/l	1	NONE	< 1.0	-	-	-	-
Tetrachloromethane	µg/l	1	NONE	< 1.0	-	-	-	-
1,2-dichloropropane	µg/l	1	NONE	< 1.0	-	-	-	-
Trichloroethene	µg/l	1	NONE	< 1.0	-	-	-	-
Dibromomethane	µg/l	1	NONE	< 1.0	-	-	-	-
Bromodichloromethane	µg/l	1	NONE	< 1.0	-	-	-	-
Cis-1,3-dichloropropene	µg/l	1	NONE	< 1.0	-	-	-	-
Trans-1,3-dichloropropene	µg/l	1	NONE	< 1.0	-	-	-	-
Toluene	µg/l	1	NONE	< 1.0	-	-	-	-
1,1,2-Trichloroethane	µg/l	1	NONE	< 1.0	-	-	-	-
1,3-Dichloropropane	µg/l	1	NONE	< 1.0	-	-	-	-
Dibromochloromethane	µg/l	1	NONE	< 1.0	-	-	-	-
Tetrachloroethene	µg/l	1	NONE	< 1.0	-	-	-	-
1,2-Dibromoethane	µg/l	1	NONE	< 1.0	-	-	-	-
Chlorobenzene	µg/l	1	NONE	< 1.0	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	1	NONE	< 1.0	-	-	-	-
Ethylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
p & m-xylene	µg/l	1	NONE	< 1.0	-	-	-	-
Styrene	µg/l	1	NONE	< 1.0	-	-	-	-
Tribromomethane	µg/l	1	NONE	< 1.0	-	-	-	-
o-xylene	µg/l	1	NONE	< 1.0	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	1	NONE	< 1.0	-	-	-	-
Isopropylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
Bromobenzene	µg/l	1	NONE	< 1.0	-	-	-	-
N-Propylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
2-Chlorotoluene	µg/l	1	NONE	< 1.0	-	-	-	-
4-Chlorotoluene	µg/l	1	NONE	< 1.0	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
Tert-Butylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
Sec-Butylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
1,3-dichlorobenzene	µg/l	1	NONE	< 1.0	-	-	-	-
P-Isopropyltoluene	µg/l	1	NONE	< 1.0	-	-	-	-
1,2-dichlorobenzene	µg/l	1	NONE	< 1.0	-	-	-	-
1,4-dichlorobenzene	µg/l	1	NONE	< 1.0	-	-	-	-
Butylbenzene	µg/l	1	NONE	< 1.0	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	1	NONE	< 1.0	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	1	NONE	< 1.0	-	-	-	-
Hexachlorobutadiene	µg/l	0.1	NONE	< 0.1	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	1	NONE	< 1.0	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553621	553622	555916	555917	555918
Sample Reference				TP136 (WS)	TP139 (WS)	TP143 (WS)	TP143 (WS)	WS144
Sample Number				2	2	2	9	1
Depth (m)				0.50	0.25	0.50	1.20	0.10
Date Sampled				17/03/2016	17/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
Compound Name		10	NONE	None Detected	-	-	-	-
Compound % Match	%	10	NONE	0	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553621	553622	555916	555917	555918
Sample Reference				TP136 (WS)	TP139 (WS)	TP143 (WS)	TP143 (WS)	WS144
Sample Number				2	2	2	9	1
Depth (m)				0.50	0.25	0.50	1.20	0.10
Date Sampled				17/03/2016	17/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	-	-	-	-
Phenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	-	-	-	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	-	-	-	-
2-Methylphenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
Hexachloroethane	µg/l	0.05	NONE	< 0.05	-	-	-	-
Nitrobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
4-Methylphenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
Isophorone	µg/l	0.05	NONE	< 0.05	-	-	-	-
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Naphthalene	µg/l	0.01	NONE	< 0.01	-	-	-	-
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	-	-	-	-
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	-	-	-	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	-	-	-	-
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	-	-	-	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Acenaphthylene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Acenaphthene	µg/l	0.01	NONE	< 0.01	-	-	-	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Dibenzofuran	µg/l	0.05	NONE	< 0.05	-	-	-	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	-	-	-	-
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	-	-	-	-
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	-	-	-	-
Fluorene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Azobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	-	-	-	-
Hexachlorobenzene	µg/l	0.02	NONE	< 0.02	-	-	-	-
Phenanthrene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Anthracene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Carbazole	µg/l	0.05	NONE	< 0.05	-	-	-	-
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	-	-	-	-
Anthraquinone	µg/l	0.05	NONE	< 0.05	-	-	-	-
Fluoranthene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Pyrene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	-	-	-	-
Benzo(a)anthracene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Chrysene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Benzo(b)fluoranthene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Benzo(k)fluoranthene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Benzo(a)pyrene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	-	-	-	-
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				553621	553622	555916	555917	555918
Sample Reference				TP136 (WS)	TP139 (WS)	TP143 (WS)	TP143 (WS)	WS144
Sample Number				2	2	2	9	1
Depth (m)				0.50	0.25	0.50	1.20	0.10
Date Sampled				17/03/2016	17/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
Compound Name		N/A	NONE	None Detected	-	-	-	-
Compound % Match	%	N/A	NONE	0	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555919	555920	555921	555922	555923
Sample Reference				WS144	WLS109	WLS109	CP110	CP110
Sample Number				6	2	4	1	3
Depth (m)				1.00	0.50	2.00	0.10	1.00
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	8.5	8.7	8.7	8.5	8.4
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	23400	5090	7460	12100	8910
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ammoniacal Nitrogen as N	µg/l	15	NONE	19	57	23	770	27
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	1.7	ISO 17025	3.4	< 1.7	< 1.7	< 1.7	< 1.7
Arsenic (dissolved)	µg/l	1.1	ISO 17025	8.0	6.9	1.6	2.0	2.2
Boron (dissolved)	µg/l	10	ISO 17025	38	23	18	12	16
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.5	0.9	1.3	0.4	2.7
Copper (dissolved)	µg/l	0.7	ISO 17025	5.8	16	5.6	16	7.5
Iron (dissolved)	mg/l	0.004	ISO 17025	0.83	6.1	2.2	0.46	2.8
Lead (dissolved)	µg/l	1	ISO 17025	39	29	18	4.9	14
Manganese (dissolved)	µg/l	0.06	ISO 17025	15	28	51	440	18
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	0.9	1.6	2.5	2.7	1.2
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	4.2	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	0.5	2.6	0.7	31	0.7

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555919	555920	555921	555922	555923
Sample Reference				WS144	WLS109	WLS109	CP110	CP110
Sample Number				6	2	4	1	3
Depth (m)				1.00	0.50	2.00	0.10	1.00
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	NONE	-	-	-	-	-
Chloroethane	µg/l	1	NONE	-	-	-	-	-
Bromomethane	µg/l	1	NONE	-	-	-	-	-
Vinyl Chloride	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethane	µg/l	1	NONE	-	-	-	-	-
2,2-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloromethane	µg/l	1	NONE	-	-	-	-	-
1,1,1-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloroethane	µg/l	1	NONE	-	-	-	-	-
1,1-Dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
Benzene	µg/l	1	NONE	-	-	-	-	-
Tetrachloromethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloroethene	µg/l	1	NONE	-	-	-	-	-
Dibromomethane	µg/l	1	NONE	-	-	-	-	-
Bromodichloromethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Toluene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,3-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Dibromochloromethane	µg/l	1	NONE	-	-	-	-	-
Tetrachloroethene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/l	1	NONE	-	-	-	-	-
Chlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Ethylbenzene	µg/l	1	NONE	-	-	-	-	-
p & m-xylene	µg/l	1	NONE	-	-	-	-	-
Styrene	µg/l	1	NONE	-	-	-	-	-
Tribromomethane	µg/l	1	NONE	-	-	-	-	-
o-xylene	µg/l	1	NONE	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Isopropylbenzene	µg/l	1	NONE	-	-	-	-	-
Bromobenzene	µg/l	1	NONE	-	-	-	-	-
N-Propylbenzene	µg/l	1	NONE	-	-	-	-	-
2-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
4-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Tert-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Sec-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,3-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
P-Isopropyltoluene	µg/l	1	NONE	-	-	-	-	-
1,2-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,4-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.1	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555919	555920	555921	555922	555923
Sample Reference				WS144	WLS109	WLS109	CP110	CP110
Sample Number				6	2	4	1	3
Depth (m)				1.00	0.50	2.00	0.10	1.00
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
Compound Name		10	NONE	-	-	-	-	-
Compound % Match	%	10	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555919	555920	555921	555922	555923
Sample Reference				WS144	WLS109	WLS109	CP110	CP110
Sample Number				6	2	4	1	3
Depth (m)				1.00	0.50	2.00	0.10	1.00
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	-	-	-	-
Phenol	µg/l	0.05	NONE	-	-	-	-	-
2-Chlorophenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	-	-	-	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	-	-	-	-
2-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Hexachloroethane	µg/l	0.05	NONE	-	-	-	-	-
Nitrobenzene	µg/l	0.05	NONE	-	-	-	-	-
4-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Isophorone	µg/l	0.05	NONE	-	-	-	-	-
2-Nitrophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4-Dimethylphenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Naphthalene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
4-Chloroaniline	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.05	NONE	-	-	-	-	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2-Methylnaphthalene	µg/l	0.05	NONE	-	-	-	-	-
2-Chloronaphthalene	µg/l	0.05	NONE	-	-	-	-	-
Dimethylphthalate	µg/l	0.05	NONE	-	-	-	-	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Acenaphthylene	µg/l	0.01	NONE	-	-	-	-	-
Acenaphthene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Dibenzofuran	µg/l	0.05	NONE	-	-	-	-	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Diethyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
4-Nitroaniline	µg/l	0.05	NONE	-	-	-	-	-
Fluorene	µg/l	0.01	NONE	-	-	-	-	-
Azobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobenzene	µg/l	0.02	NONE	-	-	-	-	-
Phenanthrene	µg/l	0.01	NONE	-	-	-	-	-
Anthracene	µg/l	0.01	NONE	-	-	-	-	-
Carbazole	µg/l	0.05	NONE	-	-	-	-	-
Dibutyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Anthraquinone	µg/l	0.05	NONE	-	-	-	-	-
Fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Pyrene	µg/l	0.01	NONE	-	-	-	-	-
Butyl benzyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Benzo(a)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Chrysene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(b)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(k)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(a)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Dibenz(a,h)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(ghi)perylene	µg/l	0.01	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555919	555920	555921	555922	555923
Sample Reference				WS144	WLS109	WLS109	CP110	CP110
Sample Number				6	2	4	1	3
Depth (m)				1.00	0.50	2.00	0.10	1.00
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
Compound Name		N/A	NONE	-	-	-	-	-
Compound % Match	%	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555924	555925	555926	555927	555928
Sample Reference				CP110	CP110	WS151	WS150	WS149
Sample Number				5	7	3	2	1
Depth (m)				3.00	5.00	0.50	0.50	0.10
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	8.5	8.4	8.4	8.3	8.2
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	4350	4970	22500	17800	7130
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ammoniacal Nitrogen as N	µg/l	15	NONE	15	24	17	25	77
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	2.4	< 1.7
Arsenic (dissolved)	µg/l	1.1	ISO 17025	2.5	1.2	5.5	3.3	4.7
Boron (dissolved)	µg/l	10	ISO 17025	17	12	25	30	48
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	< 0.4	< 0.4	0.9	1.3	< 0.4
Copper (dissolved)	µg/l	0.7	ISO 17025	5.7	3.9	5.9	5.6	15
Iron (dissolved)	mg/l	0.004	ISO 17025	0.65	0.074	0.12	0.17	0.22
Lead (dissolved)	µg/l	1	ISO 17025	11	7.4	17	16	19
Manganese (dissolved)	µg/l	0.06	ISO 17025	20	170	7.4	13	14
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	1.2	< 0.3	< 0.3	0.9	< 0.3
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	4.4	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	< 0.4	< 0.4	3.8	< 0.4	5.7

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555924	555925	555926	555927	555928
Sample Reference				CP110	CP110	WS151	WS150	WS149
Sample Number				5	7	3	2	1
Depth (m)				3.00	5.00	0.50	0.50	0.10
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	NONE	-	-	-	-	-
Chloroethane	µg/l	1	NONE	-	-	-	-	-
Bromomethane	µg/l	1	NONE	-	-	-	-	-
Vinyl Chloride	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	NONE	-	-	-	-	-
1,1-dichloroethane	µg/l	1	NONE	-	-	-	-	-
2,2-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloromethane	µg/l	1	NONE	-	-	-	-	-
1,1,1-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloroethane	µg/l	1	NONE	-	-	-	-	-
1,1-Dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,2-dichloroethene	µg/l	1	NONE	-	-	-	-	-
Benzene	µg/l	1	NONE	-	-	-	-	-
Tetrachloromethane	µg/l	1	NONE	-	-	-	-	-
1,2-dichloropropane	µg/l	1	NONE	-	-	-	-	-
Trichloroethene	µg/l	1	NONE	-	-	-	-	-
Dibromomethane	µg/l	1	NONE	-	-	-	-	-
Bromodichloromethane	µg/l	1	NONE	-	-	-	-	-
Cis-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Trans-1,3-dichloropropene	µg/l	1	NONE	-	-	-	-	-
Toluene	µg/l	1	NONE	-	-	-	-	-
1,1,2-Trichloroethane	µg/l	1	NONE	-	-	-	-	-
1,3-Dichloropropane	µg/l	1	NONE	-	-	-	-	-
Dibromochloromethane	µg/l	1	NONE	-	-	-	-	-
Tetrachloroethene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/l	1	NONE	-	-	-	-	-
Chlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Ethylbenzene	µg/l	1	NONE	-	-	-	-	-
p & m-xylene	µg/l	1	NONE	-	-	-	-	-
Styrene	µg/l	1	NONE	-	-	-	-	-
Tribromomethane	µg/l	1	NONE	-	-	-	-	-
o-xylene	µg/l	1	NONE	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	-	-
Isopropylbenzene	µg/l	1	NONE	-	-	-	-	-
Bromobenzene	µg/l	1	NONE	-	-	-	-	-
N-Propylbenzene	µg/l	1	NONE	-	-	-	-	-
2-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
4-Chlorotoluene	µg/l	1	NONE	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Tert-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	1	NONE	-	-	-	-	-
Sec-Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,3-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
P-Isopropyltoluene	µg/l	1	NONE	-	-	-	-	-
1,2-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
1,4-dichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Butylbenzene	µg/l	1	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	1	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.1	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	1	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555924	555925	555926	555927	555928
Sample Reference				CP110	CP110	WS151	WS150	WS149
Sample Number				5	7	3	2	1
Depth (m)				3.00	5.00	0.50	0.50	0.10
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
Compound Name		10	NONE	-	-	-	-	-
Compound % Match	%	10	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555924	555925	555926	555927	555928
Sample Reference				CP110	CP110	WS151	WS150	WS149
Sample Number				5	7	3	2	1
Depth (m)				3.00	5.00	0.50	0.50	0.10
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	-	-	-	-
Phenol	µg/l	0.05	NONE	-	-	-	-	-
2-Chlorophenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	-	-	-	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	-	-	-	-
2-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Hexachloroethane	µg/l	0.05	NONE	-	-	-	-	-
Nitrobenzene	µg/l	0.05	NONE	-	-	-	-	-
4-Methylphenol	µg/l	0.05	NONE	-	-	-	-	-
Isophorone	µg/l	0.05	NONE	-	-	-	-	-
2-Nitrophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4-Dimethylphenol	µg/l	0.05	NONE	-	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	-	-	-	-
Naphthalene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
4-Chloroaniline	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobutadiene	µg/l	0.05	NONE	-	-	-	-	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	-	-	-	-
2-Methylnaphthalene	µg/l	0.05	NONE	-	-	-	-	-
2-Chloronaphthalene	µg/l	0.05	NONE	-	-	-	-	-
Dimethylphthalate	µg/l	0.05	NONE	-	-	-	-	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Acenaphthylene	µg/l	0.01	NONE	-	-	-	-	-
Acenaphthene	µg/l	0.01	NONE	-	-	-	-	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	-	-
Dibenzofuran	µg/l	0.05	NONE	-	-	-	-	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Diethyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
4-Nitroaniline	µg/l	0.05	NONE	-	-	-	-	-
Fluorene	µg/l	0.01	NONE	-	-	-	-	-
Azobenzene	µg/l	0.05	NONE	-	-	-	-	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	-	-
Hexachlorobenzene	µg/l	0.02	NONE	-	-	-	-	-
Phenanthrene	µg/l	0.01	NONE	-	-	-	-	-
Anthracene	µg/l	0.01	NONE	-	-	-	-	-
Carbazole	µg/l	0.05	NONE	-	-	-	-	-
Dibutyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Anthraquinone	µg/l	0.05	NONE	-	-	-	-	-
Fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Pyrene	µg/l	0.01	NONE	-	-	-	-	-
Butyl benzyl phthalate	µg/l	0.05	NONE	-	-	-	-	-
Benzo(a)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Chrysene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(b)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(k)fluoranthene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(a)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	-	-	-	-	-
Dibenz(a,h)anthracene	µg/l	0.01	NONE	-	-	-	-	-
Benzo(ghi)perylene	µg/l	0.01	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555924	555925	555926	555927	555928
Sample Reference				CP110	CP110	WS151	WS150	WS149
Sample Number				5	7	3	2	1
Depth (m)				3.00	5.00	0.50	0.50	0.10
Date Sampled				30/03/2016	30/03/2016	30/03/2016	30/03/2016	30/03/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
Compound Name		N/A	NONE	-	-	-	-	-
Compound % Match	%	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555929	555930	555931	556206	562982
Sample Reference				WS145	TP146 (WS)	TP147 (WS)	TP102	CP110
Sample Number				2	1	2	ES6	11
Depth (m)				0.50	0.10	0.30	1.00	9.00
Date Sampled				30/03/2016	30/03/2016	30/03/2016	07/03/2016	15/04/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	8.2	8.1	8.2	8.6	8.5
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	6410	6330	3690	27100	3340
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ammoniacal Nitrogen as N	µg/l	15	NONE	23	1100	28	30	63
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
Arsenic (dissolved)	µg/l	1.1	ISO 17025	1.9	3.1	4.6	< 1.1	< 1.1
Boron (dissolved)	µg/l	10	ISO 17025	20	30	18	17	24
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.4	ISO 17025	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Copper (dissolved)	µg/l	0.7	ISO 17025	9.2	24	10	3.4	2.2
Iron (dissolved)	mg/l	0.004	ISO 17025	0.12	0.10	0.15	0.017	0.17
Lead (dissolved)	µg/l	1	ISO 17025	12	25	13	< 1.0	1.3
Manganese (dissolved)	µg/l	0.06	ISO 17025	1.0	310	4.0	2.8	17
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	< 0.3	1.2	< 0.3	0.8	< 0.3
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	< 0.4	6.3	3.4	< 0.4	9.5

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555929	555930	555931	556206	562982
Sample Reference				WS145	TP146 (WS)	TP147 (WS)	TP102	CP110
Sample Number				2	1	2	ES6	11
Depth (m)				0.50	0.10	0.30	1.00	9.00
Date Sampled				30/03/2016	30/03/2016	30/03/2016	07/03/2016	15/04/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	NONE	-	-	-	< 1.0	-
Chloroethane	µg/l	1	NONE	-	-	-	< 1.0	-
Bromomethane	µg/l	1	NONE	-	-	-	< 1.0	-
Vinyl Chloride	µg/l	1	NONE	-	-	-	< 1.0	-
1,1-dichloroethene	µg/l	1	NONE	-	-	-	< 1.0	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	NONE	-	-	-	< 1.0	-
Cis-1,2-dichloroethene	µg/l	1	NONE	-	-	-	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	NONE	-	-	-	< 1.0	-
1,1-dichloroethane	µg/l	1	NONE	-	-	-	< 1.0	-
2,2-Dichloropropane	µg/l	1	NONE	-	-	-	< 1.0	-
Trichloromethane	µg/l	1	NONE	-	-	-	< 1.0	-
1,1,1-Trichloroethane	µg/l	1	NONE	-	-	-	< 1.0	-
1,2-dichloroethane	µg/l	1	NONE	-	-	-	< 1.0	-
1,1-Dichloropropene	µg/l	1	NONE	-	-	-	< 1.0	-
Trans-1,2-dichloroethene	µg/l	1	NONE	-	-	-	< 1.0	-
Benzene	µg/l	1	NONE	-	-	-	< 1.0	-
Tetrachloromethane	µg/l	1	NONE	-	-	-	< 1.0	-
1,2-dichloropropane	µg/l	1	NONE	-	-	-	< 1.0	-
Trichloroethene	µg/l	1	NONE	-	-	-	< 1.0	-
Dibromomethane	µg/l	1	NONE	-	-	-	< 1.0	-
Bromodichloromethane	µg/l	1	NONE	-	-	-	< 1.0	-
Cis-1,3-dichloropropene	µg/l	1	NONE	-	-	-	< 1.0	-
Trans-1,3-dichloropropene	µg/l	1	NONE	-	-	-	< 1.0	-
Toluene	µg/l	1	NONE	-	-	-	< 1.0	-
1,1,2-Trichloroethane	µg/l	1	NONE	-	-	-	< 1.0	-
1,3-Dichloropropane	µg/l	1	NONE	-	-	-	< 1.0	-
Dibromochloromethane	µg/l	1	NONE	-	-	-	< 1.0	-
Tetrachloroethene	µg/l	1	NONE	-	-	-	< 1.0	-
1,2-Dibromoethane	µg/l	1	NONE	-	-	-	< 1.0	-
Chlorobenzene	µg/l	1	NONE	-	-	-	< 1.0	-
1,1,1,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	< 1.0	-
Ethylbenzene	µg/l	1	NONE	-	-	-	< 1.0	-
p & m-xylene	µg/l	1	NONE	-	-	-	< 1.0	-
Styrene	µg/l	1	NONE	-	-	-	< 1.0	-
Tribromomethane	µg/l	1	NONE	-	-	-	< 1.0	-
o-xylene	µg/l	1	NONE	-	-	-	< 1.0	-
1,1,2,2-Tetrachloroethane	µg/l	1	NONE	-	-	-	< 1.0	-
Isopropylbenzene	µg/l	1	NONE	-	-	-	< 1.0	-
Bromobenzene	µg/l	1	NONE	-	-	-	< 1.0	-
N-Propylbenzene	µg/l	1	NONE	-	-	-	< 1.0	-
2-Chlorotoluene	µg/l	1	NONE	-	-	-	< 1.0	-
4-Chlorotoluene	µg/l	1	NONE	-	-	-	< 1.0	-
1,3,5-Trimethylbenzene	µg/l	1	NONE	-	-	-	< 1.0	-
Tert-Butylbenzene	µg/l	1	NONE	-	-	-	< 1.0	-
1,2,4-Trimethylbenzene	µg/l	1	NONE	-	-	-	< 1.0	-
Sec-Butylbenzene	µg/l	1	NONE	-	-	-	< 1.0	-
1,3-dichlorobenzene	µg/l	1	NONE	-	-	-	< 1.0	-
P-Isopropyltoluene	µg/l	1	NONE	-	-	-	< 1.0	-
1,2-dichlorobenzene	µg/l	1	NONE	-	-	-	< 1.0	-
1,4-dichlorobenzene	µg/l	1	NONE	-	-	-	< 1.0	-
Butylbenzene	µg/l	1	NONE	-	-	-	< 1.0	-
1,2-Dibromo-3-chloropropane	µg/l	1	NONE	-	-	-	< 1.0	-
1,2,4-Trichlorobenzene	µg/l	1	NONE	-	-	-	< 1.0	-
Hexachlorobutadiene	µg/l	0.1	NONE	-	-	-	< 0.1	-
1,2,3-Trichlorobenzene	µg/l	1	NONE	-	-	-	< 1.0	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555929	555930	555931	556206	562982
Sample Reference				WS145	TP146 (WS)	TP147 (WS)	TP102	CP110
Sample Number				2	1	2	ES6	11
Depth (m)				0.50	0.10	0.30	1.00	9.00
Date Sampled				30/03/2016	30/03/2016	30/03/2016	07/03/2016	15/04/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
Compound Name		10	NONE	-	-	-	None Detected	-
Compound % Match	%	10	NONE	-	-	-	0	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555929	555930	555931	556206	562982
Sample Reference				WS145	TP146 (WS)	TP147 (WS)	TP102	CP110
Sample Number				2	1	2	ES6	11
Depth (m)				0.50	0.10	0.30	1.00	9.00
Date Sampled				30/03/2016	30/03/2016	30/03/2016	07/03/2016	15/04/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	-	-	< 0.05	-
Phenol	µg/l	0.05	NONE	-	-	-	< 0.05	-
2-Chlorophenol	µg/l	0.05	NONE	-	-	-	< 0.05	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	-	-	< 0.05	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	< 0.05	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	< 0.05	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	-	-	< 0.05	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	-	-	< 0.05	-
2-Methylphenol	µg/l	0.05	NONE	-	-	-	< 0.05	-
Hexachloroethane	µg/l	0.05	NONE	-	-	-	< 0.05	-
Nitrobenzene	µg/l	0.05	NONE	-	-	-	< 0.05	-
4-Methylphenol	µg/l	0.05	NONE	-	-	-	< 0.05	-
Isophorone	µg/l	0.05	NONE	-	-	-	< 0.05	-
2-Nitrophenol	µg/l	0.05	NONE	-	-	-	< 0.05	-
2,4-Dimethylphenol	µg/l	0.05	NONE	-	-	-	< 0.05	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	-	-	< 0.05	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	-	-	< 0.05	-
Naphthalene	µg/l	0.01	NONE	-	-	-	< 0.01	-
2,4-Dichlorophenol	µg/l	0.05	NONE	-	-	-	< 0.05	-
4-Chloroaniline	µg/l	0.05	NONE	-	-	-	< 0.05	-
Hexachlorobutadiene	µg/l	0.05	NONE	-	-	-	< 0.05	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	-	-	< 0.05	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	-	-	< 0.05	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	-	-	< 0.05	-
2-Methylnaphthalene	µg/l	0.05	NONE	-	-	-	< 0.05	-
2-Chloronaphthalene	µg/l	0.05	NONE	-	-	-	< 0.05	-
Dimethylphthalate	µg/l	0.05	NONE	-	-	-	< 0.05	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	< 0.05	-
Acenaphthylene	µg/l	0.01	NONE	-	-	-	< 0.01	-
Acenaphthene	µg/l	0.01	NONE	-	-	-	< 0.01	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	-	-	< 0.05	-
Dibenzofuran	µg/l	0.05	NONE	-	-	-	< 0.05	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	< 0.05	-
Diethyl phthalate	µg/l	0.05	NONE	-	-	-	< 0.05	-
4-Nitroaniline	µg/l	0.05	NONE	-	-	-	< 0.05	-
Fluorene	µg/l	0.01	NONE	-	-	-	< 0.01	-
Azobenzene	µg/l	0.05	NONE	-	-	-	< 0.05	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	-	-	< 0.05	-
Hexachlorobenzene	µg/l	0.02	NONE	-	-	-	< 0.02	-
Phenanthrene	µg/l	0.01	NONE	-	-	-	< 0.01	-
Anthracene	µg/l	0.01	NONE	-	-	-	< 0.01	-
Carbazole	µg/l	0.05	NONE	-	-	-	< 0.05	-
Dibutyl phthalate	µg/l	0.05	NONE	-	-	-	< 0.05	-
Anthraquinone	µg/l	0.05	NONE	-	-	-	< 0.05	-
Fluoranthene	µg/l	0.01	NONE	-	-	-	< 0.01	-
Pyrene	µg/l	0.01	NONE	-	-	-	< 0.01	-
Butyl benzyl phthalate	µg/l	0.05	NONE	-	-	-	< 0.05	-
Benzo(a)anthracene	µg/l	0.01	NONE	-	-	-	< 0.01	-
Chrysene	µg/l	0.01	NONE	-	-	-	< 0.01	-
Benzo(b)fluoranthene	µg/l	0.01	NONE	-	-	-	< 0.01	-
Benzo(k)fluoranthene	µg/l	0.01	NONE	-	-	-	< 0.01	-
Benzo(a)pyrene	µg/l	0.01	NONE	-	-	-	< 0.01	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	-	-	-	< 0.01	-
Dibenz(a,h)anthracene	µg/l	0.01	NONE	-	-	-	< 0.01	-
Benzo(ghi)perylene	µg/l	0.01	NONE	-	-	-	< 0.01	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				555929	555930	555931	556206	562982
Sample Reference				WS145	TP146 (WS)	TP147 (WS)	TP102	CP110
Sample Number				2	1	2	ES6	11
Depth (m)				0.50	0.10	0.30	1.00	9.00
Date Sampled				30/03/2016	30/03/2016	30/03/2016	07/03/2016	15/04/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
Compound Name		N/A	NONE	-	-	-	None Detected	-
Compound % Match	%	N/A	NONE	-	-	-	0	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				562983	562984			
Sample Reference				CP117	CP117			
Sample Number				2	4			
Depth (m)				0.50	2.00			
Date Sampled				15/04/2016	15/04/2016			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	8.4	8.1			
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10			
Free Cyanide	µg/l	10	NONE	< 10	< 10			
Sulphate as SO_4	µg/l	100	ISO 17025	1710	5110			
Sulphide	µg/l	5	NONE	< 5.0	< 5.0			
Ammoniacal Nitrogen as N	µg/l	15	NONE	91	66			
Heavy Metals / Metalloids								
Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7			
Arsenic (dissolved)	µg/l	1.1	ISO 17025	3.5	5.7			
Boron (dissolved)	µg/l	10	ISO 17025	21	16			
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08			
Chromium (hexavalent)	µg/l	5	NONE	< 5.0	< 5.0			
Chromium (dissolved)	µg/l	0.4	ISO 17025	2.5	0.8			
Copper (dissolved)	µg/l	0.7	ISO 17025	13	11			
Iron (dissolved)	mg/l	0.004	ISO 17025	2.1	0.44			
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0			
Manganese (dissolved)	µg/l	0.06	ISO 17025	3.7	10			
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5			
Nickel (dissolved)	µg/l	0.3	ISO 17025	1.5	1.5			
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0			
Zinc (dissolved)	µg/l	0.4	ISO 17025	2.9	4.5			

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				562983	562984			
Sample Reference				CP117	CP117			
Sample Number				2	4			
Depth (m)				0.50	2.00			
Date Sampled				15/04/2016	15/04/2016			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	NONE	-	-			
Chloroethane	µg/l	1	NONE	-	-			
Bromomethane	µg/l	1	NONE	-	-			
Vinyl Chloride	µg/l	1	NONE	-	-			
1,1-dichloroethene	µg/l	1	NONE	-	-			
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	NONE	-	-			
Cis-1,2-dichloroethene	µg/l	1	NONE	-	-			
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	NONE	-	-			
1,1-dichloroethane	µg/l	1	NONE	-	-			
2,2-Dichloropropane	µg/l	1	NONE	-	-			
Trichloromethane	µg/l	1	NONE	-	-			
1,1,1-Trichloroethane	µg/l	1	NONE	-	-			
1,2-dichloroethane	µg/l	1	NONE	-	-			
1,1-Dichloropropene	µg/l	1	NONE	-	-			
Trans-1,2-dichloroethene	µg/l	1	NONE	-	-			
Benzene	µg/l	1	NONE	-	-			
Tetrachloromethane	µg/l	1	NONE	-	-			
1,2-dichloropropane	µg/l	1	NONE	-	-			
Trichloroethene	µg/l	1	NONE	-	-			
Dibromomethane	µg/l	1	NONE	-	-			
Bromodichloromethane	µg/l	1	NONE	-	-			
Cis-1,3-dichloropropene	µg/l	1	NONE	-	-			
Trans-1,3-dichloropropene	µg/l	1	NONE	-	-			
Toluene	µg/l	1	NONE	-	-			
1,1,2-Trichloroethane	µg/l	1	NONE	-	-			
1,3-Dichloropropane	µg/l	1	NONE	-	-			
Dibromochloromethane	µg/l	1	NONE	-	-			
Tetrachloroethene	µg/l	1	NONE	-	-			
1,2-Dibromoethane	µg/l	1	NONE	-	-			
Chlorobenzene	µg/l	1	NONE	-	-			
1,1,1,2-Tetrachloroethane	µg/l	1	NONE	-	-			
Ethylbenzene	µg/l	1	NONE	-	-			
p & m-xylene	µg/l	1	NONE	-	-			
Styrene	µg/l	1	NONE	-	-			
Tribromomethane	µg/l	1	NONE	-	-			
o-xylene	µg/l	1	NONE	-	-			
1,1,2,2-Tetrachloroethane	µg/l	1	NONE	-	-			
Isopropylbenzene	µg/l	1	NONE	-	-			
Bromobenzene	µg/l	1	NONE	-	-			
N-Propylbenzene	µg/l	1	NONE	-	-			
2-Chlorotoluene	µg/l	1	NONE	-	-			
4-Chlorotoluene	µg/l	1	NONE	-	-			
1,3,5-Trimethylbenzene	µg/l	1	NONE	-	-			
Tert-Butylbenzene	µg/l	1	NONE	-	-			
1,2,4-Trimethylbenzene	µg/l	1	NONE	-	-			
Sec-Butylbenzene	µg/l	1	NONE	-	-			
1,3-dichlorobenzene	µg/l	1	NONE	-	-			
P-Isopropyltoluene	µg/l	1	NONE	-	-			
1,2-dichlorobenzene	µg/l	1	NONE	-	-			
1,4-dichlorobenzene	µg/l	1	NONE	-	-			
Butylbenzene	µg/l	1	NONE	-	-			
1,2-Dibromo-3-chloropropane	µg/l	1	NONE	-	-			
1,2,4-Trichlorobenzene	µg/l	1	NONE	-	-			
Hexachlorobutadiene	µg/l	0.1	NONE	-	-			
1,2,3-Trichlorobenzene	µg/l	1	NONE	-	-			

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				562983	562984			
Sample Reference				CP117	CP117			
Sample Number				2	4			
Depth (m)				0.50	2.00			
Date Sampled				15/04/2016	15/04/2016			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
Compound Name		10	NONE	-	-			
Compound % Match	%	10	NONE	-	-			

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				562983	562984			
Sample Reference				CP117	CP117			
Sample Number				2	4			
Depth (m)				0.50	2.00			
Date Sampled				15/04/2016	15/04/2016			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	-			
Phenol	µg/l	0.05	NONE	-	-			
2-Chlorophenol	µg/l	0.05	NONE	-	-			
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	-			
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	-			
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	-			
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	-			
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	-			
2-Methylphenol	µg/l	0.05	NONE	-	-			
Hexachloroethane	µg/l	0.05	NONE	-	-			
Nitrobenzene	µg/l	0.05	NONE	-	-			
4-Methylphenol	µg/l	0.05	NONE	-	-			
Isophorone	µg/l	0.05	NONE	-	-			
2-Nitrophenol	µg/l	0.05	NONE	-	-			
2,4-Dimethylphenol	µg/l	0.05	NONE	-	-			
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	-			
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	-			
Naphthalene	µg/l	0.01	NONE	-	-			
2,4-Dichlorophenol	µg/l	0.05	NONE	-	-			
4-Chloroaniline	µg/l	0.05	NONE	-	-			
Hexachlorobutadiene	µg/l	0.05	NONE	-	-			
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	-			
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	-			
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	-			
2-Methylnaphthalene	µg/l	0.05	NONE	-	-			
2-Chloronaphthalene	µg/l	0.05	NONE	-	-			
Dimethylphthalate	µg/l	0.05	NONE	-	-			
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	-			
Acenaphthylene	µg/l	0.01	NONE	-	-			
Acenaphthene	µg/l	0.01	NONE	-	-			
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	-			
Dibenzofuran	µg/l	0.05	NONE	-	-			
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	-			
Diethyl phthalate	µg/l	0.05	NONE	-	-			
4-Nitroaniline	µg/l	0.05	NONE	-	-			
Fluorene	µg/l	0.01	NONE	-	-			
Azobenzene	µg/l	0.05	NONE	-	-			
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	-			
Hexachlorobenzene	µg/l	0.02	NONE	-	-			
Phenanthrene	µg/l	0.01	NONE	-	-			
Anthracene	µg/l	0.01	NONE	-	-			
Carbazole	µg/l	0.05	NONE	-	-			
Dibutyl phthalate	µg/l	0.05	NONE	-	-			
Anthraquinone	µg/l	0.05	NONE	-	-			
Fluoranthene	µg/l	0.01	NONE	-	-			
Pyrene	µg/l	0.01	NONE	-	-			
Butyl benzyl phthalate	µg/l	0.05	NONE	-	-			
Benzo(a)anthracene	µg/l	0.01	NONE	-	-			
Chrysene	µg/l	0.01	NONE	-	-			
Benzo(b)fluoranthene	µg/l	0.01	NONE	-	-			
Benzo(k)fluoranthene	µg/l	0.01	NONE	-	-			
Benzo(a)pyrene	µg/l	0.01	NONE	-	-			
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	-	-			
Dibenz(a,h)anthracene	µg/l	0.01	NONE	-	-			
Benzo(ghi)perylene	µg/l	0.01	NONE	-	-			

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Lab Sample Number				562983	562984			
Sample Reference				CP117	CP117			
Sample Number				2	4			
Depth (m)				0.50	2.00			
Date Sampled				15/04/2016	15/04/2016			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
Compound Name		N/A	NONE	-	-			
Compound % Match	%	N/A	NONE	-	-			

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
545000	TP125	0.50	None Supplied	Brown clay and sand with vegetation.
545001	TP125	2.50	None Supplied	Grey clay with gravel.
545046	TP122	1	0.10	Black loam and clay with vegetation.
545047	TP122	3	1.00	Brown clay and sand.
548316	TP157	3	0.50	Grey clay.
548317	TP157	5	1.00	Brown sandy clay.
548318	TP157	7	1.40	Black loam with peat and vegetation
548319	TP159	1	0.10	Grey clay and loam.
548320	TP159	5	1.00	Grey clay.
548321	TP159	10	3.00	Grey clay.
548322	TP102	1	0.10	Light brown clay and loam with vegetation.
548323	TP102	3	0.50	Grey gravelly loam with vegetation.
548324	TP103	3	1.00	Grey gravelly loam with vegetation.
548325	TP103	5	2.00	Grey gravelly loam.
548326	TP101	2	0.50	Grey gravelly loam with vegetation.
548327	TP104	7	1.50	Grey gravelly loam.
548328	TP105	2	0.50	Grey gravelly loam.
548329	TP105	5	2.90	Grey gravelly loam.
548330	TP106	1	0.10	Grey gravelly loam with vegetation.
548331	TP106	11	3.00	Grey gravelly loam.
549415	TP107	2	0.50	Black gravelly loam.
549416	TP107	6	2.20	Black clay and sand.
549417	TP108	1	0.10	Brown loam and clay.
549418	TP108	5	3.00	Black clay and sand.
549419	TP116 (WS)	1	0.10	Brown clay.
549420	TP116 (WS)	5	2.00	Brown clay.
549421	TP116 (WS)	9	4.00	Brown clay and sand.
549422	TP116 (WS)	11	5.00	Brown clay and sand with peat
549423	TP115 (WS)	1	0.20	Brown clay and loam with vegetation.
549424	TP115 (WS)	4	0.80	Brown clay and sand.
549425	TP115 (WS)	8	2.70	Brown clay and sand with vegetation.
549426	TP165 (WS)	1	0.10	Brown clay and sand with vegetation.
549427	TP165 (WS)	2	1.20	Brown clay and sand with vegetation.
553585	TP162 (WS)	1	0.10	Brown loam and clay with gravel and vegetation.
553586	TP162 (WS)	6	2.00	Brown loam and clay with gravel.
553587	TP137 (WS)	2	0.50	Non Soil**
553588	TP137 (WS)	3	1.00	Non Soil**
553589	OP111	2	0.50	Brown loam and clay with gravel and vegetation.
553590	OP111	3	0.75	Brown loam and clay with vegetation.
553591	OP112	1	0.10	Brown loam and clay with vegetation.
553592	OP112	7	1.00	Light brown clay and loam with gravel and vegetation.
553593	OP113	2	0.50	Light brown clay and loam with gravel and vegetation.
553594	OP113	3	1.00	Light brown clay and loam with gravel.
553595	TP114	1	0.10	Brown clay and loam with vegetation.
553596	TP114	2	0.50	Light brown clay and loam with gravel and vegetation.
553597	TP140 (WS)	1	0.10	Brown clay and sand with vegetation.
553598	TP140 (WS)	4	0.50	Brown clay and sand with gravel and vegetation.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
553599	WS138	2	0.50	Non Soil**
553600	WS138	3	1.00	Non Soil**
553601	TP136 (WS)	1	0.10	Brown gravelly loam with glass.
553602	TP136 (WS)	2	0.50	Brown gravelly loam.
553603	TP139 (WS)	2	0.25	Light brown clay and loam with gravel.
555899	TP143 (WS)	2	0.50	Brown clay and sand.
555900	TP143 (WS)	9	1.20	Brown clay and sand with gravel.
555901	WS144	1	0.10	Brown loam and sand with gravel and vegetation.
555902	WS144	6	1.00	Brown loam and sand with gravel and vegetation.
555903	WLS109	2	0.50	Brown loam and sand with gravel and vegetation.
555904	WLS109	4	2.00	Brown loam and clay with gravel and vegetation.
555905	CP110	1	0.10	Brown loam and clay with gravel and vegetation.
555906	CP110	3	1.00	Brown loam and clay with gravel and vegetation.
555907	CP110	5	3.00	Brown clay and sand with gravel.
555908	CP110	7	5.00	Brown clay and sand with gravel.
555909	WS151	3	0.50	Brown loam and sand with gravel and vegetation.
555910	WS150	2	0.50	Brown loam and sand with gravel and vegetation.
555911	WS150	3	1.00	Brown clay and sand with gravel.
555912	WS149	1	0.10	Brown loam and clay with gravel and vegetation.
555913	WS145	2	0.50	Brown loam and sand with gravel and vegetation.
555914	TP146 (WS)	1	0.10	Brown loam and sand with gravel and vegetation.
555915	TP147 (WS)	2	0.30	Brown loam and sand with gravel and vegetation.
556205	TP102	ES6	1.00	Grey gravelly loam.
562979	CP110	11	9.00	Brown gravel.**
562980	CP117	2	0.50	Brown clay and loam with vegetation.
562981	CP117	4	2.00	Brown clay and sand.

**Non MCerts matrix

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammoniacal Nitrogen as N in soil	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method,10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	The analysis was carried out using documented in-house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006	D	ISO 17025
Biological oxygen demand of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B. Samples received > 24 hrs after sampling, data may not be valid and should be interpreted with care.	L086-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Calorific Value of soil	Calorific Value of Soil - Subcontracted Analysis.	Subcontracted Analysis - See Attached Subcon Report.		W	NONE
Cations in soil by ICP-OES	Determination of cations in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K2Cr2O7 followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082 B	W	ISO 17025
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Elemental sulphur in soil	Determination of elemental sulphur in soil by extraction in acetonitrile followed by HPLC.	In-house method based on Secondsite Property Holdings Guidance for Assessing and Managing Potential	L021-PL	D	MCERTS
Free cyanide in leachate	Determination of free cyanide by distillation followed by colorimetry.	In-house method	L080-PL	W	NONE
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L047-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Combined Report : Sections 5 & 6 of the A465

Project / Site name: A465 - Section 5&6

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Nitrate in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Nitrite in water	Determination of nitrite in water by addition of sulphanilamide and NED followed by colorimetry.Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L077-PL	W	ISO 17025
pH in leachate	Determination of pH in leachate by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	ISO 17025
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
pH in water	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	ISO 17025

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Quantum
Geotechnical

Quantum Geotechnical Ltd
Tŷ Berwig
Bynea
Llanelli
Carmarthenshire
SA14 9ST
T: 01554 744880
F: 01554 776150
E: enquiries@quantum-geotech.co.uk
W: http://www.quantum-geotech.co.uk

Page left intentionally blank

Appendix 12B – Potential Sources of Contamination

Figure reference	Potential source of contamination	Further information	Reference
Sheet 1 of 4			
1	Hirwaun Waste Disposal Site	Historical landfill which accepted waste including liquid sludge.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984986. Landmark, 2014. Envirocheck Report. Order Reference: 58812138_1_1.
2	Active Sewage Works	N/A	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985.
3	Hirwaun Industrial Estate (South of the A465)	Former Royal Ordnance Factory (1941 - 1945), specialising in small arms ammunition manufacture. The area has been used as an industrial estate since 1945 with activities including clothing and furniture manufacture, production of auromycin, metal works, electronic manufacturing and recovery of waste tyres.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985. Coflein, 2010. Royal Commission on the Ancient and Historical Monuments of Wales: Hirwaun Royal Ordnance Factory, Hirwaun. (http://www.coflein.gov.uk/en/site/308127/details/HIRWAUN+ROYAL+ORDNANCE+FACTORY, +HIRWAUN/). [Accessed on 23/05/2016].
4	Hirwaun Industrial estate (North of the A465)	Industrial estate with activities including shelving manufacturers. The northern area of this site was formally used as military land, potentially associated with the munitions factory in the industrial estate located south of the A465, however, its specific purpose is unknown.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985.
5	Brickworks and Engine House	Historical brickworks (1900 - 1903) and engine house (1877 - 1878).	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985.
6	Hirwaun Opencast Mine	Former colliery site for coal and lignite mining with associated historical colliery spoil, engine house and tramway system. Historical uses also include a rifle range. The site is currently an opencast mine, forming part of Tower Regeneration; a project including extraction of remaining surface coal and full restoration of the entire colliery site.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985. Tower Regeneration, 2016. Land Reclamation, Surface Coal Mining and Restoration at the Former Tower Colliery Site. (http://www.towerregeneration.co.uk/) [Accessed on 23/05/2016].
7	Cartref, The Bryn	Historical landfill which ceased to operate following 1983. Maximum input at the site was	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference:

Figure reference	Potential source of contamination	Further information	Reference
		equal to / greater than 25, 000 t. The site was authorised to accept excavated natural materials, hardcore and rubble and prohibited materials including empty use containers, industrial wastes, sludge wastes and toxic / poisonous wastes.	GS-1984986. Landmark, 2014. Envirocheck Report. Order Reference: 58812138_1_1.
8	Made Ground in the form of Infilled Ponds	The ponds appear to have been infilled between 1968 and 1969. The nature of the made ground is unknown but may comprise material from nearby industrial activities including an iron works, colliery, saw mill and brick works. The infilled ponds extended west; however, this area has since been claimed by opencast.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985.
9	Historical Tank	Historical tank dated 1914.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985.
10	Bryngelli Industrial Estate	Industrial estate with a concrete products works, joinery, bakery and warehouse.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985 Google Maps, 2016. (www.google.co.uk/maps/) [Accessed 04/02/2016].
11	Made Ground	Made ground comprised of unknown materials, likely to be associated with the Iron and Steel Works.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985.
12	Colliery Spoil (Coal)	An area of colliery spoil previously occupied with a saw mill (pre-dates mapping - 1914), smithy (pre-dates mapping - 1900/03), dismantled tramway / railway system (pre-dates mapping to present), and presence of disused levels.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985.
13	Hirwaun Iron & Steel Works	Historical Iron and Steel Works (1884 – 1961 / 1964).	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985.
14 & 16	Gravel Pit	Historical gravel pit.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985.
15	Gas Works	Historical gas works (1844 - 1949)	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference:

Figure reference	Potential source of contamination	Further information	Reference
			GS-1984985.
17	Colliery Spoil (Coal)	Brownfield areas with colliery spoil present.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985.
18	Pentwyn Cynon Farm Landfill	Historical landfill which ceased to operate following 1992. The site deposited various wastes, including inert waste.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984986.
19	Sewage Works	Former sewage works, including filter beds (1914 - 1969). The filter bed area is labelled as a tank in 1976 mapping.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
Sheet 2 of 4			
20	Made Ground	Made ground comprised of unknown materials associated with the construction of the bridge forming part of the A465. The underlying reservoir was previously Aberdare Water Works.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
21	Colliery Spoil (Ironstone & Coal)	Former coal and ironstone level (pre-dates mapping - 1901) and then a disused tip by 1976/1979. The nature of the ground is unknown but likely to comprise spoil associated with the coal and Ironstone level.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
22	Made Ground	Made ground in the form of an infilled reservoir. The reservoir was infilled between 1976 and 1979. The nature of the made ground is unknown.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
23	Colliery Spoil (Ironstone & Coal)	Former ironstone mining and quarry area with some coal levels also present (pre-dates mapping - 1901). A smithy (1875/78 - 1903) and infilled reservoir (1976/79) are also noted. At present, the area is likely to comprise spoil from previous land uses.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
Sheet 3 of 4			
24	Cefn Coed	Cemetery (pre-dates 1884 / 1885	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference:

Figure reference	Potential source of contamination	Further information	Reference
	Cemetery	mapping to present).	GS-1984985
25	Ffrwd Quarry Landfill	Historical landfill which ceased to operate in 1992. The site accepted deposited wastes including inert waste.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984986.
26	Cefn Coed Cemetery Expansion	Cemetery expansion (1965 - present).	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
27	Lime Kiln	Historical lime kiln (pre-dates 1884 / 85 mapping - 1901).	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
28	Jewish Burial Ground	Jewish burial ground (pre-dates 1884 / 85 mapping - present).	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
29	Historical Tank	Historical tank present in 1884/85 mapping and is no longer marked on historical mapping by 1965.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
30	Quarry	Historical quarry which pre-dates 1884 / 85 mapping and is no longer marked on historical maps by 1965.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
31	Fairview Terrace Landfill	Historical landfill which accepted industrial and household waste.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984986.
32	Made Ground	Made ground in the form of an infilled reservoir. The reservoir was infilled by 1992. The nature of the made ground is unknown.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
33	Brewery	Historical brewery present in 1884/85 mapping and is no longer marked on maps by 1965.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
34	Quarry	Historical quarry workings which pre-date 1884 / 85 mapping and are no longer marked on mapping dated from 1965.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
35	Dismantled Railway	Former railway, currently dismantled, pre-dates 1884 / 85 mapping - 1976.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
36	Gravel Pit	Historical gravel pit present from 1903 / 1905, but not marked on	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference:

Figure reference	Potential source of contamination	Further information	Reference
		1965 historical mapping.	GS-1984985
37	Gurnos Quarry	Former quarry with a smithy at northwestern extent (pre-dates 1875 / 78 mapping - 1901).	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
38	Prince Charles Hospital	Marked on historical maps from 1978 to present.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
39	Made Ground	Made ground in the form of an infilled pond. The pond was infilled by 1965. The nature of the infilling material is unknown.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
Sheet 4 of 4			
40	Quarry	Historical quarry workings (present on historical mapping from 1901 to 1948).	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
41	Pant Industrial Estate	Industrial estate with businesses including builders merchants and car garages. The industrial estate has been active from 1975/76 to present. Between 1965 to 1975 / 76, the site operated as Imperial Chemical Industries, producing ammonia.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985 8.
42	Brewery	Historical brewery (pre-dates 1884 / 85 mapping - 1901).	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
43	Gas Works	Historical gas works which pre-dates 1875 mapping and is no longer present on mapping from 1965.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
44	Made Ground	An area of made ground with unspecified tracks present on maps from 1875 - 1922. By 1948, tracks are no longer present and by 1975, the area is marked as a disused tip. The area is currently used as a park area, named Ifor Park.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
45	Made Ground	Made ground likely to be associated with adjacent iron works. Named 'Dowlais Great Tip' on historical mapping (pre-dates 1875 - 1965).	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985

Figure reference	Potential source of contamination	Further information	Reference
46	British Steel Corporation Landfill	Historical landfill which ceased operation in 1998. The site accepted inert, industrial and commercial wastes in addition to liquid sludge.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984986.
47	Dowlais Iron Works	Historical iron works (pre-dates 1875 mapping to 1987), with an area towards the south which previously comprised an engine house, brickworks and railway / tramway network.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
48	Dismantled Railway	Former railway, currently dismantled, pre-dates 1875 mapping - 1982.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
49	Dismantled Railway	Former railway, currently dismantled, pre-dates 1875 mapping - 1982.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
50	Quarry	Former quarry area (pre-dates 1875 mapping) which appears to have extended into the adjacent industrial estate from 1875.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
51	Fuel Station	Active fuel station (1982 - present).	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
52	Jasonic Landfill	Historical landfill which ceased operation in 1992. The site accepted inert waste.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984986.
53	Ffos-Y-Fran Opencast Mine	Active opencast mine which extracts coal. Active since 2007 until present.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
54	Historical Landfill (Unnamed)	Historical landfill which ceased to operate in 1989.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984986. Landmark, 2014. Envirocheck Report. Order Reference: 58812138_1_1.
55	Royal Arms Group Landfill	Historical landfill which ceased operation in 1989. The site accepted industrial, commercial and household waste.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984986.
56	Trecatti Council Landfill	Historical landfill which ceased operation in 1993. The site accepts wastes including inert, industrial, commercial, household and special wastes in	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984986.

Figure reference	Potential source of contamination	Further information	Reference
		addition to liquid sludge. This landfill has since been claimed by the current Trecatti Landfill operated by Biffa.	
57	Trecatti Landfill	The site was formally an ironstone mining area, containing associated spoil deposits. The site was then an opencast from 1982 which expanded to include adjacent opencast. Trecatti landfill, operated by Biffa, has been operational from 1988 to present.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984986.
58	Dowlais Top Industrial Estate	Former quarry area (pre-dates 1875 mapping). In 1965, the area is marked as a tipping area until 1982. Currently, the site has several retail buildings and a fuel station residing on it. The current industrial estate is present in 1992 maps and expands north-east by 2002.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
59	Made Ground	Made ground in the form of an infilled reservoir. The reservoir pre-dates 1875 mapping and is present up until 2010 mapping. The nature of the infilled material is unknown.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
60	Trecatti North Landfill	Historical landfill which ceased operation in 1989. The site accepted household waste.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
61	Dismantled Railway	Former railway, currently dismantled, pre-dates 1875 mapping - 1982.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985
62	Quarry	Quarry workings marked on 1875 mapping, labelled old quarry / disused quarry from 1898 / 1901 - present. The southern extent of these quarry workings are also marked as a disused tip area.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984986.
63	Colliery Spoil	Area of colliery spoil, previously occupied by ironstone mining pits and associated spoil. The presence of mines and their associated spoil pre-dates 1875	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985

Figure reference	Potential source of contamination	Further information	Reference
		mining.	

Appendix 12C – Coal Authority Mining Report (February 2016)

See following page.

Page left intentionally blank

The Coal Authority

Issued by:
The Coal Authority, Property Search Services, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire, NG18 4RG
Website: www.groundstability.com Phone: 0345 762 6848

GROUNDSURE LIMITED
SOVEREIGN HOUSE
CHURCH STREET
BRIGHTON
BN1 3UJ

Our reference:	**71001290633001**
Your reference:	**A465**
Date of your enquiry:	**23 February 2016**
Date we received your enquiry:	**23 February 2016**
Date of issue:	**26 February 2016**

This report is for the property described in the address below and the attached plan.

Non-Residential Coal Authority Mining Report

A465, RHONDDA CYNON TAFF

This report is based on and limited to the records held by, the Coal Authority, and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Coal mining	See comments below
Brine Compensation District	No

Information from the Coal Authority

Underground coal mining

Past

The property is in the likely zone of influence from workings in 13 seams of coal at shallow to 120m depth, and last worked in 1964.

The property is in the likely zone of influence from workings in 8 seams of ironstone at shallow to 170m depth, and last worked in 1900.

Present

The property is not in the likely zone of influence of any present underground coal workings.

Future

The property is not in an area for which the Coal Authority is determining whether to grant a licence to remove coal using underground methods.

The property is not in an area for which a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area that is likely to be affected at the surface from any planned future workings.

All rights reserved. You must not reproduce, store or transmit any part of this document unless you have our written permission. --
© The Coal Authority --

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notice of the risk of the land being affected by subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991.

Mine entries

Within, or within 20 metres of, the boundary of the property there are 130 mine entries, the approximate positions of which are shown on the attached plan.

Our records disclose the following information:

308208-035. This mine entry may have been partially or wholly excavated during past opencast mining.

308208-040. This mine entry may have been partially or wholly excavated during past opencast mining.

308208-038. This mine entry may have been partially or wholly excavated during past opencast mining.

308208-026. No treatment details.

296205-001. The entrance to this adit is fitted with a steel grid incorporating an o uter mesh guard.

307207-050. The mouth of the adit has been sealed by a brick wall..

307207-124. This mine entry may have been partially or wholly excavated during past opencast mining.

307207-025. No treatment details.

307207-088. No treatment details.

307208-010. This shaft was capped to an unknown specification in 1973.

300207-008. No treatment details.

301207-010. No treatment details.

301207-011. No treatment details.

307207-094. This mine entry may have been partially or wholly excavated during past opencast mining.

307207-130. No treatment details.

307207-122. No treatment details.

307207-009. No treatment details.

307207-113. No treatment details.

307207-115. No treatment details.

307207-040. No treatment details.

307208-006. No treatment details.

307207-058. No treatment details.

307207-070. This mine entry may have been partially or wholly excavated during past opencast mining.

308207-028. This mine entry may have been partially or wholly excavated during past opencast mining.

308208-012. This mine entry may have been partially or wholly excavated during past opencast mining.

308208-024. This mine entry may have been partially or wholly excavated during past opencast mining.

308208-023. No treatment details.

308208-041. No treatment details.

295204-029. No treatment details.

300206-035. The adit entrance has been fenced with timber posts and a heras panel by contractors acting on behalf of the Authority..

© The Coal Authority

301207-009. No treatment details.
301207-001. No treatment details.
306207-119. No treatment details.
307207-123. No treatment details.
307207-082. This mine entry may have been partially or wholly excavated during past opencast mining.
307207-006. Records indicate that there is a masonary wall at this shaft however there are no details on the method or date of construction..
307207-114. No treatment details.
307207-055. No treatment details.
307207-089. No treatment details.
307207-079. No treatment details.
307207-059. No treatment details.
307207-029. This mine entry may have been partially or wholly excavated during past opencast mining.
307207-027. This mine entry may have been partially or wholly excavated during past opencast mining.
307207-084. This mine entry may have been partially or wholly excavated during past opencast mining.
308208-021. This mine entry may have been partially or wholly excavated during past opencast mining.
308208-042. This mine entry may have been partially or wholly excavated during past opencast mining.
295204-022. No treatment details.
295204-032. No treatment details.
301207-014. No treatment details.
307207-081. No treatment details.
307207-100. No treatment details.
307207-010. This mine entry may have been partially or wholly excavated during past opencast mining.
307207-034. This mine entry may have been partially or wholly excavated during past opencast mining.
307207-093. No treatment details.
307207-090. No treatment details.
307208-001. This shaft has been capped in 1973. There are no details on the construction of the cap..
307207-028. This mine entry may have been partially or wholly excavated during past opencast mining.
308207-029. This mine entry may have been partially or wholly excavated during past opencast mining.
308208-051. This mine entry may have been partially or wholly excavated during past opencast mining.
308208-044. No treatment details.
308208-039. This mine entry may have been partially or wholly excavated during past opencast mining.
301207-003. GA Spacey & Associated supervised the excavation of 3 trenches at approxi 6m centres from the rear building line to the southern boundary fence of the proposed plot 29 Beacon Heights. All 3 trenches proved the presence of undisturbed naturally occurring soils with no indication of ground conditions associated with the presence of existing mine entries..
306207-014. No treatment details.

© The Coal Authority

307207-051. No treatment details.
307207-007. No treatment details.
307207-116. No treatment details.
307207-068. No treatment details.
307207-091. No treatment details.
307207-092. No treatment details.
307207-086. No treatment details.
307207-001. No treatment details.
307207-043. The entry may have been partially or fully removed by opencasting..
307207-044. This mine entry may have been partially or wholly excavated during past opencast mining.
307208-008. No treatment details.
295205-002. No treatment details.
295204-008. No treatment details.
296204-001. This adit is blocked off. Two 0.45m diameter pipes are incorporated in the stopping to provide drainage from the adit..
299206-001. No treatment details.
300206-034. This adit had a brick wall constructed 1.0m inbye of the entrance at some time in the past. There are no details on the method of construction..
300207-005. No treatment details.
301207-002. No treatment details.
307207-099. No treatment details.
307207-011. No treatment details.
307207-033. This mine entry may have been partially or wholly excavated during past opencast mining.
307207-112. No treatment details.
307207-048. No treatment details.
307207-041. No treatment details.
307207-126. No treatment details.
307207-087. No treatment details.
307207-054. No treatment details.
307207-042. No treatment details.
307207-067. This shaft has been capped with a concrete raft at some time in the past There are no details on the construction of the cap..
307207-056. No treatment details.
307208-003. No treatment details.
308208-011. This mine entry is surrounded with masonary wall. The mine entry may have been partilly or wholly excavated during past opencast mining.
308208-013. This mine entry may have been partially or wholly excavated during past opencast mining.
296204-048. The entrance to this adit has been blocked by the landowner. Pipes have been laid from the mouth of the adit for drainage..
300206-033. No treatment details.
300207-006. No treatment details.
301207-013. No treatment details.
307207-037. No treatment details.
307207-117. No treatment details.
307207-047. No treatment details.
307207-120. No treatment details.

© The Coal Authority

307207-057. No treatment details.
307208-007. No treatment details.
307207-046. No treatment details.
307207-045. No treatment details.
307207-026. This mine entry may have been partially or wholly excavated during past opencast mining.
308208-034. This mine entry may have been partially or wholly excavated during past opencast mining.
308208-001. This mine entry may have been partially or wholly excavated during past opencast mining.
308208-027. No treatment details.
294205-005. No treatment details.
295205-003. No treatment details.
295204-040. No treatment details.
295204-010. No treatment details.
299207-001. No treatment details.
300206-032. This shaft has been filled at some time in the past. There are no details on the materials or date of filling although it may have been partially or wholly excavated during past opencast mining.
300207-007. No treatment details.
301207-004. No treatment details.
306207-012. No treatment details.
307207-121. This mine entry may have been partially or wholly excavated during past opencast mining.
307207-008. No treatment details.
307207-036. No treatment details.
307207-035. No treatment details.
307207-013. No treatment details.
307208-005. No treatment details.
307207-002. This entry is capped with a concrete raft supported on RSJ^s 1.2m below ground level. A manhole with circular cover is incorporated in the design.
307207-069. No treatment details.
308207-030. This mine entry may have been partially or wholly excavated during past opencast mining.

Records may be incomplete. Consequently, there may exist in the local area mine entries of which the Coal Authority has no knowledge.

For an additional fee, the Coal Authority will provide a supplementary Mine Entry Interpretive Report. The report will provide a separate assessment for the mine entry (entries) referred to in this report. It will give details based on information in the Coal Authority's possession, together with an opinion on the likelihood of mining subsidence damage arising from ground movement as a consequence of the existence of the mine entry/entries. It will also give details of the remedies available for subsidence damage where the mine entry was sunk in connection with coal mining.

Please note that it may not be possible to produce a report if the main building to the property cannot be identified from Coal Authority plans (ie. for development sites and new build).

For further advice on how to order this additional information visit www.groundstability.com or telephone 0345 7626 848.

Coal mining geology

The Authority is not aware of any evidence of damage arising due to geological faults or other lines of weakness that have been affected by coal mining.

© The Coal Authority

Opencast coal mining

Past

The property is within the boundary of an opencast site from which coal has been removed by opencast methods.

Present

The property lies within 200 metres of the boundary of the FFOS-Y-FRAN opencast site from which coal is being removed by opencast methods.

The property lies within 200 metres of the boundary of the Tower Colliery Reclamation Site opencast site from which coal is being removed by opencast methods.

Future

The property is not within 800 metres of the boundary of an opencast site for which the Coal Authority is determining whether to grant a licence to remove coal by opencast methods.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres, since 31st October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

There is no record of a mine gas emission requiring action by the Coal Authority within the boundary of the property.

Hazards related to coal mining

The property has been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

Withdrawal of support

The property is not in an area for which a notice of entitlement to withdraw support has been published.

The property is not in an area for which a notice has been given under section 41 of the Coal Industry Act 1994, revoking the entitlement to withdraw support.

Working facilities orders

The property is not in an area for which an Order has been made under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

Payments to owners of former copyhold land

The property is not in an area for which a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

© The Coal Authority

Comments on Coal Authority information

The attached plan shows the approximate location of the disused mine entry/entries referred to in this report. For reasons of clarity, mine entry symbols may not be drawn to the same scale as the plan.

Property owners have the benefit of statutory protection (under the Coal Mining Subsidence act 1991*). This contains provision for the making good, to the reasonable satisfaction of the owner, of physical damage from disused coal mine workings including disused coal mine entries. A leaflet setting out the rights and the obligations of either the Coal Authority or other responsible persons under the 1991 Act can be obtained by telephoning 0345 762 6848.

If you wish to discuss the relevance of any of the information contained in this report you should seek the advice of a qualified mining engineer or surveyor. If you or your adviser wish to examine the source plans from which the information has been taken these are normally available at our Mansfield office, free of charge, by prior appointment, telephone 01623 637225. Should you or your adviser wish to carry out any physical investigations that may enter, disturb or interfere with any disused mine entry the prior permission of the owner must be sought. For coal mine entries the owner will normally be the Coal Authority.

The Coal Authority, regardless of responsibility and in conjunction with other public bodies, provide an emergency call out facility in coalfield areas to assess the public safety implications of mining features (including disused mine entries). Our emergency telephone number at all times is 01623 646333.

*Note, this Act does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

In view of the mining circumstances a prudent developer would seek appropriate technical advice before any works are undertaken.

Therefore if development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. Developers should be aware that the investigation of coal seams/former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

A site investigation was carried out in September 2012 by ESI Limited on behalf of Biffa Waste Services Limited, Hoods Close, Leicester LE4 2BN.

Information from the Cheshire Brine Subsidence Compensation Board

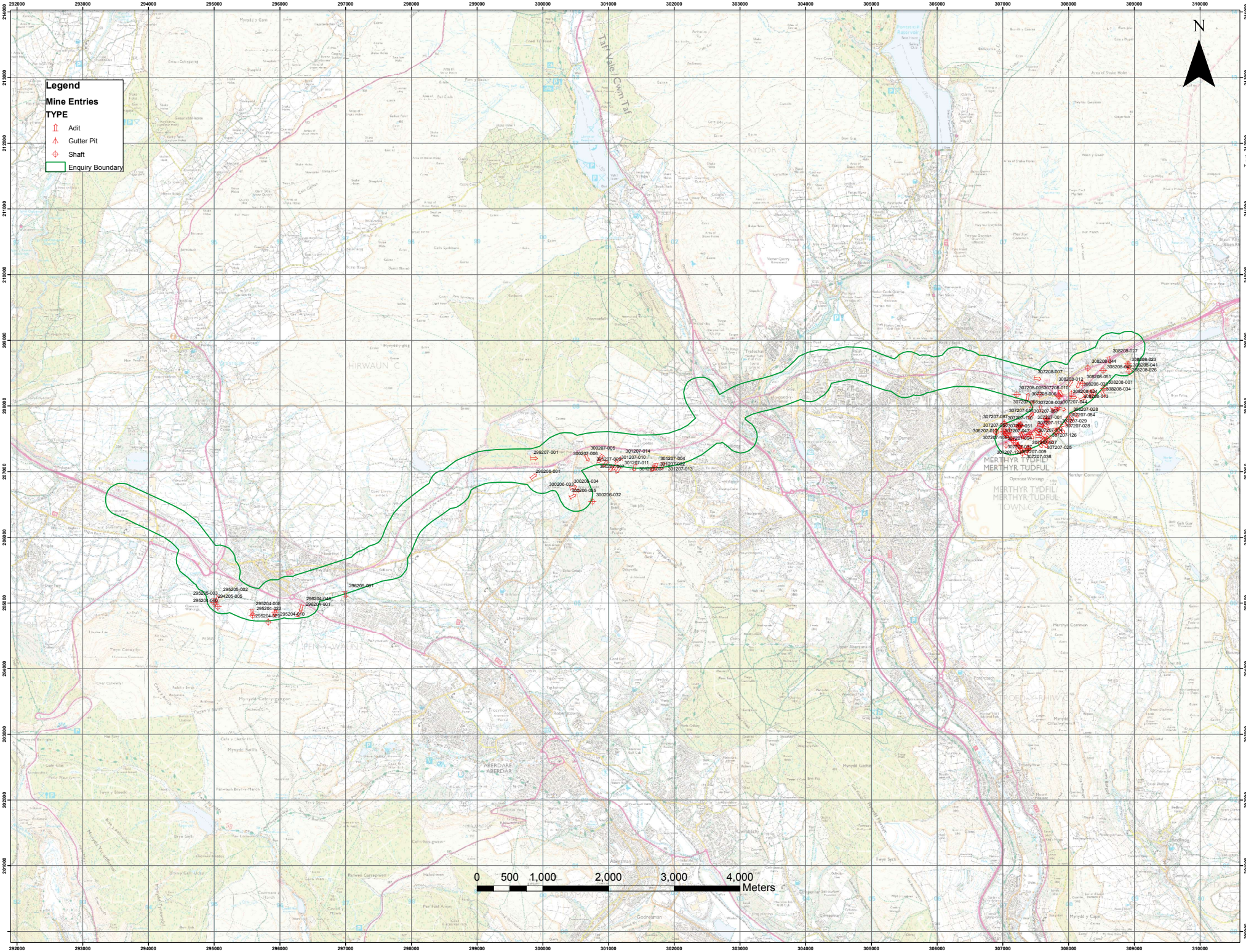
The property lies outside the Cheshire Brine Compensation District.

Additional Remarks

Information provided by the Coal Authority in this report is compiled in response to the Law Society's Con29M Coal Mining and Brine Subsidence Claim enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL. Please note that Brine Subsidence Claim enquiries are only relevant for England and Wales. This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions applicable at the time the report was produced.

The Coal Authority owns the copyright in this report. The information we have used to write this report is protected by our database rights. All rights are reserved and unauthorised use is prohibited. If we provide a report for you, this does not mean that copyright and any other rights will pass to you. However, you can use the report for your own purposes.

Map images are being sent under separate cover



The Coal Authority

These maps are reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationary Office. ©Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. The Coal Authority. Licence Number: 100020315. [2014]
©Copyright Coal Authority

Mining Report Enquiry
Reference - 71001290633001

1:25,000

Welsh Government

A465 Heads of the Valleys - Section 5 and 6 - Dowlais Top to Hirwaun

Appendix 13A - Carbon Footprint Assessment of the Construction Phase

Rev 0

July 2017

Final

Contents

Executive Summary **1**
Next Steps **2**
1. Introduction **3**
1.1 Purpose of report 3
1.2 Units and definitions 3
1.3 Climate change and the global context 3
2. Methodology, assumptions and notes **5**
2.1 The Highways England Carbon Tool 5
2.2 Project boundary for this assessment 5
2.3 Source data 6
3. Results **10**
3.1 Project emissions summary 10
3.2 Summary of Embodied Carbon Emissions from Construction Materials 10
4. Recommendations **10**
4.1 Interpretation and validation of results 12
4.2 Further work 12
5. References **14**

Executive Summary

The HM Treasury (2013) has identified infrastructure as one of the priority areas to focus the mitigation of greenhouse gas (GHG) emissions for the United Kingdom (UK). Therefore, accurate measurement and identification of opportunities to reduce emissions from infrastructure projects is an essential part of meeting the UK's challenging carbon reduction obligations.

The following report outlines the key GHGs associated with the construction of Sections 5 and 6 of the A465. This report has been prepared at outline design phase, Key Stage 3 (KS3). Reports prepared at later stages of the design process may have access to more finalised quantities, and, therefore, may be more accurate.

This carbon assessment was made using the Highways England Carbon Tool (v1.02). The tool covers GHG emissions from the following sources:

- embodied carbon in raw materials required for the construction phase (including transport of materials to site);
- fuel, electricity and water consumption during the construction phase;
- business and employee transport during the construction phase; and
- waste and waste transport.

Any emissions after the construction phase (such as operation of the street lighting) are excluded from the assessment.

The assessment calculated a carbon footprint for the project of **161,848 tonnes CO_2e (carbon dioxide equivalent)**. Emissions from materials contributed the greatest proportion (representing 73% of emissions), with energy use and transport of materials contributing most of the remaining emissions (Plate 1.1).

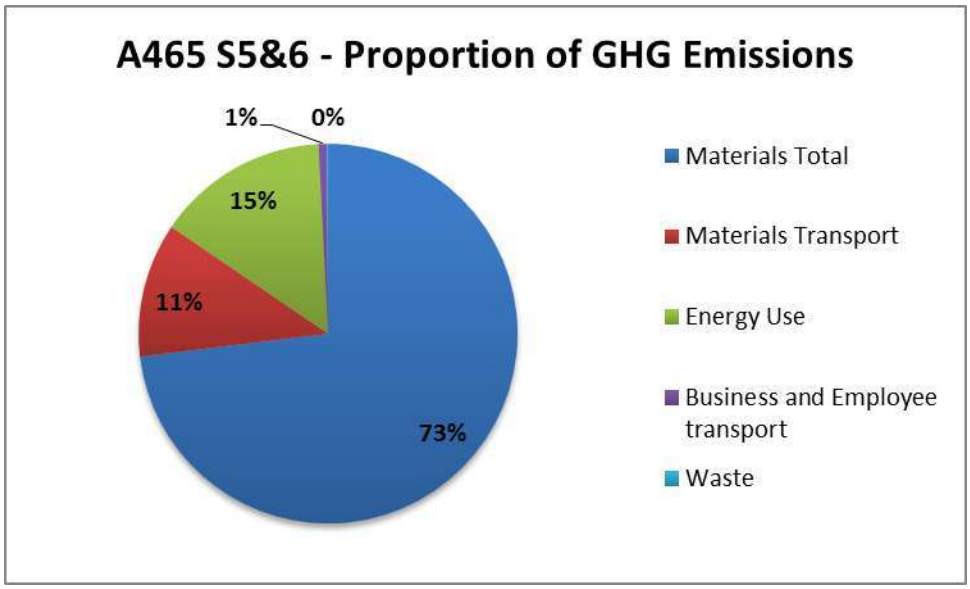


Plate 1.1 : Proportion of total GHG emissions for A465 Sections 5 and 6 Construction Phase

Next Steps

The majority of the data required to make an assessment for the boundaries was available without any significant omissions. The level of accuracy of this assessment is proportionate to its objectives, capturing the most significant emission sources for the project. At the time of this assessment the design was still being finalised and therefore the quantities required may also change. Therefore the carbon assessment should be updated if any significant design changes are made. There would be opportunities for carbon savings through the project, for example by using lower grade concrete (utilising a higher % of Fly Ash) where feasible (such as on footpaths). Such opportunities have not been captured as part of this assessment as the design has not been developed in sufficient detail (as, for example, required grades of concrete are unknown at this stage). High level awareness of these kinds of opportunities is important for exploration when the design develops.

1. Introduction

1.1 Purpose of this Report

This report is used to assess the greenhouse gas (GHG) impact of a proposed infrastructure scheme, which involves the major upgrade of approximately 17.7 km of the A465 in South Wales.

The project is currently at stage Key Stage 3, outline design, with Draft Orders due to be published in summer 2017 under the Highways Act 1980 (as amended). The assessed sections of the dualling project in this report are for Sections 5 and 6 of the carriageway between Hirwaun and Dowlais Top. For context; at the time of this report Section 1 (Abergavenny to Gilwern), Section 3 (Brynmawr to Tredegar) and Section 4 (Tredegar to Dowlais Top) of the 40 km dualling project are complete and open to traffic. Section 2 (Gilwern to Brynmawr) is currently under construction and due for completion in 2018.

This assessment is intended to be a comprehensive carbon assessment of the construction phase of the proposed Section 5 & 6 scheme, based upon the design information available at this stage. The results of this assessment can be used as a benchmark against which to identify options for reducing the carbon impact of the project as the design progresses.

1.2 Units and Definitions

Reporting for the GHG impact of this proposed scheme is carried out using mass of carbon dioxide equivalent (CO_2e) emissions, which allows for the emissions of the six key GHG to be expressed in terms of their equivalent global warming potential in mass of CO_2. The six key GHG are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6). The Greenhouse Gas Protocol (Greenhouse Gas Protocol, 2004) is the most widely used accounting system for GHG emissions.

Key definitions in order to determine the boundary of ownership for emissions include:

- direct emissions: originating from sources that are owned or controlled by the reporter; and
- indirect emissions: emissions that are a consequence of the activities of the reporting entity, but occur at sources owned or controlled by another entity.

Further to this, the GHG Protocol (2004) categorises these direct and indirect emissions into three broad scopes, including:

- scope 1: Direct GHG emissions – emissions that occur from sources that are owned or controlled by the project;
- scope 2: Electricity indirect GHG emissions – emissions generated through the purchase of electricity, heat, steam or cooling; and
- scope 3: Other indirect GHG emissions – emissions from sources not owned or controlled by the project, but occur as a consequence of the project and its activities.

Scope 3 emissions include embodied carbon. These are the greenhouse gas emissions associated with a manufactured product or built asset. This includes the emissions generated from the extraction, transportation and processing of raw materials required to create them.

1.3 Climate Change and the Global Context

The need to reduce greenhouse gas emissions is enshrined in UK law; and in December 2015 at the Paris climate conference (COP21), 195 countries adopted the first-ever universal, legally binding global climate deal (European Commission, 2015). The Intergovernmental Panel on Climate Change 5th Working Group report "The Physical Basis" includes summaries of recorded observations of the climatic changes that have already occurred, along with projected future climatic changes (IPCC, 2013). While the global climatic system is incredibly complex, this report presents a clear message that *"continued emissions of greenhouse gases will*

cause further warming and changes in all components of the climate system. Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions."

The ultimate receptor of greenhouse gas emissions is the global climate system, and climate change caused by greenhouse gas emissions will result in social, environmental and economic impacts felt globally. This is the case regardless of where the greenhouse gases are emitted, whether they be released directly from the combustion of fossil fuels, or associated with the extraction and manufacture of materials. It is for this reason that to reduce the carbon footprint of infrastructure, it is important that the greenhouse gases production embodied in the materials used are accounted for, and minimised where possible.

2. Methodology, Assumptions and Notes

2.1 The Highways England Carbon Tool

This assessment uses the Highways England Carbon Tool v1.02. There is no equivalent Wales-specific model and the Highways England Carbon Tool's boundary (Plate 2.1) is sufficient for this report's methodology. Highways England have developed this tool to measure the scope 1, 2 and 3 carbon emissions associated with their construction and maintenance activities across their road schemes.

The tool is used to estimate carbon emissions associated with civil and structural engineering projects, including road, rail and buildings. It is primarily designed for use during the construction process to record actual emissions and actual embodied emissions associated with a project. It can also be used throughout the design process, from outline design to detailed design, allowing for comparison of design options to be made.

Whole life carbon options can be estimated for projects based on the embodied carbon associated with the materials used, the transport of materials and waste, site plant energy consumption, any operational energy and emissions associated with structural maintenance.

2.2 Project Boundary for this Assessment

The Highways England Carbon Tool recommends a boundary that includes embodied materials, emissions from construction equipment and emissions associated with waste; and recommends the exclusion of the transport of materials by third parties, and emissions produced after construction and maintenance has ended. This assessment adopts the boundaries recommended by Highways England. These boundaries are shown in Plate 2.1.

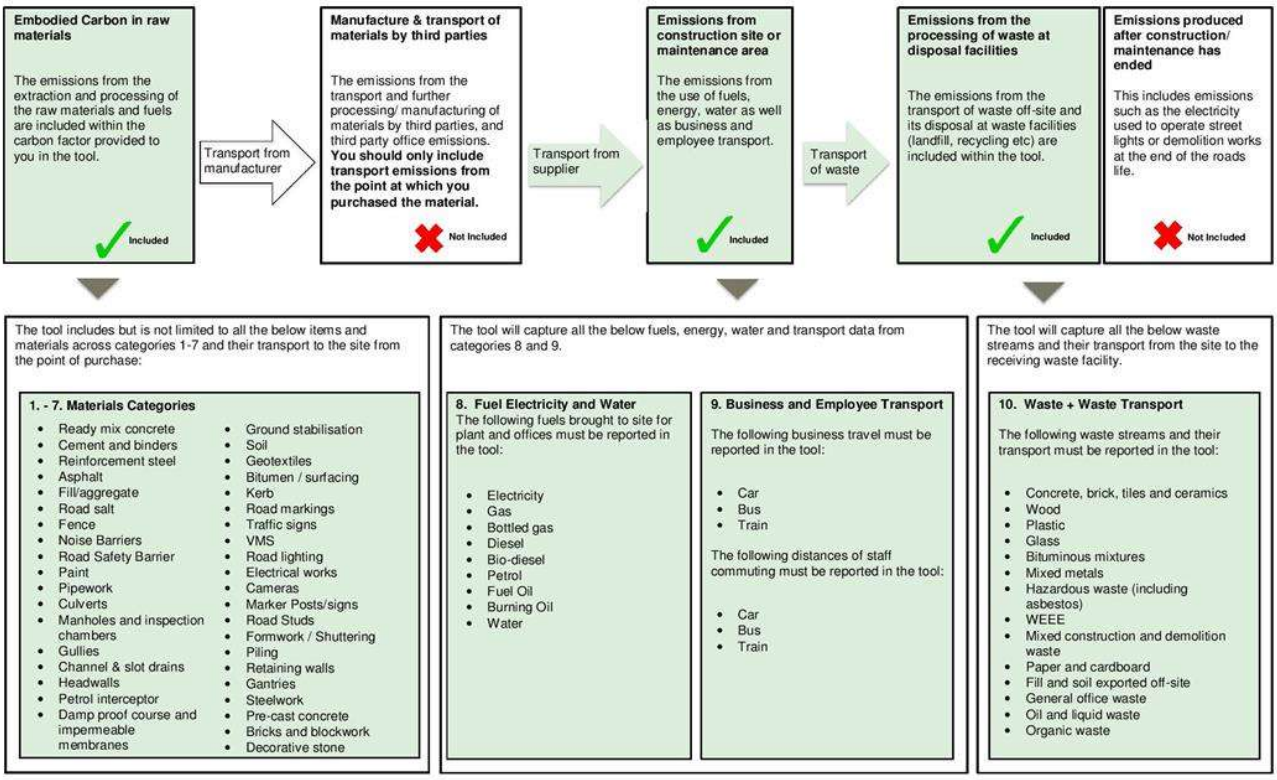


Plate 2.1 : Highways England Carbon Tool Boundary

The initial step towards project carbon management is to identify and map out the emissions sources that can be attributed to the project throughout the project's life cycle; effective management and reduction can only occur after this step.

2.3 Source Data

2.3.1 Information used

Entries into the tool are based on design information available at the time of writing, early 2017. This design quantity information was provided by David Lavin (Jacobs, Principal Engineer, Highways) and the transport and energy use information provided by Matthew Robinson (Jacobs, Construction Manager, PMCM).

This information allowed for the calculation of material use, which is presented in Table 2.1 by broad material type and construction component.

Table 2.1 : Materials consumption during construction phase

Project elements	Material type	Description	Units	Quantity
Fencing / Road Restraint Systems / Barriers	Timber	Fencing (all types)	m	79,560
	Steel	Barriers and wire/chain	m	48,005
	Concrete	Step barriers	m	30,988
Drainage	HDPE	Pipework (various diameters)	m	71,763
	Concrete	Precast manholes, inspection chambers	no.	1,144
	Concrete	Precast Gullies	no.	1,851
Earthworks	Soil	Imported	m3	253,909
	Soil	Site won soil / muck shift	m3	2,871,834
	Polypropylene	Geotextile Matting	m2	164,445
	Soil	Exported	m3	24,308
Road pavement	Concrete	Precast kerb	m	19,119
	Thermoplastic	Road markings	tonnes	203
Street Furniture	Aluminium	Road signs	m2	1,840
	Aluminium	Lighting columns	no.	403
	Copper / plastic	Cable	m	79,579
	Mixed	Cameras, cabinets and pole	no.	54
	Plastic / aluminium	Road Studs	no.	13,752
Civil Structures	Concrete	Structures	m3	2,550
Bulk materials	Concrete	Various structures and road course binder	m3	108,208
	Steel	Reinforcement of concrete	tonnes	25,970
	Asphalt	Road surface	tonnes	157,845
	Aggregate	Fill	tonnes	473,076

Information on utilities consumption during the construction phase was also provided, allowing emissions from this phase of the project to be included within the assessment. A summary of the data used is presented in Table 2.2 by energy source.

Table 2.2 : Utilities consumption during construction phase

Project Elements	Utility Type	Description	Units	Quantity
Site offices, vehicles and plant energy	Electricity	Site offices (power supply)	kWh	437,239
	Gas	Site offices (heating)	kWh	218,619
	Red diesel	Site offices (temporary generator)	litres	120,527
	Bottled Gas	Plant (road markings)	kg	1,128
	Rad diesel	Plant (heavy plant)	litres	6,240,000
	Petrol	Plant (small tools)	litres	390,000
Water	Mains water	Staff welfare, vehicle cleaning	litres	5,987,444
	Tankered water	Staff welfare, vehicle cleaning	litres	583,533

Information on contractors and sub-contractors required during the construction phase was provided, including the distances travelled for each contractor type, number of contractors and the number of days required on site to calculate the total kilometres travelled. This is displayed in Table 2.3.

Table 2.3 : Total distances travelled by employees and contractors during construction phase

Project Elements	Vehicle type	Description	Units	Quantity
Business travel	Private vehicle (any type)	Various contractors (for example Principle contractor, Structures contractor)	km	292,561
	Train	Contractors lead designer	km	9,612
Employee commuting	Private vehicle (any type)	Various subcontractors (for example Earthworks subcontractor, Structures subcontractor)	km	5,629,185
	Bus / Coach	Surfacing subcontractors arriving in minibus	km	165,920

2.3.2 Transport: transport of material to site

A supplier for materials has not yet been selected, and therefore it has been assumed that materials are to be sourced locally, through procurement in Cardiff (approximately 40 km) away, Bristol (approximately 100 km away) or local towns (approximately 3-20 km away). Using the average distances for contractors and sub-contractors, an average transport distance of approximately 60 km can be used to estimate emissions from material transport to various locations along the A465. When further design information is available it may be possible to determine more accurate transport distances, based on individual construction compound locations when these are fully specified.

Where required, the export of surplus fill material has been considered. There is evidence of sufficient capacity for this material to be disposed or re-used within 10 km of the site, so this distance has been used as an estimated upper bound for the disposal of material.

2.3.3 Exclusions due to incomplete or unknown design information:

The following aspects are those that are within the project boundary, as defined in Section 2.2, but for which there is incomplete or unknown design information at KS3:

- cement and binder materials (where applicable in addition to bulk concrete requirements);
- ground stabilisation materials;
- Environmental barrier materials (requirements for these still to be confirmed);

- paint or timber treatment materials;
- bitumen / surface treatment materials (where applicable in addition to bulk asphalt requirements);
- other potential road sign materials (other than those known at KS3);
- formwork or piling materials;
- steelwork, bricks, blockwork and decorative stone materials; and
- maintenance and renewal materials and activities.

As the project progresses into future key stages, more detailed design information would become available and the aspects outline above should be incorporated into the assessment.

In terms of materiality, the majority of the above materials are expected to be relatively small in terms of contribution to the overall scheme carbon emissions due to their smaller volumes and weights relative to the bulk materials, energy and fuel. Maintenance materials could potentially be very significant if the full life-cycle of the road were to be considered (for example materials associated with resurfacing and repair of the road over the next 30-50 years). At this stage details of the required maintenance cycle for the road have not been provided.

2.3.4 Carbon Sequestration

The construction of the road will involve the planting of trees and other vegetation along the route of the carriageway which will sequester carbon dioxide during their lifetime. We have calculated the impact of this sequestration over 40 years. It is assumed that at 40 years there will be some form of clearing to allow new growth. There will also likely be significant maintenance of the carriageway at around 40 years. Landscape impact assessment of the planted area only goes up to 30 years, and therefore there is uncertainty as to what will be present post 30 years.

The land area planted, as well as the density of vegetation has been provided via the landscaping impact assessment team. The assessment has also provided the mixture of species of vegetation within the area planted.

To calculate the carbon impact of the planting, we have used the Woodland Carbon Code Lookup Tables. The tables provide carbon sequestration values per hectare planted for most species of forestry plants native to the UK. Where species are to be planted that do not match the available species, we have used “sycamore, ash, birch (mix or pure species)” as this is the most common type being planted within the project. We have used the inverse of the average number of plants per square meter to select the spacing (in meters) between plants. In most cases, planting will be denser than the available data for the lookup tables – therefore calculations based on these tables will be an underestimate in the first 10 years of growth where the plantings will be at their most dense.

Yield Class applied has assumed to be 6 (options available are 4, 6, 8 and 10) as a conservative mid-point. It is assumed that the trees will be managed and thinned approximately every 5 years – this has the greatest impact from year 15 onwards when the trees are more mature and will need to be cut back, reducing carbon sequestration.

The assessment includes the establishment emissions during year 1. This includes the impact of seedlings, fencing, ground preparations and use of herbicides. Assumptions regarding the use and emissions from fertilisers are not available from the lookup tables, and it is recommended to account for these separately using alternative tools (e.g. the CALM tool, or CoolFarm). However at this stage of the design process, data on fertiliser use is not known, and therefore these emissions are omitted from the assessment.

It is noted that there will be trees and other vegetation present in the project area prior to construction. These existing areas of vegetation will be cleared to make way for the new carriageway and junctions, and there will be reduced sequestration as a result. These will be offset somewhat by new plantings, but the new plantings will not sequester the same amount of carbon dioxide as the existing vegetation during the same period due to

lower sequestration rates during the first few years after establishment. This avoided sequestration is not included within the assessment.

2.3.5 Emissions during KS3

The Jacobs emissions during Key Stage 3 of the project have been calculated. This has been calculated based on the total carbon emissions from Jacobs UK and apportioned based on the billable hours on the project as a percentage of the total UK total billable hours.

3. Results

3.1 Project Emissions Summary

A summary of the total carbon emissions calculated for the proposed scheme is shown in Table 3.1, indicating the source of the emissions by high level category.

Table 3.1 : Total project emissions summary

Carbon source	Emissions (tCO_2e)
Total carbon emissions	**161,848**
Construction: Materials embodied	118,260
Construction: Transport of material	18,497
Construction: Energy Use	23,778
Construction: Business and Employee Transport	1,140
Construction: Waste	173

3.2 Summary of Embodied Carbon Emissions from Construction Materials

The calculated embodied carbon emissions from construction materials are shown in Table 3.2, with a breakdown according to proposed scheme elements.

Table 3.2 : Summary of embodied carbon emissions from construction materials

Carbon source	Emissions (tCO_2e)
Fencing / Road Restraint Systems / Barriers	9,412
Drainage	4,143
Earthworks	10,893
Pavements	1,308
Street Furniture	1,602
Civil Structures	873
Bulk materials	90,028

3.3 Carbon Sequestration

The calculated carbon emissions and sequestration from the vegetation planted within the project are shown in Table 3.3, with a breakdown according period following planting.

Table 3.3 : Summary of carbon emissions and sequestration from trees and other plants

Period	Emissions (tCO_2e)	Sequestration (tCO_2e)
Year 0-5	90	217
Year 5-10	-	677
Year 10-15	-	2,152
Year 15-20	-	5,279

Period	Emissions (tCO_2e)	Sequestration (tCO_2e)
Year 20-25	-	2,759
Year 25-30	-	1,704
Year 30-35	-	1,390
Year 35-40	-	1,725
TOTAL	**90**	**15,903**

The net total sequestration from planting is 15,813 tonnes CO_2e. The sequestered carbon dioxide is additional to the total emissions presented within the rest of the report which include only emissions during construction.

3.4 Emissions during KS3

Total emissions from Jacobs during Key Stage 3 of the project is 303 tonnes CO_2e. These emissions are additional to the total emissions presented within the rest of the report which include only emissions during the construction phase.

4. Recommendations

4.1 Interpretation and Validation of Results

For the proposed scheme, the carbon assessment indicates a footprint of 161,848 tonnes CO_2e, with the majority of emissions coming from the embodied carbon of materials used in construction (118,260 tonnes CO_2e).

It should be acknowledged that there are elements missing from the assessment that could potentially alter the footprint. This assessment does not consider any materials required during maintenance of the road during its lifetime (for example road resurfacing and repairs), and similarly excludes data which were not available for the materials in 2.3.3, albeit their smaller volumes. Some quantities of specific structures have been estimated via correspondence with colleagues in the Highways team. Plate 1.1 is repeated below, providing the proportion of total GHG emissions for A465 Sections 5 and 6.

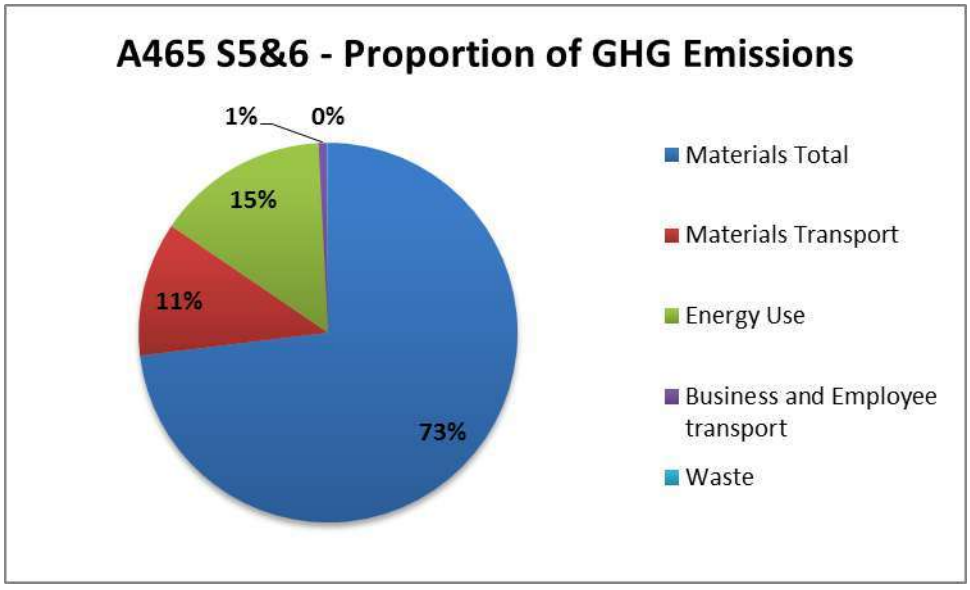


Plate 4.1 : Proportion of total GHG emissions for proposed A465 Sections 5 and 6 Construction Phase

With the majority of the footprint in the bulk materials and their transport to and from site, the footprint is accordingly sensitive to variations in the quantities of these materials. Therefore care has been taken to ensure the accuracy of the estimations provided such that they do not significantly over or underestimate the footprint. Over the lifetime of the project, maintenance requirements would have a large addition to the footprint which should be considered with regard to opportunities for carbon reduction when the maintenance programme is defined.

4.2 Further Work

4.2.1 Future carbon assessments

The requirements for maintenance has been shown (for other schemes) to be a potentially significant emission source, and therefore should be considered for this proposed scheme. This would require an understanding of road maintenance and material replacement requirements over the project lifetime – information which was not available at the time of this assessment.

As the proposed scheme progresses and further design information becomes available, the carbon assessments should be updated to complete the elements currently excluded due to incomplete or unknown design information. It should, however, be noted that while attaining absolute completeness of all scheme components is desirable, it is not necessarily an efficient means of managing project carbon emissions. Many

components would have a negligible impact and offer limited opportunities for mitigation compared to the time, effort and cost involved in determining its carbon impact. Therefore the focus should always be on quantifying (and attempting to reduce) the sources with the greatest carbon impact.

4.2.2 Identifying carbon saving measures

A key outcome of carbon quantification process should be to understand which sources have the greatest carbon impacts for the project to enable opportunities for reducing carbon to be highlighted.

Reporting and guidance, such as the Infrastructure Carbon Review (HM Treasury, 2013) and Building a Sustainable Future (ICE, 2011) indicate that the potential to influence carbon emissions decreases as a project progresses, from the most during the planning stage, to more modest reductions during design and construction.

With this in mind, the key early intervention procedure, as identified in the Infrastructure Carbon Review (HM Treasury, 2013), can be considered to be:

- avoid and / or eliminate or 'build nothing': challenge the need; explore alternative approaches to achieve the desired outcome;
- reduce or 'build less': maximise the use of existing assets, optimise asset operation and management to reduce the extent of new construction required;
- substitute or replace or 'build clever': design in the use of low carbon materials, streamline the delivery process, minimise resource consumption; and
- compensate or 'build efficiently': embrace new construction technologies, eliminate waste.

In the first instance, use of significant quantities of high carbon impact materials, (for example steel), or processes (for example large amounts of excavation), should be avoided where practicable through alternative design specification. If this cannot be done, the amount of material or the length / intensity of the process should be reduced where functional specifications allow. Materials or processes should be substituted with lower intensity replacements, if possible within design standards for strength and safety. Finally, compensatory measures, such as carbon offsetting, should be considered where it is felt they would be cost effective. Some of these measures may be complementary with noise mitigation measures (for example tree planting on road side).

Where it would not significantly impact upon engineering, safety and maintenance characteristics, the principle of substitution requires that low carbon alternatives for materials be considered.

On the basis of this assessment, concrete and steel are a part of the overall carbon footprint of this proposed scheme. Opportunities to reduce the carbon intensity of concrete used in the project (for example through inclusion of fly ash, or use of lower tensile strength grades of concrete) should be maximised where safety and engineering requirements allow.

The transportation of large volumes of materials to site is a significant source of emissions, and efforts to minimise both the volume and distance, would yield reductions the carbon footprint. Using local as opposed to regional suppliers as close to the project site would reduce these emissions

These potential measures along with the carbon management principles set out above should be taken forward into future design stages.

5. References

European Commission (2015). Available at: http://ec.europa.eu/clima/policies/international/negotiations/paris/index_en.htm

ICE (2011). Building a Sustainable Future: ICE low carbon infrastructure trajectory – 2050. Institute of Civil Engineers. London, UK.

Intergovernmental Panel on Climate Change (IPCC) (2013): Summary for Policymakers. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1–30, doi:10.1017/CBO9781107415324.004GHG Protocol (2004). Available at: https://www.ipcc.ch/report/ar5/wg1/

UK Treasury (2013): Infrastructure Carbon Review. Available at: https://www.gov.uk/government/publications/infrastructure-carbon-review

Woodland Carbon Code (Forestry Commission), carbon lookup tables for carbon sequestration, 2012. Available at: https://www.forestry.gov.uk/forestry/infd-8jue9t

Woodland Carbon Code guidance materials available at: https://www.forestry.gov.uk/pdf/WCC_Lookup_guidance_v1.4_27Jul2012.pdf/$FILE/WCC_Lookup_guidance_v1.4_27Jul2012.pdf

Appendix 13B – Active Coal Extraction Sites and Landfills along the Proposed Scheme (to be used with Figure 13.3)

Figure reference	Name	Further information	Reference
Sheet 1 of 4			
1	Tower Colliery Land Reclamation Scheme	The Tower Regeneration Project includes extraction of the remaining surface coal before fully restoring the colliery site with landscaping and nature conservation areas. The mining phase of the project is anticipated to last seven years, involving excavation to a maximum depth in the east of 90 m bgl and 165 m bgl in the west of the site. Mining operations will commence in the east of the site, sequentially moving westwards with systematic backfilling of the mined void.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985. Tower Regeneration, 2016. Project Overview. (http://www.towerregeneration.co.uk/about.php) [Accessed 04/02/2016].
Sheet 4 of 4			
2	Ffos-Y-Fran Land Reclamation Scheme	The Ffos-Y-Fran opencast mine will extract 11 million tonnes of coal and also restore 367 acres of derelict land, including the removal, capping and in some circumstances restoration of mine shafts. The mining phase of the project is anticipated to last until 2022 and reach depths in excess of 150 m bgl. The restoration phase is likely to take place until 2024 followed by 5 years of monitoring and aftercare.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985. Miller Argent, 2016. Ffos-y-fran. (http://www.millerargent.co.uk/projects/ffos-y-fran/) [Accessed 04/02/2016].
3	Trecatti Landfill	Trecatti landfill forms the principal destination for much of the residual and unavoidable waste generated in Merthyr Tydfil. The site also imports material from certain neighbouring authorities. The current waste management license permits the disposal of household waste together with industrial and commercial wastes, including residual treated solid waste. The site has a remaining capacity of 7 Mm^3, which gives a life expectancy to 2022 - 2024, depending upon the level of input.	Groundsure Insights, 2015. Groundsure Report: Historical Maps. Report Reference: GS-1984985. Davies. A. N., 2011. Merthyr Tydfil Local Development Plan 2006 - 2021.

Page left intentionally blank.

Welsh Government

A465 Abergavenny to Hirwaun Dualling - Sections 5 & 6 Dowlais Top to Hirwaun

Appendix 13C - Outline Materials Management Plan (MMP)

Rev 0

July 2017

Final

Contents

1. Introduction 1
1.1 Principles for the Use of Materials as Non-Waste 1
2. Site Characterisation 2
2.1 Introduction 2
2.2 Site Location and Description 2
2.3 Proposed Scheme 2
2.4 Landowner and Developer 2
2.5 Re-use of Site Derived Material 3
2.6 Acceptability Criteria 3
2.7 Use of Excavated Material as Non-Waste 4
3. Risk Assessment 5
4. Materials Management Plan 6
4.1 Summary of Earthworks 6
4.2 Other Materials 7
5. References 9

1. Introduction

This document is intended to set out the principles which underlie the management of the materials during the construction of the proposed scheme. These materials would be managed by the appointed Design Build Finance and Operate ('DBFO') Contractor and it is probable that the Contractor would work in accordance with "The Definition of Waste: Development Industry Code of Practice" (Version 3, 2014) published by CL:AIRE. This Code of Practice (CoP) provides a site specific basis for assessing whether excavated materials are classified as waste or not and when treated, excavated materials can cease to be waste and rendered acceptable for a particular use. Given the scale of earthworks associated with the proposed scheme this is a significant consideration in maximising the sustainability of the work.

This outline Materials Management Plan (MMP) provides the framework which would be used as a basis from which the fully developed proposed scheme's MMP would be developed.

Given the quantities of material resources that would be used and likely waste arisings associated with the proposed scheme, a need has been identified for the development of a MMP that details the process of procurement, handling and management of materials in the most efficient and sustainable manner. This outline MMP provides the framework for the appropriate management, on / off-site re-use of materials and to demonstrate that the principles for the use of materials as Non-Waste, as set out in the CoP, are satisfied.

1.1 Principles for the Use of Materials as Non-Waste

In the context of excavated materials used on sites undergoing development the following factors are considered to be on relevance:

- the potential risks to human health and the environment from the material have been considered and assessed and that both human health and the environment are protected;
- the material is suitable for its intended use without further treatment (suitability for use);
- there is a requirement for the material (certainty of use); and
- the quantity of material used is no more than is necessary for the work.

The proposed scheme MMP would also include a specific soils management plan developed using the following voluntary and industry regulated CoP:

- the Construction CoP for the Sustainable Use of Soils on Construction Sites. This provides best practice guidelines for the excavation, handling, storage and final placement of soils; and
- the Definition of Waste Development Industry CoP provides a process whereby contaminated soils can be reused on the site of origin if they are proven through appropriate risk assessment to be suitable for use. It also provides for soils with naturally elevated contamination to be used directly on another site provided that they are suitable for use at that site.

Waste streams that have the potential to be re-used on site or transported off site for re-use / recycling would be segregated. Although every effort would be made to retain and re-use all suitable materials on site, it is possible that some of these materials could not be re-used or recycled during the construction of the proposed scheme. In these situations, the Contractor would seek to identify opportunities for these materials to be redistributed to other suitable sites. This represents the most sustainable alternative to disposal at a landfill.

2. Site Characterisation

2.1 Introduction

Site characterisation is described in the following reports:

- A465 Abergavenny to Hirwaun Dualling Section 3, Factual Report on Ground Investigation (Babtie Group, 1997);
- A465 Heads of the Valley Dualling Sections 5 & 6: Preliminary Sources Study Report (Jacobs, 2015);
- A465 Heads of the Valley Dualling Sections 5 & 6: Preliminary Risk Assessment (Jacobs, 2016) including Annex A;
- A465 Heads of the Valleys Sections 5 & 6 Phase II Ground Investigation Factual Report (Quantum, 2016); and
- A465 Abergavenny to Hirwaun Dualling Sections 5 & 6: Interpretative Report on Phase 1 Land Quality Ground Investigation (Jacobs, 2016).

The different phases of site investigation have characterised geotechnical properties of the soils and geology across the length of the proposed scheme. Chemical characterisation has been carried out to a level where the typical properties of the material types have been identified. Planned further investigations will add detail to knowledge of the material types and the knowledge of the variability within each material group.

2.2 Site Location and Description

Section 5 and 6 of the A465 extends from Hirwaun in the west to Dowlais Top in the east; a total distance of approximately 17.7 km. Further information regarding site location and extent is presented in Sections 4.1 and 4.2 of the Preliminary Sources Study Report (PSSR) completed by Jacobs in 2015 (Jacobs, 2015) and in Chapter 5: Scheme Description of the Environmental Statement (ES).

2.3 Proposed Scheme

The proposed scheme involves the widening of Section 5 and 6 of the existing A465 from a three lane carriageway to a dual two-lane carriageway. Section 5 of the proposed scheme extends from Dowlais Top at ch. 16150, to Nant Ffrwd at ch. 9850, and Section 6 extends from Nant Ffrwd at ch. 9850, to Hirwaun at ch. 900 (National Grid Reference SO 078082 to SN 961051). Chainage 0 to ch. 900 is already a dual carriageway road and no significant improvements are planned there.

The majority of the proposed scheme requires widening of the existing A465 road, considered as “on-line widening”. However, there is a section of the proposed scheme within the current design which extends from approximately ch. 1800 to 3100 and does not follow the existing A465 thereby requiring the construction of a new section of road; this section is therefore considered “off-line”. The location of the proposed scheme is presented in the ES Volume 3 Figure 1.1.

Welsh Government plans to procure the works through a Design, Build, Finance and Operate (DBFO) contract which would include the detailed design, construction and maintenance of the road.

The proposed scheme seeks to provide a highway to modern design standards, including improved vertical and horizontal alignment compared to the existing A465 route that was designed and built to 1960s standards. Where possible the proposed scheme would also seek to increase sustainability by re-using as much excavated material as possible.

2.4 Landowner and Developer

The name of the landowner where excavated materials would be arising from and being used is:

Welsh Government

Cathays Park
Cardiff
CF10 3NQ

The organisation that will design, build, finance and operate the project is not yet confirmed:

2.5 Re-use of Site Derived Material

During the construction phase, the earthworks would include the excavation of cuttings into the existing topography, the largest of which is in the vicinity of the Baverstock junction (ch. 8500). In addition, embankments would be constructed along the proposed scheme, the most significant at the A470 junction to the west of Merthyr Tydfil. The majority of embankments would be required to accommodate structures or support the new proposed highway elevated above existing infrastructure or watercourses.

The approach for the construction phase would be to reuse as much of the site-won materials (cut or excavated materials) within the proposed scheme as possible. This would be achieved through the use of the CL:AIRE Definition of Waste: Development Industry Code of Practice (CL:AIRE, 2014). This aims to amplify the sustainability of the proposed scheme by minimising the amount of material requiring off-site disposal and to reduce the amount of virgin materials imported, preserving mineral resources.

The earthworks would involve the excavation of a number of types of material some of natural origin and some the result of historic industrial and development activity in the study area. Some of that material would be unsuitable for use in the construction works either because of its chemical composition, which may include the presence of hazardous materials within the soil, or because it's strength or physical property makes it unsuitable for use in the construction. The proportion of "unsuitable" material has been estimated at 10% of the volume of excavated made ground and glacial material. Peat deposits and solifluction materials are not considered likely to be suitable for re-use within the proposed scheme without appropriate treatment. Therefore, it is proposed to reuse the peat and solifluction material following appropriate treatment processes, such as stabilising with the addition of lime, optimising the re-use of materials within the proposed scheme and meeting the Welsh Government's targets in this regard.

At this stage, it has been assumed that the majority of excavated site won materials would be reused within the proposed scheme, but the viability of the possible treatment processes would need to be reviewed at the time of construction.

2.6 Acceptability Criteria

The acceptability criteria for the re-use of site-won material would need to satisfy three sets of criteria which are described below.

2.6.1 Geotechnical properties

All the materials to be used in the works need to satisfy the requirements for geotechnical properties which are described in the Works Information and the Contractor's Design.

2.6.2 Chemical properties

The chemical properties of the materials must meet criteria specified in order to protect the environment including the water environment, and to protect human health. These criteria will differ at different locations depending upon a range of factors which will include (but may not be limited to) proximity to surface water, intended surface land use at a specific location, chemical composition and leachability.

2.6.3 Certainty of use

The requirements of the CL:AIRE CoP including certainty of use and necessity for use in the specified quantity.

2.7 Use of Excavated Material as Non-Waste

Excavated natural ground required as General Fill is therefore considered a Non-Waste providing the acceptability criteria are met.

Re-use of natural ground at the site would not undermine the aims of the Waste Framework Directive as the material is certain to be used, is suitable for use (without harming human health, polluting the environment or adversely affecting the countryside or places of special interest) and material would be used in the quantities required for the construction purposes detailed above.

3. Risk Assessment

Current UK guidance on contaminated land assessment requires development of a conceptual site model (CSM) and the completion of a risk assessment including evaluation of all potentially unacceptable risks / significant pollution linkages.

A Preliminary Risk Assessment, covering the area of the proposed scheme and 2016 Intrusive Site Investigation, has been completed by Jacobs. There have also been previous site investigation works undertaken along the proposed scheme, although these have been predominantly geotechnical and have not fed in to the risk assessment.

The CSM developed for the proposed scheme, indicates a moderate risk to some surface waters, construction workers and ecology.

The risks are generally limited to the construction phase as the design eliminates the risks during the operational life of the proposed scheme.

On the basis of the site investigations completed, the majority of site derived materials are anticipated to be considered suitable for use within the proposed scheme. However, it is recommended that further, more extensive, site investigation is undertaken which would provide additional information in support of the MMP for the proposed scheme. This additional site investigation is anticipated to be completed in 2018.

4. Materials Management Plan

At this stage of the proposed scheme and the procurement process through which the proposed scheme would be delivered (DBFO) this MMP can only be an outline document as detailed design cannot be finalised until the DBFO Contractor is appointed. Consequently, no completed MMP form has been included in this document. This section instead sets out the key requirements of the MMP.

The Contractor must put in place a tracking system which records and details materials re-used within the proposed scheme during construction.

The key requirements for the contractor include the following:

- regular inspection of the material for visual / olfactory indications of contamination;
- segregation of material with visual / olfactory indications of contamination and consultation with a suitably qualified Land Quality Specialist who would be able to assess the risks and advise whether the material is unsuitable for re-use, suitable only at certain locations or suitable for re-use anywhere on the site. This is likely to require additional sampling and testing;
- manage segregated material appropriately once advice has been offered by the Land Quality Specialist and remove unsuitable material off-site to an appropriately permitted waste management facility or re-use suitable material on site in accordance with the recommendations;
- collation of appropriate records including the tracking form, dated annotated site drawings showing material movements and temporary stockpiles, photographs, topographical surveys and waste transfer notes for off-site removal of waste;
- record any changes to the MMP during the project; and
- record the presence of any unforeseen material and the contingency arrangements carried out to manage this material.

4.1 Summary of Earthworks

As the proposed scheme is heavily earthworks driven, the current approach set out in the Constructability and Phasing Report (Jacobs, 2017) looks to minimise earthworks movements by establishing clear routes early on and limiting required haulage distance by utilisation of soil storage areas. At this stage, cut / fill locations have been assessed, but are subject to change once a Contractor Organisation has been appointed. As the scheme proposal is 17.7 km long, the works have been split into three distinct sections which are as follows:

- A465 Hirwaun junction to Nant Melyn viaduct (ch. 0 to 6000)
- A465 Nant Melyn viaduct to A470 junction (ch. 6000 to 11000)
- A470 junction to Dowlais junction (ch. 11000 to 16500)

4.1.1 A465 Hirwaun junction to Nant Melyn viaduct

The key quantities of cut and fill materials in this section are set out below:

Cut 590,000 m^3

Fill 760,000 m^3

In this section, the excavation of the large cutting between Hirwaun and Trewaun would take place with the bulk of the usable material transported to the new grade separated junction at Hirwaun. At this point, the mainline would be raised on an embankment over the new roundabout alignment with smaller volumes transported to other minor embankments within this section. Additional cutting would take place for the Trewaun underpass. This phase would produce a shortfall of fill materials, and therefore material from cut areas where there is a

surplus of material would be used, thereby achieving material balance and minimising the import of virgin materials.

4.1.2 A465 Nant Melyn viaduct to A470 junction

The key quantities of cut and fill materials in this section are set out below:

Cut 740,000 m^3

Fill 850,000 m^3

This section would incorporate the largest cutting on the proposed scheme at Baverstock junction. Material from this cutting would be stored at a stockpile close to the coniferous forest to the north of the junction and eventually move to the large embankment structures at the A470 junction. There are other proposed minor cuttings in this section mainly associated with crossings and slip roads. There would be a surplus of cut materials and therefore this material would be moved to construct large embankments at Gurnos and Dowlais.

4.1.3 A470 junction to Dowlais junction

The key quantities of cut and fill materials in this section are set out below:

Cut 820,000 m^3

Fill 630,000 m^3

This section would mainly be raised on embankments up and over the Dowlais junction roundabout below along with approaches / slips, with the mainline then tied in to the existing upgraded A465. There are several embankments that would be constructed as the mainline passes through Pant, with the most significant at Pant Road Viaduct. There would be a short embankment between Pen-y-Dre junction and Prince Charles Hospital junction. There would be a shortfall of cut materials within this section, and therefore materials from Nant Melyn to A470 would likely be transported to and used within this section.

In the phased process of excavated cuttings and constructed embankments, material would be temporarily stockpiled. The management of these stockpiles is covered within the Construction Environmental Management Plan (CEMP) for the proposed scheme.

4.1.4 Overall balance

There is a predicted that there would be an overall balance of materials for the earthworks phase of construction..

4.2 Other Materials

4.2.1 Demolition materials

Demolition works would be required at various sections of the existing highway generating materials. The types and quantities of materials are currently unknown. However, they would likely comprise:

- reinforcement and structural steelwork;
- masonry and brickwork;
- reinforced concrete and concrete;
- fill and landscaping materials;
- aggregate sub-base; and
- bituminous pavement material.

Where possible, these materials would be reused or suitably processed for use within the proposed scheme.

5. References

CL:AIRE (2014) The Definition of Waste: Development Industry Code of Practice. Version 3.

CL:AIRE (2011) Materials Management Plan (MMP) Form

Exploration Associates Ltd. (1997). A465 Abergavenny to Hirwaun Dualling Section 3 – Factual Report on Ground Investigation (Document Ref: 166001-3).

Jacobs (2015) A465 Heads of the Valley Dualling Sections 5 & 6: Preliminary Sources Study Report (PSSR) Report B2191100/D0/5/014

Jacobs (2016) A465 Heads of the Valley Dualling Sections 5 & 6: Preliminary Risk Assessment (PRA) Report B2191100/D5/3000/100/032

Jacobs (2016) A465 Abergavenny to Hirwaun Dualling Sections 5 & 6: Interpretative Report on Phase 1 Land Quality Ground Investigation Report B2191100/D2/1/2/045

Quantum Geotechnical (2016) A465 Heads of the Valleys Sections 5 & 6 Phase II Ground Investigation Factual Report (Ref: G791/FR)

Page left intentionally blank

Appendix 14A – Acoustic Context and Definitions

14A.1 Sound and Human Response

A sound wave travelling through the air is a regular disturbance in ambient atmospheric pressure. These pressure fluctuations, when of frequencies within the audible range, are detected by the human ear which passes nerve responses to the brain, producing the sensation of hearing.

The response of the human ear is not constant over all frequencies. It is therefore usual to weight the measured frequency to approximate human response. This is achieved by using filters to vary the contribution of different frequencies to the measured level.

The “A” weighting network is the most commonly used and has been shown to correlate closely to the non-linear and subjective response of humans to sound. The use of this weighting is denoted by a capital A in the unit abbreviation (i.e. LAmax, LAeq, LA90 etc.) or a capital A in brackets after a decibel (dB) level (i.e. 3 dB(A)).

The human ear is sensitive to a wide range of sound levels; the sound pressure level of the threshold of pain is over a million times that of the quietest audible sound. In order to reduce the relative magnitude of the numbers involved, a logarithmic scale of dB based on a reference level of the lowest audible sound is used.

14A.2 Noise

Noise has been defined in a variety of ways and is very much dependent on factors such as the listener’s attitude to the source of the sound and their environment, but is essentially any sound that is unwanted by the recipient.

It is impossible to measure the degree of nuisance caused by noise directly, as this is essentially a subjective response of the listener, but it is possible to measure the “loudness” of that noise. Loudness is related to both the sound pressure (the magnitude of the maximum excursion of the pressure wave around the ambient atmospheric pressure) and the frequency, both of which can be measured.

14A.3 Sound pressure level

The sound pressure level (LP or SPL) is the instantaneous acoustic pressure and is measured in decibels. Since the ear is sensitive to variations in pressure, rather than source power or intensity, the measurement of this parameter gives an indication of the impact on people. The SPL is defined as:

$$SPL = 10\log_{10}\left(\frac{p^2}{p_{ref}^2}\right) \text{ or } SPL = 20\log_{10}\left(\frac{p}{p_{ref}}\right)$$

where:

p is the rms pressure of the sound in question (in pascals)

pref is the reference sound pressure, defined as the limit of human audibility (2 x 10-5 Pa)

Leq: The Leq is defined as the equivalent continuous sound level and is the most widely used parameter for assessing environmental noise. Since this descriptor is a type of average level, it must by definition have an associated time period over which the measurement is referring to. This is often included in the abbreviation in the form Leq, T, where T is the time period (i.e. LAeq, 5 min). The formula for calculating the Leq is:

$$L_{eq} = 10\log_{10}\left(\frac{1}{t_2 - t_1}\int_{t_1}^{t_2}\frac{p^2}{p_{ref}^2}.dt\right)$$

In practice, since most modern sound level meters are digital and hence take periodic samples of the sound pressure level, the Leq will be the logarithmic average of all the SPL samples taken in the measurement period.

Lmax: The Lmax is defined as the maximum rms level recorded during a measurement period.

L10: The L10 refers to the level exceeded for 10% of the measurement period and is widely considered as the standard index to describe traffic noise.

L90: The L90 refers to the level exceeded for 90% of the measurement period and is widely considered to represent background noise, or the underlying noise in an area between noisy events (such as cars passing etc.).

Lnight: The Lnight is a façade noise index derived from the LA10,18h index using TRL conversion method.

Lnight,outside: The Lnight,outside is defined as the free-field A-weighted long-term average sound level of the 8-hour night-time period determined over all nights of a year outside a property.

Façade: The term “façade” refers to noise levels that have been measured or predicted 1 metre in front of the most exposed window or door in a façade.

Free-Field: The term “free-field” refers to noise levels that have been measured or predicted in the absence of any influence of reflections from nearby surfaces. In practice, a measurement is considered to be free-field if it was taken at a distance of over 3.5 m from any reflecting surfaces.

Appendix 14B – Assessment Approach

14B.1 Study Area

14B.1.1 Noise

The study and calculation areas for the noise assessment were defined in accordance with HD 213/11 (Highways Agency, 2011). Firstly, the study area is defined as a 1 km boundary around the start and end points of the physical works associated with the proposed scheme, including any improved or bypassed routes. The calculation area is then defined as all residential dwellings and other noise sensitive receptors within 600 m of the proposed scheme and for those roads (within 1 km of the proposed scheme) on the existing road network that are predicted to result in noise changes of 1 dB in the opening year or 3 dB in the design year.

HD 213/11 (Highways Agency, 2011) requires consideration beyond the "calculation area", to take into account the likely noise impacts on the wider road network (considered in terms of change in basic noise level (BNL)). This is required for such roads where there is a 1 dB increase or decrease in noise in the baseline year and / or a 3 dB increase or decrease in the future assessment year in comparison with the baseline year.

14B.1.2 Vibration

The study area for the vibration assessment was defined as within 40 m of all roads where noise level predictions were undertaken.

14B.2 Noise Assessment

14B.2.1 DMRB Noise Assessment

The assessment of noise levels at noise sensitive receptors has followed the "Detailed Assessment" methodology outlined in HD 213/11 (Highways Agency, 2011). Noise levels have been calculated at all residential dwellings within the Calculation Area (see Figure 14.1 in Volume 3 of the Environmental Statement). Noise levels at dwellings have generally been calculated at first floor level; unless the property is known to only have one floor. For single storey dwelling, and for other sensitive receptors, such as churches, schools, medical facilities and outdoor areas, predictions have been undertaken at 1.5 m above ground level.

Consideration has also been given to likely noise impacts on the wider road network, outside the calculation area. The basic noise level (BNL) changes have been predicted for the affected routes outside the calculation area where there is a 1 dB increase or decrease in noise in the baseline year and / or a 3 dB increase or decrease in the future assessment year in comparison with the baseline year.

The future assessment year is defined as the year within the first 15 years of opening of the proposed scheme where traffic flows are greatest. The future assessment year is therefore usually 15 years after opening, which in this assessment is 2037.

This assessment considers noise level changes at dwellings and other sensitive receptors according to their baseline façade noise levels (reception point 1 m in front of the building facade). The following comparisons are made:

- Do Minimum scenario in baseline year (2022) against Do Minimum in the future assessment year (2037);
- Do Minimum scenario in the baseline year (2022) against Do Something scenario in the baseline year (2022); and,
- Do Minimum condition in baseline year (2022) against Do Something in the future assessment year (2037).

14B.2.2 Noise level predictions

Noise level predictions have been undertaken using the CadnaA noise modelling package, which incorporates the methodology contained in CRTN (Department for Transport and the Welsh Office, 1988). This document is a technical memorandum providing the definitive method of predicting road traffic noise in the United Kingdom. Noise level predictions take account of the following variables:

- typical weekday volumes of traffic during the eighteen hour period from 6 am to midnight (18-hour AAWT flows) – day time assessment;
- typical weekday volumes of traffic during the eight hour period from 11 pm to 7 am – night-time assessment;
- percentage of Heavy Vehicles (vehicles of unladen weight > 3.5 tonnes);
- traffic speeds (banded speed based on Interim Advice Note 185/15 (Highways Agency, 2015);
- road gradient;
- local topography;
- nature of the ground cover between the road and the receptor;
- shielding effects of any intervening structures, including allowances for limited angles of view from the road and any reflection effects from relevant surfaces; and,
- road surfacing type.

HD 213/11 (Highways Agency, 2011) provides updated guidance on the use of CRTN (Department for Transport and the Welsh Office, 1988). This includes guidance on predicting noise from dual carriageways; noise reduction corrections to be applied for low noise surfacing systems; and the prediction of road traffic noise levels to 600 m from a road traffic source (CRTN provides for a prediction distance of 300 m).

For daytime noise levels at dwellings, community facilities and other noise sensitive properties, façade noise levels are predicted whereas night-time noise levels are free-field (in the open, without any nearby noise-reflecting surfaces).

HD 213/11 provides specific guidance in relation to the noise level correction that should be applied when using Low Noise Road Surfaces (LNRS) for existing and new carriageways.

- For existing carriageways, unless alternative RSI measurements for the surface are available, a -2.5 dB surface correction should be used for an existing low noise surface in the baseline year.
- For the future assessment year, a -3.5 dB correction should be applied for a low noise road surface that is expected to be in place on an existing road.

It also states that, “where new carriageways are to be constructed and a thin surfacing system [low noise surfacing] used, or where an existing surface is to be replaced with a thin surfacing system, a -3.5 dB correction should be assumed for the thin surface system [equivalent to a Road Surface Influence (RSI) of -5 dB] unless any information is available regarding the specific surface to be installed. This advice applies where the mean traffic speed is >=75 kph (47 mph). Where the mean speed is <75 kph (47 mph), a -1 dB correction should be applied to a new low-noise surface.”

The assumptions made for this assessment are in line with the guidance provided in HD 213/11 (Highways Agency, 2011).

The following road surface types have been assumed:

DM 2022 – HRA for all roads within the calculation area, with the exception of the following lengths of the A465, which have existing low noise surfaces, according to the SWTRA Pavement Management System. In accordance with HD 213/11, a LNRS correction of -2.5 dB is applied to these sections of carriageway.

- Chainages 8350 to 10700

DM 2037 – The A465 mainline and slip roads will be resurfaced with LNRS before the future assessment year, even if the proposed scheme doesn't go ahead. Therefore a -3.5 dB correction is applied for the entire A465 mainline and slip roads, and standard HRA for the side roads.

DS 2022 – The proposed scheme mainline and slip roads would be laid using LNRS and HRA. Therefore a LNRS correction of -3.5 dB is applied for the following A465 mainline and slip roads, and standard HRA for the side roads.

- Chainages 1500 to 5500
- Chainages 8100 to 17700

DS 2037 – The road surfacing assumptions used in DS 2037 follow those in DS 2022.

It should be noted that LNRS corrections of -2.5 dB and -3.5 dB have only been applied where the traffic speed is greater than 75 kph (47 mph), in line with the guidance contained within HD 213/11 (Highways Agency, 2011).

Where the traffic assessment modelling has predicted 18-hr AAWT traffic flows less than 1000, the lower threshold for the CRTN calculation method, traffic flows have generally been set to 0 within the noise model scenarios affected. However, this approach can lead to artificial noise changes on links where traffic flows are less than 1000 in some scenarios but greater than 1000 in others. On such links, traffic flows of less than 1000 have therefore been set at 1000 to minimise the potential for artificial noise changes.

In line with HD 213/11 (Highways Agency, 2011), a minimum traffic speed of 20 kph (12 mph) has been used in the noise model, where the traffic model predictions provide speeds less than this.

It is considered that all data inputs for this assessment are of an adequate level to support a 'Detailed' level of assessment as defined in HD 213/11 (Highways Agency, 2011).

14B.2.3 Night time noise

An assessment of night-time noise levels has been undertaken in accordance with HD 213/11. Therefore, consideration is given to those receptors that are predicted to experience a noise level change in the long-term and which are exposed to an Lnight,outside noise level of 55 dB or greater in any scenario. Method 3 within TRL report 'Converting the UK traffic noise index LA10,18h to EU noise indices for noise mapping' has been used to determine the night-time levels (Lnight,outside).

For the night-time assessment, the following comparisons are made:

Do Minimum scenario in baseline year (2022) against Do Minimum in the future assessment year (2037); and,

Do Minimum condition in baseline year (2022) against Do Something in the future assessment year (2037).

14B.2.4 Noise nuisance

HD 213/11 (Highways Agency, 2011) defines the level of noise 'nuisance' by reference to the percentage of people in the affected population that are likely to be 'bothered very much or quite a lot' by traffic noise. Gradual increases in noise are expected to produce a gradual and proportionate increase in the nuisance level (i.e. the percentage of the population that is bothered). However, sudden increases in the noise level are expected to result in an initial large increase in the nuisance level. This new level of nuisance appears to persist for several years at least but, in the longer term, nuisance levels tend back towards those expected for a gradual increase in noise.

In this assessment, noise nuisance predictions have been based on the highest nuisance levels expected during the first 15 years after opening for the Do Minimum and Do Something scenario and compared to the nuisance levels of the Do Minimum baseline year (2022). In accordance with the predictive technique presented

in HD 213/11 (Highways Agency, 2011), an assessment of noise nuisance for all properties situated within the calculation area has been undertaken.

14B.2.5 Ground-borne vibration

HD 213/11 (Highways Agency, 2011) provides guidance on ground-borne vibration from highway schemes. It states "If ground-borne vibration on existing routes is considered to be a potential problem, calculations or measurements of vibration at the foundations of typical buildings considered to be at high risk may be taken in order to establish whether increasing vibration levels would be likely to exceed the threshold values".

The document also advises that methods are available to predict ground-borne vibration from roads; however, it does state that this requires detailed knowledge of the ground type, which is unlikely to be readily available. The methodology also requires detailed knowledge of deviations in the road surface (holes, cracks, undulations, etc). For these reasons, this assessment provides a qualitative assessment on the likelihood of perceptible traffic induced ground-borne vibration.

14B.2.6 Vibration nuisance

Where properties are within 40 m of the carriageway, HD 213/11 (Highways Agency, 2011) recommends that, for a given level of noise exposure, the percentage of those 'bothered' by airborne vibration is 10% lower than the corresponding figure for noise nuisance. Where noise levels are below 58 dB LA10,18h, it should be assumed that residents would not be 'bothered' by airborne vibration. Consideration has been given to changes in airborne vibration nuisance at all dwellings within 40 m of roads where noise level predictions have been undertaken.

14B.3 Assessment of the Significance of Effects

14B.3.1 Construction noise

BS 5228-1:2009 +A1:2014 includes example thresholds of 'significant effects'. These thresholds can be based on the 'ABC' method, which takes into account the existing ambient noise levels in the area, along with predicted construction noise levels. It should be noted that the thresholds in BS 5228-1:2009 +A1:2014 are examples and therefore there is scope for them to be adapted, if deemed necessary to local circumstances.

Example thresholds of significant effects (or potential disturbance), using the ABC methodology as set out in Annex E of BS5228-1:2009 +A1:2014, are detailed in Table 14B.1.

Table 14B.1 : Construction Noise Thresholds

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A[A)]	Category B[B)]	Category C[C)]
Night-time (2300 – 0700)	45	50	55
Evenings and weekends [D)]	55	60	65
Daytime (0700 – 1900) and Saturdays (0700 – 1300)	65	70	75
NOTE 1: A potential significant effect is indicated if the l L_{Aeq} noise level, from the site, exceeds the threshold level for the category appropriate to the ambient noise level. **NOTE 2**: If the ambient noise level exceeds the Category C threshold values given in the table (i.e. if the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total L_{Aeq} noise level for the period increases by more than 3dB due to site noise. **NOTE 3**: Applies to residential receptors only			

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A[A)]	Category B[B)]	Category C[C)]
Category A: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values Category B: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as Category A values Category C: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than Category A values 1900 – 2300 weekdays, 1300 – 2300 Saturdays and 0700 – 2300 Sundays			

14B.3.2 Construction vibration

Vibration is a low frequency disturbance producing physical movement in buildings or to their occupants. Ground-borne vibration is usually measured in terms of peak particle velocity (ppv), which is measured in terms of movement in mm/s. BS 5228-2:2009+A1:2014 (BSI, 2014) contains guidance on vibration levels in structures from construction works. It provides a prediction methodology for mechanised construction works, such as compaction and tunnelling works, and piling works. The Standard also presents guidance for the control of vibration from construction works.

BS 5228-2:2009+A1:2014 (BSI, 2014) provides guidance on the human response to vibration. The Standard provides guidance for predicting human response to vibration in buildings. For construction works, the guidance contained in Table 14B.2 is provided:

Table 14B.2 : Guidance on the Human Response to Vibration Levels from BS5228-2:2009+A1:2014+A1:2014

Vibration Level (ppv)	Effect
0.14 mm/s	Vibration might just be perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration
0.3 mm/s/	Vibration might just be perceptible in residential environments
1.0 mm/s	It is likely that vibration of this level in residential environments would cause complaint, but can be tolerated if prior warning and explanation has been given to residents
10.0 mm/s	Vibration is likely to be intolerable for any more than very brief exposure to this level

For building structure response, BS 5228-2:2009+A1:2014 (BSI, 2014) reproduces the advice given in BS 7385-2:1993 (BSI, 1993), which gives guidance on vibration levels which could potentially result in building damage. The response of a building to ground-borne vibration is affected by the type of foundation, underlying ground conditions, the building construction and the state of repair of the building. Table 14 23 reproduces the guidance detailed in BS 5228-2:2009+A1:2014 (BSI, 2014) on building classification and guide values for cosmetic building damage.

Minor damage is possible at vibration magnitudes which are greater than twice those given in Table 14B.3, with major damage at values greater than four times the values in the table. BS 7385-2:1993 (BSI, 1993) also notes that the probability of cosmetic damage tends towards zero at 12.5 mm/s peak component particle velocity.

Table 14B.3 : Guidance on the Effects of Vibration Levels on Building Structures from BS5228-2:2009+A1:2014+A1:2014

Type of building	PPV in frequency range of predominant pulse	
	4 Hz to 15 Hz	15 Hz and above
Reinforced or framed structures	50 mm/s	50 mm/s
Industrial and heavy commercial buildings		
Un-reinforced or light framed structures	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above
Residential or light commercial buildings		

14B.4 Vibration

HD 213/11 (Highways Agency, 2011) advises that should the level of vibration at a receptor be predicted to rise to above a level of 0.3 mm/s, or an existing level above 0.3 mm/s is predicted to increase, then this should be classed as an adverse impact from vibration.

HD 213/11 (Highways Agency, 2011) paragraph A5.26 states, “Significant ground-borne vibrations may be generated by irregularities in the road surface. Such vibrations are unlikely to be important when considering disturbance from new roads and the assessment will only be necessary in exceptional circumstances.” Further to this, Figure 3 from Transport and Road Research Laboratory (TRRL) Report No RR53 – Ground Vibration Caused by Civil Engineering Works provides a summary of measurements taken by the TRRL which indicates the relative effects of various construction related sources. This figure indicates that, for a heavy lorry on a poor road surface at 8 m, a PPV of 0.1 mm/s is expected.

References

British Standards (1993) BS 7385-2:1993. Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration.

British Standards (2014). BS 5228-2:2009+A1:2014. Code of practice for noise and vibration on construction and open sites.

Department for Transport and the Welsh Office, (1988) *Calculation of Road Traffic Noise.*

Highways Agency (2011) Design Manual for Roads and Bridges Volume 11, Section 3, Part 7 (HD 213/11) *Environmental Assessment: Environmental Assessment Techniques: Noise and Vibration.*

Highways Agency (2015) *Interim Advice Note 185/15 Updated traffic, air quality and noise advice on the assessment of link speeds and generation of vehicle data into ‘speed-bands’ for users of DMRB Volume 11, Section 3, Part 1 ‘Air Quality and Volume 11, Section 3. Part 7 Noise.* Available at: http://www.standardsforhighways.co.uk/ians/pdfs/ian185.pdf. (Accessed and confirmed link June 2017).

Appendix 14C – Noise Monitoring Results

14C.1 Introduction

This appendix contains the details of the noise monitoring survey that was undertaken during January and February 2016 adjacent to the proposed scheme. The survey was undertaken in accordance with the methodology agreed with Merthyr Tydfil County Borough Council (MTCBC) and Rhondda Cynon Taf County Borough Council (RCTCBC) prior to commencement.

Baseline measurements were undertaken at eleven locations to inform the construction assessment, and for validation and verification of predicted operational noise levels. All noise measurements were undertaken using a Class 1 integrating Sound Level Meter (SLM) that had been laboratory calibrated within the last 12 months (calibration certificates are provided in Appendix 14D in Volume 2 of this Environmental Statement). The measurements consisted of both long and short term measurements, where seven locations were long term (minimum seven day duration) and four locations were short term (three hour duration).

14C.2 Comparison between Measured and Predicted Noise Levels

Table 14C.1 provides a comparison of the LA10,18 hour noise levels measured in 2016 against those predicted in this assessment for the Do Minimum scenario in the opening year (2022). Although traffic would increase slightly between 2016 and 2022, this is not considered to result in significant changes in noise levels, in the context of the variability and uncertainty associated with environmental noise measurements. Both measured and predicted are shown as façade noise levels.

The measured and predicted noise levels are considered to be largely comparable, when taking into account the variability and uncertainty associated with environmental noise measurements, and give a good level of confidence that the noise model is sufficiently accurate to describe the local traffic noise climate.

Table 14C.1 : Comparison between measured and predicted noise levels

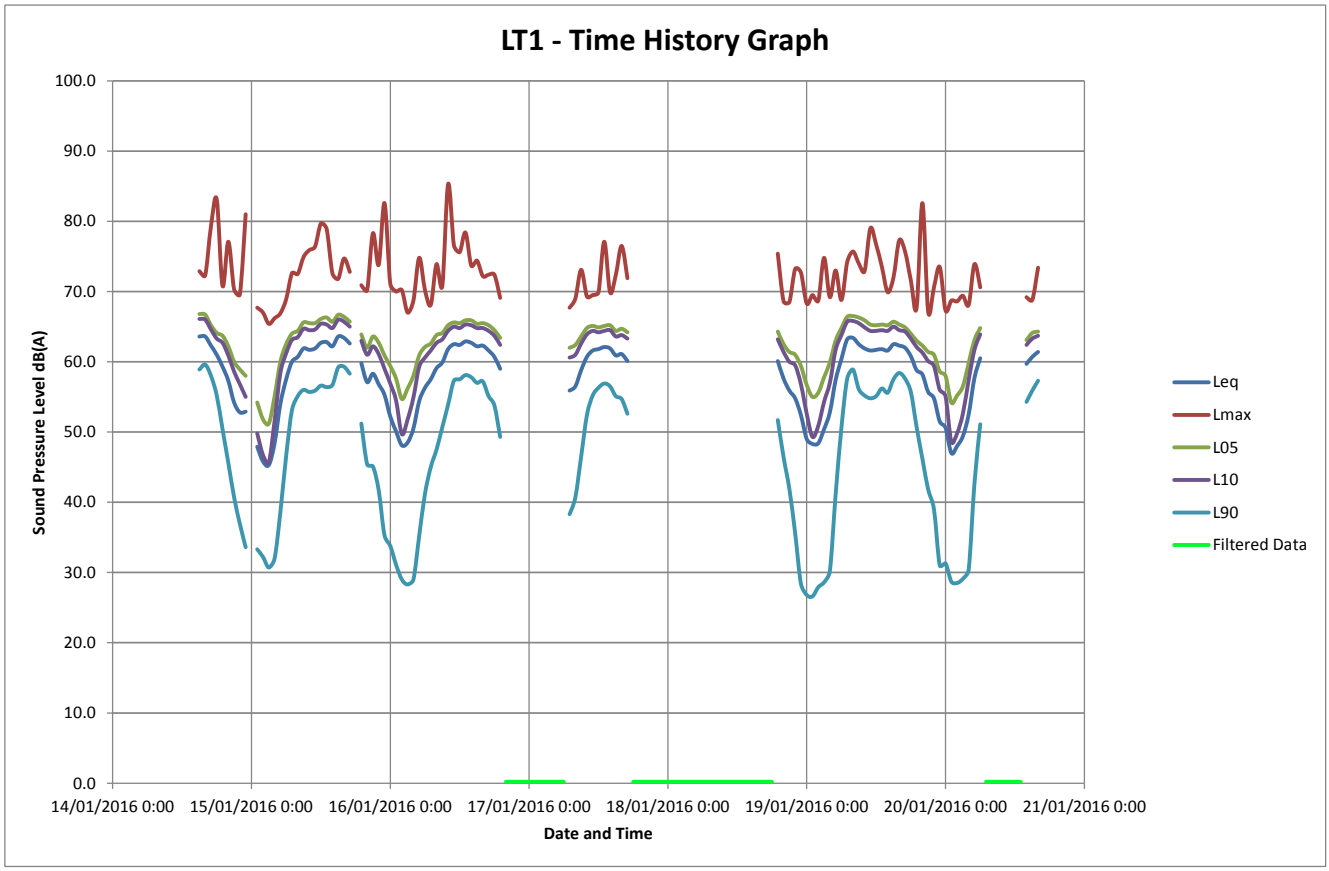
Location ID	Location	Measured noise level dB $L_{A10,18hour}$	Predicted noise level dB $L_{A10,18hour}$
LT1	12 Penyfan View	62.8	61.4
LT2	12 Eighth Avenue	63.0	62.0
LT3	84 The Hafod Pant	60.9	58.3
LT4	2 Trewaun	66.8	68.3
LT5	1 Oakland Close	64.5	66.0
LT6	Tawel Fan	53.4	50.7
LT7	Hafan Dawel	57.7	61.0
ST1	Pearces Court	66.4	65.5
ST2	Vaynor Road	69.8	67.1
ST3	Hornbeam Close	72.7	69.4
ST4	Houlson Street	77.8	74.6

The full measured data, location records, photographs, equipment personnel, calibration records, meteorological records, and subjective impressions of the noise environment are presented in the following measurement sheets.

LT1: 12 Penyfan View						
Address	12 Penyfan View Merthyr Tydfil CF47 9BX					
OSGB coordinates	X	304446		Y	208550	
Equipment used	Model	RION NL32		Serial no.	00875	
Calibration level (dBA)	Pre	94.0	Post	94.1	Drift	0.1
Site engineer(s)	James Wright & Humphrey Roberts-Powell					
Meteorological notes during equipment installation (14/01/2016)						
General description	Fine and dry. A very small amount of surface water on roads but it was negligible.					
Wind speed (m/s)	2					
Wind direction (from)	North					
Temperature (°C)	2					
Cloud cover %	<10%					
Meteorological notes during equipment collection (20/01/2016)						
General description	Fine and dry. Some ground frost.					
Wind speed (m/s)	1					
Wind direction (from)	South east					
Temperature (°C)	1					
Cloud cover %	<10%					
Description of audible noise during equipment installation						
General description	Dominated by road traffic noise, some wind induced noise from vegetation.					
Description of audible noise during equipment collection						

General description	Dominated by road traffic noise, some wind induced noise from vegetation.

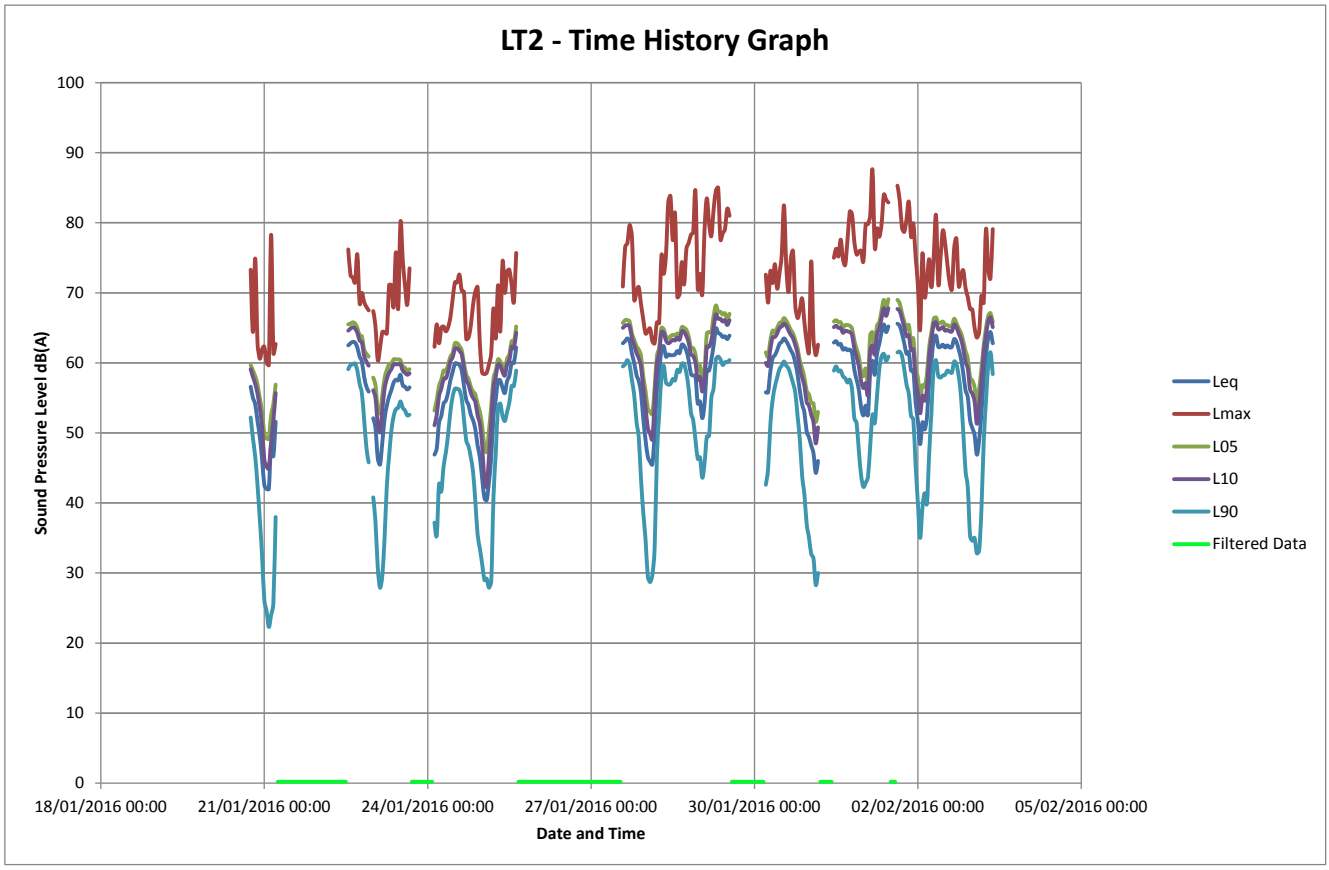
LT1 – View towards house	**LT1 – View away from house**
LT1 – view towards A465	LT1 – Another view towards house


LT1 - Time History Graph
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Sound Pressure Level dB(A)
14/01/2016 0:00
15/01/2016 0:00
16/01/2016 0:00
17/01/2016 0:00
18/01/2016 0:00
19/01/2016 0:00
20/01/2016 0:00
21/01/2016 0:00
Date and Time
Leq
Lmax
L05
L10
L90
Filtered Data

LT2 - 12 Eighth Avenue						
Address	12 Eighth Avenue Merthyr Tydfil CF47 9UN					
OSGB coordinates	X	305411		Y	208369	
Equipment used	Model	RION NL32		Serial no.	00875	
Calibration level (dBA)	Pre	94.0	Post	93.9	Drift	0.1
Site engineer(s)	James Wright & Humphrey Roberts-Powell					
Meteorological notes during equipment installation (20/01/2016)						
General description	Fine, clear.					
Wind speed (m/s)	1m/s					
Wind direction (from)	SE					
Temperature (°C)	2					
Cloud cover %	<10					
Meteorological notes during equipment collection (03/02/2016)						
General description	Overcast.					
Wind speed (m/s)	2m/s					
Wind direction (from)	SE					
Temperature (°C)	6					
Cloud cover %	60-70					
Description of audible noise during equipment installation						
General description	Dominated by road traffic noise, some wind induced noise from vegetation.					
Description of audible noise during equipment collection						

General description	Dominated by road traffic noise, some wind induced noise from vegetation.

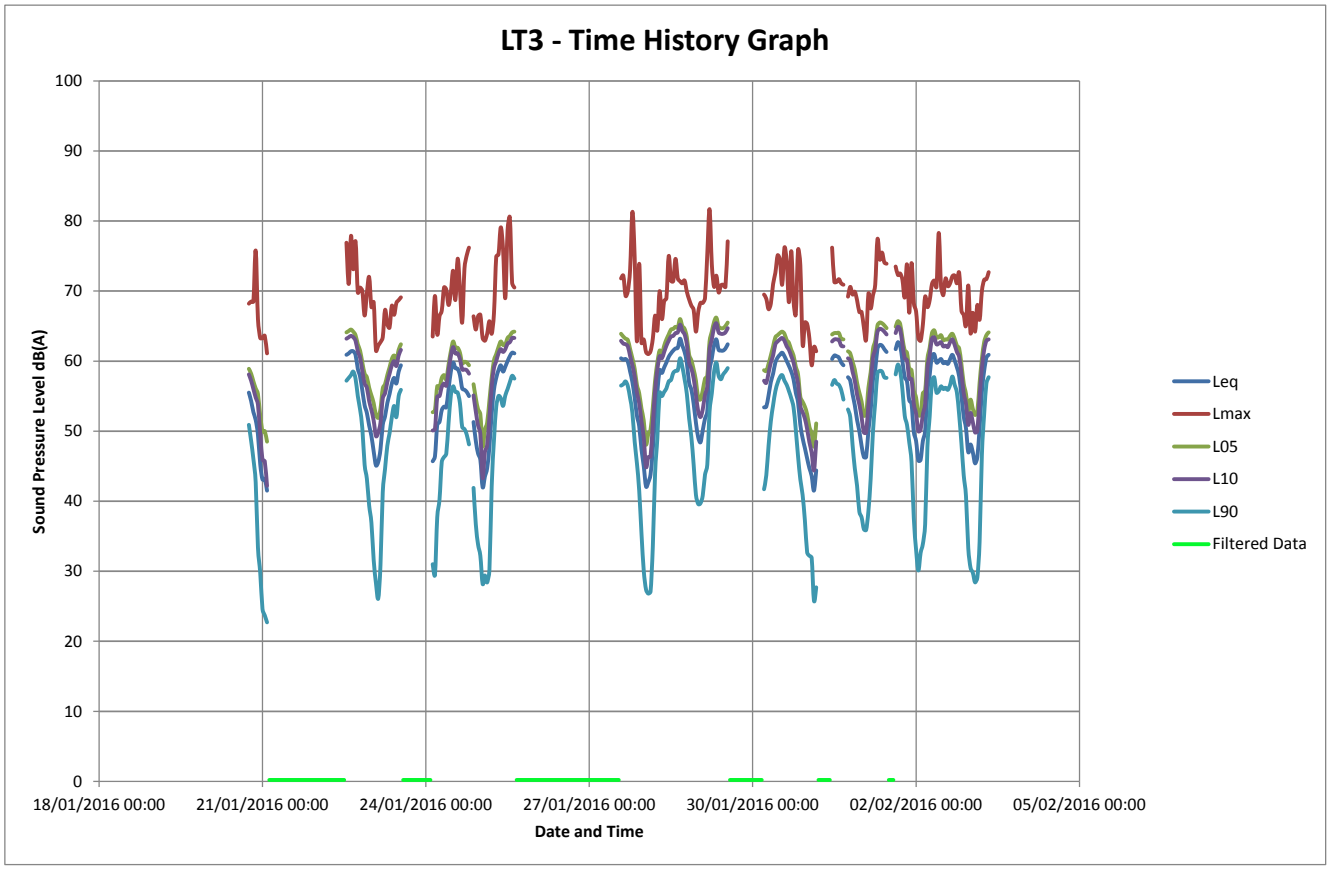
LT2 – View to the south east	**LT2 – View towards house**
LT2 – View towards A465	LT2 – View towards A465 (2)


LT2 - Time History Graph
Sound Pressure Level dB(A)
100
90
80
70
60
50
40
30
20
10
0
18/01/2016 00:00
21/01/2016 00:00
24/01/2016 00:00
27/01/2016 00:00
30/01/2016 00:00
02/02/2016 00:00
05/02/2016 00:00
Date and Time
Leq
Lmax
L05
L10
L90
Filtered Data

LT3 - 84 The Hafod Pant						
Address	84 The Hafod Pant Merthyr Tydfil CF48 2ED					
OSGB coordinates	X	306712		Y	208574	
Equipment used	Model	RION NL32		Serial no.	00871	
Calibration level (dBA)	Pre	94.0	Post	94.0	Drift	0.0
Site engineer(s)	James Wright & Humphrey Roberts-Powell					
Meteorological notes during equipment installation						
General description	Fine, clear.					
Wind speed (m/s)	1m/s					
Wind direction (from)	SE					
Temperature (°C)	2					
Cloud cover %	<10					
Meteorological notes during equipment collection						
General description	Overcast.					
Wind speed (m/s)	2m/s					
Wind direction (from)	SE					
Temperature (°C)	6					
Cloud cover %	60-70					
Description of audible noise during equipment installation						
General description	Dominated by road traffic noise, some wind induced noise from vegetation.					
Description of audible noise during equipment collection						

General description	Dominated by road traffic noise, some wind induced noise from vegetation.

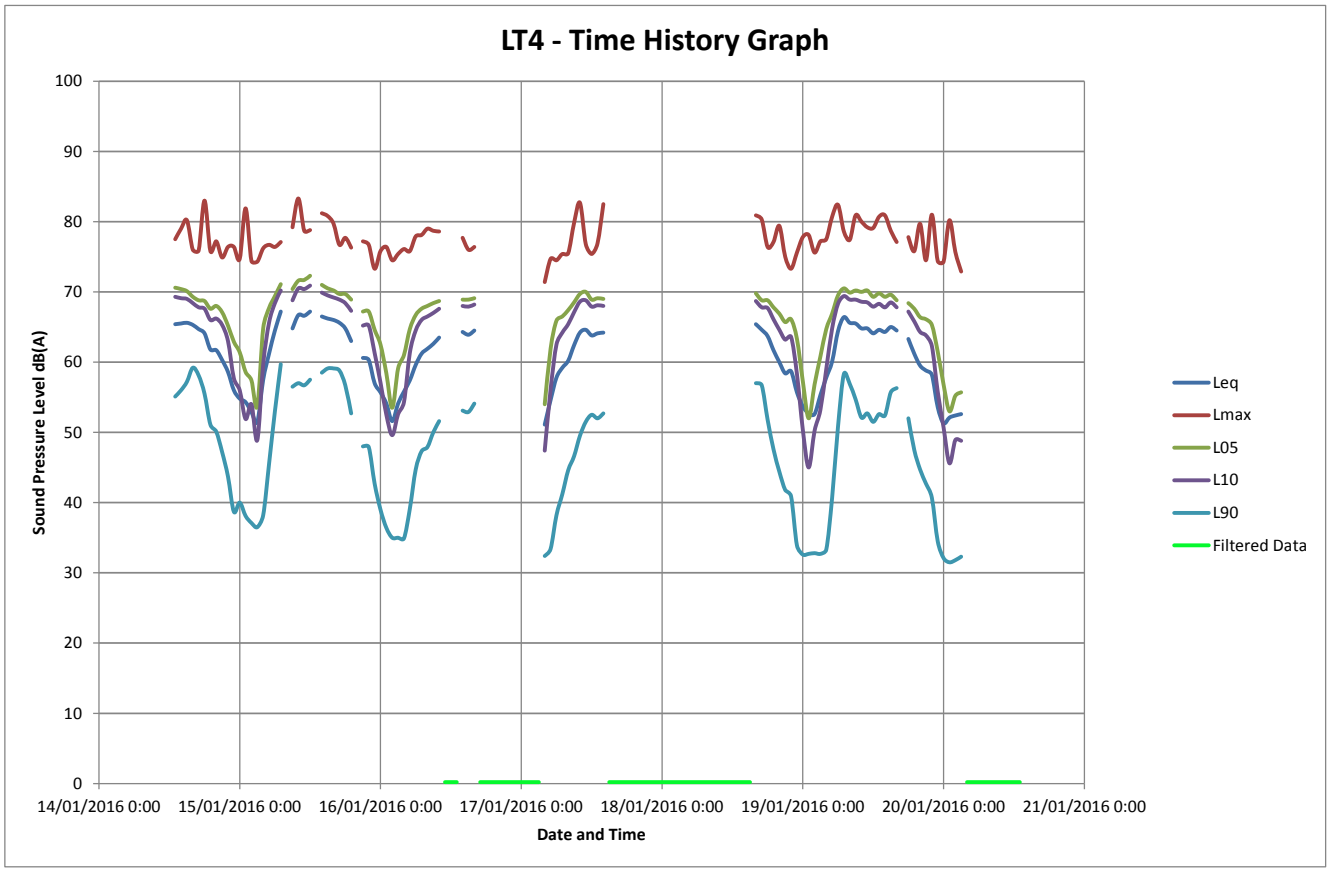
LT3 – View towards A465	**LT3 – View towards east**
LT3 – View towards house	LT3 - View towards A465 (2)


LT3 - Time History Graph
Sound Pressure Level dB(A)
100
90
80
70
60
50
40
30
20
10
0
18/01/2016 00:00
21/01/2016 00:00
24/01/2016 00:00
27/01/2016 00:00
30/01/2016 00:00
02/02/2016 00:00
05/02/2016 00:00
Date and Time
Leq
Lmax
L05
L10
L90
Filtered Data

LT4 - 9 Trewaun Hirwaun						
Address	9 Trewaun Hirwaun Aberdare CF44 9HN					
OSGB coordinates	X	296273		Y	205132	
Equipment used	Model	RION NL32		Serial no.	00871	
Calibration level (dBA)	Pre	94.0	Post	94.0	Drift	0.0
Site engineer(s)	James Wright & Humphrey Roberts-Powell					
Meteorological notes during equipment installation (14/01/2016)						
General description	Fine and dry. A very small amount of surface water on roads but negligible.					
Wind speed (m/s)	2 m/s					
Wind direction (from)	North					
Temperature (°C)	2					
Cloud cover %	<10%					
Meteorological notes during equipment installation (20/01/2016)						
General description	Fine and dry. Some ground frost.					
Wind speed (m/s)	1					
Wind direction (from)	South east					
Temperature (°C)	1					
Cloud cover %	<10%					
Description of audible noise during equipment installation						
General description	Dominated by road traffic noise (A465), some wind induced noise from vegetation.					
Description of audible noise during equipment collection						

General description	Dominated by road traffic noise (A465), some wind induced noise from vegetation.

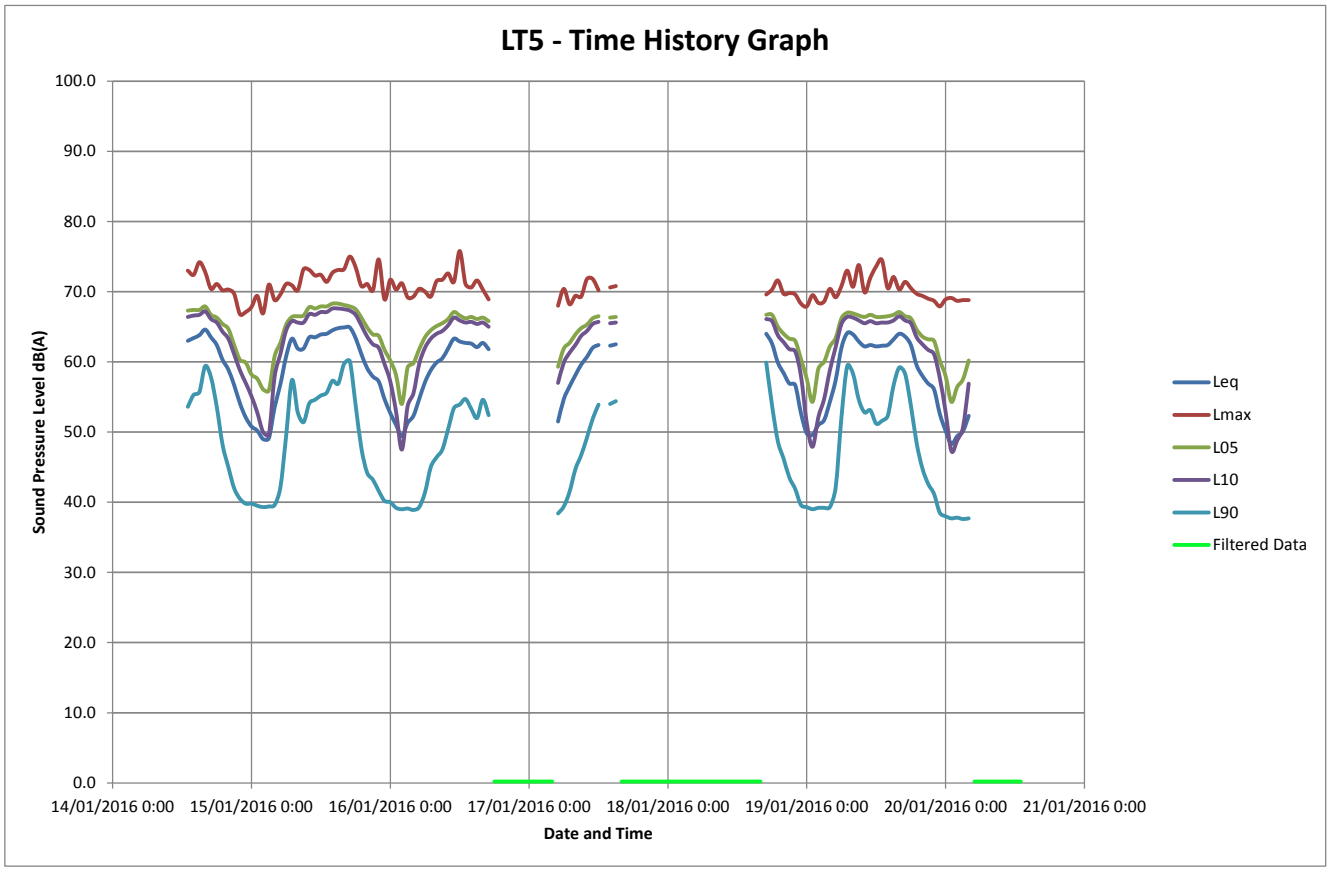
LT4 - View towards A465	**LT4 – View towards A465**
LT4 - View towards next door (No. 8)	LT4 – View towards house


LT4 - Time History Graph
Sound Pressure Level dB(A)
100
90
80
70
60
50
40
30
20
10
0
14/01/2016 0:00
15/01/2016 0:00
16/01/2016 0:00
17/01/2016 0:00
18/01/2016 0:00
19/01/2016 0:00
20/01/2016 0:00
21/01/2016 0:00
Date and Time
Leq
Lmax
L05
L10
L90
Filtered Data

LT5 - 1 Oakland Close						
Address	1 Oakland Close Hirwaun Aberdare CF44 9QT					
OSGB coordinates	X	296273		Y	205132	
Equipment used	Model	RION NL32		Serial no.	00873	
Calibration level (dBA)	Pre	94.0	Post	93.8	Drift	0.2
Site engineer(s)	James Wright & Humphrey Roberts-Powell					
Meteorological notes during equipment installation (14/01/2016)						
General description	Fine and dry. A very small amount of surface water on roads but negligible.					
Wind speed (m/s)	2 m/s					
Wind direction (from)	North					
Temperature (°C)	2					
Cloud cover %	<10%					
Meteorological notes during equipment collection (20/01/2016)						
General description	Fine and dry. Some ground frost.					
Wind speed (m/s)	1					
Wind direction (from)	South east					
Temperature (°C)	1					
Cloud cover %	<10%					
Description of audible noise during equipment installation						
General description	Dominated by road traffic noise (A465), some wind induced noise from vegetation.					
Description of audible noise during equipment collection						

General description	Dominated by road traffic noise (A465), some wind induced noise from vegetation.

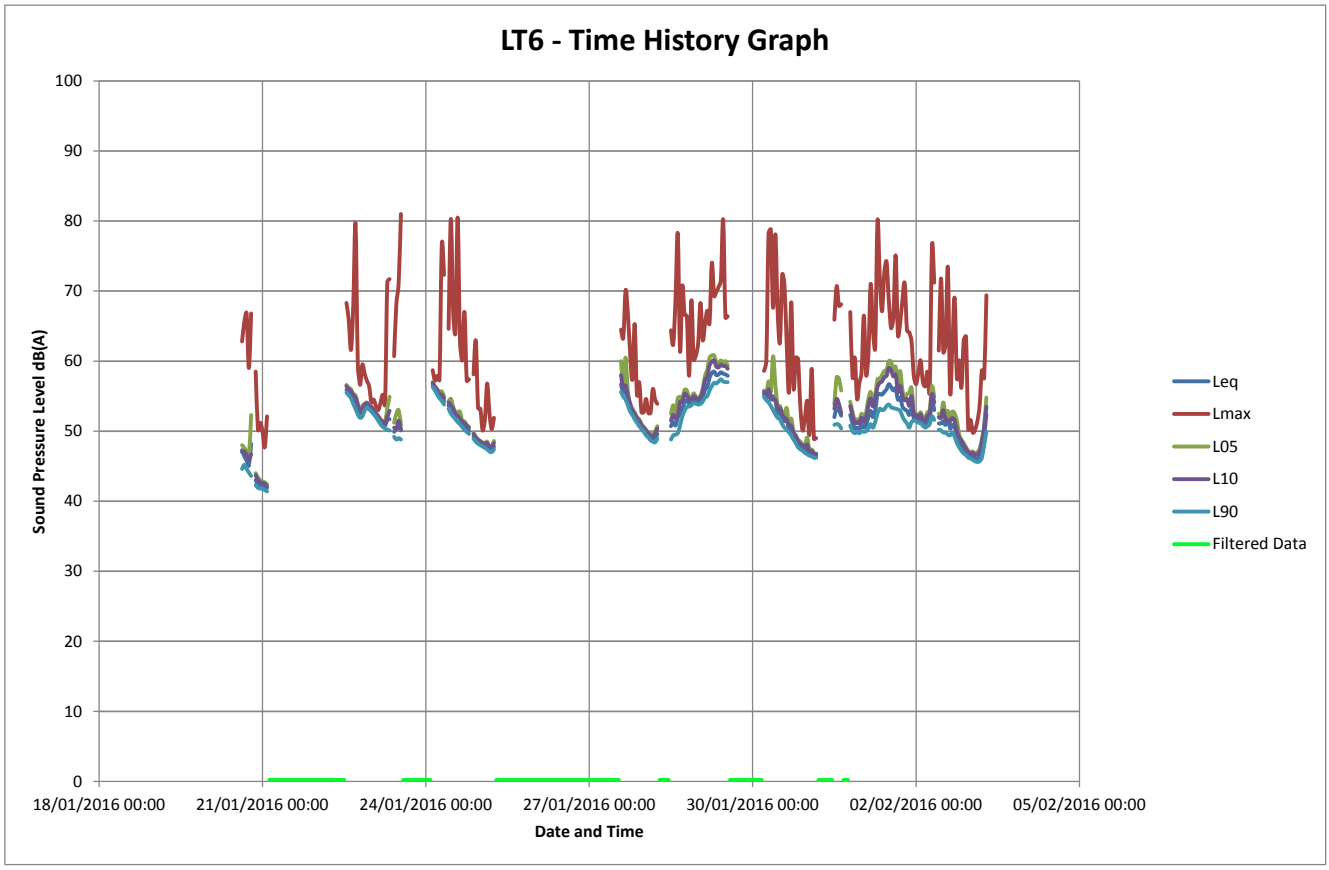
LT5 – View away from A465	**LT5 – View towards house**
LT5 – View towards A465	LT5 – View away from house (A465 to right)


LT5 - Time History Graph
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Sound Pressure Level dB(A)
14/01/2016 0:00
15/01/2016 0:00
16/01/2016 0:00
17/01/2016 0:00
18/01/2016 0:00
19/01/2016 0:00
20/01/2016 0:00
21/01/2016 0:00
Date and Time
Leq
Lmax
L05
L10
L90
Filtered Data

LT6 - Tawel Fan						
Address	Tawel Fan Croesbychan Aberdare CF44 0EJ					
OSGB coordinates	X	297944		Y	205916	
Equipment used	Model	RION NL32		Serial no.	00873	
Calibration level (dBA)	Pre	94.0	Post	94.2	Drift	0.2
Site engineer(s)	James Wright & Humphrey Roberts-Powell					
Meteorological notes during equipment installation (20/01/16)						
General description	Fine, clear.					
Wind speed (m/s)	1m/s					
Wind direction (from)	SE					
Temperature (°C)	2					
Cloud cover %	<10					
Meteorological notes during equipment collection (03/02/16)						
General description	Overcast.					
Wind speed (m/s)	2m/s					
Wind direction (from)	SE					
Temperature (°C)	6					
Cloud cover %	60-70					
Description of audible noise during equipment installation						
General description	Wind noise through vegetation, stream and road traffic noise in distance.					
Description of audible noise during equipment collection						

General description	Wind noise through vegetation, stream and road traffic noise in distance.

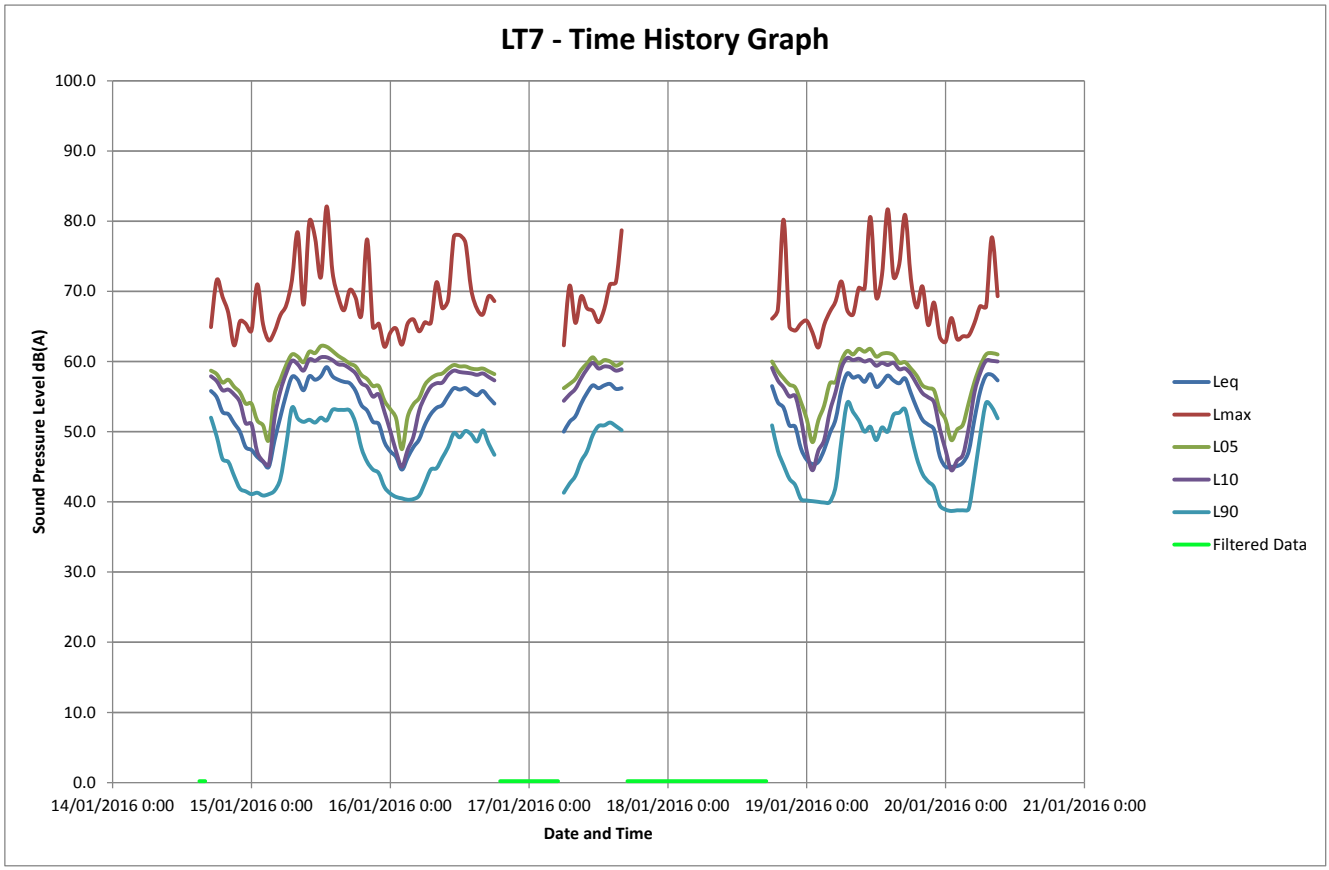
LT6 – View towards A465	**LT6 – View towards north (away from house)**
LT6 – View towards house	LT6 – View towards A465/stream


LT6 - Time History Graph
Sound Pressure Level dB(A)
100
90
80
70
60
50
40
30
20
10
0
18/01/2016 00:00
21/01/2016 00:00
24/01/2016 00:00
27/01/2016 00:00
30/01/2016 00:00
02/02/2016 00:00
05/02/2016 00:00
Date and Time
Leq
Lmax
L05
L10
L90
Filtered Data

LT7 - Hafan Dawel						
Address	Hafan Dawel, 2 Ivy Cottages, Hirwaun, CF44 9QT					
OSGB coordinates	X	296262		Y	205190	
Equipment used	Model	RION NL32		Serial no.	00875	
Calibration level (dBA)	Pre	94.0	Post	94.1	Drift	0.1
Site engineer(s)	James Wright & Humphrey Roberts-Powell					
Meteorological notes during equipment installation (14/01/2016)						
General description	Fine and dry. A very small amount of surface water on roads but negligible.					
Wind speed (m/s)	2 m/s					
Wind direction (from)	North					
Temperature (°C)	2					
Cloud cover %	<10%					
Meteorological notes during equipment collection (20/01/2016)						
General description	Fine and dry. Some ground frost.					
Wind speed (m/s)	1					
Wind direction (from)	South east					
Temperature (°C)	1					
Cloud cover %	<10%					
Description of audible noise during equipment installation						
General description	Dominated by road traffic noise (A465), some wind induced noise from vegetation.					
Description of audible noise during equipment collection						

General description	Dominated by road traffic noise (A465), some wind induced noise from vegetation.

LT7 – View towards A465	**LT7 – View towards A465 (roundabout)**
LT7 – View away from A465 toward neighbours	LT7 – View toward house


LT7 - Time History Graph
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Sound Pressure Level dB(A)
14/01/2016 0:00
15/01/2016 0:00
16/01/2016 0:00
17/01/2016 0:00
18/01/2016 0:00
19/01/2016 0:00
20/01/2016 0:00
21/01/2016 0:00
Date and Time
Leq
Lmax
L05
L10
L90
Filtered Data

ST1 - Pearce's Court (CRTN)						
Address	Pearce's Court, Cefn-Coed-y-Cymmer					
OSGB coordinates	X	302951		Y	207991	
Equipment used	Model	RION NL32		Serial no.	00874	
Calibration level (dBA)	Pre	94.0	Post	94.0	Drift	0.0
Site engineer(s)	James Wright & Humphrey Roberts-Powell					
Meteorological notes during measurement						
General description	Overcast, rain around 1630.					
Wind speed (m/s)	2m/s					
Wind direction (from)	SE					
Temperature (°C)	6					
Cloud cover %	40					
Description of audible noise during measurement						
General description	Dominant noise source was A465					

ST1 – View towards 7 Pearce's Court	ST1 – View away from A465
ST1 – View towards A465	ST1 – View towards north east

Start date and time (dd/mm/yy hh:mm)	Measurement duration (hh:mm)	Measured Noise Level dB				
		L_{Aeq}	L_{Amax}	L_{A5}	L_{A10}	L_{A90}
03/02/2016 14:00	1:00:00	64.7	72.4	67.8	67.1	60.4
03/02/2016 15:00	1:00:00	65.3	73.2	68.3	67.4	61.3
03/02/2016 16:00	0:31:11*	65.3	74.5	68.5	67.8	60.3

Start date and time (dd/mm/yy hh:mm)	Measurement duration (hh:mm)	Noise Level dB	
		$L_{A10, 3h}$	$L_{A10, 18h}$
03/02/2016 14:00	1:00:00	67.1	66.4
03/02/2016 15:00	1:00:00	67.4	
03/02/2016 16:00	0:31:11*	67.8	

** The third hour of monitoring was stopped early due to rainfall. The data set was judged to be robust enough to not need to repeat the survey.*

ST2 - Vaynor Road (CRTN)						
Address	Vaynor Road – 1 m from façade (stone wall) / 5 m from carriageway edge					
OSGB coordinates	X	303172		Y	208164	
Equipment used	Model	RION NL32		Serial no.	00873	
Calibration level (dBA)	Pre	94.0	Post	94.0	Drift	0.0
Site engineer(s)	James Wright & Humphrey Roberts-Powell					
Meteorological notes during measurement						
General description	Fine and dry.					
Wind speed (m/s)	1					
Wind direction (from)	South east					
Temperature (°C)	1					
Cloud cover %	<10%					
Description of audible noise during measurement						
General description	Noise from local road (Vaynor Rd) and A465 (in deep cutting).					

ST2 – View west	**ST2 - View towards properties**
ST2 – View towards wall	ST2 – View east

Start date and time (dd/mm/yy hh:mm)	Measurement duration (hh:mm)	Measured Noise Level dB				
		L_{Aeq}	L_{Amax}	L_{A5}	L_{A10}	L_{A90}
20/01/2016 12:24	01:00	65.8	87.2	72.3	70.4	56.4
20/01/2016 13:24	01:00	66.9	85.9	72.6	70.8	57.2
20/01/2016 14:24	01:00	66.8	82.5	73.1	71.3	57.4

Start date and time (dd/mm/yy hh:mm)	Measurement duration (hh:mm)	Noise Level dB	
		$L_{A10, 3h}$	$L_{A10, 18h}$
20/01/2016 12:24	01:00	70.4	69.8
20/01/2016 13:24	01:00	70.8	
20/01/2016 14:24	01:00	71.3	

ST3 – Hornbeam Close (CRTN)						
Address	Adjacent to Hornbeam Close Merthyr Tydfil CF47 9BW. 5.5m (2D) from carriageway edge (Gurnos Ring Road) and 35m (2D) from A465.					
OSGB coordinates	X	304505		Y	208577	
Equipment used	Model	RION NL32		Serial no.	00873	
Calibration level (dBA)	Pre	94.0	Post	94.0	Drift	0.0
Site engineer(s)	James Wright & Humphrey Roberts-Powell					
Meteorological notes during measurement						
General description	Fine and dry. A very small amount of surface water on roads but negligible.					
Wind speed (m/s)	2 m/s					
Wind direction (from)	North					
Temperature (°C)	1					
Cloud cover %	<10%					
Description of audible noise during measurement						
General description	Road traffic noise from local road (Gurnos Ring Road) and A465.					

ST3 – Towards A465 looking west (behind fence)	ST3 – Towards A465 looking north (behind fence)

ST3 – Towards properties on Hornbeam Close

ST3 – Towards A465 looking east (behind fence)

Start date and time (dd/mm/yy hh:mm)	Measurement duration (hh:mm)	Measured Noise Level dB				
		L_{Aeq}	L_{Amax}	L_{A5}	L_{A10}	L_{A90}
14/01/2016 14:00	01:00	70.5	83.2	74.5	73.4	65.1
14/01/2016 15:00	01:00	70.6	79.6	74.6	73.6	65.7
14/01/2016 16:00	01:00	71.4	81.3	75.1	74.1	65.9

Start date and time (dd/mm/yy hh:mm)	Measurement duration (hh:mm)	Noise Level dB	
		$L_{A10, 3h}$	$L_{A10, 18h}$
14/01/2016 14:00	01:00	73.4	72.7
14/01/2016 15:00	01:00	73.6	
14/01/2016 16:00	01:00	74.1	

ST4 – Houlson Street (CRTN)						
Address	Houlson Street, Pen-y-Wern					
OSGB coordinates	X	306647		Y	208518	
Equipment used	Model	RION NL32		Serial no.	00874	
Calibration level (dBA)	Pre	94.0	Post	94.0	Drift	0.0
Site engineer(s)	James Wright & Humphrey Roberts-Powell					
Meteorological notes during measurement						
General description	Overcast					
Wind speed (m/s)	1m/s					
Wind direction (from)	SE					
Temperature (°C)	6					
Cloud cover %	60					
Description of audible noise during collection						
General description	Dominant noise was from A465.					

ST4 – View towards A4654 west	**ST4 – View towards properties on Davies Street**

ST4 – View north

ST4 – View towards A4654 west (2)

Start date and time (dd/mm/yy hh:mm)	Measurement duration (hh:mm)	Measured Noise Level dB				
		L_{Aeq}	L_{Amax}	L_{A5}	L_{A10}	L_{A90}
03/02/2016 10:01	1:00:00	74.9	85.3	79.9	78.8	60.4
03/02/2016 11:01	1:00:00	75.2	84.3	80.1	78.9	62.3
03/02/2016 12:01	1:00:00	75.1	83.9	79.7	78.8	62.4

Start date and time (dd/mm/yy hh:mm)	Measurement duration (hh:mm)	Noise Level dB	
		$L_{A10, 3h}$	$L_{A10, 18h}$
03/02/2016 10:01	1:00:00	78.8	77.8
03/02/2016 11:01	1:00:00	78.9	
03/02/2016 12:01	1:00:00	78.8	

Appendix 14D – Calibration Certificates

See following page.

Page left intentionally blank

CERTIFICATE OF CALIBRATION

ISSUED BY AV CALIBRATION

Date of issue 26 May 2015 Certificate N° 1505287

AV Calibration
2 Warren Court
Chicksands, Shefford
Bedfordshire SG17 5QB
U.K.
Tel: +44 (0)1462 638600
Fax: +44 (0)1462 638601
Email: lab@avcalib.co.uk
www.avcalibration.co.uk
Acoustics Noise and Vibration Ltd trading as AV Calibration

Signed

G. Parry [ ] B. Baker [ ]

CLIENT	Jacobs Ltd Enviros House Shrewsbury Business Park Sitka Drive Shrewsbury SY2 6LG
F.A.O.	Barry Salway
ORDER No	- Job No TRAC15/05144/01
DATE OF RECEIPT	26 May 2015
PROCEDURE	AV Calibration Engineer's Handbook section 3
IDENTIFICATION	(0872) Sound level meter Rion type NL-31 serial No 00583275 connected via extension lead type EC-04 and preamplifier type NH-21 serial No 27505 to a half-inch microphone type UC-53A serial No 314015 fitted with a foam windshield type WS-03. Associated calibrator Rion type NC-74 serial No 34257024 with a one-inch housing and adapter type NC-74-002 for half-inch microphone.
CALIBRATED ON	26 May 2015
PREVIOUS CALIBRATION	Calibrated on 03 June 2014, Certificate No. TCRT14/1183 issued by a non accredited calibration laboratory ANV Measurement Systems

The measurements detailed herein are traceable to units of measurement realised at the National Physical Laboratory.
This certificate may not be reproduced other than in full, except with the prior written approval of AV Calibration.

CERTIFICATE OF CALIBRATION

ISSUED BY AV CALIBRATION

Date of issue 26 May 2015 Certificate N° 1505289

AV Calibration
2 Warren Court
Chicksands, Shefford
Bedfordshire SG17 5QB
U.K.
Tel: +44 (0)1462 638600
Fax: +44 (0)1462 638601
Email: lab@avcalib.co.uk
www.avcalibration.co.uk
Acoustics Noise and Vibration Ltd trading as AV Calibration

Signed

G. Parry [ ] B. Baker [✓]

CLIENT	Jacobs Ltd Enviros House Shrewsbury Business Park Sitka Drive Shrewsbury SY2 6LG
F.A.O.	Barry Salway
ORDER No	- Job No TRAC15/05144/02
DATE OF RECEIPT	26 May 2015
PROCEDURE	AV Calibration Engineer's Handbook section 3
IDENTIFICATION	(0874) Sound level meter Rion type NL-32 serial No 00482614 connected via extension lead type EC-04 and preamplifier type NH-21 serial No 27718 to a half-inch microphone type UC-53A serial No 314307 fitted with a foam windshield type WS-03. Associated calibrator Rion type NC-74 serial No 34257024 with a one-inch housing and adapter type NC-74-002 for half-inch microphone.
CALIBRATED ON	26 May 2015
PREVIOUS CALIBRATION	Calibrated on 04 June 2014, Certificate No. TCRT14/1184 issued by a non accredited calibration laboratory ANV Measurement Systems

The measurements detailed herein are traceable to units of measurement realised at the National Physical Laboratory.
This certificate may not be reproduced other than in full, except with the prior written approval of AV Calibration.

CERTIFICATE OF CALIBRATION

ISSUED BY AV CALIBRATION

Date of issue 22/5/1/5 Certificate N° 1505281

AV Calibration
2 Warren Court
Chicksands, Shefford
Bedfordshire SG17 5QB
U.K.
Tel: +44 (0)1462 638600
Fax: +44 (0)1462 638601
Email: lab@avcalib.co.uk
www.avcalibration.co.uk
Acoustics Noise and Vibration Ltd trading as AV Calibration

Signed

G. Parry [ ] B. Baker [✓]

CLIENT Jacobs Ltd
Enviros House
Shrewsbury Business Park
Sitka Drive
Shrewsbury
SY2 6LG

F.A.O. Barry Salway

ORDER No - Job No TRAC15/05127/02

DATE OF RECEIPT 12 May 2015

PROCEDURE AV Calibration Engineer's Handbook section 3

IDENTIFICATION (0871) Sound level meter Rion type NL-32 serial No 00751323 connected via extension lead type EC-04 and preamplifier type NH-21 serial No 23663 to a half-inch microphone type UC-53A serial No 308645 fitted with a foam windshield type WS-03. Associated calibrator Rion type NC-74 serial No 34257024 with a one-inch housing and adapter type NC-74-002 for half-inch microphone.

CALIBRATED ON 22/5/1/5

PREVIOUS CALIBRATION Calibrated on 17 March 2014, Certificate No. TCRT14/1094 issued by a non accredited calibration laboratory ANV Measurement Systems

The measurements detailed herein are traceable to units of measurement realised at the National Physical Laboratory.
This certificate may not be reproduced other than in full, except with the prior written approval of AV Calibration.

CERTIFICATE OF CALIBRATION

ISSUED BY AV CALIBRATION

Date of issue 22/5/1/5 Certificate N° 1505286

AV Calibration
2 Warren Court
Chicksands, Shefford
Bedfordshire SG17 5QB
U.K.
Tel: +44 (0)1462 638600
Fax: +44 (0)1462 638601
Email: lab@avcalib.co.uk
www.avcalibration.co.uk
Acoustics Noise and Vibration Ltd trading as AV Calibration

Signed

G. Parry [ ] B. Baker [✓]

CLIENT	Jacobs Ltd Enviros House Shrewsbury Business Park Sitka Drive Shrewsbury SY2 6LG
F.A.O.	Barry Salway
ORDER No	- Job No TRAC15/05127/03
DATE OF RECEIPT	12 May 2015
PROCEDURE	AV Calibration Engineer's Handbook section 3
IDENTIFICATION	(0873) Sound level meter Rion type NL-32 serial No 00482601 connected via extension lead type EC-04 and preamplifier type NH-21 serial No 27705 to a half-inch microphone type UC-53A serial No 321276 fitted with a foam windshield type WS-03. Associated calibrator Rion type NC-74 serial No 34257024 with a one-inch housing and adapter type NC-74-002 for half-inch microphone.
CALIBRATED ON	22/5/1/5
PREVIOUS CALIBRATION	Calibrated on 17 March 2014, Certificate No. TCRT14/1093 issued by a non accredited calibration laboratory ANV Measurement Systems

The measurements detailed herein are traceable to units of measurement realised at the National Physical Laboratory.
This certificate may not be reproduced other than in full, except with the prior written approval of AV Calibration.

CERTIFICATE OF CALIBRATION

ISSUED BY AV CALIBRATION

Date of issue 22/5/1/5 Certificate N° 1505285

AV Calibration
2 Warren Court
Chicksands, Shefford
Bedfordshire SG17 5QB
U.K.
Tel: +44 (0)1462 638600
Fax: +44 (0)1462 638601
Email: lab@avcalib.co.uk
www.avcalibration.co.uk
Acoustics Noise and Vibration Ltd trading as AV Calibration

Signed

G. Parry [ ] B. Baker [✓]

CLIENT Jacobs Ltd
Enviros House
Shrewsbury Business Park
Sitka Drive
Shrewsbury
SY2 6LG

F.A.O. Barry Salway

ORDER No - Job No TRAC15/05127/04

DATE OF RECEIPT 12 May 2015

PROCEDURE AV Calibration Engineer's Handbook section 3

IDENTIFICATION Sound level meter Rion type NL-32 serial No 00482602 connected via extension lead type EC-04 and preamplifier type NH-21 serial No 27706 to a half-inch microphone type UC-53A serial No 321107 fitted with a foam windshield type WS-03. Associated calibrator Rion type NC-74 serial No 34257024 with a one-inch housing and adapter type NC-74-002 for half-inch microphone.

CALIBRATED ON 22/5/1/5

PREVIOUS CALIBRATION Calibrated on 14 March 2014, Certificate No. TCRT14/1092 issued by a non accredited calibration laboratory ANV Measurement Systems

The measurements detailed herein are traceable to units of measurement realised at the National Physical Laboratory.
This certificate may not be reproduced other than in full, except with the prior written approval of AV Calibration.

CERTIFICATE OF CALIBRATION

ISSUED BY AV CALIBRATION

Date of issue 22 May 2015 Certificate N° 1505280

AV Calibration
2 Warren Court
Chicksands, Shefford
Bedfordshire SG17 5QB
U.K.
Tel: +44 (0)1462 638600
Fax: +44 (0)1462 638601
Email: lab@avcalib.co.uk
www.avcalibration.co.uk
Acoustics Noise and Vibration Ltd trading as AV Calibration

Signed BBaker

G. Parry [ ] B. Baker [✓]

CLIENT Jacobs Ltd
Enviros House
Shrewsbury Business Park
Sitka Drive
Shrewsbury
SY2 6LG

F.A.O. Barry Salway

ORDER No see note Job No TRAC15/05139/01

DATE OF RECEIPT 20 May 2015

PROCEDURE AV Calibration Engineer's Handbook section 2

(584) New purchase 28/5/15.

IDENTIFICATION Sound Calibrator Rion type NC-74 serial number 34257024 with one-inch housing and adapter type NC-74-002 for half-inch microphone

CALIBRATED ON 22 May 2015

PREVIOUS CALIBRATION None known

The measurements detailed herein are traceable to units of measurement realised at the National Physical Laboratory.
This certificate may not be reproduced other than in full, except with the prior written approval of AV Calibration.

Appendix 14E – Estimated Construction Plant Numbers

Works Location	Estimated number of plant items at work site						
	Hydraulic road surface breaker	Pneumatic road surface breaker	Planer	Excavator	Dozer	Dump truck	Excavator
BS5228 Plant Ref	C5.1	C5.6	C5.7	C5.11	C5.13	C5.16	C5.18
Hirwaun Junction	1	0	1	1	1	2	1
Trewaun Junction	1	0	1	0	0	2	2
Pentwyn Cynon (Tramway) Footbridge	1	0	1	0	0	1	1
Afon Cynon Bridge	1	0	0	0	0	1	1
Vale of Neath Railway Bridge	1	0	0	0	0	1	1
Court Lodge Underpass	0	0	0	0	0	2	1
Croesbychan Junction	0	1	1	1	0	2	1
Nant Melyn Mainline Viaduct	0	0	1	0	0	1	1
Nant Hir (North) Viaduct	0	1	1	0	0	2	1
Baverstock Junction	1	1	1	0	1	2	2
Baverstock Excavation	0	0	1	1	1	4	2
A465	0	0	1	0	0	2	2
Nant Ffrwd structures	0	0	0	0	0	2	1
Taf Fawr Mainline Viaduct	0	0	1	0	0	2	2
Cefn Coed	2	0	1	0	0	2	1
Taf Fechan Viaduct (Widened)	0	0	1	0	0	1	1
Gurnos Farm Underpass	1	1	1	0	1	2	2
Prince Charles Hospital Junction Widening	1	0	0	0	0	4	2
Prince Charles Hospital Junction	1	0	1	0	0	2	2
Pant Road Bridge	2	0	1	0	0	2	1
Jones St. Bridge	1	1	1	0	1	2	2
Dowlais Junction	1	0	1	0	0	4	2

Works location	Estimated number of plant items at work site					
	Roller	Paver	Tipper lorry	Tower crane	Telescopic crane	Concrete pump
BS5228 Plant Ref	C5.20	C5.31	C6.24	C4.49	C4.45	C3.25
Hirwaun Junction	2	2	4	0	1	1
Trewaun Junction	1	1	2	0	1	1
Pentwyn Cynon (Tramway) Footbridge	1	1	1	0	1	1
Afon Cynon Bridge	1	1	1	0	1	1
Vale of Neath Railway Bridge	1	1	2	0	1	1
Court Lodge Underpass	1	1	1	0	1	1
Croesbychan Junction	1	2	4	0	1	0
Nant Melyn Mainline Viaduct	1	1	2	0	1	1
Nant Hir (North) Viaduct	1	1	2	0	1	1
Baverstock Junction	2	2	4	0	1	0
Baverstock Excavation	2	2	4	0	1	1
A465	1	1	2	0	1	1
Nant Ffrwd structures	1	1	2	0	1	0
Taf Fawr Mainline Viaduct	1	1	2	2	1	2
Cefn Coed Bridge	1	1	2	0	1	1
Taf Fechan Viaduct (Widened)	1	1	2	2	1	2
Gurnos Farm Underpass	2	2	4	0	1	0
Prince Charles Hospital Junction Widening	2	2	4	0	0	0
Prince Charles Hospital Junction	1	1	2	0	1	1
Pant Road Bridge	1	1	2	0	1	1
Jones St. Bridge	2	2	4	0	1	0
Dowlais Junction	1	1	2	0	1	1

Works location	Piling details		
	No. piling rigs	No. piles for works item	Piling method
Hirwaun Junction	1	172	Rotary bored
Trewaun Junction	2	211	Rotary bored & driven
Pentwyn Cynon (Tramway) Footbridge	1	6	Rotary bored
Afon Cynon Bridge	1	184	Rotary bored
Vale of Neath Railway Bridge	1	138	Rotary bored
Court Lodge Underpass	1	145	Rotary bored
Croesbychan Junction	1	142	Rotary bored
Baverstock Junction	1	146	Rotary bored
A465*	1	72	Driven
Nant Ffrwd structures	1	30	Rotary bored
Taf Fawr Mainland Viaduct	1	189	Rotary bored
Cefn-Coed	1	178	Rotary bored
Prince Charles Hospital Junction	2	1541	Rotary bored
Dowlais Junction	1	240	Rotary bored

Note * a driven piling rig has been assumed as a worst-case at this location

Page left intentionally blank.

Appendix 14F – Predicted Operational Noise Levels at Receptors

Predicted Noise Levels for Sensitive Receptors within the HD 213/11 Calculation Area.

See following page.

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
Mountain View 1 Mountain View Crematorium Road	CF44 0DJ	Dwelling	54.1	52.6	56.8	58.5	42.7	41.3	45.1	46.7
Ty Newydd Farm 1 Ty Newydd Hafod Y Beudy Crematorium Road	CF44 0DJ	Dwelling	49.9	48.6	52.9	54.6	38.9	37.7	41.6	43.1
Mountain View 2 Mountain View Crematorium Road	CF44 0DJ	Dwelling	52.5	51.0	55.0	56.8	41.3	39.9	43.5	45.1
Ty Newydd Farm 2 Ty Newydd Willowdene Crematorium Road	CF44 0DJ	Dwelling	49.7	48.5	52.3	53.9	38.7	37.6	41.0	42.5
Nantmelyn Farm Caravan Crematorium Road	CF44 0DJ	Dwelling	44.9	43.2	48.4	50.3	34.4	32.9	37.6	39.2
Ty Newydd Farm Cottage Crematorium Road	CF44 0DJ	Dwelling	54.3	52.7	56.7	58.5	42.9	41.4	45.0	46.6
Galt Y Gog Farm Farmhouse Crematorium Road	CF44 0DJ	Dwelling	48.2	47.4	51.0	52.6	37.4	36.6	39.9	41.4
Nantmelyn Farm Farmhouse Crematorium Road	CF44 0DJ	Dwelling	48.3	46.7	51.7	53.6	37.5	36.0	40.5	42.2
Ffinnant Ffinant Crematorium Road	CF44 0DJ	Dwelling	50.8	49.6	54.1	55.8	39.7	38.6	42.6	44.2
Flat At Lwydcoed Crematorium Crematorium Road	CF44 0DJ	Dwelling	48.5	47.1	51.7	53.5	37.6	36.4	40.5	42.1
Galtygog Barn Galltygog Barn Crematorium Road	CF44 0DJ	Dwelling	50.5	49.2	53.5	55.2	39.4	38.3	42.1	43.7
Galltygog Galltygog House Crematorium Road	CF44 0DJ	Dwelling	55.1	53.9	56.1	57.9	43.5	42.5	44.5	46.0
Llwydcoed Crematorium Crematorium Road	CF44 0DJ	OSR	48.5	47.1	51.7	53.5	37.6	36.4	40.5	42.1
Nant Cae Farm Nanthir House Nant Hir House Crematorium Road	CF44 0DJ	Dwelling	53.8	52.2	57.3	59.1	42.4	41.0	45.6	47.2
Tir Mawr Farm Farmhouse Cottage Cwmynysminton Road	CF44 0DX	Dwelling	49.1	49.2	49.9	54.5	38.1	38.2	38.9	43.1
Birch Acre Birch Acre Croes Bychan Road	CF44 0EJ	Dwelling	52.2	51.9	55.0	56.7	41.0	40.7	43.5	45.0
Dingle Gardens Dingle Gardens Croes Bychan Road	CF44 0EJ	Dwelling	49.2	48.1	51.0	53.0	38.3	37.3	39.9	41.7
Gelli Tarw Farm Farmhouse Croes Bychan Road	CF44 0EJ	Dwelling	49.0	48.9	50.6	56.8	38.1	38.0	39.5	45.1
Gelli Tarw Farm Gellitarw Cottages Croes Bychan Road	CF44 0EJ	Dwelling	51.1	50.2	53.0	59.0	40.0	39.2	41.7	47.1
Glyn Villa Glyn Villa Croes Bychan Road	CF44 0EJ	Dwelling	52.5	51.1	52.7	54.8	41.2	40.0	41.4	43.3
Heather Hill Heather Hill Croes Bychan Road	CF44 0EJ	Dwelling	53.6	52.0	55.7	57.5	42.2	40.8	44.1	45.7
La Paz La Paz Croes Bychan Road	CF44 0EJ	Dwelling	50.6	49.8	52.1	54.3	39.5	38.8	40.9	42.8
Swyn Yr Awel Swn Yr Awel Croes Bychan Road	CF44 0EJ	Dwelling	52.3	50.9	52.4	54.5	41.0	39.8	41.2	43.0
Tawel Fan Tawel Fan Croes Bychan Road	CF44 0EJ	Dwelling	52.5	51.2	54.1	56.1	41.2	40.0	42.7	44.4
The Dell Croes Bychan Road	CF44 0EJ	Dwelling	55.1	55.4	55.7	57.0	43.5	43.8	44.1	45.3
Ty Croes Bychan Ty-Croesbychan Croes Bychan Road	CF44 0EJ	Dwelling	52.0	50.6	53.2	55.1	40.8	39.5	41.8	43.5
Ynysowen Bungalow Ynysowen Croes Bychan Road	CF44 0EJ	Dwelling	48.3	46.9	50.7	52.5	37.5	36.2	39.6	41.2
Court Farm Farmhouse Croes Bychan Road	CF44 0EX	Dwelling	47.9	46.4	49.5	51.2	37.1	35.8	38.6	40.1
Gerybont Ger-Y-Bont Croes Bychan Road	CF44 0EX	Dwelling	49.0	47.7	49.2	50.4	38.1	37.0	38.2	39.3
Plas Elfed Plas Elfed Croes Bychan Road	CF44 0EX	Dwelling	50.7	50.4	51.2	52.4	39.6	39.3	40.1	41.1
Bryn Y Gwyddel Bryn Gwyddel Merthyr Road	CF44 0LJ	Dwelling	55.7	56.3	57.6	57.6	44.1	44.6	45.8	45.8
Dyllas Farm Farmhouse Merthyr Road	CF44 0LJ	Dwelling	59.6	60.5	61.9	61.1	47.6	48.4	49.7	49.0
Jah Jireh Care Home Bungalow 1 Jah Jireh Care Home Bungalow 1 Heads Of The Valleys Road	CF44 0LX	Dwelling	50.0	50.0	53.5	55.2	39.0	39.0	42.2	43.6
Jah Jireh Care Home Bungalow 2 Jah Jireh Care Home Bungalow 2 Heads Of The Valleys Road	CF44 0LX	Dwelling	50.3	50.4	51.6	53.1	39.3	39.3	40.5	41.8
Ty Gwyn Farm Farmhouse Crematorium Road	CF44 0LX	Dwelling	52.8	51.9	55.9	57.4	41.5	40.7	44.3	45.6
Jah Jireh Care Home Heads Of The Valleys Road	CF44 0LX	Dwelling	50.0	50.0	53.5	55.2	39.0	39.0	42.2	43.6
Ty Gwyn Farm The Annexe Crematorium Road	CF44 0LX	Dwelling	53.4	51.8	56.3	58.0	42.0	40.6	44.6	46.2
Court Lodge Court Lodge Croes Bychan Road	CF44 0PJ	Dwelling	58.7	57.6	60.3	61.2	46.8	45.8	48.3	49.1
Llwyncoch Farm Farmhouse Road To Llwyncoch	CF44 0PJ	Dwelling	41.7	40.4	43.2	44.9	31.5	30.4	32.9	34.4
Nantmoel Farm Farmhouse Swansea Road To Nantmoel Farm	CF44 0PJ	Dwelling	56.3	54.6	58.9	60.7	44.7	43.1	47.0	48.6
Ingledene Ingledene Swansea Road To Nantmoel Farm	CF44 0PJ	Dwelling	53.3	52.2	55.5	56.4	42.0	40.9	44.0	44.8
Lynwood Lynwood Croes Bychan Road	CF44 0PJ	Dwelling	61.4	59.7	61.1	62.5	49.2	47.7	49.0	50.2
Min Y Coed Min-Y-Coed Swansea Road To Nantmoel Farm	CF44 0PJ	Dwelling	56.9	55.3	58.7	60.5	45.2	43.7	46.8	48.4
The Oaks The Oaks Swansea Road To Nantmoel Farm	CF44 0PJ	Dwelling	52.8	51.6	53.9	54.7	41.5	40.4	42.5	43.2
Valley View Valley View Swansea Road To Nantmoel Farm	CF44 0PJ	Dwelling	58.9	57.2	59.6	61.4	47.0	45.5	47.6	49.2
Cefndon Cottage 1 Cefndon Cottage Penyard Road	CF44 0PX	Dwelling	46.6	46.7	46.8	47.6	36.0	36.0	36.1	36.8
Brynawel Brynawel Penyard Road	CF44 0PX	Dwelling	49.1	49.0	49.2	49.9	38.1	38.1	38.2	38.9
Brynderwen Farm Farmhouse Penyard Road	CF44 0PX	Dwelling	42.3	41.8	42.2	43.0	32.1	31.6	31.9	32.6
Ger Y Nant Farm Farmhouse Penyard Road	CF44 0PX	Dwelling	47.9	48.1	47.7	48.5	37.1	37.3	36.9	37.6
Ty Ar Y Bryn Farm Farmhouse Penyard Road	CF44 0PX	Dwelling	47.5	47.6	47.5	48.4	36.8	36.8	36.7	37.5
Penyboyr House Penboyr Penyard Road	CF44 0PX	Dwelling	45.1	44.8	45.3	46.0	34.6	34.3	34.8	35.4
Penyard House Penyard House Penyard Road	CF44 0PX	Dwelling	46.0	45.6	46.3	47.0	35.4	35.1	35.7	36.3
Swn Y Nant Swn Y Nant Gelli Farm Penyard Road	CF44 0PX	Dwelling	49.1	49.1	49.1	49.8	38.2	38.2	38.2	38.8
20 Plasmarl	CF44 0UD	Dwelling	50.1	50.8	50.4	52.0	39.1	39.7	39.3	40.8
21 Plasmarl	CF44 0UD	Dwelling	50.4	51.1	50.7	52.1	39.4	40.0	39.6	40.8
22 Plasmarl	CF44 0UD	Dwelling	46.3	46.9	46.4	48.1	35.6	36.2	35.8	37.3
Caercwm Caercwm Lon Las	CF44 0UF	Dwelling	51.4	52.0	51.7	53.5	40.2	40.8	40.5	42.1
Dol Yr Onnen Dol-Yr-Onen Lon Las	CF44 0UF	Dwelling	51.0	51.7	51.4	53.2	39.8	40.5	40.2	41.8
Ffrwd Y Ddol Ffrwd Y Ddol Lon Las	CF44 0UF	Dwelling	49.9	50.3	50.2	54.2	38.9	39.3	39.1	42.8
Ty Olaf Ty Olaf Lon Las	CF44 0UF	Dwelling	46.7	46.5	46.9	50.6	36.0	35.9	36.2	39.6
Penfro Penfro 3 Lon Las	CF44 0UF	Dwelling	42.9	43.1	43.8	45.7	32.6	32.8	33.4	35.1
Ailsa Craig Ailsa Craig Cwmynysminton Road	CF44 0UP	Dwelling	49.9	50.6	50.2	52.2	38.9	39.5	39.2	41.0
Tir Mawr Farm Annex Cwmynysminton Road	CF44 0UP	Dwelling	50.9	51.5	51.1	55.7	39.8	40.4	40.0	44.1
Beechwood Beechwood Cwmynysminton Road	CF44 0UP	Dwelling	51.0	51.9	51.4	52.4	39.9	40.7	40.2	41.1
Calgarwyn Calgarwyn Cwmynysminton Road	CF44 0UP	Dwelling	46.5	47.3	46.8	48.4	35.9	36.6	36.1	37.5
Cilgerran Cilgerran Cwmynysminton Road	CF44 0UP	Dwelling	51.8	52.6	52.3	54.3	40.6	41.3	41.0	42.8
Dolwen Dolwen Lon Las	CF44 0UP	Dwelling	43.9	44.2	44.2	46.3	33.5	33.8	33.8	35.6
Nant Livery Farm Farmhouse Crematorium Road	CF44 0UP	Dwelling	50.7	49.0	54.2	56.0	39.6	38.1	42.8	44.4
Glan Yr Afon Glanyrafon Cwmynysminton Road	CF44 0UP	Dwelling	46.1	46.1	46.2	49.7	35.5	35.5	35.6	38.7
Hibernium Hibernuim House Cwmynysminton Road	CF44 0UP	Dwelling	45.7	45.7	46.2	48.4	35.1	35.1	35.6	37.6
Llwydcoed Farm Cottage Llwydcoed Farm Cottage Cwmynysminton Road	CF44 0UP	Dwelling	51.8	52.5	52.2	53.6	40.6	41.2	40.9	42.2
Meadows Edge Meadows Edge Cwmynysminton Road	CF44 0UP	Dwelling	48.2	48.5	48.4	50.7	37.3	37.6	37.6	39.6
River Side Riverside Cwmynysminton Road	CF44 0UP	Dwelling	48.7	49.0	48.9	51.5	37.8	38.1	38.0	40.3
Savannah Savannah Lon Las To End South	CF44 0UP	Dwelling	44.6	44.2	44.4	47.5	34.1	33.8	34.0	36.7
Swn Yr Afon Swn Yr Afon Cwmynysminton Road	CF44 0UP	Dwelling	50.6	51.7	51.0	51.6	39.5	40.5	39.8	40.4
The Barn The Barn Cwmynysminton Road	CF44 0UP	Dwelling	49.7	50.3	50.0	51.9	38.7	39.3	39.0	40.7
The Old Oaks The Old Oaks Cwmynysminton Road	CF44 0UP	Dwelling	49.8	50.4	50.1	52.6	38.8	39.3	39.1	41.3
Tyn Coed Hir Tyncoed Hir Lon Las	CF44 0UP	Dwelling	45.5	45.0	46.0	48.4	34.9	34.5	35.4	37.5
Pentwyn Cynon Farm Cottage Trenant	CF44 8BB	Dwelling	51.6	50.7	52.9	53.8	40.4	39.6	41.6	42.4
Maesycwmrig Maesycwmrig Hirwaun Road	CF44 9AF	Dwelling	66.7	67.5	66.8	67.6	54.0	54.7	54.1	54.8
Dawkins Place	CF44 9AG	Dwelling	66.0	67.4	66.0	68.5	53.4	54.6	53.4	55.6
2 Dawkins Place	CF44 9AG	Dwelling	63.6	64.9	63.7	66.0	51.3	52.4	51.3	53.4
57 Heol Keir Hardie	CF44 9AL	Dwelling	50.7	51.2	50.8	51.7	39.6	40.1	39.7	40.5
58 Heol Keir Hardie	CF44 9AL	Dwelling	49.0	49.6	49.1	50.5	38.0	38.6	38.2	39.4
59 Heol Keir Hardie	CF44 9AL	Dwelling	49.5	50.1	49.7	51.3	38.5	39.1	38.7	40.1
60 Heol Keir Hardie	CF44 9AL	Dwelling	49.6	49.8	49.6	51.3	38.6	38.8	38.6	40.2
61 Heol Keir Hardie	CF44 9AL	Dwelling	48.8	49.3	48.9	50.1	37.9	38.3	38.0	39.0
62 Heol Keir Hardie	CF44 9AL	Dwelling	50.0	50.0	49.7	51.0	39.0	39.0	38.7	39.9
63 Heol Keir Hardie	CF44 9AL	Dwelling	54.6	55.0	54.6	55.6	43.2	43.5	43.1	44.0
64 Heol Keir Hardie	CF44 9AL	Dwelling	49.6	49.9	49.6	50.6	38.6	38.9	38.6	39.5
65 Heol Keir Hardie	CF44 9AL	Dwelling	50.0	50.3	50.1	51.2	39.0	39.2	39.0	40.1
66 Heol Keir Hardie	CF44 9AL	Dwelling	48.3	48.9	48.5	49.7	37.5	37.9	37.6	38.7
67 Heol Keir Hardie	CF44 9AL	Dwelling	48.6	49.2	48.7	50.4	37.7	38.3	37.8	39.3
68 Heol Keir Hardie	CF44 9AL	Dwelling	49.7	50.0	49.8	50.9	38.7	39.0	38.8	39.8
69 Heol Keir Hardie	CF44 9AL	Dwelling	50.0	50.4	50.0	51.1	39.0	39.4	39.0	40.0
70 Heol Keir Hardie	CF44 9AL	Dwelling	53.5	54.0	53.5	54.5	42.1	42.5	42.2	43.1
71 Heol Keir Hardie	CF44 9AL	Dwelling	50.1	50.5	50.2	51.2	39.1	39.4	39.1	40.0
72 Heol Keir Hardie	CF44 9AL	Dwelling	49.5	49.7	49.4	50.8	38.5	38.7	38.5	39.7
73 Heol Keir Hardie	CF44 9AL	Dwelling	49.3	49.9	49.5	50.6	38.4	38.9	38.5	39.5
74 Heol Keir Hardie	CF44 9AL	Dwelling	48.8	49.1	48.7	50.1	37.9	38.2	37.8	39.0
75 Heol Keir Hardie	CF44 9AL	Dwelling	54.9	55.4	54.9	55.9	43.4	43.8	43.4	44.2
76 Heol Keir Hardie	CF44 9AL	Dwelling	50.9	51.4	51.0	52.1	39.8	40.2	39.8	40.8
77 Heol Keir Hardie	CF44 9AL	Dwelling	50.6	51.0	50.5	51.9	39.5	39.8	39.5	40.7
78 Heol Keir Hardie	CF44 9AL	Dwelling	51.1	51.6	51.2	52.3	40.0	40.4	40.0	41.0
79 Heol Keir Hardie	CF44 9AL	Dwelling	50.7	50.9	50.5	52.1	39.6	39.8	39.5	40.9
80 Heol Keir Hardie	CF44 9AL	Dwelling	49.9	50.2	49.8	51.5	38.9	39.1	38.8	40.3
81 Heol Keir Hardie	CF44 9AL	Dwelling	49.3	49.4	49.1	50.6	38.3	38.4	38.1	39.5

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
82 Heol Keir Hardie	CF44 9AL	Dwelling	49.7	49.9	49.5	51.2	38.7	38.9	38.5	40.0
83 Heol Keir Hardie	CF44 9AL	Dwelling	53.7	54.0	53.6	54.8	42.3	42.6	42.2	43.3
84 Heol Keir Hardie	CF44 9AL	Dwelling	54.3	55.1	54.7	55.5	42.9	43.6	43.2	43.9
85 Heol Keir Hardie	CF44 9AL	Dwelling	55.8	56.5	56.1	57.0	44.2	44.8	44.5	45.3
86 Heol Keir Hardie	CF44 9AL	Dwelling	53.6	53.9	53.5	55.3	42.2	42.5	42.1	43.7
87 Heol Keir Hardie	CF44 9AL	Dwelling	64.3	65.1	64.5	65.1	51.9	52.5	52.1	52.6
88 Heol Keir Hardie	CF44 9AL	Dwelling	56.5	57.1	56.7	57.5	44.9	45.4	45.0	45.7
89 Heol Keir Hardie	CF44 9AL	Dwelling	62.0	62.8	62.4	63.0	49.8	50.5	50.1	50.7
90 Heol Keir Hardie	CF44 9AL	Dwelling	57.5	58.2	57.8	58.7	45.7	46.4	46.0	46.8
91 Heol Keir Hardie	CF44 9AL	Dwelling	62.6	63.3	63.0	63.5	50.3	51.0	50.7	51.1
92 Heol Keir Hardie	CF44 9AL	Dwelling	55.0	55.4	55.1	56.2	43.4	43.9	43.6	44.5
93 Heol Keir Hardie	CF44 9AL	Dwelling	52.4	52.7	52.3	53.7	41.1	41.4	41.1	42.3
94 Heol Keir Hardie	CF44 9AL	Dwelling	53.7	54.0	53.5	55.1	42.3	42.6	42.2	43.6
95 Heol Keir Hardie	CF44 9AN	Dwelling	54.9	55.4	55.1	56.6	43.4	43.8	43.6	44.9
96 Heol Keir Hardie	CF44 9AN	Dwelling	50.4	50.1	49.9	52.6	39.4	39.1	38.9	41.3
98 Heol Keir Hardie	CF44 9AN	Dwelling	49.7	50.2	50.0	52.6	38.7	39.2	39.0	41.4
100 Heol Keir Hardie	CF44 9AN	Dwelling	50.6	50.2	49.9	52.4	39.5	39.2	38.9	41.1
102 Heol Keir Hardie	CF44 9AN	Dwelling	52.4	53.0	52.7	54.5	41.1	41.7	41.4	43.0
103 Heol Keir Hardie	CF44 9AN	Dwelling	50.4	50.0	49.7	52.2	39.4	38.9	38.7	40.9
106 Heol Keir Hardie	CF44 9AN	Dwelling	50.4	50.7	50.4	52.5	39.3	39.6	39.3	41.2
108 Heol Keir Hardie	CF44 9AN	Dwelling	52.8	53.0	52.7	54.5	41.5	41.7	41.4	43.0
110 Heol Keir Hardie	CF44 9AN	Dwelling	49.8	50.2	50.0	52.0	38.8	39.1	38.9	40.8
111 Heol Keir Hardie	CF44 9AN	Dwelling	52.7	52.8	52.5	54.4	41.4	41.5	41.2	42.9
113 Heol Keir Hardie	CF44 9AN	Dwelling	52.7	52.8	52.5	54.4	41.4	41.5	41.2	43.0
115 Heol Keir Hardie	CF44 9AN	Dwelling	52.6	52.7	52.4	54.3	41.3	41.4	41.1	42.9
118 Heol Keir Hardie	CF44 9AN	Dwelling	51.8	51.7	51.5	53.8	40.6	40.6	40.3	42.4
119 Heol Keir Hardie	CF44 9AN	Dwelling	50.3	50.1	49.9	52.2	39.2	39.1	38.9	40.9
122 Heol Keir Hardie	CF44 9AN	Dwelling	52.2	52.2	52.0	54.0	41.0	41.0	40.8	42.6
123 Heol Keir Hardie	CF44 9AN	Dwelling	50.0	49.8	49.6	51.9	39.0	38.8	38.6	40.7
126 Heol Keir Hardie	CF44 9AN	Dwelling	51.4	52.0	51.7	53.4	40.3	40.8	40.5	42.1
127 Heol Keir Hardie	CF44 9AN	Dwelling	52.1	52.1	51.9	53.9	40.9	40.8	40.7	42.5
129 Heol Keir Hardie	CF44 9AN	Dwelling	51.9	52.3	52.0	54.0	40.7	41.0	40.8	42.6
132 Heol Keir Hardie	CF44 9AN	Dwelling	52.0	51.9	51.7	53.8	40.8	40.6	40.5	42.4
133 Heol Keir Hardie	CF44 9AN	Dwelling	52.2	52.2	52.0	54.1	41.0	40.9	40.8	42.6
136 Heol Keir Hardie	CF44 9AN	Dwelling	51.9	51.8	51.7	53.8	40.7	40.6	40.5	42.4
150 Heol Keir Hardie	CF44 9AN	Dwelling	50.8	50.9	50.6	52.2	39.7	39.8	39.6	41.0
151 Heol Keir Hardie	CF44 9AN	Dwelling	51.5	51.6	51.5	53.0	40.4	40.4	40.3	41.7
153 Heol Keir Hardie	CF44 9AN	Dwelling	50.7	50.9	50.6	52.3	39.6	39.8	39.5	41.1
155 Heol Keir Hardie	CF44 9AN	Dwelling	51.4	51.5	51.4	53.1	40.2	40.3	40.2	41.8
157 Heol Keir Hardie	CF44 9AN	Dwelling	50.5	50.6	50.2	52.0	39.4	39.5	39.2	40.8
160 Heol Keir Hardie	CF44 9AN	Dwelling	51.4	51.5	51.2	53.0	40.3	40.3	40.1	41.6
161 Heol Keir Hardie	CF44 9AN	Dwelling	53.4	53.7	53.3	54.8	42.1	42.3	42.0	43.3
163 Heol Keir Hardie	CF44 9AN	Dwelling	51.4	51.4	51.2	52.8	40.2	40.2	40.0	41.5
165 Heol Keir Hardie	CF44 9AN	Dwelling	51.1	51.3	51.2	52.6	40.0	40.2	40.0	41.3
166 Heol Keir Hardie	CF44 9AN	Dwelling	50.5	50.7	50.4	51.9	39.4	39.6	39.3	40.7
167 Heol Keir Hardie	CF44 9AN	Dwelling	50.0	50.1	49.8	51.6	39.0	39.1	38.8	40.4
168 Heol Keir Hardie	CF44 9AN	Dwelling	53.7	53.9	53.6	55.0	42.3	42.5	42.2	43.4
169 Heol Keir Hardie	CF44 9AN	Dwelling	51.5	51.9	51.6	53.0	40.3	40.7	40.4	41.6
170 Heol Keir Hardie	CF44 9AN	Dwelling	54.1	54.5	54.1	55.5	42.7	43.0	42.7	43.9
171 Heol Keir Hardie	CF44 9AN	Dwelling	52.2	52.7	52.4	53.7	40.9	41.4	41.1	42.3
172 Heol Keir Hardie	CF44 9AN	Dwelling	54.6	55.1	54.8	55.8	43.2	43.6	43.3	44.2
173 Heol Keir Hardie	CF44 9AN	Dwelling	53.3	53.9	53.7	54.8	42.0	42.5	42.3	43.3
174 Heol Keir Hardie	CF44 9AN	Dwelling	55.0	55.6	55.3	56.4	43.5	44.1	43.7	44.7
1 Gwladys Street	CF44 9AP	Dwelling	52.2	51.8	52.1	54.0	41.0	40.6	40.8	42.5
2 Gwladys Street	CF44 9AP	Dwelling	49.6	50.2	49.9	51.4	38.6	39.1	38.9	40.2
3 Gwladys Street	CF44 9AP	Dwelling	49.8	50.4	49.9	51.2	38.8	39.3	38.9	40.1
3 Bronllys	CF44 9AR	Dwelling	50.9	50.2	50.9	52.9	39.8	39.2	39.8	41.6
4 Bronllys	CF44 9AR	Dwelling	50.8	50.6	50.9	52.9	39.7	39.5	39.8	41.6
Flat Above Colliers Arms Heol Caradoc	CF44 9AS	Dwelling	46.7	47.4	47.7	50.3	36.0	36.7	36.9	39.3
3 Llyswen	CF44 9AT	Dwelling	51.2	51.1	51.2	52.9	40.1	39.9	40.0	41.6
4 Llyswen	CF44 9AT	Dwelling	48.8	48.4	48.9	50.9	37.9	37.5	38.0	39.8
5 Llyswen	CF44 9AT	Dwelling	48.3	47.9	48.4	50.0	37.5	37.1	37.6	39.0
6 Llyswen	CF44 9AT	Dwelling	52.6	52.3	52.4	54.2	41.3	41.0	41.1	42.7
7 Llyswen	CF44 9AT	Dwelling	47.7	47.3	48.0	49.7	36.9	36.6	37.2	38.7
8 Llyswen	CF44 9AT	Dwelling	47.9	48.5	48.2	49.9	37.1	37.7	37.3	38.9
9 Llyswen	CF44 9AT	Dwelling	48.4	49.0	48.6	50.1	37.6	38.1	37.7	39.0
10 Llyswen	CF44 9AT	Dwelling	48.2	48.2	48.6	49.9	37.4	37.4	37.8	38.9
11 Llyswen	CF44 9AT	Dwelling	48.2	48.0	48.8	51.7	37.4	37.2	37.9	40.5
12 Llyswen	CF44 9AT	Dwelling	47.4	47.4	48.6	51.4	36.7	36.6	37.7	40.2
13 Llyswen	CF44 9AT	Dwelling	47.6	48.1	47.7	49.8	36.8	37.3	36.9	38.8
14 Llyswen	CF44 9AT	Dwelling	47.3	47.8	47.4	49.6	36.5	37.0	36.7	38.6
15 Llyswen	CF44 9AT	Dwelling	47.6	48.2	47.8	49.7	36.8	37.4	37.0	38.7
16 Llyswen	CF44 9AT	Dwelling	47.8	48.4	48.0	49.8	37.0	37.5	37.2	38.8
1 Heol Caradoc	CF44 9AU	Dwelling	50.1	49.6	50.0	52.2	39.1	38.6	39.0	41.0
2 Heol Caradoc	CF44 9AU	Dwelling	49.6	49.8	50.1	51.9	38.7	38.8	39.1	40.7
3 Heol Caradoc	CF44 9AU	Dwelling	49.7	49.3	49.8	51.8	38.7	38.3	38.8	40.6
4 Heol Caradoc	CF44 9AU	Dwelling	51.2	51.5	51.6	53.5	40.1	40.3	40.4	42.2
5 Heol Caradoc	CF44 9AU	Dwelling	49.5	49.3	49.9	51.7	38.5	38.3	38.9	40.5
6 Heol Caradoc	CF44 9AU	Dwelling	51.0	51.3	51.4	53.5	39.9	40.1	40.3	42.1
7 Heol Caradoc	CF44 9AU	Dwelling	52.1	51.9	52.0	54.0	40.9	40.7	40.8	42.6
8 Heol Caradoc	CF44 9AU	Dwelling	51.7	51.9	51.9	53.8	40.5	40.7	40.7	42.4
9 Heol Caradoc	CF44 9AU	Dwelling	44.6	44.8	45.6	47.0	34.1	34.3	35.0	36.3
10 Heol Caradoc	CF44 9AU	Dwelling	43.0	43.6	43.4	48.0	32.7	33.2	33.1	37.2
11 Heol Caradoc	CF44 9AU	Dwelling	44.3	44.6	45.0	49.0	33.9	34.1	34.5	38.1
12 Heol Caradoc	CF44 9AU	Dwelling	43.5	43.9	44.5	48.5	33.2	33.5	34.0	37.6
13 Heol Caradoc	CF44 9AU	Dwelling	43.5	43.6	45.2	47.0	33.1	33.2	34.7	36.3
14 Heol Caradoc	CF44 9AU	Dwelling	47.1	46.4	47.8	50.3	36.3	35.7	37.0	39.2
15 Heol Caradoc	CF44 9AU	Dwelling	43.9	44.3	44.3	48.9	33.5	33.9	33.8	38.0
16 Heol Caradoc	CF44 9AU	Dwelling	45.3	45.4	46.1	50.0	34.8	34.9	35.4	39.0
17 Heol Caradoc	CF44 9AU	Dwelling	49.0	48.1	48.9	52.0	38.0	37.3	38.0	40.8
18 Heol Caradoc	CF44 9AU	Dwelling	46.7	47.3	46.9	50.2	36.0	36.5	36.2	39.1
19 Heol Caradoc	CF44 9AU	Dwelling	44.8	44.6	46.5	49.6	34.3	34.1	35.8	38.7
20 Heol Caradoc	CF44 9AU	Dwelling	43.0	43.5	43.9	48.4	32.7	33.1	33.5	37.6
21 Heol Caradoc	CF44 9AU	Dwelling	45.4	45.5	46.6	48.7	34.8	35.0	35.9	37.8
22 Heol Caradoc	CF44 9AU	Dwelling	45.2	44.8	46.7	49.6	34.6	34.3	36.0	38.6
23 Heol Caradoc	CF44 9AU	Dwelling	45.0	44.8	46.6	50.2	34.5	34.3	35.9	39.1
24 Heol Caradoc	CF44 9AU	Dwelling	45.3	45.2	46.8	50.3	34.8	34.7	36.1	39.3
25 Heol Caradoc	CF44 9AU	Dwelling	51.0	50.6	50.9	53.3	39.9	39.5	39.8	42.0
26 Heol Caradoc	CF44 9AU	Dwelling	51.3	50.9	51.2	53.5	40.2	39.8	40.1	42.1
22 Heol Keir Hardie	CF44 9AW	Dwelling	50.6	50.1	50.6	52.5	39.5	39.1	39.5	41.2
23 Heol Keir Hardie	CF44 9AW	Dwelling	48.4	48.4	48.4	50.4	37.5	37.5	37.6	39.4
24 Heol Keir Hardie	CF44 9AW	Dwelling	49.7	49.4	50.0	52.1	38.7	38.4	39.0	40.9
25 Heol Keir Hardie	CF44 9AW	Dwelling	50.3	50.1	50.3	52.3	39.2	39.0	39.3	41.1
26 Heol Keir Hardie	CF44 9AW	Dwelling	51.1	50.7	50.9	53.4	39.9	39.6	39.8	42.0
27 Heol Keir Hardie	CF44 9AW	Dwelling	51.0	50.7	50.8	53.2	39.9	39.6	39.7	41.9
28 Heol Keir Hardie	CF44 9AW	Dwelling	50.4	50.6	50.8	53.2	39.3	39.6	39.7	41.9
29 Heol Keir Hardie	CF44 9AW	Dwelling	51.1	50.6	50.8	53.4	39.9	39.5	39.7	42.1

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
30 Heol Keir Hardie	CF44 9AW	Dwelling	49.5	49.9	50.2	52.8	38.5	38.9	39.2	41.5
31 Heol Keir Hardie	CF44 9AW	Dwelling	51.0	50.4	50.6	52.8	39.9	39.4	39.6	41.5
32 Heol Keir Hardie	CF44 9AW	Dwelling	50.6	50.0	50.2	52.3	39.5	38.9	39.1	41.1
33 Heol Keir Hardie	CF44 9AW	Dwelling	51.4	50.9	51.0	53.0	40.2	39.8	39.9	41.7
34 Heol Keir Hardie	CF44 9AW	Dwelling	50.7	50.1	50.4	52.3	39.6	39.1	39.3	41.1
35 Heol Keir Hardie	CF44 9AW	Dwelling	51.4	50.9	51.0	53.0	40.2	39.8	39.9	41.7
36 Heol Keir Hardie	CF44 9AW	Dwelling	50.9	50.5	50.7	52.5	39.7	39.4	39.6	41.2
49 Heol Keir Hardie	CF44 9AW	Dwelling	56.3	56.5	56.2	56.8	44.6	44.8	44.5	45.1
50 Heol Keir Hardie	CF44 9AW	Dwelling	52.3	52.6	52.3	53.2	41.1	41.3	41.0	41.8
51 Heol Keir Hardie	CF44 9AW	Dwelling	54.7	55.4	54.9	55.4	43.2	43.8	43.3	43.8
52 Heol Keir Hardie	CF44 9AW	Dwelling	49.5	49.8	49.4	50.9	38.5	38.8	38.5	39.8
53 Heol Keir Hardie	CF44 9AW	Dwelling	54.0	54.1	53.8	55.3	42.6	42.7	42.4	43.7
54 Heol Keir Hardie	CF44 9AW	Dwelling	54.6	55.2	54.8	55.4	43.1	43.7	43.3	43.8
55 Heol Keir Hardie	CF44 9AW	Dwelling	55.4	55.9	55.5	56.2	43.8	44.3	43.9	44.5
56 Heol Keir Hardie	CF44 9AW	Dwelling	54.9	55.5	55.0	55.6	43.4	43.9	43.5	44.0
137 Heol Keir Hardie	CF44 9AW	Dwelling	52.1	52.1	52.0	54.1	40.9	40.8	40.8	42.6
139 Heol Keir Hardie	CF44 9AW	Dwelling	49.9	49.7	49.7	52.1	38.9	38.7	38.7	40.9
141 Heol Keir Hardie	CF44 9AW	Dwelling	52.0	51.9	51.8	54.0	40.8	40.7	40.6	42.6
143 Heol Keir Hardie	CF44 9AW	Dwelling	51.8	51.6	51.6	53.9	40.6	40.4	40.5	42.5
145 Heol Keir Hardie	CF44 9AW	Dwelling	51.3	50.8	51.0	53.1	40.2	39.7	39.9	41.7
147 Heol Keir Hardie	CF44 9AW	Dwelling	53.5	53.5	53.3	54.9	42.1	42.1	42.0	43.4
27 Heol Caradoc	CF44 9AY	Dwelling	46.1	46.1	46.2	48.6	35.5	35.5	35.5	37.7
28 Heol Caradoc	CF44 9AY	Dwelling	47.5	47.5	47.8	50.5	36.8	36.8	37.0	39.5
29 Heol Caradoc	CF44 9AY	Dwelling	46.7	46.4	47.5	51.1	36.0	35.7	36.7	40.0
30 Heol Caradoc	CF44 9AY	Dwelling	47.6	47.2	48.3	51.6	36.8	36.4	37.4	40.4
31 Heol Caradoc	CF44 9AY	Dwelling	45.8	45.6	45.9	48.7	35.2	35.1	35.3	37.8
32 Heol Caradoc	CF44 9AY	Dwelling	46.7	46.4	46.9	49.9	36.0	35.8	36.2	38.9
33 Heol Caradoc	CF44 9AY	Dwelling	44.9	45.2	45.2	48.9	34.4	34.6	34.7	38.0
34 Heol Caradoc	CF44 9AY	Dwelling	45.6	45.5	46.2	50.3	35.0	34.9	35.6	39.2
35 Heol Caradoc	CF44 9AY	Dwelling	46.8	46.6	46.7	49.7	36.1	35.9	36.0	38.7
36 Heol Caradoc	CF44 9AY	Dwelling	47.4	47.1	47.9	51.2	36.6	36.4	37.0	40.1
37 Heol Caradoc	CF44 9AY	Dwelling	50.5	50.4	50.7	52.8	39.4	39.3	39.6	41.5
38 Heol Caradoc	CF44 9AY	Dwelling	51.2	51.2	51.2	54.0	40.0	40.0	40.1	42.5
Brynawel Bungalow Brynawel Bungalow Cwm Nant-Yr-Hwch	CF44 9BA	Dwelling	53.4	53.7	53.5	59.9	42.0	42.3	42.2	47.9
Gamlyn Isaf Farm Caravan Heol Caradoc	CF44 9BA	Dwelling	48.4	48.7	48.5	53.0	37.5	37.8	37.7	41.7
Cwm Nant Yr Hwch Heol Caradoc	CF44 9BA	Dwelling	48.6	49.1	49.3	54.8	37.7	38.2	38.3	43.3
Swn Yr Awel Swn Yr Awel Cwm Nant-Yr-Hwch	CF44 9BA	Dwelling	51.8	51.8	51.8	57.3	40.6	40.6	40.6	45.6
Cwm Nant Yr Hwch 9 Heol Caradoc	CF44 9BA	Dwelling	53.4	53.8	53.7	58.5	42.1	42.4	42.3	46.6
Gamlyn Isaf Farm 1 Gamlyn Isaf Cottages Cottage Heol Caradoc	CF44 9BB	Dwelling	47.9	48.3	48.8	61.8	37.1	37.4	37.9	49.6
Gamlyn Isaf Farm Farmhouse Heol Caradoc	CF44 9BB	Dwelling	48.5	48.4	48.9	61.1	37.6	37.5	38.0	48.9
Gamlyn Isaf Farm Gamlyn Isaf Barn Barn Heol Caradoc	CF44 9BB	Dwelling	42.9	42.5	43.6	56.1	32.6	32.3	33.3	44.5
39 Heol Caradoc	CF44 9BD	Dwelling	51.0	50.8	50.9	53.6	39.9	39.7	39.8	42.2
40 Heol Caradoc	CF44 9BD	Dwelling	54.4	54.9	54.7	57.2	43.0	43.4	43.2	45.4
41 Heol Caradoc	CF44 9BD	Dwelling	51.0	50.7	50.9	53.5	39.9	39.6	39.8	42.1
42 Heol Caradoc	CF44 9BD	Dwelling	53.3	53.8	53.3	56.3	42.0	42.4	42.0	44.6
43 Heol Caradoc	CF44 9BD	Dwelling	54.1	54.9	54.5	56.5	42.7	43.4	43.0	44.8
44 Heol Caradoc	CF44 9BD	Dwelling	51.2	52.0	51.6	55.0	40.1	40.8	40.4	43.5
45 Heol Caradoc	CF44 9BD	Dwelling	52.2	52.6	52.6	56.4	40.9	41.3	41.3	44.8
46 Heol Caradoc	CF44 9BD	Dwelling	51.7	52.1	52.1	56.0	40.5	40.8	40.9	44.4
47 Heol Caradoc	CF44 9BD	Dwelling	51.3	51.7	51.8	55.8	40.2	40.5	40.6	44.2
48 Heol Caradoc	CF44 9BD	Dwelling	48.1	48.6	49.1	53.3	37.3	37.7	38.2	42.0
49 Heol Caradoc	CF44 9BD	Dwelling	51.5	52.0	52.1	55.8	40.4	40.8	40.8	44.2
50 Heol Caradoc	CF44 9BD	Dwelling	47.6	48.4	48.6	52.9	36.9	37.5	37.7	41.6
51 Heol Caradoc	CF44 9BD	Dwelling	50.7	51.2	51.1	55.1	39.6	40.1	40.0	43.6
52 Heol Caradoc	CF44 9BD	Dwelling	52.1	52.5	52.2	55.6	40.9	41.2	40.9	44.0
53 Heol Caradoc	CF44 9BD	Dwelling	51.9	52.4	52.0	55.0	40.7	41.1	40.8	43.5
54 Heol Caradoc	CF44 9BD	Dwelling	50.4	50.8	51.0	54.3	39.3	39.7	39.9	42.9
55 Heol Caradoc	CF44 9BD	Dwelling	48.9	49.5	49.8	53.8	38.0	38.5	38.8	42.4
56 Heol Caradoc	CF44 9BD	Dwelling	48.5	48.9	49.3	53.4	37.6	38.0	38.4	42.0
57 Heol Caradoc	CF44 9BD	Dwelling	50.2	50.4	50.7	54.6	39.2	39.4	39.6	43.1
58 Heol Caradoc	CF44 9BD	Dwelling	49.0	49.1	49.6	53.7	38.1	38.2	38.7	42.3
59 Heol Caradoc	CF44 9BD	Dwelling	48.1	48.1	49.0	53.0	37.3	37.3	38.1	41.7
60 Heol Caradoc	CF44 9BD	Dwelling	48.2	48.2	49.1	53.1	37.4	37.4	38.1	41.7
61 Heol Caradoc	CF44 9BD	Dwelling	48.4	48.4	49.3	53.1	37.5	37.5	38.3	41.8
62 Heol Caradoc	CF44 9BD	Dwelling	47.8	47.8	48.9	52.7	37.0	37.0	38.0	41.4
63 Heol Caradoc	CF44 9BD	Dwelling	47.0	47.0	48.3	52.2	36.3	36.2	37.4	40.9
64 Heol Caradoc	CF44 9BD	Dwelling	44.4	44.5	45.8	50.7	34.0	34.0	35.2	39.6
65 Heol Caradoc	CF44 9BD	Dwelling	48.8	48.4	49.0	53.1	37.9	37.5	38.1	41.8
66 Heol Caradoc	CF44 9BD	Dwelling	46.3	46.0	47.7	51.6	35.6	35.4	36.9	40.4
67 Heol Caradoc	CF44 9BD	Dwelling	45.2	45.3	46.6	52.0	34.7	34.8	35.9	40.8
68 Heol Caradoc	CF44 9BD	Dwelling	43.5	43.8	43.5	46.8	33.1	33.4	33.1	36.1
69 Heol Caradoc	CF44 9BD	Dwelling	50.3	50.4	50.7	53.4	39.3	39.3	39.6	42.0
70 Heol Caradoc	CF44 9BD	Dwelling	48.4	47.7	48.6	51.9	37.6	36.9	37.7	40.7
8A Flat A Heol Dyfed	CF44 9BE	Dwelling	50.4	50.5	50.8	53.5	39.3	39.4	39.7	42.1
1 Heol Dyfed	CF44 9BE	Dwelling	50.8	50.5	50.8	53.6	39.7	39.5	39.7	42.2
2 Heol Dyfed	CF44 9BE	Dwelling	50.9	50.7	50.9	54.1	39.8	39.6	39.8	42.6
3 Heol Dyfed	CF44 9BE	Dwelling	48.8	48.1	48.9	52.4	37.9	37.3	38.0	41.1
4 Heol Dyfed	CF44 9BE	Dwelling	48.1	47.4	48.5	52.1	37.3	36.7	37.6	40.8
5 Heol Dyfed	CF44 9BE	Dwelling	47.6	47.2	48.3	51.9	36.8	36.5	37.4	40.7
6 Heol Dyfed	CF44 9BE	Dwelling	47.4	47.0	48.1	51.8	36.7	36.3	37.2	40.6
7 Heol Dyfed	CF44 9BE	Dwelling	46.6	46.9	47.2	50.1	35.9	36.2	36.4	39.1
9 Heol Dyfed	CF44 9BE	Dwelling	47.6	47.4	48.4	51.2	36.8	36.6	37.5	40.1
10 Heol Dyfed	CF44 9BE	Dwelling	47.8	47.5	48.5	51.5	37.0	36.7	37.7	40.4
11 Heol Dyfed	CF44 9BE	Dwelling	47.6	47.1	48.4	51.5	36.8	36.3	37.5	40.3
12 Heol Dyfed	CF44 9BE	Dwelling	47.8	47.2	48.5	51.5	37.0	36.5	37.6	40.3
13 Heol Dyfed	CF44 9BE	Dwelling	46.3	46.9	46.5	49.5	35.6	36.2	35.8	38.6
14 Heol Dyfed	CF44 9BE	Dwelling	44.8	44.7	45.3	49.0	34.3	34.2	34.7	38.0
25 Erw Las	CF44 9BG	Dwelling	51.4	50.4	51.3	54.2	40.2	39.4	40.2	42.7
26 Erw Las	CF44 9BG	Dwelling	46.7	46.1	46.3	49.9	36.0	35.5	35.7	38.9
27 Erw Las	CF44 9BG	Dwelling	50.8	49.8	50.9	54.6	39.7	38.8	39.8	43.1
28 Erw Las	CF44 9BG	Dwelling	45.5	45.2	46.6	49.9	34.9	34.7	35.9	38.9
29 Erw Las	CF44 9BG	Dwelling	51.2	50.3	51.2	54.4	40.1	39.2	40.1	42.9
30 Erw Las	CF44 9BG	Dwelling	49.9	49.3	49.5	52.7	38.9	38.3	38.6	41.4
31 Erw Las	CF44 9BG	Dwelling	46.4	45.7	48.3	53.4	35.7	35.1	37.4	42.0
32 Erw Las	CF44 9BG	Dwelling	45.6	45.7	46.8	50.1	35.1	35.1	36.1	39.1
33 Erw Las	CF44 9BG	Dwelling	51.3	50.5	51.4	55.7	40.2	39.5	40.2	44.1
34 Erw Las	CF44 9BG	Dwelling	46.9	46.2	47.0	50.6	36.2	35.6	36.3	39.5
35 Erw Las	CF44 9BG	Dwelling	49.1	48.4	49.5	54.6	38.2	37.5	38.5	43.1
36 Erw Las	CF44 9BG	Dwelling	45.6	45.6	46.3	50.7	35.1	35.1	35.6	39.6
37 Erw Las	CF44 9BG	Dwelling	51.2	50.3	51.2	55.9	40.0	39.3	40.1	44.3
38 Erw Las	CF44 9BG	Dwelling	49.3	48.8	50.0	54.0	38.4	37.9	39.0	42.5
39 Erw Las	CF44 9BG	Dwelling	47.1	46.8	48.7	52.2	36.4	36.1	37.8	40.9
40 Erw Las	CF44 9BG	Dwelling	49.0	49.1	50.1	54.2	38.1	38.2	39.1	42.8
41 Erw Las	CF44 9BG	Dwelling	47.6	47.1	48.9	54.9	36.8	36.4	38.0	43.4
42 Erw Las	CF44 9BG	Dwelling	49.2	49.1	50.2	54.6	38.3	38.2	39.1	43.1
43 Erw Las	CF44 9BG	Dwelling	48.8	48.0	49.1	55.1	37.9	37.2	38.2	43.5
44 Erw Las	CF44 9BG	Dwelling	49.0	49.0	50.0	54.4	38.1	38.1	39.0	43.0

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
45 Erw Las	CF44 9BG	Dwelling	51.1	50.4	51.2	56.5	40.0	39.3	40.0	44.8
46 Erw Las	CF44 9BG	Dwelling	49.3	49.3	50.2	54.7	38.3	38.4	39.2	43.2
47 Erw Las	CF44 9BG	Dwelling	48.8	48.1	49.2	55.5	37.9	37.3	38.2	43.9
48 Erw Las	CF44 9BG	Dwelling	49.2	49.3	50.2	54.6	38.3	38.4	39.2	43.1
49 Erw Las	CF44 9BG	Dwelling	50.9	50.2	51.0	56.6	39.8	39.1	39.9	44.9
51 Erw Las	CF44 9BG	Dwelling	47.0	47.0	48.6	54.8	36.3	36.3	37.7	43.3
53 Erw Las	CF44 9BG	Dwelling	50.8	50.1	50.9	56.9	39.7	39.1	39.8	45.2
55 Erw Las	CF44 9BG	Dwelling	46.3	46.5	48.0	55.3	35.7	35.8	37.2	43.7
57 Erw Las	CF44 9BG	Dwelling	46.3	46.2	47.7	54.7	35.6	35.6	36.9	43.2
59 Erw Las	CF44 9BG	Dwelling	43.6	44.0	43.8	53.4	33.2	33.6	33.4	42.0
61 Erw Las	CF44 9BG	Dwelling	43.6	43.9	43.9	53.1	33.3	33.5	33.5	41.7
63 Erw Las	CF44 9BG	Dwelling	47.7	46.7	48.0	54.8	36.9	36.0	37.2	43.3
65 Erw Las	CF44 9BG	Dwelling	44.4	44.9	44.6	51.9	34.0	34.4	34.1	40.7
67 Erw Las	CF44 9BG	Dwelling	45.3	45.5	46.6	53.1	34.8	35.0	35.9	41.8
69 Erw Las	CF44 9BG	Dwelling	45.5	45.7	46.9	53.2	34.9	35.1	36.2	41.9
71 Erw Las	CF44 9BG	Dwelling	45.8	46.0	47.3	53.3	35.2	35.3	36.6	42.0
73 Erw Las	CF44 9BG	Dwelling	45.7	45.9	47.3	53.1	35.1	35.3	36.6	41.8
75 Erw Las	CF44 9BG	Dwelling	46.2	46.3	47.7	53.2	35.5	35.6	36.9	41.8
1 Erw Las	CF44 9BH	Dwelling	49.4	49.5	50.3	53.7	38.4	38.6	39.2	42.3
2 Erw Las	CF44 9BH	Dwelling	47.8	48.1	49.1	52.5	37.0	37.2	38.2	41.2
3 Erw Las	CF44 9BH	Dwelling	50.9	50.3	50.9	54.1	39.8	39.3	39.8	42.7
4 Erw Las	CF44 9BH	Dwelling	44.5	44.4	45.4	50.1	34.0	34.0	34.8	39.1
5 Erw Las	CF44 9BH	Dwelling	49.4	49.5	50.4	53.6	38.4	38.6	39.3	42.2
6 Erw Las	CF44 9BH	Dwelling	44.0	44.4	44.5	49.8	33.6	33.9	34.0	38.8
7 Erw Las	CF44 9BH	Dwelling	50.0	49.6	50.4	53.4	39.0	38.6	39.3	42.0
8 Erw Las	CF44 9BH	Dwelling	49.5	49.2	50.3	53.4	38.6	38.3	39.2	42.0
9 Erw Las	CF44 9BH	Dwelling	49.2	49.2	50.1	53.5	38.2	38.3	39.1	42.1
10 Erw Las	CF44 9BH	Dwelling	45.7	45.6	46.9	50.3	35.1	35.0	36.2	39.2
11 Erw Las	CF44 9BH	Dwelling	50.7	50.0	50.8	53.9	39.6	39.0	39.7	42.5
12 Erw Las	CF44 9BH	Dwelling	50.1	49.4	50.4	53.6	39.1	38.5	39.3	42.2
14 Erw Las	CF44 9BH	Dwelling	49.3	48.8	50.0	53.5	38.3	37.9	39.0	42.1
16 Erw Las	CF44 9BH	Dwelling	43.0	43.3	42.9	46.6	32.7	33.0	32.6	36.0
17 Erw Las	CF44 9BH	Dwelling	48.9	49.1	50.1	53.2	38.0	38.1	39.1	41.8
18 Erw Las	CF44 9BH	Dwelling	46.5	46.5	48.0	51.2	35.9	35.9	37.2	40.0
19 Erw Las	CF44 9BH	Dwelling	50.2	49.4	50.3	53.7	39.1	38.4	39.3	42.3
20 Erw Las	CF44 9BH	Dwelling	46.0	46.0	47.4	50.6	35.4	35.4	36.6	39.5
21 Erw Las	CF44 9BH	Dwelling	47.4	47.6	48.8	52.3	36.7	36.8	37.9	41.0
22 Erw Las	CF44 9BH	Dwelling	46.1	46.1	47.2	50.6	35.5	35.5	36.5	39.5
23 Erw Las	CF44 9BH	Dwelling	47.5	47.1	48.9	51.6	36.7	36.4	37.9	40.4
24 Erw Las	CF44 9BH	Dwelling	46.2	46.2	47.2	50.6	35.6	35.5	36.5	39.5
1 Brodawel	CF44 9BL	Dwelling	47.1	47.5	47.8	51.4	36.3	36.8	37.0	40.2
2 Brodawel	CF44 9BL	Dwelling	50.1	49.0	50.2	53.3	39.1	38.1	39.2	42.0
3 Brodawel	CF44 9BL	Dwelling	48.5	47.8	49.1	52.5	37.7	37.0	38.2	41.2
4 Brodawel	CF44 9BL	Dwelling	49.9	48.8	50.1	53.3	38.9	37.9	39.1	41.9
5 Brodawel	CF44 9BL	Dwelling	48.1	48.0	49.4	52.8	37.3	37.2	38.4	41.5
6 Brodawel	CF44 9BL	Dwelling	49.9	48.8	50.3	53.5	38.9	37.9	39.2	42.1
7 Brodawel	CF44 9BL	Dwelling	47.6	47.2	48.2	51.3	36.9	36.4	37.3	40.1
8 Brodawel	CF44 9BL	Dwelling	49.3	48.2	50.0	53.2	38.4	37.4	38.9	41.9
9 Brodawel	CF44 9BL	Dwelling	49.6	48.8	50.2	53.5	38.6	37.9	39.1	42.1
10 Brodawel	CF44 9BL	Dwelling	50.3	49.3	50.3	53.9	39.3	38.3	39.3	42.5
11 Brodawel	CF44 9BL	Dwelling	48.8	48.1	49.4	52.7	37.9	37.2	38.4	41.4
12 Brodawel	CF44 9BL	Dwelling	49.3	48.2	49.8	52.9	38.3	37.4	38.8	41.6
14 Brodawel	CF44 9BL	Dwelling	50.7	49.6	50.7	54.0	39.6	38.6	39.6	42.5
16 Brodawel	CF44 9BL	Dwelling	50.8	49.7	50.8	54.0	39.7	38.7	39.7	42.6
1 Heol Silyn	CF44 9BN	Dwelling	48.7	48.5	49.4	51.6	37.8	37.6	38.5	40.4
2 Heol Silyn	CF44 9BN	Dwelling	48.6	48.4	49.1	51.7	37.8	37.5	38.2	40.6
3 Heol Silyn	CF44 9BN	Dwelling	47.0	47.5	47.2	49.8	36.3	36.8	36.4	38.8
4 Heol Silyn	CF44 9BN	Dwelling	48.7	48.4	49.2	51.9	37.8	37.6	38.3	40.7
5 Heol Silyn	CF44 9BN	Dwelling	46.0	46.6	46.1	49.0	35.4	36.0	35.5	38.0
6 Heol Silyn	CF44 9BN	Dwelling	48.5	48.3	49.1	51.9	37.7	37.4	38.1	40.7
7 Heol Silyn	CF44 9BN	Dwelling	46.7	47.3	46.9	49.8	36.0	36.5	36.2	38.8
8 Heol Silyn	CF44 9BN	Dwelling	48.4	48.2	49.0	51.9	37.6	37.3	38.1	40.7
9 Heol Silyn	CF44 9BN	Dwelling	46.3	46.9	46.4	49.4	35.6	36.2	35.8	38.4
10 Heol Silyn	CF44 9BN	Dwelling	48.0	47.8	48.6	51.6	37.2	37.0	37.7	40.4
11 Heol Silyn	CF44 9BN	Dwelling	46.6	47.2	46.8	49.7	35.9	36.5	36.1	38.7
12 Heol Silyn	CF44 9BN	Dwelling	48.6	48.3	49.2	52.1	37.7	37.4	38.2	40.9
13 Heol Silyn	CF44 9BN	Dwelling	46.4	47.1	46.6	49.7	35.8	36.4	35.9	38.8
14 Heol Silyn	CF44 9BN	Dwelling	48.4	48.1	49.0	52.0	37.5	37.3	38.1	40.8
15 Heol Silyn	CF44 9BN	Dwelling	46.8	47.4	46.9	50.1	36.1	36.7	36.2	39.1
16 Heol Silyn	CF44 9BN	Dwelling	44.3	45.0	44.6	48.4	33.9	34.5	34.1	37.5
17 Heol Silyn	CF44 9BN	Dwelling	46.5	47.2	46.7	49.9	35.8	36.5	36.0	38.9
18 Heol Silyn	CF44 9BN	Dwelling	47.5	47.2	48.3	51.6	36.7	36.5	37.4	40.4
19 Heol Silyn	CF44 9BN	Dwelling	46.8	47.4	47.0	50.3	36.1	36.7	36.3	39.3
20 Heol Silyn	CF44 9BN	Dwelling	47.9	47.6	48.6	51.9	37.1	36.8	37.7	40.7
21 Heol Silyn	CF44 9BN	Dwelling	46.7	47.4	46.8	50.2	36.0	36.6	36.1	39.2
22 Heol Silyn	CF44 9BN	Dwelling	47.9	47.6	48.7	52.2	37.1	36.8	37.8	40.9
23 Heol Silyn	CF44 9BN	Dwelling	46.6	47.3	46.8	50.1	35.9	36.5	36.1	39.1
24 Heol Silyn	CF44 9BN	Dwelling	47.6	47.3	48.4	51.9	36.8	36.5	37.5	40.7
25 Heol Silyn	CF44 9BN	Dwelling	47.4	48.2	47.7	50.7	36.7	37.4	36.9	39.6
26 Heol Silyn	CF44 9BN	Dwelling	48.1	47.7	48.8	52.5	37.3	36.9	37.9	41.2
27 Heol Silyn	CF44 9BN	Dwelling	47.6	48.4	47.9	50.9	36.8	37.5	37.1	39.8
28 Heol Silyn	CF44 9BN	Dwelling	47.8	47.3	48.6	52.8	37.0	36.6	37.7	41.5
29 Heol Silyn	CF44 9BN	Dwelling	47.2	48.0	47.5	50.8	36.5	37.2	36.7	39.7
31 Heol Silyn	CF44 9BN	Dwelling	47.5	48.3	47.7	51.1	36.7	37.4	37.0	40.0
33 Heol Silyn	CF44 9BN	Dwelling	47.1	47.9	47.4	50.9	36.4	37.1	36.6	39.8
35 Heol Silyn	CF44 9BN	Dwelling	47.5	48.2	47.8	51.2	36.7	37.4	37.0	40.0
37 Heol Silyn	CF44 9BN	Dwelling	47.5	48.3	47.8	51.0	36.7	37.4	37.0	39.9
39 Heol Silyn	CF44 9BN	Dwelling	50.3	50.8	50.7	54.0	39.2	39.7	39.6	42.6
41 Heol Silyn	CF44 9BN	Dwelling	47.2	48.0	47.5	51.2	36.5	37.2	36.7	40.0
43 Heol Silyn	CF44 9BN	Dwelling	46.9	47.1	48.4	52.3	36.2	36.4	37.5	41.1
Cartref Bungalow Cartref Bungalow Hobbs Lane	CF44 9BU	Dwelling	44.5	44.6	44.0	44.7	34.0	34.1	33.6	34.2
Cysgod Y Cudyll Cysgod Y Cudyll Hobbs Lane	CF44 9BU	Dwelling	51.2	51.4	50.8	51.4	40.0	40.2	39.7	40.2
Diddosfa Bungalow Diddosfa Bungalow Hobbs Lane	CF44 9BU	Dwelling	47.5	47.8	48.1	48.8	36.7	37.0	37.3	37.9
Ty Llewellyn Ty Llewellyn Hobbs Lane	CF44 9BU	Dwelling	46.6	47.1	47.5	48.2	35.9	36.3	36.7	37.4
1 Awelfryn	CF44 9DP	Dwelling	51.7	51.0	51.5	53.6	40.5	39.9	40.3	42.2
2 Awelfryn	CF44 9DP	Dwelling	48.2	48.8	48.3	50.0	37.4	37.9	37.5	39.0
3 Awelfryn	CF44 9DP	Dwelling	48.6	49.1	48.7	50.4	37.7	38.2	37.8	39.3
4 Awelfryn	CF44 9DP	Dwelling	48.3	48.9	48.4	50.1	37.5	38.0	37.6	39.1
5 Awelfryn	CF44 9DP	Dwelling	51.4	51.7	51.8	53.6	40.3	40.5	40.6	42.2
Flying Start Centre Coed Glas	CF44 9DR	OSR	49.7	50.2	50.6	53.3	38.7	39.2	39.5	41.9
Penywaun Primary School Coed Glas	CF44 9DR	OSR	49.7	50.2	50.6	53.3	38.7	39.2	39.5	41.9
1 Coed Glas	CF44 9DR	Dwelling	49.4	50.0	49.6	51.0	38.4	39.0	38.6	39.9
2 Coed Glas	CF44 9DR	Dwelling	47.1	47.4	47.0	48.8	36.3	36.6	36.3	37.9
3 Coed Glas	CF44 9DR	Dwelling	51.6	51.1	51.5	53.1	40.4	40.0	40.3	41.8
4 Coed Glas	CF44 9DR	Dwelling	50.8	50.0	50.7	52.7	39.7	39.0	39.6	41.4
5 Coed Glas	CF44 9DR	Dwelling	46.7	47.4	47.0	49.7	36.0	36.6	36.2	38.7
6 Coed Glas	CF44 9DR	Dwelling	46.6	47.4	46.8	49.5	35.9	36.6	36.1	38.5

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
7 Coed Glas	CF44 9DR	Dwelling	48.6	49.3	48.8	50.7	37.7	38.4	37.9	39.6
8 Coed Glas	CF44 9DR	Dwelling	49.1	49.7	49.3	51.2	38.2	38.7	38.3	40.1
9 Coed Glas	CF44 9DR	Dwelling	48.9	49.4	49.7	51.8	38.0	38.5	38.8	40.6
10 Coed Glas	CF44 9DR	Dwelling	49.4	49.6	50.4	52.5	38.4	38.6	39.3	41.2
11 Coed Glas	CF44 9DR	Dwelling	49.0	49.0	50.0	52.4	38.1	38.1	39.0	41.1
12 Coed Glas	CF44 9DR	Dwelling	47.1	47.1	48.0	50.9	36.4	36.4	37.2	39.7
13 Coed Glas	CF44 9DR	Dwelling	47.6	48.1	48.3	51.1	36.8	37.3	37.4	40.0
14 Coed Glas	CF44 9DR	Dwelling	48.0	48.4	49.0	51.7	37.2	37.5	38.1	40.6
15 Coed Glas	CF44 9DS	Dwelling	48.6	48.2	49.1	51.7	37.7	37.4	38.1	40.5
16 Coed Glas	CF44 9DS	Dwelling	48.3	47.9	48.7	51.3	37.5	37.1	37.8	40.1
17 Coed Glas	CF44 9DS	Dwelling	50.0	50.1	50.8	52.8	39.0	39.1	39.7	41.5
18 Coed Glas	CF44 9DS	Dwelling	48.9	48.9	49.8	51.3	38.0	38.0	38.8	40.2
19 Coed Glas	CF44 9DS	Dwelling	49.0	48.9	49.9	51.4	38.0	38.0	38.9	40.2
21 Coed Glas	CF44 9DS	Dwelling	47.7	47.7	49.0	50.5	36.9	36.9	38.1	39.5
22 Coed Glas	CF44 9DS	Dwelling	50.6	49.5	50.9	52.8	39.5	38.5	39.7	41.5
23 Coed Glas	CF44 9DS	Dwelling	46.0	46.0	47.1	49.7	35.3	35.3	36.4	38.7
24 Coed Glas	CF44 9DS	Dwelling	48.2	47.4	48.9	51.1	37.4	36.6	38.0	39.9
25 Coed Glas	CF44 9DS	Dwelling	47.6	46.8	48.5	50.6	36.8	36.1	37.6	39.5
26 Coed Glas	CF44 9DS	Dwelling	52.5	51.5	52.1	54.2	41.2	40.4	40.9	42.7
St Winifreds Church Heol Bryn Gwyn	CF44 9DT	OSR	45.3	45.3	45.9	48.5	34.7	34.7	35.3	37.7
55 Coed Glas	CF44 9DU	Dwelling	49.8	49.1	49.9	51.8	38.8	38.1	38.9	40.6
56 Coed Glas	CF44 9DU	Dwelling	48.5	48.3	49.0	50.5	37.6	37.5	38.1	39.4
57 Coed Glas	CF44 9DU	Dwelling	43.3	43.2	43.7	46.3	33.0	32.8	33.3	35.7
58 Coed Glas	CF44 9DU	Dwelling	48.8	48.8	49.3	51.2	37.9	37.9	38.4	40.1
59 Coed Glas	CF44 9DU	Dwelling	49.0	48.2	49.7	51.5	38.1	37.4	38.7	40.3
60 Coed Glas	CF44 9DU	Dwelling	46.4	45.6	47.2	50.2	35.7	35.0	36.5	39.2
61 Coed Glas	CF44 9DU	Dwelling	48.8	47.7	49.3	51.6	37.9	36.9	38.4	40.4
62 Coed Glas	CF44 9DU	Dwelling	49.7	48.9	50.2	52.3	38.7	38.0	39.1	41.0
63 Coed Glas	CF44 9DU	Dwelling	48.2	47.8	49.3	51.0	37.3	37.0	38.4	39.9
64 Coed Glas	CF44 9DU	Dwelling	49.7	49.8	50.5	52.6	38.7	38.8	39.4	41.3
65 Coed Glas	CF44 9DU	Dwelling	49.3	48.6	49.8	51.7	38.4	37.7	38.8	40.5
66 Coed Glas	CF44 9DU	Dwelling	46.9	46.6	48.6	51.1	36.2	35.9	37.8	40.0
47 Llwynderi	CF44 9DW	Dwelling	48.5	48.7	49.4	51.2	37.7	37.8	38.5	40.0
48 Llwynderi	CF44 9DW	Dwelling	51.6	50.8	51.4	53.5	40.4	39.7	40.2	42.2
1 Dan-Yr-Heol	CF44 9DY	Dwelling	48.0	48.7	48.2	50.6	37.2	37.8	37.3	39.5
2 Dan-Yr-Heol	CF44 9DY	Dwelling	50.2	49.7	50.5	54.0	39.2	38.7	39.5	42.6
3 Dan-Yr-Heol	CF44 9DY	Dwelling	48.1	48.8	48.3	50.7	37.3	37.9	37.4	39.6
4 Dan-Yr-Heol	CF44 9DY	Dwelling	47.5	47.3	47.9	51.8	36.8	36.5	37.0	40.6
5 Dan-Yr-Heol	CF44 9DY	Dwelling	48.1	48.7	48.2	50.8	37.3	37.9	37.4	39.7
6 Dan-Yr-Heol	CF44 9DY	Dwelling	46.4	47.0	46.5	50.6	35.7	36.3	35.8	39.5
7 Dan-Yr-Heol	CF44 9DY	Dwelling	48.2	48.9	48.4	51.0	37.4	38.0	37.6	39.9
8 Dan-Yr-Heol	CF44 9DY	Dwelling	45.2	45.2	45.0	50.2	34.7	34.7	34.5	39.1
9 Dan-Yr-Heol	CF44 9DY	Dwelling	48.3	48.9	48.5	51.2	37.5	38.0	37.7	40.1
10 Dan-Yr-Heol	CF44 9DY	Dwelling	45.3	46.0	45.5	50.5	34.8	35.4	34.9	39.4
11 Dan-Yr-Heol	CF44 9DY	Dwelling	48.5	49.0	48.9	51.6	37.7	38.1	38.0	40.4
12 Dan-Yr-Heol	CF44 9DY	Dwelling	47.9	47.3	49.2	52.0	37.1	36.6	38.3	40.7
13 Dan-Yr-Heol	CF44 9DY	Dwelling	49.0	49.1	49.9	52.5	38.1	38.2	38.9	41.2
14 Dan-Yr-Heol	CF44 9DY	Dwelling	46.1	46.8	46.3	50.8	35.5	36.1	35.6	39.7
15 Dan-Yr-Heol	CF44 9DY	Dwelling	44.9	45.3	44.8	48.6	34.4	34.8	34.3	37.7
16 Dan-Yr-Heol	CF44 9DY	Dwelling	49.3	48.3	49.7	52.7	38.3	37.5	38.7	41.4
17 Dan-Yr-Heol	CF44 9DY	Dwelling	46.2	46.9	46.3	49.0	35.6	36.2	35.7	38.1
18 Dan-Yr-Heol	CF44 9DY	Dwelling	47.8	47.6	49.4	52.8	37.0	36.8	38.4	41.5
19 Dan-Yr-Heol	CF44 9DY	Dwelling	45.9	45.9	46.6	49.1	35.3	35.3	35.9	38.2
20 Dan-Yr-Heol	CF44 9DY	Dwelling	51.5	50.4	51.6	54.6	40.3	39.4	40.4	43.1
21 Dan-Yr-Heol	CF44 9DY	Dwelling	44.7	45.3	44.8	47.5	34.2	34.7	34.3	36.7
22 Dan-Yr-Heol	CF44 9DY	Dwelling	48.8	48.4	49.9	53.4	37.9	37.5	38.9	42.1
23 Dan-Yr-Heol	CF44 9DY	Dwelling	48.5	47.8	48.6	51.5	37.6	37.0	37.7	40.3
24 Dan-Yr-Heol	CF44 9DY	Dwelling	52.0	50.9	52.0	54.8	40.7	39.8	40.7	43.3
25 Dan-Yr-Heol	CF44 9DY	Dwelling	45.3	45.7	45.3	48.3	34.7	35.1	34.8	37.4
26 Dan-Yr-Heol	CF44 9DY	Dwelling	47.8	47.4	49.4	52.1	37.0	36.6	38.4	40.9
27 Dan-Yr-Heol	CF44 9DY	Dwelling	47.8	47.0	48.2	50.9	37.0	36.3	37.4	39.8
28 Dan-Yr-Heol	CF44 9DY	Dwelling	52.1	51.1	52.1	54.8	40.8	39.9	40.8	43.3
29 Dan-Yr-Heol	CF44 9DY	Dwelling	46.4	46.3	47.1	49.9	35.7	35.7	36.3	38.9
30 Dan-Yr-Heol	CF44 9DY	Dwelling	52.1	51.1	52.1	54.8	40.9	40.0	40.9	43.3
31 Dan-Yr-Heol	CF44 9DY	Dwelling	48.2	47.2	48.4	51.3	37.4	36.5	37.5	40.2
32 Dan-Yr-Heol	CF44 9DY	Dwelling	52.2	51.2	52.2	54.8	41.0	40.1	40.9	43.3
33 Dan-Yr-Heol	CF44 9DY	Dwelling	47.9	46.9	48.3	51.1	37.1	36.2	37.5	40.0
34 Dan-Yr-Heol	CF44 9DY	Dwelling	49.7	48.7	50.2	53.0	38.7	37.8	39.1	41.7
35 Dan-Yr-Heol	CF44 9DY	Dwelling	51.3	50.4	51.2	53.7	40.2	39.3	40.0	42.3
36 Dan-Yr-Heol	CF44 9DY	Dwelling	52.1	51.1	52.1	54.7	40.9	39.9	40.8	43.2
37 Dan-Yr-Heol	CF44 9DY	Dwelling	48.4	47.4	49.1	51.5	37.5	36.7	38.2	40.4
38 Dan-Yr-Heol	CF44 9DY	Dwelling	52.1	51.0	52.1	54.6	40.9	39.9	40.9	43.1
39 Dan-Yr-Heol	CF44 9DY	Dwelling	47.7	46.8	48.7	51.1	37.0	36.1	37.8	40.0
40 Dan-Yr-Heol	CF44 9DY	Dwelling	52.2	51.1	52.1	54.6	40.9	40.0	40.9	43.2
41 Dan-Yr-Heol	CF44 9DY	Dwelling	50.7	50.2	51.0	53.4	39.6	39.1	39.8	42.0
43 Dan-Yr-Heol	CF44 9DY	Dwelling	51.4	50.6	51.1	53.4	40.3	39.6	39.9	42.1
45 Dan-Yr-Heol	CF44 9DY	Dwelling	48.5	47.7	49.0	51.0	37.7	36.9	38.1	39.9
47 Dan-Yr-Heol	CF44 9DY	Dwelling	51.9	51.0	51.8	54.0	40.7	39.9	40.6	42.6
49 Dan-Yr-Heol	CF44 9DY	Dwelling	52.6	51.7	52.4	54.7	41.3	40.5	41.1	43.2
51 Dan-Yr-Heol	CF44 9DY	Dwelling	52.9	52.1	52.7	54.9	41.6	40.8	41.4	43.3
1 Pen-Yr-Heol	CF44 9EA	Dwelling	46.1	46.6	46.2	48.1	35.5	35.9	35.5	37.3
2 Pen-Yr-Heol	CF44 9EA	Dwelling	49.6	49.8	49.8	51.7	38.6	38.8	38.8	40.5
3 Pen-Yr-Heol	CF44 9EA	Dwelling	49.5	49.9	49.6	51.2	38.6	38.9	38.6	40.0
4 Pen-Yr-Heol	CF44 9EA	Dwelling	50.0	50.1	50.1	52.0	39.0	39.1	39.1	40.7
5 Pen-Yr-Heol	CF44 9EA	Dwelling	52.4	51.6	52.4	54.5	41.2	40.4	41.1	43.0
6 Pen-Yr-Heol	CF44 9EA	Dwelling	52.5	51.6	52.3	54.7	41.2	40.4	41.1	43.2
7 Pen-Yr-Heol	CF44 9EA	Dwelling	52.2	51.3	52.0	54.3	41.0	40.2	40.8	42.8
8 Pen-Yr-Heol	CF44 9EA	Dwelling	51.9	51.1	52.0	54.2	40.7	39.9	40.7	42.8
9 Pen-Yr-Heol	CF44 9EA	Dwelling	51.7	50.8	51.7	54.1	40.5	39.7	40.5	42.7
10 Pen-Yr-Heol	CF44 9EA	Dwelling	48.1	47.4	48.6	50.9	37.3	36.7	37.7	39.8
11 Pen-Yr-Heol	CF44 9EA	Dwelling	51.2	50.3	51.2	53.5	40.0	39.2	40.1	42.1
12 Pen-Yr-Heol	CF44 9EA	Dwelling	49.2	49.1	50.2	52.7	38.3	38.2	39.2	41.4
13 Pen-Yr-Heol	CF44 9EA	Dwelling	48.3	47.7	48.9	51.2	37.5	36.9	38.0	40.1
14 Pen-Yr-Heol	CF44 9EA	Dwelling	51.2	50.7	51.3	53.8	40.0	39.6	40.2	42.4
15 Pen-Yr-Heol	CF44 9EA	Dwelling	50.1	49.8	50.1	52.3	39.1	38.8	39.0	41.0
16 Pen-Yr-Heol	CF44 9EA	Dwelling	50.3	50.1	50.3	52.6	39.2	39.1	39.2	41.3
17 Pen-Yr-Heol	CF44 9EA	Dwelling	46.3	46.1	46.2	48.4	35.6	35.5	35.5	37.5
18 Pen-Yr-Heol	CF44 9EA	Dwelling	45.8	46.0	46.0	48.6	35.2	35.4	35.4	37.7
42 Dan-Yr-Heol	CF44 9EB	Dwelling	50.6	49.6	50.9	53.6	39.6	38.6	39.8	42.2
44 Dan-Yr-Heol	CF44 9EB	Dwelling	52.1	51.0	52.1	54.5	40.9	39.9	40.9	43.0
46 Dan-Yr-Heol	CF44 9EB	Dwelling	52.1	50.9	52.1	54.4	40.9	39.8	40.8	43.0
48 Dan-Yr-Heol	CF44 9EB	Dwelling	52.0	50.9	52.0	54.3	40.8	39.8	40.8	42.9
50 Dan-Yr-Heol	CF44 9EB	Dwelling	52.8	51.8	52.7	55.0	41.5	40.6	41.4	43.4
52 Dan-Yr-Heol	CF44 9EB	Dwelling	52.1	50.9	52.1	54.4	40.9	39.8	40.8	42.9
53 Dan-Yr-Heol	CF44 9EB	Dwelling	47.6	47.4	49.0	51.0	36.8	36.7	38.1	39.9
54 Dan-Yr-Heol	CF44 9EB	Dwelling	52.1	51.0	52.1	54.4	40.9	39.8	40.9	42.9
55 Dan-Yr-Heol	CF44 9EB	Dwelling	50.4	49.2	50.6	52.7	39.3	38.3	39.5	41.4

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
56 Dan-Yr-Heol	CF44 9EB	Dwelling	52.1	50.9	52.0	54.2	40.8	39.8	40.8	42.8
57 Dan-Yr-Heol	CF44 9EB	Dwelling	50.4	49.3	50.6	52.6	39.3	38.3	39.5	41.3
58 Dan-Yr-Heol	CF44 9EB	Dwelling	50.9	49.8	51.1	53.2	39.8	38.8	40.0	41.8
59 Dan-Yr-Heol	CF44 9EB	Dwelling	50.1	49.1	50.2	52.2	39.1	38.2	39.2	41.0
60 Dan-Yr-Heol	CF44 9EB	Dwelling	52.2	51.0	52.1	54.3	41.0	39.9	40.9	42.8
61 Dan-Yr-Heol	CF44 9EB	Dwelling	50.1	49.1	50.1	52.2	39.1	38.1	39.1	40.9
62 Dan-Yr-Heol	CF44 9EB	Dwelling	52.2	51.0	52.1	54.3	41.0	39.9	40.9	42.8
63 Dan-Yr-Heol	CF44 9EB	Dwelling	49.8	48.8	49.9	52.1	38.8	37.9	38.9	40.8
64 Dan-Yr-Heol	CF44 9EB	Dwelling	52.2	51.0	52.1	54.3	41.0	39.9	40.9	42.8
65 Dan-Yr-Heol	CF44 9EB	Dwelling	49.6	48.6	49.6	51.6	38.6	37.7	38.6	40.4
66 Dan-Yr-Heol	CF44 9EB	Dwelling	52.3	51.1	52.1	54.2	41.1	40.0	40.9	42.7
67 Dan-Yr-Heol	CF44 9EB	Dwelling	52.4	51.4	52.2	54.3	41.1	40.3	41.0	42.8
68 Dan-Yr-Heol	CF44 9EB	Dwelling	52.3	51.1	52.1	54.2	41.1	40.0	40.8	42.8
69 Dan-Yr-Heol	CF44 9EB	Dwelling	47.9	47.6	48.2	50.3	37.1	36.9	37.4	39.2
70 Dan-Yr-Heol	CF44 9EB	Dwelling	52.4	51.2	52.1	54.3	41.1	40.0	40.9	42.8
71 Dan-Yr-Heol	CF44 9EB	Dwelling	52.1	51.2	52.1	54.0	40.9	40.0	40.8	42.6
72 Dan-Yr-Heol	CF44 9EB	Dwelling	52.4	51.1	52.1	54.2	41.1	40.0	40.9	42.8
73 Dan-Yr-Heol	CF44 9EB	Dwelling	51.5	51.0	51.6	53.6	40.4	39.9	40.4	42.3
74 Dan-Yr-Heol	CF44 9EB	Dwelling	49.3	49.1	50.4	52.3	38.4	38.2	39.3	41.1
76 Dan-Yr-Heol	CF44 9EB	Dwelling	52.7	51.6	52.4	54.5	41.4	40.4	41.1	43.0
3 Mangoed	CF44 9EP	Dwelling	52.3	51.3	52.0	53.3	41.0	40.1	40.8	42.0
4 Mangoed	CF44 9EP	Dwelling	49.9	49.9	50.3	51.2	38.9	38.9	39.2	40.0
17 Mangoed	CF44 9EP	Dwelling	54.7	53.7	54.4	55.7	43.2	42.3	42.9	44.1
18 Mangoed	CF44 9EP	Dwelling	54.8	53.7	54.4	55.7	43.3	42.3	42.9	44.1
19 Mangoed	CF44 9EP	Dwelling	54.5	53.4	54.3	55.6	43.0	42.0	42.8	44.0
20 Mangoed	CF44 9EP	Dwelling	53.2	52.2	53.2	54.4	41.9	41.0	41.8	42.9
5 Mangoed	CF44 9ER	Dwelling	54.3	53.3	53.6	54.9	42.9	42.0	42.3	43.4
6 Mangoed	CF44 9ER	Dwelling	55.1	54.2	54.4	55.5	43.6	42.8	42.9	43.9
13 Mangoed	CF44 9ER	Dwelling	53.7	52.8	53.3	54.4	42.3	41.5	41.9	43.0
14 Mangoed	CF44 9ER	Dwelling	53.3	52.4	52.9	54.1	41.9	41.1	41.6	42.7
15 Mangoed	CF44 9ER	Dwelling	54.7	53.7	54.2	55.5	43.2	42.3	42.8	43.9
16 Mangoed	CF44 9ER	Dwelling	52.9	51.9	52.4	53.8	41.6	40.7	41.2	42.4
Education And Youth Centre Mangoed	CF44 9ES	OSR	53.0	51.7	53.0	54.4	41.7	40.5	41.6	42.9
1 Pentwyn Court	CF44 9ET	Dwelling	54.9	53.8	54.5	55.8	43.4	42.4	43.0	44.2
2 Pentwyn Court	CF44 9ET	Dwelling	52.7	51.5	52.5	53.9	41.4	40.3	41.3	42.5
3 Pentwyn Court	CF44 9ET	Dwelling	55.2	54.0	54.7	56.0	43.6	42.6	43.2	44.4
4 Pentwyn Court	CF44 9ET	Dwelling	55.5	54.3	55.1	56.4	44.0	42.9	43.6	44.7
5 Pentwyn Court	CF44 9ET	Dwelling	55.7	54.5	55.2	56.5	44.1	43.0	43.6	44.8
6 Pentwyn Court	CF44 9ET	Dwelling	56.2	55.0	55.8	57.1	44.6	43.5	44.2	45.4
7 Pentwyn Court	CF44 9ET	Dwelling	56.1	54.8	55.7	57.0	44.5	43.3	44.1	45.3
8 Pentwyn Court	CF44 9ET	Dwelling	55.5	54.2	55.1	56.5	44.0	42.8	43.6	44.8
9 Pentwyn Court	CF44 9ET	Dwelling	55.9	54.7	55.6	56.9	44.3	43.2	44.0	45.2
10 Pentwyn Court	CF44 9ET	Dwelling	55.5	54.2	55.0	56.4	44.0	42.8	43.5	44.7
11 Pentwyn Court	CF44 9ET	Dwelling	51.3	50.7	51.4	52.5	40.2	39.6	40.2	41.2
12 Pentwyn Court	CF44 9ET	Dwelling	55.9	54.6	55.3	56.6	44.3	43.2	43.7	44.9
13 Pentwyn Court	CF44 9ET	Dwelling	55.4	54.0	54.8	56.2	43.8	42.6	43.3	44.5
14 Pentwyn Court	CF44 9ET	Dwelling	55.3	53.9	54.7	56.1	43.7	42.5	43.3	44.5
15 Pentwyn Court	CF44 9ET	Dwelling	50.6	49.8	50.8	51.9	39.5	38.8	39.7	40.7
16 Pentwyn Court	CF44 9ET	Dwelling	55.2	53.9	54.6	56.0	43.7	42.5	43.1	44.4
17 Pentwyn Court	CF44 9ET	Dwelling	55.1	53.8	54.6	55.9	43.6	42.4	43.1	44.3
18 Pentwyn Court	CF44 9ET	Dwelling	55.6	54.4	55.0	56.4	44.0	42.9	43.5	44.7
19 Pentwyn Court	CF44 9ET	Dwelling	55.1	53.8	54.5	55.9	43.6	42.4	43.0	44.3
20 Pentwyn Court	CF44 9ET	Dwelling	55.1	53.8	54.5	55.9	43.6	42.4	43.0	44.3
21 Pentwyn Court	CF44 9ET	Dwelling	55.6	54.4	54.9	56.3	44.0	43.0	43.4	44.6
22 Pentwyn Court	CF44 9ET	Dwelling	51.4	50.9	51.2	52.5	40.2	39.8	40.0	41.2
24 Pentwyn Court	CF44 9ET	Dwelling	51.9	50.9	51.3	52.7	40.7	39.8	40.1	41.4
25 Pentwyn Court	CF44 9ET	Dwelling	49.7	48.7	49.8	51.4	38.7	37.9	38.8	40.2
27 Pentwyn Court	CF44 9ET	Dwelling	53.4	52.4	53.1	54.5	42.1	41.1	41.8	43.0
30 Pentwyn Court	CF44 9ET	Dwelling	49.8	48.8	49.2	50.8	38.8	37.9	38.3	39.7
31 Pentwyn Court	CF44 9ET	Dwelling	52.1	51.7	52.1	53.1	40.9	40.5	40.9	41.7
33 Pentwyn Court	CF44 9ET	Dwelling	54.1	53.1	53.6	54.9	42.7	41.8	42.3	43.4
31 Heol Bryn Gwyn	CF44 9EU	Dwelling	51.8	50.6	51.6	53.0	40.6	39.5	40.4	41.7
32 Heol Bryn Gwyn	CF44 9EU	Dwelling	52.0	51.2	51.7	52.8	40.8	40.1	40.5	41.5
33 Heol Bryn Gwyn	CF44 9EU	Dwelling	51.7	50.9	51.4	52.6	40.5	39.8	40.3	41.3
34 Heol Bryn Gwyn	CF44 9EU	Dwelling	51.7	51.0	51.4	52.6	40.5	39.9	40.3	41.3
35 Heol Bryn Gwyn	CF44 9EU	Dwelling	51.1	50.7	51.3	52.4	40.0	39.6	40.2	41.1
36 Heol Bryn Gwyn	CF44 9EU	Dwelling	50.8	50.3	51.1	52.2	39.7	39.3	39.9	41.0
37 Heol Bryn Gwyn	CF44 9EU	Dwelling	50.6	50.1	50.8	52.0	39.5	39.1	39.7	40.8
38 Heol Bryn Gwyn	CF44 9EU	Dwelling	50.5	50.1	50.7	52.0	39.4	39.0	39.6	40.7
39 Heol Bryn Gwyn	CF44 9EU	Dwelling	49.8	49.4	50.1	51.3	38.8	38.5	39.1	40.2
40 Heol Bryn Gwyn	CF44 9EU	Dwelling	48.6	48.5	48.7	49.9	37.7	37.6	37.8	38.9
41 Heol Bryn Gwyn	CF44 9EU	Dwelling	53.1	52.6	53.0	54.1	41.8	41.3	41.7	42.6
42 Heol Bryn Gwyn	CF44 9EU	Dwelling	50.2	49.6	50.6	51.6	39.2	38.6	39.5	40.5
43 Heol Bryn Gwyn	CF44 9EU	Dwelling	52.3	52.0	52.1	53.0	41.0	40.8	40.9	41.7
Ty Ysgol Lawrence Avenue	CF44 9EW	Dwelling	50.3	49.8	50.6	51.6	39.2	38.8	39.5	40.4
7 Lawrence Avenue	CF44 9EW	Dwelling	49.8	49.2	49.9	51.5	38.8	38.2	38.9	40.3
8 Lawrence Avenue	CF44 9EW	Dwelling	48.8	47.8	48.2	49.5	37.9	37.0	37.4	38.5
9 Lawrence Avenue	CF44 9EW	Dwelling	48.5	47.7	48.1	49.7	37.7	36.9	37.3	38.7
10 Lawrence Avenue	CF44 9EW	Dwelling	49.9	49.2	49.7	51.2	38.9	38.2	38.7	40.0
11 Lawrence Avenue	CF44 9EW	Dwelling	50.5	49.7	50.3	51.8	39.4	38.7	39.2	40.6
12 Lawrence Avenue	CF44 9EW	Dwelling	49.2	48.1	48.7	49.9	38.3	37.3	37.8	38.9
13 Lawrence Avenue	CF44 9EW	Dwelling	46.9	46.1	47.0	48.1	36.2	35.4	36.3	37.3
14 Lawrence Avenue	CF44 9EW	Dwelling	50.9	50.0	50.6	51.9	39.8	39.0	39.5	40.7
15 Lawrence Avenue	CF44 9EW	Dwelling	49.0	47.9	49.1	50.7	38.1	37.1	38.2	39.6
16 Lawrence Avenue	CF44 9EW	Dwelling	51.1	50.2	50.5	51.8	40.0	39.2	39.4	40.6
17 Lawrence Avenue	CF44 9EW	Dwelling	49.4	48.3	49.4	51.0	38.5	37.5	38.4	39.9
18 Lawrence Avenue	CF44 9EW	Dwelling	53.1	52.0	52.6	54.0	41.8	40.8	41.3	42.6
19 Lawrence Avenue	CF44 9EW	Dwelling	52.6	51.6	52.2	53.6	41.4	40.4	41.0	42.2
20 Lawrence Avenue	CF44 9EW	Dwelling	52.4	51.4	51.9	53.3	41.1	40.2	40.7	41.9
21 Lawrence Avenue	CF44 9EW	Dwelling	54.0	52.8	53.2	54.5	42.5	41.5	41.8	43.0
22 Lawrence Avenue	CF44 9EW	Dwelling	55.2	54.2	54.3	55.5	43.7	42.8	42.8	43.9
1 Heol Bryn Gwyn	CF44 9EY	Dwelling	50.1	50.1	50.4	51.6	39.1	39.1	39.3	40.4
2 Heol Bryn Gwyn	CF44 9EY	Dwelling	53.6	52.5	52.9	54.3	42.2	41.3	41.6	42.8
3 Heol Bryn Gwyn	CF44 9EY	Dwelling	53.6	52.6	52.9	54.3	42.3	41.3	41.6	42.9
4 Heol Bryn Gwyn	CF44 9EY	Dwelling	53.2	52.3	52.7	54.1	41.9	41.0	41.4	42.7
5 Heol Bryn Gwyn	CF44 9EY	Dwelling	50.0	49.5	49.8	50.8	39.0	38.5	38.8	39.7
6 Heol Bryn Gwyn	CF44 9EY	Dwelling	52.6	51.4	51.0	52.6	41.3	40.2	39.9	41.3
7 Heol Bryn Gwyn	CF44 9EY	Dwelling	52.1	50.9	50.7	52.2	40.9	39.8	39.6	40.9
8 Heol Bryn Gwyn	CF44 9EY	Dwelling	54.8	53.7	53.2	54.7	43.3	42.3	41.9	43.2
9 Heol Bryn Gwyn	CF44 9EY	Dwelling	49.9	49.0	49.7	51.4	38.9	38.1	38.7	40.2
10 Heol Bryn Gwyn	CF44 9EY	Dwelling	51.3	50.7	51.0	52.2	40.2	39.6	39.8	40.9
11 Heol Bryn Gwyn	CF44 9EY	Dwelling	51.8	50.7	51.3	52.7	40.6	39.6	40.1	41.4
12 Heol Bryn Gwyn	CF44 9EY	Dwelling	52.2	51.0	51.7	53.2	40.9	39.9	40.5	41.8
13 Heol Bryn Gwyn	CF44 9EY	Dwelling	52.5	51.4	51.9	53.4	41.3	40.2	40.7	42.1
14 Heol Bryn Gwyn	CF44 9EY	Dwelling	52.1	50.9	51.7	53.2	40.8	39.8	40.5	41.8
15 Heol Bryn Gwyn	CF44 9EY	Dwelling	55.0	53.9	53.8	55.1	43.5	42.5	42.4	43.6
16 Heol Bryn Gwyn	CF44 9EY	Dwelling	52.0	50.8	51.9	53.5	40.8	39.7	40.7	42.1

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
17 Heol Bryn Gwyn	CF44 9EY	Dwelling	52.6	51.4	52.3	53.8	41.3	40.3	41.1	42.4
18 Heol Bryn Gwyn	CF44 9EY	Dwelling	52.7	51.4	52.0	53.5	41.4	40.3	40.8	42.2
19 Heol Bryn Gwyn	CF44 9EY	Dwelling	52.0	50.7	51.7	53.2	40.7	39.6	40.5	41.9
20 Heol Bryn Gwyn	CF44 9EY	Dwelling	53.2	52.0	52.1	53.6	41.8	40.8	40.9	42.2
21 Heol Bryn Gwyn	CF44 9EY	Dwelling	51.9	50.8	51.8	53.3	40.7	39.7	40.6	41.9
22 Heol Bryn Gwyn	CF44 9EY	Dwelling	51.9	50.8	51.6	53.1	40.7	39.7	40.4	41.7
23 Heol Bryn Gwyn	CF44 9EY	Dwelling	51.2	50.1	50.9	52.4	40.1	39.1	39.8	41.1
24 Heol Bryn Gwyn	CF44 9EY	Dwelling	51.3	50.2	51.1	52.6	40.2	39.1	40.0	41.3
25 Heol Bryn Gwyn	CF44 9EY	Dwelling	51.2	50.1	50.7	52.1	40.1	39.0	39.6	40.9
26 Heol Bryn Gwyn	CF44 9EY	Dwelling	49.8	49.2	49.8	51.1	38.8	38.2	38.8	40.0
27 Heol Bryn Gwyn	CF44 9EY	Dwelling	52.5	51.3	52.0	53.4	41.2	40.2	40.8	42.1
28 Heol Bryn Gwyn	CF44 9EY	Dwelling	54.8	53.7	54.1	55.5	43.3	42.3	42.7	43.9
29 Heol Bryn Gwyn	CF44 9EY	Dwelling	52.7	51.5	52.1	53.5	41.4	40.3	40.9	42.1
30 Heol Bryn Gwyn	CF44 9EY	Dwelling	52.6	51.6	52.3	53.4	41.3	40.5	41.1	42.1
1 Bryn Gwyn Close	CF44 9HA	Dwelling	51.0	49.9	51.1	52.8	39.8	38.9	40.0	41.5
2 Bryn Gwyn Close	CF44 9HA	Dwelling	53.7	52.5	53.1	54.6	42.3	41.3	41.8	43.1
3 Bryn Gwyn Close	CF44 9HA	Dwelling	53.7	52.6	53.1	54.6	42.3	41.3	41.8	43.1
4 Bryn Gwyn Close	CF44 9HA	Dwelling	53.4	52.2	52.8	54.2	42.0	41.0	41.5	42.8
5 Bryn Gwyn Close	CF44 9HA	Dwelling	52.2	51.2	51.8	53.3	41.0	40.1	40.6	41.9
6 Bryn Gwyn Close	CF44 9HA	Dwelling	53.1	52.0	52.6	54.0	41.8	40.7	41.3	42.6
7 Bryn Gwyn Close	CF44 9HA	Dwelling	51.3	50.6	50.4	51.8	40.1	39.5	39.4	40.6
8 Bryn Gwyn Close	CF44 9HA	Dwelling	51.5	50.4	50.7	52.2	40.3	39.4	39.6	41.0
9 Bryn Gwyn Close	CF44 9HA	Dwelling	50.5	49.7	49.6	51.1	39.4	38.7	38.6	39.9
10 Bryn Gwyn Close	CF44 9HA	Dwelling	50.8	50.0	50.2	51.7	39.7	39.0	39.1	40.5
11 Bryn Gwyn Close	CF44 9HA	Dwelling	51.9	51.1	51.4	52.8	40.7	39.9	40.3	41.5
12 Bryn Gwyn Close	CF44 9HA	Dwelling	54.4	53.1	53.9	55.3	42.9	41.8	42.5	43.8
13 Bryn Gwyn Close	CF44 9HA	Dwelling	54.3	53.0	53.8	55.3	42.9	41.7	42.4	43.7
14 Bryn Gwyn Close	CF44 9HA	Dwelling	54.3	53.0	53.8	55.3	42.9	41.7	42.4	43.7
15 Bryn Gwyn Close	CF44 9HA	Dwelling	54.3	53.0	53.8	55.3	42.8	41.7	42.4	43.7
16 Bryn Gwyn Close	CF44 9HA	Dwelling	54.2	52.9	53.7	55.2	42.8	41.6	42.4	43.7
17 Bryn Gwyn Close	CF44 9HA	Dwelling	51.4	50.9	51.5	52.9	40.2	39.8	40.4	41.6
18 Bryn Gwyn Close	CF44 9HA	Dwelling	52.3	51.6	51.6	53.1	41.0	40.4	40.4	41.8
19 Bryn Gwyn Close	CF44 9HA	Dwelling	51.7	51.1	50.9	52.5	40.5	40.0	39.8	41.2
20 Bryn Gwyn Close	CF44 9HA	Dwelling	51.6	51.1	50.6	52.2	40.5	39.9	39.5	41.0
21 Bryn Gwyn Close	CF44 9HA	Dwelling	51.7	51.1	50.4	52.0	40.6	40.0	39.4	40.8
22 Bryn Gwyn Close	CF44 9HA	Dwelling	50.8	49.7	50.1	51.7	39.7	38.7	39.1	40.5
23 Bryn Gwyn Close	CF44 9HA	Dwelling	53.2	52.1	52.5	53.8	41.9	40.9	41.2	42.4
24 Bryn Gwyn Close	CF44 9HA	Dwelling	52.9	51.6	51.8	53.3	41.6	40.4	40.6	41.9
25 Bryn Gwyn Close	CF44 9HA	Dwelling	52.5	51.3	51.7	53.2	41.3	40.1	40.5	41.9
1 Trewaun	CF44 9HN	Dwelling	68.8	69.4	63.6	63.5	55.9	56.4	51.2	51.1
2 Trewaun	CF44 9HN	Dwelling	60.6	61.1	59.9	59.4	48.5	49.0	47.9	47.5
3 Trewaun	CF44 9HN	Dwelling	60.2	60.6	58.3	58.2	48.1	48.5	46.5	46.4
4 Trewaun	CF44 9HN	Dwelling	60.6	61.2	60.1	59.6	48.6	49.1	48.1	47.6
5 Trewaun	CF44 9HN	Dwelling	59.4	59.8	58.1	57.8	47.4	47.8	46.3	46.0
6 Trewaun	CF44 9HN	Dwelling	52.8	53.1	50.9	51.6	41.5	41.8	39.8	40.5
7 Trewaun	CF44 9HN	Dwelling	60.6	61.3	60.5	59.9	48.5	49.1	48.5	47.9
8 Trewaun	CF44 9HN	Dwelling	59.9	60.0	58.3	59.0	47.9	47.9	46.4	47.0
9 Trewaun	CF44 9HN	Dwelling	68.6	68.8	68.8	69.9	55.7	55.9	55.9	56.9
10 Trewaun	CF44 9HN	Dwelling	59.4	59.4	58.0	58.6	47.4	47.4	46.2	46.7
11 Trewaun	CF44 9HN	Dwelling	58.8	58.7	57.9	58.5	46.9	46.8	46.1	46.6
12 Trewaun	CF44 9HN	Dwelling	64.0	64.7	62.6	61.9	51.6	52.2	50.3	49.7
13 Trewaun	CF44 9HN	Dwelling	66.0	66.7	64.6	63.9	53.4	54.0	52.1	51.5
14 Trewaun	CF44 9HN	Dwelling	50.8	51.2	50.3	50.8	39.7	40.0	39.2	39.7
15 Trewaun	CF44 9HN	Dwelling	59.7	60.4	59.6	58.9	47.7	48.3	47.6	47.0
16 Trewaun	CF44 9HN	Dwelling	62.1	62.8	61.6	60.9	49.9	50.5	49.5	48.8
17 Trewaun	CF44 9HN	Dwelling	60.6	61.3	60.0	59.3	48.6	49.2	48.0	47.4
18 Trewaun	CF44 9HN	Dwelling	64.8	65.5	64.3	63.6	52.3	53.0	51.9	51.2
Birchwood Bungalows 1 Birchwood Bungalows Hirwaun Road	CF44 9HP	Dwelling	48.6	49.2	48.2	47.9	37.7	38.3	37.4	37.1
Birchwood Bungalows 2 Birchwood Bungalows Hirwaun Road	CF44 9HP	Dwelling	49.0	49.6	48.8	48.7	38.1	38.6	37.9	37.8
Dunromin Dunromin Steam Coal Lane	CF44 9HP	Dwelling	45.6	46.1	45.7	45.7	35.0	35.5	35.1	35.1
Fair View Bungalow Fair View Bungalow Steam Coal Lane	CF44 9HP	Dwelling	52.5	52.2	51.8	52.4	41.2	40.9	40.6	41.1
Mountain View Bungalow Mountain View Bungalow Steam Coal Lane	CF44 9HP	Dwelling	45.8	46.1	47.1	47.6	35.2	35.5	36.3	36.8
Roseville Bungalow Roseville Bungalow Hirwaun Road	CF44 9HP	Dwelling	59.6	60.2	59.2	58.5	47.6	48.2	47.2	46.7
Roseville Nurseries Hirwaun Road	CF44 9HP	OSR	47.5	48.1	48.2	48.6	36.7	37.2	37.4	37.7
Windy Ridge Windy Ridge Steam Coal Lane	CF44 9HP	Dwelling	44.3	44.2	46.2	47.0	33.8	33.7	35.5	36.3
Mountain View 1 Mountain View Hirwaun Road	CF44 9HR	Dwelling	68.4	69.1	67.9	67.1	55.5	56.1	55.1	54.4
Mountain View 2 Mountain View Hirwaun Road	CF44 9HR	Dwelling	58.4	59.1	58.0	57.5	46.6	47.2	46.2	45.7
Abishua Abishua Hirwaun Road	CF44 9HR	Dwelling	48.7	49.3	48.4	48.2	37.9	38.4	37.5	37.4
Cartref Bungalow Cartref Hirwaun Road	CF44 9HR	Dwelling	52.7	53.4	52.3	51.7	41.4	42.0	41.0	40.5
Emmerdale Emmerdale House Hirwaun Road	CF44 9HR	Dwelling	49.1	49.6	48.8	48.6	38.2	38.7	37.9	37.8
Enniskerry Enniskerry Hirwaun Road	CF44 9HR	Dwelling	56.1	56.8	55.7	55.0	44.5	45.1	44.1	43.5
Fairhaven Fairhaven Hirwaun Road	CF44 9HR	Dwelling	51.0	51.5	50.7	50.4	39.9	40.4	39.6	39.4
Lyndene Lyndene Hirwaun Road	CF44 9HR	Dwelling	62.6	63.2	62.2	61.5	50.4	50.9	49.9	49.4
Lynton Lynton Hirwaun Road	CF44 9HR	Dwelling	57.5	58.2	57.1	56.4	45.8	46.3	45.3	44.7
Preswylfa Preswylfa Hirwaun Road	CF44 9HR	Dwelling	50.8	51.4	50.4	50.0	39.7	40.2	39.3	39.0
Rosewood Rosewood Hirwaun Road	CF44 9HR	Dwelling	66.7	67.4	66.2	65.5	54.0	54.6	53.6	52.9
Waungron Waungron Hirwaun Road	CF44 9HR	Dwelling	57.8	58.5	60.4	60.7	46.0	46.7	48.3	48.6
Woodlands Woodlands Hirwaun Road	CF44 9HR	Dwelling	67.0	67.7	66.5	65.8	54.3	54.9	53.8	53.2
Ambleside Ambleside Hirwaun Road	CF44 9HW	Dwelling	68.1	68.8	67.7	66.9	55.3	55.9	54.9	54.2
Glannant Glannant Hirwaun Road	CF44 9HW	Dwelling	56.0	56.1	55.4	55.7	44.4	44.4	43.9	44.1
Heulwen Heulwen Hirwaun Road	CF44 9HW	Dwelling	64.7	65.4	64.3	63.6	52.2	52.9	51.9	51.2
25A Montana Park	CF44 9HY	Dwelling	59.6	60.1	59.3	58.9	47.6	48.0	47.3	47.0
30A Montana Park	CF44 9HY	Dwelling	54.6	54.4	54.3	55.0	43.1	42.9	42.9	43.5
Brynrhos Flat 2 Montana Park	CF44 9HY	Dwelling	55.2	54.9	54.9	55.8	43.6	43.4	43.4	44.2
Brynrhos Flat 3 Montana Park	CF44 9HY	Dwelling	54.4	54.3	54.7	55.5	43.0	42.8	43.2	44.0
The Bungalow Montana Park The Bungalow Montana Park	CF44 9HY	Dwelling	55.1	55.3	55.3	55.9	43.6	43.7	43.7	44.2
1 Montana Park	CF44 9HY	Dwelling	53.1	53.1	52.4	52.9	41.7	41.7	41.1	41.6
2 Montana Park	CF44 9HY	Dwelling	60.9	61.4	60.5	60.1	48.8	49.2	48.4	48.0
3 Montana Park	CF44 9HY	Dwelling	52.4	52.6	52.1	52.5	41.1	41.3	40.8	41.2
4 Montana Park	CF44 9HY	Dwelling	62.6	63.3	62.2	61.4	50.3	50.9	49.9	49.3
5 Montana Park	CF44 9HY	Dwelling	69.7	70.4	69.2	68.3	56.7	57.4	56.2	55.5
10 Montana Park	CF44 9HY	Dwelling	51.8	52.3	51.4	51.5	40.6	41.0	40.3	40.3
11 Montana Park	CF44 9HY	Dwelling	51.9	52.2	51.6	51.9	40.7	40.9	40.4	40.7
12 Montana Park	CF44 9HY	Dwelling	54.4	53.9	54.2	55.0	42.9	42.5	42.7	43.5
14 Montana Park	CF44 9HY	Dwelling	54.9	54.6	54.9	55.8	43.4	43.1	43.4	44.2
15 Montana Park	CF44 9HY	Dwelling	58.3	58.1	57.3	58.2	46.5	46.3	45.5	46.4
16 Montana Park	CF44 9HY	Dwelling	56.0	55.5	55.8	56.6	44.4	44.0	44.2	44.9
17 Montana Park	CF44 9HY	Dwelling	53.7	53.5	53.8	54.4	42.3	42.2	42.4	43.0
Innesfree 18 Montana Park	CF44 9HY	Dwelling	53.6	54.0	53.1	53.4	42.2	42.5	41.8	42.0
19 Montana Park	CF44 9HY	Dwelling	53.8	53.3	53.9	54.6	42.4	42.0	42.5	43.1
20 Montana Park	CF44 9HY	Dwelling	52.8	52.6	52.3	53.1	41.5	41.4	41.1	41.8
21 Montana Park	CF44 9HY	Dwelling	52.5	52.2	52.8	53.4	41.2	41.0	41.5	42.0
22 Montana Park	CF44 9HY	Dwelling	54.4	55.0	54.0	53.7	42.9	43.5	42.6	42.3
23 Montana Park	CF44 9HY	Dwelling	53.8	54.3	54.3	54.2	42.4	42.9	42.8	42.8
24 Montana Park	CF44 9HY	Dwelling	53.1	53.6	53.5	53.5	41.7	42.3	42.2	42.1
25 Montana Park	CF44 9HY	Dwelling	57.4	57.3	57.4	57.9	45.7	45.5	45.6	46.1
26 Montana Park	CF44 9HY	Dwelling	62.1	62.8	61.7	60.9	49.9	50.5	49.5	48.8

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
27 Montana Park	CF44 9HY	Dwelling	50.0	50.3	49.4	49.8	39.0	39.3	38.5	38.8
28 Montana Park	CF44 9HY	Dwelling	49.6	49.8	49.0	49.5	38.6	38.8	38.1	38.5
29 Montana Park	CF44 9HY	Dwelling	54.4	54.2	54.1	54.8	43.0	42.8	42.6	43.3
30 Montana Park	CF44 9HY	Dwelling	53.4	53.5	53.2	53.9	42.0	42.1	41.9	42.5
31 Montana Park	CF44 9HY	Dwelling	55.3	55.1	54.7	55.4	43.7	43.6	43.2	43.9
32 Montana Park	CF44 9HY	Dwelling	54.4	54.3	53.9	54.5	42.9	42.9	42.5	43.0
33 Montana Park	CF44 9HY	Dwelling	54.9	54.9	54.2	54.8	43.4	43.4	42.8	43.3
34 Montana Park	CF44 9HY	Dwelling	55.8	55.7	55.1	55.6	44.2	44.1	43.6	44.0
35 Montana Park	CF44 9HY	Dwelling	71.6	72.3	71.1	70.3	58.4	59.1	58.0	57.2
1 Trenant	CF44 9LA	Dwelling	69.3	70.0	68.8	68.0	56.4	57.0	55.9	55.2
2 Trenant	CF44 9LA	Dwelling	70.0	70.7	69.5	68.7	57.0	57.7	56.6	55.8
3 Trenant	CF44 9LA	Dwelling	54.5	54.1	54.0	54.7	43.0	42.7	42.6	43.2
4 Trenant	CF44 9LA	Dwelling	53.8	53.5	53.3	54.0	42.4	42.1	42.0	42.6
5 Trenant	CF44 9LA	Dwelling	56.7	56.6	56.1	56.5	45.0	44.9	44.5	44.8
6 Trenant	CF44 9LA	Dwelling	56.6	56.6	56.0	56.3	44.9	44.9	44.3	44.6
13 Trenant	CF44 9LA	Dwelling	53.5	53.3	53.3	53.8	42.2	42.0	42.0	42.4
14 Trenant	CF44 9LA	Dwelling	50.7	50.9	50.9	51.4	39.6	39.8	39.8	40.2
15 Trenant	CF44 9LA	Dwelling	53.8	53.7	53.7	54.1	42.4	42.3	42.3	42.6
16 Trenant	CF44 9LA	Dwelling	51.3	51.0	51.2	51.9	40.1	39.9	40.1	40.7
17 Trenant	CF44 9LA	Dwelling	55.8	55.7	55.6	56.0	44.2	44.1	44.0	44.4
18 Trenant	CF44 9LA	Dwelling	53.2	53.1	53.1	53.5	41.8	41.8	41.8	42.1
19 Trenant	CF44 9LA	Dwelling	55.8	55.7	55.6	56.2	44.2	44.1	44.1	44.5
20 Trenant	CF44 9LA	Dwelling	55.0	54.7	54.7	55.5	43.5	43.2	43.2	43.9
21 Trenant	CF44 9LA	Dwelling	54.9	54.8	54.8	55.3	43.4	43.3	43.3	43.8
22 Trenant	CF44 9LA	Dwelling	55.1	55.0	55.0	55.6	43.5	43.4	43.5	44.0
23 Trenant	CF44 9LA	Dwelling	55.1	55.0	54.9	55.5	43.6	43.5	43.4	44.0
24 Trenant	CF44 9LA	Dwelling	54.5	54.5	54.4	55.1	43.1	43.0	43.0	43.6
25 Trenant	CF44 9LA	Dwelling	54.5	54.5	54.2	55.0	43.0	43.0	42.7	43.4
26 Trenant	CF44 9LA	Dwelling	54.8	54.4	55.2	56.2	43.3	42.9	43.7	44.5
27 Trenant	CF44 9LA	Dwelling	53.1	52.8	53.8	54.6	41.8	41.5	42.4	43.1
28 Trenant	CF44 9LA	Dwelling	55.2	55.0	55.2	56.2	43.6	43.4	43.7	44.5
29 Trenant	CF44 9LA	Dwelling	53.3	53.3	53.8	54.4	42.0	42.0	42.4	43.0
30 Trenant	CF44 9LA	Dwelling	53.0	52.8	52.7	53.6	41.7	41.5	41.4	42.2
31 Trenant	CF44 9LA	Dwelling	55.9	55.5	55.9	56.7	44.3	43.9	44.3	45.0
32 Trenant	CF44 9LA	Dwelling	55.0	54.7	54.4	55.5	43.5	43.2	43.0	43.9
33 Trenant	CF44 9LA	Dwelling	54.2	54.3	53.8	54.7	42.8	42.8	42.4	43.2
34 Trenant	CF44 9LA	Dwelling	49.1	49.5	48.8	49.3	38.2	38.5	37.9	38.4
35 Trenant	CF44 9LA	Dwelling	50.1	50.4	49.9	50.6	39.1	39.3	38.9	39.5
36 Trenant	CF44 9LA	Dwelling	51.8	52.1	50.7	51.5	40.6	40.9	39.6	40.4
37 Trenant	CF44 9LA	Dwelling	53.2	53.4	52.5	53.3	41.8	42.1	41.2	41.9
38 Trenant	CF44 9LA	Dwelling	53.4	53.6	52.5	53.4	42.1	42.2	41.2	42.0
39 Trenant	CF44 9LA	Dwelling	53.3	53.3	53.3	54.1	42.0	42.0	42.0	42.7
40 Trenant	CF44 9LA	Dwelling	52.4	52.6	51.5	52.5	41.2	41.4	40.3	41.2
41 Trenant	CF44 9LA	Dwelling	51.7	51.9	51.2	52.2	40.5	40.7	40.1	41.0
42 Trenant	CF44 9LA	Dwelling	51.9	52.1	51.4	52.4	40.7	40.8	40.2	41.1
43 Trenant	CF44 9LA	Dwelling	51.1	51.2	50.8	51.7	40.0	40.1	39.7	40.5
44 Trenant	CF44 9LA	Dwelling	50.8	51.0	50.5	51.5	39.7	39.9	39.5	40.3
45 Trenant	CF44 9LA	Dwelling	53.9	54.1	53.6	54.5	42.5	42.7	42.2	43.0
46 Trenant	CF44 9LA	Dwelling	53.8	54.0	53.5	54.4	42.4	42.6	42.1	42.9
47 Trenant	CF44 9LA	Dwelling	64.6	64.7	64.0	65.2	52.1	52.2	51.6	52.6
48 Trenant	CF44 9LA	Dwelling	64.0	64.1	63.5	64.7	51.6	51.6	51.1	52.2
49 Trenant	CF44 9LA	Dwelling	64.6	64.7	64.0	65.2	52.1	52.2	51.6	52.6
50 Trenant	CF44 9LA	Dwelling	62.1	62.0	61.9	63.1	49.8	49.8	49.7	50.7
51 Trenant	CF44 9LA	Dwelling	64.1	64.2	63.5	64.7	51.7	51.7	51.1	52.2
52 Trenant	CF44 9LA	Dwelling	61.5	61.4	61.4	62.5	49.3	49.2	49.2	50.3
53 Trenant	CF44 9LA	Dwelling	63.5	63.5	63.0	64.2	51.1	51.2	50.7	51.7
54 Trenant	CF44 9LA	Dwelling	60.9	60.7	60.8	62.0	48.8	48.6	48.7	49.8
55 Trenant	CF44 9LA	Dwelling	61.1	61.4	60.7	61.9	49.0	49.3	48.6	49.7
56 Trenant	CF44 9LA	Dwelling	58.2	58.4	58.8	59.9	46.4	46.6	46.9	47.9
57 Trenant	CF44 9LA	Dwelling	60.2	60.5	60.1	61.3	48.1	48.4	48.1	49.1
58 Trenant	CF44 9LA	Dwelling	54.1	54.3	55.1	56.2	42.6	42.9	43.6	44.5
59 Trenant	CF44 9LA	Dwelling	57.7	57.9	57.9	59.1	45.9	46.1	46.1	47.1
60 Trenant	CF44 9LA	Dwelling	52.4	52.7	53.3	54.4	41.1	41.4	42.0	42.9
61 Trenant	CF44 9LA	Dwelling	59.0	59.3	59.2	60.3	47.1	47.3	47.2	48.2
62 Trenant	CF44 9LA	Dwelling	57.6	57.4	57.8	58.9	45.8	45.7	46.0	47.0
63 Trenant	CF44 9LA	Dwelling	58.4	58.7	58.1	59.2	46.6	46.8	46.3	47.3
64 Trenant	CF44 9LA	Dwelling	51.4	51.5	53.0	54.0	40.2	40.3	41.7	42.6
65 Trenant	CF44 9LA	Dwelling	53.0	53.2	54.1	55.2	41.7	41.9	42.7	43.7
66 Trenant	CF44 9LA	Dwelling	50.7	50.7	52.6	53.6	39.6	39.6	41.3	42.2
67 Trenant	CF44 9LA	Dwelling	53.3	53.6	54.3	55.4	42.0	42.2	42.9	43.8
68 Trenant	CF44 9LA	Dwelling	57.4	56.4	57.5	58.7	45.6	44.8	45.8	46.8
97 Trenant	CF44 9LB	Dwelling	54.7	54.3	54.5	55.3	43.2	42.8	43.1	43.8
98 Trenant	CF44 9LB	Dwelling	54.9	54.5	54.9	55.8	43.4	43.0	43.4	44.2
99 Trenant	CF44 9LB	Dwelling	50.2	50.0	50.3	51.1	39.2	39.0	39.3	40.0
100 Trenant	CF44 9LB	Dwelling	54.6	54.1	54.6	55.5	43.1	42.7	43.1	44.0
101 Trenant	CF44 9LB	Dwelling	51.8	51.2	52.9	53.8	40.6	40.0	41.6	42.4
102 Trenant	CF44 9LB	Dwelling	50.2	49.9	50.7	51.7	39.2	38.9	39.6	40.5
103 Trenant	CF44 9LB	Dwelling	54.7	54.2	54.7	55.7	43.2	42.8	43.2	44.1
104 Trenant	CF44 9LB	Dwelling	51.8	51.9	51.9	53.0	40.6	40.7	40.7	41.7
105 Trenant	CF44 9LB	Dwelling	55.1	54.9	54.9	55.9	43.5	43.4	43.4	44.3
106 Trenant	CF44 9LB	Dwelling	54.6	54.7	54.2	55.2	43.1	43.2	42.8	43.7
107 Trenant	CF44 9LB	Dwelling	56.7	56.3	56.7	57.7	45.0	44.7	45.0	45.9
108 Trenant	CF44 9LB	Dwelling	56.0	55.9	55.8	56.9	44.4	44.3	44.2	45.2
109 Trenant	CF44 9LB	Dwelling	56.9	56.2	57.1	58.2	45.2	44.6	45.4	46.3
110 Trenant	CF44 9LB	Dwelling	57.8	57.6	57.3	58.5	46.0	45.8	45.6	46.6
111 Trenant	CF44 9LB	Dwelling	58.5	58.2	58.2	59.3	46.6	46.3	46.3	47.3
112 Trenant	CF44 9LB	Dwelling	55.4	55.7	54.6	55.8	43.9	44.1	43.1	44.2
113 Trenant	CF44 9LB	Dwelling	50.1	50.1	50.7	51.7	39.1	39.0	39.6	40.5
114 Trenant	CF44 9LB	Dwelling	57.7	58.0	56.6	57.7	46.0	46.2	44.9	45.9
115 Trenant	CF44 9LB	Dwelling	58.2	58.3	57.4	58.5	46.4	46.4	45.6	46.6
116 Trenant	CF44 9LB	Dwelling	54.5	54.7	53.9	54.9	43.0	43.2	42.5	43.4
117 Trenant	CF44 9LB	Dwelling	54.1	54.2	53.7	54.9	42.7	42.7	42.3	43.4
118 Trenant	CF44 9LB	Dwelling	54.6	54.8	54.0	55.2	43.1	43.3	42.6	43.6
119 Trenant	CF44 9LB	Dwelling	53.2	53.3	52.5	53.7	41.9	42.0	41.3	42.3
120 Trenant	CF44 9LB	Dwelling	55.8	55.7	55.9	56.9	44.2	44.1	44.3	45.2
121 Trenant	CF44 9LB	Dwelling	57.3	56.9	57.0	58.1	45.5	45.2	45.3	46.3
122 Trenant	CF44 9LB	Dwelling	55.9	55.5	55.9	56.8	44.3	43.9	44.3	45.1
123 Trenant	CF44 9LB	Dwelling	55.5	55.1	54.8	55.8	43.9	43.6	43.3	44.2
124 Trenant	CF44 9LB	Dwelling	54.7	54.3	55.0	55.9	43.2	42.9	43.5	44.3
125 Trenant	CF44 9LB	Dwelling	56.8	56.4	56.7	57.8	45.1	44.7	45.0	46.0
126 Trenant	CF44 9LB	Dwelling	51.7	51.6	51.8	53.0	40.5	40.4	40.6	41.7
127 Trenant	CF44 9LB	Dwelling	55.7	55.2	56.0	57.1	44.1	43.7	44.4	45.3
128 Trenant	CF44 9LB	Dwelling	56.0	55.5	56.1	57.2	44.3	43.9	44.5	45.5
129 Trenant	CF44 9LB	Dwelling	55.9	55.5	55.9	56.8	44.3	43.9	44.3	45.1
130 Trenant	CF44 9LB	Dwelling	54.8	54.7	54.5	55.5	43.3	43.2	43.0	43.9
131 Trenant	CF44 9LB	Dwelling	54.9	54.6	54.7	55.7	43.4	43.2	43.2	44.1
132 Trenant	CF44 9LB	Dwelling	55.7	55.5	55.9	56.8	44.1	43.9	44.3	45.1

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
Pentwyn Cynon Farm Pentwyn Cynon Farm Farmhouse Trenant	CF44 9LD	Dwelling	53.2	52.2	53.6	54.7	41.8	40.9	42.2	43.2
7 Trenant	CF44 9LD	Dwelling	68.8	69.5	68.4	67.5	55.9	56.6	55.5	54.7
8 Trenant	CF44 9LD	Dwelling	56.2	56.7	55.8	55.3	44.6	45.0	44.2	43.8
9 Trenant	CF44 9LD	Dwelling	52.5	52.7	51.8	52.2	41.2	41.4	40.6	41.0
10 Trenant	CF44 9LD	Dwelling	57.7	58.4	57.3	56.6	45.9	46.5	45.5	44.9
11 Trenant	CF44 9LD	Dwelling	63.1	63.8	62.7	61.9	50.8	51.4	50.4	49.7
12 Trenant	CF44 9LD	Dwelling	61.6	62.3	61.2	60.3	49.5	50.1	49.0	48.3
69 Trenant	CF44 9LD	Dwelling	59.3	58.7	59.3	60.5	47.4	46.9	47.4	48.4
70 Trenant	CF44 9LD	Dwelling	51.9	51.1	52.6	53.5	40.7	40.0	41.3	42.2
71 Trenant	CF44 9LD	Dwelling	57.3	56.3	57.4	58.5	45.6	44.7	45.6	46.6
72 Trenant	CF44 9LD	Dwelling	56.9	55.8	56.8	57.9	45.2	44.2	45.1	46.1
73 Trenant	CF44 9LD	Dwelling	50.8	50.6	51.6	52.7	39.7	39.5	40.4	41.4
74 Trenant	CF44 9LD	Dwelling	56.7	55.6	56.4	57.5	45.0	44.1	44.8	45.7
75 Trenant	CF44 9LD	Dwelling	56.5	55.5	56.2	57.3	44.8	43.9	44.6	45.5
77 Trenant	CF44 9LD	Dwelling	56.4	55.5	56.1	57.1	44.7	43.9	44.5	45.4
78 Trenant	CF44 9LD	Dwelling	56.1	55.1	55.8	56.7	44.4	43.6	44.2	45.1
79 Trenant	CF44 9LD	Dwelling	54.5	54.1	54.3	55.3	43.0	42.7	42.9	43.7
80 Trenant	CF44 9LD	Dwelling	51.5	51.9	51.3	51.9	40.3	40.7	40.2	40.7
81 Trenant	CF44 9LD	Dwelling	55.5	54.8	54.8	55.8	44.0	43.3	43.3	44.2
82 Trenant	CF44 9LD	Dwelling	55.0	54.3	54.3	55.2	43.5	42.8	42.9	43.6
83 Trenant	CF44 9LD	Dwelling	54.8	54.2	54.0	55.0	43.3	42.8	42.6	43.5
84 Trenant	CF44 9LD	Dwelling	54.4	53.8	53.7	54.5	42.9	42.4	42.3	43.0
85 Trenant	CF44 9LD	Dwelling	54.3	53.9	53.7	54.4	42.9	42.5	42.3	43.0
86 Trenant	CF44 9LD	Dwelling	54.1	53.7	53.5	54.1	42.7	42.3	42.1	42.7
87 Trenant	CF44 9LD	Dwelling	54.7	54.3	53.8	54.7	43.2	42.8	42.4	43.2
88 Trenant	CF44 9LD	Dwelling	51.6	51.5	51.1	51.5	40.5	40.3	40.0	40.3
89 Trenant	CF44 9LD	Dwelling	51.7	51.7	51.3	51.5	40.5	40.5	40.2	40.4
90 Trenant	CF44 9LD	Dwelling	51.6	51.7	51.2	51.4	40.4	40.5	40.1	40.2
91 Trenant	CF44 9LD	Dwelling	52.0	52.2	51.7	51.7	40.8	41.0	40.5	40.5
92 Trenant	CF44 9LD	Dwelling	52.0	52.3	51.7	51.7	40.8	41.0	40.5	40.5
93 Trenant	CF44 9LD	Dwelling	54.4	54.6	53.6	54.0	42.9	43.1	42.2	42.6
94 Trenant	CF44 9LD	Dwelling	54.8	55.2	54.3	54.2	43.3	43.6	42.9	42.8
95 Trenant	CF44 9LD	Dwelling	55.6	55.9	55.1	54.9	44.0	44.3	43.5	43.4
96 Trenant	CF44 9LD	Dwelling	56.5	57.1	56.0	55.7	44.9	45.4	44.3	44.1
Ashgrove Ashgrove Hirwaun Road	CF44 9LE	Dwelling	55.9	56.2	55.5	55.5	44.3	44.6	43.9	43.9
Fair Meadow Fair Meadow Hirwaun Road	CF44 9LE	Dwelling	52.0	51.9	52.1	52.6	40.8	40.7	40.9	41.3
Glaslyn Glas Lyn Golwg Y Mynydd Golwg Y Mynydd	CF44 9LE	Dwelling	53.8	53.7	53.8	54.3	42.4	42.3	42.4	42.9
Gwaun Celyn Gwaun Celyn Golwg Y Mynydd Golwg Y Mynydd	CF44 9LE	Dwelling	54.3	54.8	53.8	53.3	42.9	43.3	42.4	42.0
Heathville Heathville Hirwaun Road	CF44 9LE	Dwelling	70.3	71.0	69.8	69.0	57.3	57.9	56.8	56.1
Hedd Fan Hedd Fan Golwg Y Mynydd Golwg Y Mynydd	CF44 9LE	Dwelling	54.1	54.6	53.6	53.1	42.7	43.2	42.2	41.8
Lamont Lamont Hirwaun Road	CF44 9LE	Dwelling	50.0	50.4	49.5	49.7	39.0	39.3	38.6	38.7
Lorien L'Orien Hirwaun Road	CF44 9LE	Dwelling	51.2	51.1	51.9	52.5	40.0	40.0	40.7	41.3
Maesyrhaf Maesyrhaf Hirwaun Road	CF44 9LE	Dwelling	55.3	55.5	54.9	55.0	43.8	44.0	43.4	43.5
Maes Yr Haul Maesyrhaul Hirwaun Road	CF44 9LE	Dwelling	51.5	51.7	51.0	51.3	40.4	40.5	39.9	40.1
Marjim Marjim Hirwaun Road	CF44 9LE	Dwelling	55.8	56.1	55.5	55.6	44.2	44.5	44.0	44.0
Rivendell Rivendell Hirwaun Road	CF44 9LE	Dwelling	66.4	67.1	65.9	65.1	53.8	54.4	53.3	52.6
Ronlaine Ronlaine Hirwaun Road	CF44 9LE	Dwelling	56.5	56.8	56.2	56.2	44.9	45.1	44.6	44.6
Slade House Slade House Hirwaun Road	CF44 9LE	Dwelling	55.0	55.3	54.7	54.6	43.5	43.7	43.2	43.1
Fernleigh Place 1 Hirwaun Road	CF44 9LF	Dwelling	52.5	51.6	52.5	53.6	41.2	40.4	41.3	42.2
Fernleigh Place 2 Hirwaun Road	CF44 9LF	Dwelling	52.8	51.9	52.7	53.8	41.5	40.7	41.4	42.4
Ty Diwedd Ty Diwedd Gamlyn Terrace	CF44 9LG	Dwelling	54.5	53.8	54.1	55.2	43.0	42.4	42.7	43.6
1 Gamlyn Terrace	CF44 9LG	Dwelling	74.3	75.0	73.8	73.0	60.9	61.5	60.4	59.7
2 Gamlyn Terrace	CF44 9LG	Dwelling	69.0	69.7	68.5	67.7	56.1	56.7	55.7	54.9
3 Gamlyn Terrace	CF44 9LG	Dwelling	51.0	51.6	50.6	50.1	39.9	40.4	39.5	39.0
4 Gamlyn Terrace	CF44 9LG	Dwelling	65.6	66.2	65.1	64.3	53.0	53.6	52.5	51.8
5 Gamlyn Terrace	CF44 9LG	Dwelling	63.4	64.0	62.9	62.1	51.0	51.6	50.6	49.9
6 Gamlyn Terrace	CF44 9LG	Dwelling	60.6	61.3	60.1	59.4	48.6	49.1	48.1	47.5
7 Gamlyn Terrace	CF44 9LG	Dwelling	58.7	59.3	58.2	57.5	46.8	47.3	46.3	45.7
8 Gamlyn Terrace	CF44 9LG	Dwelling	54.2	54.8	53.7	53.1	42.8	43.3	42.3	41.7
9 Gamlyn Terrace	CF44 9LG	Dwelling	53.4	54.0	52.9	52.3	42.0	42.5	41.5	41.0
10 Gamlyn Terrace	CF44 9LG	Dwelling	52.7	53.0	53.0	53.1	41.4	41.7	41.7	41.8
11 Gamlyn Terrace	CF44 9LG	Dwelling	53.2	52.9	53.1	53.8	41.8	41.6	41.7	42.4
12 Gamlyn Terrace	CF44 9LG	Dwelling	58.5	59.2	58.0	57.3	46.6	47.2	46.2	45.6
13 Gamlyn Terrace	CF44 9LG	Dwelling	63.5	64.2	63.1	62.3	51.2	51.8	50.7	50.0
14 Gamlyn Terrace	CF44 9LG	Dwelling	58.6	59.3	58.2	57.5	46.8	47.3	46.3	45.7
15 Gamlyn Terrace	CF44 9LG	Dwelling	67.2	67.9	66.7	65.9	54.5	55.1	54.1	53.3
5 Cymric Close	CF44 9LH	Dwelling	62.3	63.0	61.8	61.1	50.1	50.7	49.6	48.9
6 Cymric Close	CF44 9LH	Dwelling	54.4	53.9	54.2	55.0	43.0	42.5	42.8	43.5
7 Cymric Close	CF44 9LH	Dwelling	53.8	53.0	53.6	54.8	42.4	41.6	42.3	43.3
8 Cymric Close	CF44 9LH	Dwelling	53.8	52.9	53.6	54.7	42.4	41.6	42.2	43.2
9 Cymric Close	CF44 9LH	Dwelling	54.6	54.0	54.2	55.2	43.1	42.5	42.8	43.6
10 Cymric Close	CF44 9LH	Dwelling	54.5	53.7	54.2	55.2	43.0	42.3	42.7	43.7
Springfield Gardens	CF44 9LQ	Dwelling	52.8	52.8	53.0	53.9	41.5	41.5	41.7	42.5
65 Springfield Gardens	CF44 9LQ	Dwelling	51.4	51.0	51.3	52.3	40.2	39.9	40.2	41.0
66 Springfield Gardens	CF44 9LQ	Dwelling	51.5	51.0	51.1	52.0	40.4	39.9	40.0	40.8
67 Springfield Gardens	CF44 9LQ	Dwelling	47.3	46.8	46.9	47.8	36.6	36.1	36.2	37.0
68 Springfield Gardens	CF44 9LQ	Dwelling	51.7	51.1	51.3	52.3	40.5	40.0	40.2	41.0
69 Springfield Gardens	CF44 9LQ	Dwelling	52.3	51.2	51.9	53.0	41.1	40.0	40.6	41.7
70 Springfield Gardens	CF44 9LQ	Dwelling	51.8	51.1	51.3	52.3	40.6	40.0	40.2	41.0
71 Springfield Gardens	CF44 9LQ	Dwelling	50.1	49.0	49.5	50.8	39.0	38.1	38.5	39.7
72 Springfield Gardens	CF44 9LQ	Dwelling	49.8	48.8	49.4	50.7	38.8	37.9	38.4	39.6
73 Springfield Gardens	CF44 9LQ	Dwelling	50.2	49.2	49.7	51.0	39.2	38.3	38.7	39.9
74 Springfield Gardens	CF44 9LQ	Dwelling	50.1	49.2	49.8	51.0	39.1	38.3	38.8	39.9
75 Springfield Gardens	CF44 9LQ	Dwelling	49.7	48.7	49.3	50.5	38.7	37.8	38.3	39.5
76 Springfield Gardens	CF44 9LQ	Dwelling	51.6	50.9	51.1	52.0	40.4	39.8	39.9	40.8
77 Springfield Gardens	CF44 9LQ	Dwelling	51.1	50.4	50.5	51.5	40.0	39.4	39.4	40.3
78 Springfield Gardens	CF44 9LQ	Dwelling	50.8	50.1	50.2	51.2	39.7	39.1	39.1	40.0
79 Springfield Gardens	CF44 9LQ	Dwelling	46.7	45.6	46.1	47.2	36.0	35.0	35.4	36.4
80 Springfield Gardens	CF44 9LQ	Dwelling	56.3	55.3	55.5	56.5	44.6	43.8	43.9	44.8
81 Springfield Gardens	CF44 9LQ	Dwelling	47.0	45.9	46.3	47.5	36.3	35.3	35.7	36.7
82 Springfield Gardens	CF44 9LQ	Dwelling	48.7	47.8	48.2	49.3	37.8	37.0	37.3	38.3
83 Springfield Gardens	CF44 9LQ	Dwelling	46.4	45.2	45.7	47.0	35.8	34.7	35.1	36.2
84 Springfield Gardens	CF44 9LQ	Dwelling	50.0	48.7	49.3	50.6	39.0	37.8	38.4	39.5
85 Springfield Gardens	CF44 9LQ	Dwelling	56.1	55.0	55.6	56.7	44.5	43.4	44.0	45.0
86 Springfield Gardens	CF44 9LQ	Dwelling	48.4	47.2	47.7	48.9	37.6	36.5	36.9	38.0
87 Springfield Gardens	CF44 9LQ	Dwelling	56.3	55.7	55.7	56.9	44.7	44.1	44.1	45.2
88 Springfield Gardens	CF44 9LQ	Dwelling	60.5	60.0	59.6	61.0	48.5	47.9	47.6	48.9
89 Springfield Gardens	CF44 9LQ	Dwelling	58.0	57.3	57.5	58.7	46.2	45.6	45.7	46.8
90 Springfield Gardens	CF44 9LQ	Dwelling	54.0	53.6	53.5	54.9	42.6	42.2	42.1	43.4
91 Springfield Gardens	CF44 9LQ	Dwelling	55.1	54.4	54.1	55.5	43.6	42.9	42.7	43.9
92 Springfield Gardens	CF44 9LQ	Dwelling	56.4	55.6	56.1	57.3	44.7	44.1	44.4	45.5
93 Springfield Gardens	CF44 9LQ	Dwelling	64.1	64.1	62.8	64.9	51.7	51.7	50.5	52.4
94 Springfield Gardens	CF44 9LQ	Dwelling	50.6	49.6	49.7	51.0	39.5	38.6	38.8	39.9
95 Springfield Gardens	CF44 9LQ	Dwelling	54.0	53.3	53.2	54.4	42.6	41.9	41.9	42.9
96 Springfield Gardens	CF44 9LQ	Dwelling	53.3	53.1	52.6	54.0	42.0	41.8	41.4	42.6
97 Springfield Gardens	CF44 9LQ	Dwelling	52.9	52.7	52.8	54.1	41.6	41.4	41.5	42.7
98 Springfield Gardens	CF44 9LQ	Dwelling	63.3	63.1	62.5	64.2	51.0	50.8	50.2	51.7

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
99 Springfield Gardens	CF44 9LQ	Dwelling	47.6	46.6	46.9	48.1	36.9	35.9	36.2	37.3
100 Springfield Gardens	CF44 9LQ	Dwelling	51.3	50.9	50.9	51.8	40.2	39.8	39.8	40.6
101 Springfield Gardens	CF44 9LQ	Dwelling	54.3	53.8	53.8	54.8	42.9	42.4	42.4	43.3
102 Springfield Gardens	CF44 9LQ	Dwelling	58.8	59.4	60.1	60.2	46.9	47.4	48.0	48.2
103 Springfield Gardens	CF44 9LQ	Dwelling	56.2	56.4	56.5	57.0	44.6	44.8	44.8	45.3
104 Springfield Gardens	CF44 9LQ	Dwelling	51.0	50.9	50.9	51.6	39.9	39.8	39.8	40.5
105 Springfield Gardens	CF44 9LQ	Dwelling	55.5	56.5	56.8	56.6	43.9	44.8	45.1	45.0
106 Springfield Gardens	CF44 9LQ	Dwelling	55.2	56.2	56.5	56.4	43.7	44.6	44.9	44.8
107 Springfield Gardens	CF44 9LQ	Dwelling	55.4	56.4	56.7	56.6	43.9	44.8	45.0	44.9
108 Springfield Gardens	CF44 9LQ	Dwelling	51.3	51.9	52.5	52.7	40.2	40.7	41.2	41.4
109 Springfield Gardens	CF44 9LQ	Dwelling	53.0	53.7	54.2	54.3	41.7	42.3	42.8	42.9
110 Springfield Gardens	CF44 9LQ	Dwelling	55.9	56.4	57.0	57.3	44.3	44.7	45.3	45.5
111 Springfield Gardens	CF44 9LQ	Dwelling	59.4	60.3	60.6	60.5	47.4	48.3	48.5	48.4
113 Springfield Gardens	CF44 9LQ	Dwelling	56.9	55.9	56.6	57.6	45.2	44.3	44.9	45.8
114 Springfield Gardens	CF44 9LQ	Dwelling	52.1	51.8	52.1	53.1	40.9	40.6	40.9	41.8
115 Springfield Gardens	CF44 9LQ	Dwelling	56.0	54.9	55.6	56.6	44.4	43.4	44.0	44.9
11 Mangoed	CF44 9LS	Dwelling	54.0	53.7	53.5	54.2	42.6	42.3	42.1	42.7
12 Mangoed	CF44 9LS	Dwelling	53.1	52.4	52.7	53.9	41.8	41.1	41.4	42.5
52A Springfield Gardens	CF44 9LY	Dwelling	54.7	55.7	55.7	55.7	43.2	44.1	44.1	44.1
Marthelen House Marthelen House Springfield Gardens	CF44 9LY	Dwelling	59.3	61.0	61.4	60.7	47.3	48.9	49.2	48.6
1 Springfield Gardens	CF44 9LY	Dwelling	57.1	58.5	58.8	58.3	45.3	46.7	46.9	46.5
2 Springfield Gardens	CF44 9LY	Dwelling	57.2	58.7	58.9	58.4	45.5	46.8	47.0	46.6
3 Springfield Gardens	CF44 9LY	Dwelling	56.9	58.3	58.5	58.1	45.2	46.5	46.6	46.2
4 Springfield Gardens	CF44 9LY	Dwelling	53.0	53.4	53.6	54.1	41.7	42.0	42.2	42.7
5 Springfield Gardens	CF44 9LY	Dwelling	51.8	51.8	52.5	53.2	40.6	40.6	41.2	41.8
6 Springfield Gardens	CF44 9LY	Dwelling	52.4	52.3	52.3	53.2	41.1	41.1	41.0	41.9
7 Springfield Gardens	CF44 9LY	Dwelling	49.2	49.4	49.0	49.9	38.2	38.5	38.1	38.9
8 Springfield Gardens	CF44 9LY	Dwelling	53.3	53.3	53.6	54.6	42.0	42.0	42.2	43.1
9 Springfield Gardens	CF44 9LY	Dwelling	56.0	57.3	57.3	56.9	44.4	45.6	45.5	45.2
10 Springfield Gardens	CF44 9LY	Dwelling	51.3	52.0	52.4	52.7	40.2	40.8	41.1	41.4
11 Springfield Gardens	CF44 9LY	Dwelling	51.4	52.1	52.5	52.8	40.3	40.9	41.2	41.5
12 Springfield Gardens	CF44 9LY	Dwelling	58.3	59.5	59.5	59.3	46.5	47.6	47.5	47.3
13 Springfield Gardens	CF44 9LY	Dwelling	48.2	48.8	49.2	49.6	37.3	37.9	38.2	38.6
14 Springfield Gardens	CF44 9LY	Dwelling	52.3	52.2	52.6	53.5	41.1	41.0	41.3	42.1
15 Springfield Gardens	CF44 9LY	Dwelling	51.9	51.7	52.0	52.9	40.7	40.5	40.8	41.6
16 Springfield Gardens	CF44 9LY	Dwelling	51.0	51.2	51.4	52.3	39.9	40.1	40.2	41.1
17 Springfield Gardens	CF44 9LY	Dwelling	53.1	52.9	53.2	54.2	41.8	41.6	41.9	42.7
18 Springfield Gardens	CF44 9LY	Dwelling	54.2	54.1	54.2	55.1	42.8	42.7	42.7	43.6
19 Springfield Gardens	CF44 9LY	Dwelling	54.5	54.3	54.4	55.4	43.1	42.9	43.0	43.9
20 Springfield Gardens	CF44 9LY	Dwelling	52.4	52.3	52.6	53.5	41.1	41.0	41.3	42.1
21 Springfield Gardens	CF44 9LY	Dwelling	53.6	53.4	53.3	54.3	42.2	42.1	42.0	42.9
22 Springfield Gardens	CF44 9LY	Dwelling	46.6	46.6	46.4	47.4	35.9	35.9	35.7	36.6
23 Springfield Gardens	CF44 9LY	Dwelling	45.7	44.7	45.3	46.4	35.1	34.2	34.7	35.7
24 Springfield Gardens	CF44 9LY	Dwelling	45.3	44.4	44.8	46.0	34.7	33.9	34.3	35.3
25 Springfield Gardens	CF44 9LY	Dwelling	53.0	52.9	53.3	54.2	41.7	41.6	41.9	42.8
26 Springfield Gardens	CF44 9LY	Dwelling	51.6	51.6	52.0	52.9	40.4	40.4	40.8	41.6
35 Springfield Gardens	CF44 9LY	Dwelling	52.2	52.4	52.1	53.0	41.0	41.1	40.9	41.6
36 Springfield Gardens	CF44 9LY	Dwelling	49.1	48.4	48.8	49.9	38.2	37.6	37.9	38.9
37 Springfield Gardens	CF44 9LY	Dwelling	53.0	52.8	52.9	53.9	41.7	41.5	41.6	42.5
38 Springfield Gardens	CF44 9LY	Dwelling	49.6	48.9	49.3	50.3	38.6	38.0	38.4	39.3
39 Springfield Gardens	CF44 9LY	Dwelling	48.4	47.7	48.1	49.2	37.6	36.9	37.3	38.2
40 Springfield Gardens	CF44 9LY	Dwelling	53.5	53.4	53.2	54.2	42.1	42.1	41.9	42.7
41 Springfield Gardens	CF44 9LY	Dwelling	51.1	50.8	50.8	51.8	39.9	39.7	39.7	40.6
42 Springfield Gardens	CF44 9LY	Dwelling	51.5	51.1	51.3	52.2	40.4	40.0	40.2	41.0
43 Springfield Gardens	CF44 9LY	Dwelling	46.4	45.5	46.7	47.7	35.7	35.0	36.0	36.9
44 Springfield Gardens	CF44 9LY	Dwelling	55.3	54.2	54.9	56.0	43.8	42.8	43.4	44.3
45 Springfield Gardens	CF44 9LY	Dwelling	53.1	53.0	53.4	54.3	41.8	41.6	42.0	42.8
46 Springfield Gardens	CF44 9LY	Dwelling	47.3	47.2	47.6	48.5	36.6	36.4	36.8	37.6
47 Springfield Gardens	CF44 9LY	Dwelling	50.0	48.7	49.5	50.7	39.0	37.8	38.5	39.6
48 Springfield Gardens	CF44 9LY	Dwelling	54.4	53.4	53.9	54.9	42.9	42.0	42.5	43.4
49 Springfield Gardens	CF44 9LY	Dwelling	55.2	54.2	54.9	55.9	43.6	42.8	43.4	44.3
50 Springfield Gardens	CF44 9LY	Dwelling	54.5	53.6	54.1	55.1	43.1	42.2	42.7	43.5
51 Springfield Gardens	CF44 9LY	Dwelling	52.6	52.5	53.0	53.7	41.3	41.2	41.7	42.3
52 Springfield Gardens	CF44 9LY	Dwelling	51.9	52.5	53.2	53.7	40.7	41.2	41.8	42.3
53 Springfield Gardens	CF44 9LY	Dwelling	54.0	54.2	54.6	55.2	42.6	42.7	43.1	43.6
54 Springfield Gardens	CF44 9LY	Dwelling	54.6	54.1	55.0	55.9	43.1	42.7	43.5	44.3
55 Springfield Gardens	CF44 9LY	Dwelling	53.6	52.8	53.4	54.3	42.2	41.5	42.0	42.9
56 Springfield Gardens	CF44 9LY	Dwelling	51.6	51.2	51.7	52.6	40.4	40.0	40.5	41.4
57 Springfield Gardens	CF44 9LY	Dwelling	53.9	54.1	54.0	54.8	42.5	42.7	42.6	43.3
58 Springfield Gardens	CF44 9LY	Dwelling	50.4	50.2	50.7	51.7	39.3	39.2	39.6	40.5
59 Springfield Gardens	CF44 9LY	Dwelling	50.9	51.2	51.1	51.7	39.8	40.1	40.0	40.5
60 Springfield Gardens	CF44 9LY	Dwelling	49.5	49.3	49.2	50.0	38.6	38.4	38.3	39.0
61 Springfield Gardens	CF44 9LY	Dwelling	51.1	50.9	50.8	51.6	40.0	39.8	39.7	40.4
62 Springfield Gardens	CF44 9LY	Dwelling	57.0	58.3	58.4	58.1	45.3	46.5	46.6	46.2
63 Springfield Gardens	CF44 9LY	Dwelling	57.3	58.6	58.7	58.3	45.5	46.7	46.8	46.5
64 Springfield Gardens	CF44 9LY	Dwelling	55.8	57.2	57.3	57.0	44.2	45.4	45.6	45.2
1 Madison Drive	CF44 9LZ	Dwelling	50.8	51.5	50.5	50.2	39.7	40.3	39.4	39.2
2 Madison Drive	CF44 9LZ	Dwelling	63.2	63.9	63.0	62.3	50.9	51.5	50.6	50.1
1 Nant Celyn	CF44 9NA	Dwelling	63.9	65.2	65.1	65.7	51.5	52.7	52.6	53.1
The Willows 2 Nant Celyn	CF44 9NA	Dwelling	55.7	56.5	56.2	56.7	44.1	44.8	44.5	45.0
3 Nant Celyn	CF44 9NA	Dwelling	54.0	54.7	54.3	54.9	42.5	43.2	42.9	43.4
4 Nant Celyn	CF44 9NA	Dwelling	52.4	53.1	52.5	53.1	41.2	41.8	41.2	41.7
5 Nant Celyn	CF44 9NA	Dwelling	51.6	52.2	51.8	52.3	40.4	41.0	40.6	41.1
6 Nant Celyn	CF44 9NA	Dwelling	49.5	50.0	49.6	50.3	38.6	39.0	38.7	39.2
7 Nant Celyn	CF44 9NA	Dwelling	54.2	54.5	53.8	54.4	42.8	43.0	42.4	43.0
8 Nant Celyn	CF44 9NA	Dwelling	53.6	54.5	54.2	54.8	42.2	43.0	42.8	43.3
1 Johnson Park	CF44 9NB	Dwelling	59.9	60.4	58.5	58.4	47.9	48.4	46.7	46.6
2 Johnson Park	CF44 9NB	Dwelling	58.7	59.2	58.0	58.0	46.8	47.3	46.2	46.1
3 Johnson Park	CF44 9NB	Dwelling	57.8	58.5	56.8	56.6	46.0	46.7	45.1	44.9
4 Johnson Park	CF44 9NB	Dwelling	58.6	59.4	58.1	58.0	46.8	47.4	46.3	46.1
5 Johnson Park	CF44 9NB	Dwelling	55.9	56.5	55.3	55.2	44.3	44.9	43.7	43.7
6 Johnson Park	CF44 9NB	Dwelling	61.3	62.0	61.0	60.8	49.1	49.8	48.9	48.7
9 Johnson Park	CF44 9NB	Dwelling	55.1	55.7	55.3	55.2	43.6	44.1	43.8	43.7
11 Johnson Park	CF44 9NB	Dwelling	62.8	63.0	65.2	65.4	50.5	50.7	52.7	52.8
Swn Y Coed 14 Johnson Park	CF44 9NB	Dwelling	55.4	55.9	55.2	54.9	43.8	44.3	43.7	43.4
15 Johnson Park	CF44 9NB	Dwelling	56.6	57.2	56.5	56.2	44.9	45.4	44.8	44.6
Maesyffrwd Bungalow 16 Johnson Park	CF44 9NB	Dwelling	54.6	55.3	55.0	54.8	43.1	43.7	43.5	43.3
17 Johnson Park	CF44 9NB	Dwelling	54.1	54.7	54.2	54.0	42.6	43.3	42.7	42.6
18 Johnson Park	CF44 9NB	Dwelling	56.1	56.3	55.6	55.7	44.5	44.6	44.0	44.1
19A Brecon Road	CF44 9ND	Dwelling	65.1	65.8	64.9	64.2	52.6	53.2	52.4	51.8
40A Brecon Road	CF44 9ND	Dwelling	65.2	66.0	65.1	64.4	52.7	53.3	52.5	51.9
40B Brecon Road	CF44 9ND	Dwelling	65.0	65.7	64.9	64.2	52.5	53.2	52.3	51.7
8A Brecon Road	CF44 9ND	Dwelling	64.9	65.6	64.7	64.0	52.4	53.0	52.2	51.6
8B Brecon Road	CF44 9ND	Dwelling	65.0	65.7	64.8	64.1	52.5	53.1	52.3	51.7
8C Brecon Road	CF44 9ND	Dwelling	64.9	65.6	64.7	64.0	52.4	53.0	52.2	51.6
Brecon Road	CF44 9ND	Dwelling	64.5	65.2	64.3	63.6	52.0	52.7	51.9	51.2
Roseberry Cottage Roseberry Cottage Brecon Road	CF44 9ND	Dwelling	65.2	65.9	65.0	64.3	52.6	53.2	52.4	51.8

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
1 Brecon Road	CF44 9ND	Dwelling	68.9	69.3	68.7	68.2	56.0	56.3	55.8	55.3
2 Brecon Road	CF44 9ND	Dwelling	68.9	69.3	68.7	68.2	56.0	56.3	55.8	55.3
3 Brecon Road	CF44 9ND	Dwelling	68.4	68.8	68.3	67.7	55.5	55.9	55.4	54.9
4 Brecon Road	CF44 9ND	Dwelling	65.1	65.5	65.0	64.6	52.6	52.9	52.5	52.1
5 Brecon Road	CF44 9ND	Dwelling	65.0	65.7	64.8	64.1	52.5	53.1	52.3	51.7
6 Brecon Road	CF44 9ND	Dwelling	65.0	65.7	64.8	64.2	52.5	53.1	52.3	51.7
7 Brecon Road	CF44 9ND	Dwelling	65.1	65.8	64.8	64.2	52.5	53.2	52.3	51.7
8 Brecon Road	CF44 9ND	Dwelling	65.0	65.7	64.8	64.1	52.5	53.1	52.3	51.7
10 Brecon Road	CF44 9ND	Dwelling	65.5	66.2	65.3	64.6	52.9	53.6	52.8	52.1
11 Brecon Road	CF44 9ND	Dwelling	65.4	66.1	65.2	64.5	52.8	53.5	52.7	52.0
14 Brecon Road	CF44 9ND	Dwelling	65.7	66.4	65.5	64.8	53.1	53.7	52.9	52.3
15 Brecon Road	CF44 9ND	Dwelling	65.6	66.3	65.4	64.7	53.0	53.7	52.8	52.2
16 Brecon Road	CF44 9ND	Dwelling	65.5	66.2	65.3	64.7	53.0	53.6	52.8	52.2
17 Brecon Road	CF44 9ND	Dwelling	65.6	66.3	65.4	64.7	53.0	53.6	52.8	52.2
18 Brecon Road	CF44 9ND	Dwelling	64.8	65.5	64.6	64.0	52.3	52.9	52.2	51.5
20 Brecon Road	CF44 9ND	Dwelling	64.9	65.6	64.7	64.0	52.4	53.0	52.2	51.6
21 Brecon Road	CF44 9ND	Dwelling	64.9	65.6	64.7	64.0	52.4	53.1	52.2	51.6
22 Brecon Road	CF44 9ND	Dwelling	65.1	65.8	64.9	64.2	52.5	53.2	52.3	51.7
23 Brecon Road	CF44 9ND	Dwelling	65.0	65.7	64.8	64.1	52.5	53.1	52.3	51.7
24 Brecon Road	CF44 9ND	Dwelling	65.0	65.7	64.8	64.2	52.5	53.1	52.3	51.7
28 Brecon Road	CF44 9ND	Dwelling	64.9	65.6	64.7	64.0	52.4	53.0	52.2	51.6
29 Brecon Road	CF44 9ND	Dwelling	63.5	64.2	63.3	62.6	51.1	51.8	50.9	50.3
30 Brecon Road	CF44 9ND	Dwelling	66.2	66.9	66.0	65.3	53.6	54.2	53.4	52.8
31 Brecon Road	CF44 9ND	Dwelling	66.2	66.9	66.0	65.3	53.5	54.2	53.4	52.7
32 Brecon Road	CF44 9ND	Dwelling	65.9	66.7	65.7	65.1	53.3	54.0	53.2	52.5
33 Brecon Road	CF44 9ND	Dwelling	66.6	67.3	66.4	65.7	53.9	54.5	53.7	53.1
35 Brecon Road	CF44 9ND	Dwelling	66.5	67.2	66.3	65.6	53.8	54.5	53.7	53.0
36 Brecon Road	CF44 9ND	Dwelling	66.4	67.1	66.2	65.5	53.7	54.3	53.5	52.9
37 Brecon Road	CF44 9ND	Dwelling	65.2	65.9	65.1	64.4	52.7	53.3	52.5	51.9
38 Brecon Road	CF44 9ND	Dwelling	65.2	65.9	65.0	64.3	52.7	53.3	52.5	51.9
Silverley 39 Brecon Road	CF44 9ND	Dwelling	62.4	63.2	62.3	61.6	50.2	50.8	50.0	49.4
40 Brecon Road	CF44 9ND	Dwelling	64.8	65.5	64.6	63.9	52.3	52.9	52.1	51.5
41 Brecon Road	CF44 9ND	Dwelling	63.9	64.6	63.8	63.1	51.5	52.2	51.4	50.7
42 Brecon Road	CF44 9ND	Dwelling	63.9	64.7	63.8	63.1	51.5	52.2	51.4	50.7
43 Brecon Road	CF44 9ND	Dwelling	62.9	63.7	62.8	62.1	50.6	51.3	50.5	49.8
44 Brecon Road	CF44 9ND	Dwelling	64.1	64.8	63.9	63.2	51.7	52.3	51.5	50.9
45 Brecon Road	CF44 9ND	Dwelling	48.8	49.5	48.3	48.7	37.9	38.5	37.4	37.8
46 Brecon Road	CF44 9ND	Dwelling	63.7	64.4	63.5	62.8	51.3	51.9	51.1	50.5
47 Brecon Road	CF44 9ND	Dwelling	63.6	64.3	63.4	62.7	51.2	51.8	51.0	50.4
48 Brecon Road	CF44 9ND	Dwelling	49.2	49.7	48.7	49.2	38.3	38.7	37.8	38.2
49 Brecon Road	CF44 9ND	Dwelling	63.8	64.5	63.6	62.9	51.4	52.0	51.2	50.6
Ffrwd Terrace 1 Brecon Road	CF44 9NE	Dwelling	64.0	64.2	63.9	63.6	51.6	51.8	51.5	51.2
Ffrwd Terrace 2 Brecon Road	CF44 9NE	Dwelling	65.1	65.8	64.9	64.3	52.6	53.2	52.4	51.8
Ffrwd Terrace 3 Brecon Road	CF44 9NE	Dwelling	65.9	66.6	65.7	65.0	53.3	53.9	53.1	52.5
Ffrwd Terrace 4 Brecon Road	CF44 9NE	Dwelling	64.7	65.4	64.5	63.8	52.2	52.9	52.0	51.4
Ffrwd Terrace 5 Brecon Road	CF44 9NE	Dwelling	66.0	66.7	65.8	65.1	53.4	54.0	53.2	52.6
Beech Tree Beechtree Glanant Street	CF44 9NF	Dwelling	56.7	57.4	54.7	54.5	45.0	45.6	43.2	43.0
Hirwaun County Primary School Glanant Street	CF44 9NF	OSR	50.3	50.6	48.6	49.0	39.2	39.5	37.7	38.0
Hirwaun Infants And Nursery School Glanant Street	CF44 9NF	OSR	49.9	50.1	48.9	49.4	38.9	39.0	38.0	38.4
Mountain View Mountain View Glanant Street	CF44 9NF	Dwelling	63.4	64.1	61.7	61.1	51.0	51.7	49.5	49.0
1 Glanant Street	CF44 9NF	Dwelling	55.8	56.4	55.0	54.8	44.2	44.8	43.5	43.3
2 Glanant Street	CF44 9NF	Dwelling	53.5	54.1	52.3	52.2	42.1	42.6	41.1	40.9
3 Glanant Street	CF44 9NF	Dwelling	52.9	53.6	51.7	51.5	41.6	42.2	40.5	40.4
4 Glanant Street	CF44 9NF	Dwelling	52.6	53.2	51.3	51.2	41.3	41.9	40.1	40.0
5 Glanant Street	CF44 9NF	Dwelling	52.0	52.6	50.6	50.6	40.8	41.3	39.5	39.5
6 Glanant Street	CF44 9NF	Dwelling	51.6	52.2	50.3	50.3	40.4	41.0	39.3	39.2
7 Glanant Street	CF44 9NF	Dwelling	51.3	51.9	50.0	50.0	40.2	40.7	39.0	39.0
8 Glanant Street	CF44 9NF	Dwelling	51.0	51.6	49.7	49.7	39.8	40.4	38.7	38.7
9 Glanant Street	CF44 9NF	Dwelling	50.6	51.2	49.3	49.4	39.5	40.0	38.3	38.4
10 Glanant Street	CF44 9NF	Dwelling	50.4	51.0	49.1	49.2	39.3	39.8	38.1	38.2
11 Glanant Street	CF44 9NF	Dwelling	50.2	50.8	48.9	49.0	39.2	39.7	38.0	38.1
12 Glanant Street	CF44 9NF	Dwelling	50.1	50.6	48.7	48.9	39.0	39.6	37.8	37.9
13 Glanant Street	CF44 9NF	Dwelling	50.0	50.5	48.6	48.8	38.9	39.5	37.8	37.9
14 Glanant Street	CF44 9NF	Dwelling	49.8	50.4	48.5	48.7	38.8	39.3	37.7	37.8
15 Glanant Street	CF44 9NF	Dwelling	50.1	50.6	48.8	48.9	39.0	39.5	37.9	38.0
16 Glanant Street	CF44 9NF	Dwelling	47.9	48.4	46.9	47.1	37.1	37.6	36.1	36.4
17 Glanant Street	CF44 9NF	Dwelling	47.3	48.0	46.4	46.6	36.6	37.1	35.8	35.9
18 Glanant Street	CF44 9NF	Dwelling	48.1	48.6	47.0	47.3	37.2	37.7	36.3	36.5
19 Glanant Street	CF44 9NF	Dwelling	49.7	50.2	48.5	48.7	38.7	39.2	37.6	37.8
20 Glanant Street	CF44 9NF	Dwelling	48.3	48.9	47.2	47.5	37.5	38.0	36.5	36.7
21 Glanant Street	CF44 9NF	Dwelling	47.6	48.3	46.8	46.9	36.8	37.4	36.1	36.2
22 Glanant Street	CF44 9NF	Dwelling	48.3	48.8	47.2	47.5	37.4	37.9	36.5	36.8
23 Glanant Street	CF44 9NF	Dwelling	48.1	48.7	47.4	47.6	37.3	37.8	36.7	36.8
24 Glanant Street	CF44 9NF	Dwelling	51.1	51.6	50.0	50.1	39.9	40.4	38.9	39.1
25 Glanant Street	CF44 9NF	Dwelling	50.5	51.0	49.4	49.6	39.4	39.9	38.4	38.6
26 Glanant Street	CF44 9NF	Dwelling	50.6	51.1	49.5	49.7	39.5	40.0	38.5	38.7
27 Glanant Street	CF44 9NF	Dwelling	50.5	50.9	49.5	49.7	39.4	39.8	38.5	38.7
28 Glanant Street	CF44 9NF	Dwelling	50.5	50.9	49.7	49.9	39.4	39.8	38.7	38.9
29 Glanant Street	CF44 9NF	Dwelling	48.4	49.0	47.7	47.9	37.5	38.1	36.9	37.1
30 Glanant Street	CF44 9NF	Dwelling	55.7	55.8	55.2	55.3	44.1	44.2	43.7	43.8
Trem Y Mynydd 1A Longfield Court	CF44 9NG	Dwelling	48.1	48.7	46.9	47.2	37.3	37.8	36.2	36.4
Ty Newydd Tynewydd Longfield Court	CF44 9NG	Dwelling	50.7	51.1	49.3	49.5	39.6	40.0	38.3	38.5
1 Longfield Court	CF44 9NG	Dwelling	49.7	50.3	48.3	48.6	38.8	39.2	37.4	37.7
2 Longfield Court	CF44 9NG	Dwelling	49.7	50.2	48.3	48.6	38.7	39.2	37.5	37.7
3 Longfield Court	CF44 9NG	Dwelling	49.0	49.7	48.5	48.4	38.1	38.7	37.6	37.5
4 Longfield Court	CF44 9NG	Dwelling	50.1	50.6	48.9	49.1	39.1	39.5	38.0	38.1
5 Longfield Court	CF44 9NG	Dwelling	49.8	50.3	48.7	48.8	38.8	39.3	37.8	37.9
6 Longfield Court	CF44 9NG	Dwelling	53.3	53.6	52.1	52.5	41.9	42.2	40.9	41.2
7 Longfield Court	CF44 9NG	Dwelling	50.7	51.3	49.8	49.8	39.7	40.1	38.8	38.8
8 Longfield Court	CF44 9NG	Dwelling	52.2	52.7	51.3	51.1	41.0	41.4	40.1	40.0
9 Longfield Court	CF44 9NG	Dwelling	50.9	51.4	49.9	49.8	39.8	40.2	38.9	38.8
10 Longfield Court	CF44 9NG	Dwelling	51.6	52.1	50.7	50.7	40.4	40.9	39.6	39.6
11 Longfield Court	CF44 9NG	Dwelling	53.6	54.1	52.5	52.5	42.2	42.7	41.2	41.3
12 Longfield Court	CF44 9NG	Dwelling	54.0	54.4	52.8	53.1	42.6	42.9	41.5	41.8
13 Longfield Court	CF44 9NG	Dwelling	53.0	53.4	51.8	52.1	41.7	42.1	40.6	40.9
14 Longfield Court	CF44 9NG	Dwelling	53.1	53.5	51.9	52.1	41.8	42.2	40.7	40.9
15 Longfield Court	CF44 9NG	Dwelling	50.1	50.5	48.9	49.2	39.1	39.4	38.0	38.2
16 Longfield Court	CF44 9NG	Dwelling	49.8	50.2	48.7	49.0	38.8	39.1	37.9	38.1
Flat Above Lucky House Chinese Meals Brecon Road	CF44 9NH	Dwelling	65.9	66.6	65.8	65.0	53.3	53.9	53.2	52.5
53 Brecon Road	CF44 9NH	Dwelling	61.6	62.3	61.5	60.8	49.5	50.1	49.3	48.7
54 Brecon Road	CF44 9NH	Dwelling	65.9	66.7	65.8	65.1	53.3	54.0	53.2	52.5
55 Brecon Road	CF44 9NH	Dwelling	65.9	66.6	65.8	65.1	53.3	54.0	53.2	52.5
1 Bryngelli Close	CF44 9NJ	Dwelling	59.6	60.7	60.7	61.2	47.6	48.6	48.6	49.1
2 Bryngelli Close	CF44 9NJ	Dwelling	52.6	53.4	53.1	53.6	41.3	42.0	41.7	42.2
3 Bryngelli Close	CF44 9NJ	Dwelling	54.2	54.8	54.4	55.0	42.8	43.3	43.0	43.5
4 Bryngelli Close	CF44 9NJ	Dwelling	50.6	51.2	50.4	51.0	39.5	40.0	39.3	39.9
5 Bryngelli Close	CF44 9NJ	Dwelling	53.6	54.1	53.3	53.9	42.2	42.6	41.9	42.4

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
6 Bryngelli Close	CF44 9NJ	Dwelling	53.6	54.1	53.4	54.0	42.3	42.6	42.0	42.6
69A Brecon Road	CF44 9NL	Dwelling	52.2	52.7	51.8	52.2	41.0	41.4	40.6	40.9
Flat Above Head First Brecon Road	CF44 9NL	Dwelling	65.4	66.2	65.3	64.6	52.9	53.5	52.7	52.1
Flat Above Lamb Inn Brecon Road	CF44 9NL	Dwelling	52.7	53.5	52.4	52.8	41.4	42.1	41.2	41.5
58 Brecon Road	CF44 9NL	Dwelling	52.0	52.6	51.7	51.3	40.8	41.3	40.5	40.2
59 Brecon Road	CF44 9NL	Dwelling	52.2	52.7	51.7	52.1	41.0	41.4	40.5	40.8
60 Brecon Road	CF44 9NL	Dwelling	52.0	52.5	51.4	51.8	40.8	41.2	40.3	40.6
61 Brecon Road	CF44 9NL	Dwelling	63.3	64.0	63.1	62.5	51.0	51.6	50.8	50.2
62 Brecon Road	CF44 9NL	Dwelling	57.2	57.9	57.1	56.5	45.5	46.1	45.3	44.8
65 Brecon Road	CF44 9NL	Dwelling	60.3	61.0	60.2	59.5	48.3	48.9	48.1	47.5
66 Brecon Road	CF44 9NL	Dwelling	62.9	63.7	62.8	62.1	50.6	51.3	50.5	49.9
67 Brecon Road	CF44 9NL	Dwelling	64.4	65.1	64.2	63.6	51.9	52.6	51.8	51.2
68 Brecon Road	CF44 9NL	Dwelling	52.2	52.6	52.0	52.4	41.0	41.4	40.8	41.1
69 Brecon Road	CF44 9NL	Dwelling	48.1	48.7	47.8	48.2	37.2	37.8	37.0	37.3
74 Brecon Road	CF44 9NL	Dwelling	65.9	66.6	65.8	65.1	53.3	54.0	53.2	52.6
75 Brecon Road	CF44 9NL	Dwelling	65.8	66.5	65.6	64.9	53.2	53.8	53.0	52.4
76 Brecon Road	CF44 9NL	Dwelling	65.6	66.3	65.5	64.8	53.0	53.7	52.9	52.3
79 Brecon Road	CF44 9NL	Dwelling	62.8	63.6	62.8	62.2	50.5	51.2	50.5	50.0
79A Brecon Road	CF44 9NN	Dwelling	66.8	67.5	66.7	66.0	54.1	54.8	54.0	53.4
Grosmont Grosmont Brecon Road	CF44 9NN	Dwelling	66.5	67.2	66.4	65.7	53.9	54.5	53.7	53.1
Palsin House Palsin House Brecon Road	CF44 9NN	Dwelling	65.5	66.2	65.4	64.7	53.0	53.6	52.8	52.2
80 Brecon Road	CF44 9NN	Dwelling	66.8	67.5	66.7	65.9	54.1	54.8	54.0	53.3
81 Brecon Road	CF44 9NN	Dwelling	66.8	67.6	66.7	66.0	54.1	54.8	54.0	53.4
82 Brecon Road	CF44 9NN	Dwelling	66.7	67.5	66.6	65.9	54.0	54.7	53.9	53.3
83 Brecon Road	CF44 9NN	Dwelling	66.7	67.4	66.5	65.8	54.0	54.6	53.9	53.2
84 Brecon Road	CF44 9NN	Dwelling	66.5	67.2	66.3	65.6	53.8	54.4	53.6	53.0
85 Brecon Road	CF44 9NN	Dwelling	66.3	67.0	66.2	65.5	53.7	54.3	53.5	52.9
86 Brecon Road	CF44 9NN	Dwelling	66.2	66.9	66.1	65.4	53.6	54.2	53.4	52.8
2A Harris Street	CF44 9NP	Dwelling	58.6	59.3	58.4	57.8	46.7	47.4	46.5	46.0
Church Harris Street	CF44 9NP	OSR	47.4	48.3	48.1	47.9	36.6	37.5	37.2	37.1
Flat Above Prince Of Wales Inn Harris Street	CF44 9NP	Dwelling	65.5	66.3	65.4	64.7	53.0	53.6	52.8	52.2
3 Harris Street	CF44 9NP	Dwelling	57.1	57.7	56.8	56.4	45.3	45.9	45.1	44.7
4 Harris Street	CF44 9NP	Dwelling	45.7	46.4	45.6	45.6	35.1	35.8	35.0	35.0
5 Harris Street	CF44 9NP	Dwelling	51.5	52.0	50.9	51.1	40.4	40.8	39.8	39.9
6 Harris Street	CF44 9NP	Dwelling	47.0	47.7	47.0	46.9	36.3	36.9	36.3	36.2
7 Harris Street	CF44 9NP	Dwelling	45.6	46.7	46.2	46.0	35.1	36.0	35.6	35.4
8 Harris Street	CF44 9NP	Dwelling	45.3	46.3	45.8	45.7	34.8	35.7	35.2	35.1
9 Harris Street	CF44 9NP	Dwelling	45.9	46.9	46.5	46.3	35.3	36.2	35.8	35.7
10 Harris Street	CF44 9NP	Dwelling	47.8	49.3	49.3	48.8	37.0	38.3	38.3	37.9
11 Harris Street	CF44 9NP	Dwelling	50.7	52.2	52.2	51.7	39.6	40.9	41.0	40.5
12 Harris Street	CF44 9NP	Dwelling	51.4	53.3	53.5	52.8	40.2	41.9	42.2	41.5
13 Harris Street	CF44 9NP	Dwelling	51.5	53.1	53.2	52.7	40.4	41.8	41.9	41.4
14 Harris Street	CF44 9NP	Dwelling	49.8	51.2	51.2	50.8	38.8	40.1	40.1	39.7
18 Harris Street	CF44 9NP	Dwelling	47.6	48.3	47.8	47.8	36.8	37.5	37.0	37.0
Ty Gwalia 19 Harris Street	CF44 9NP	Dwelling	47.3	48.1	47.5	47.5	36.6	37.3	36.7	36.7
23 Harris Street	CF44 9NP	Dwelling	50.5	51.1	50.4	50.2	39.4	40.0	39.3	39.1
24 Harris Street	CF44 9NP	Dwelling	51.4	52.1	51.3	51.0	40.2	40.8	40.1	39.9
25 Harris Street	CF44 9NP	Dwelling	53.7	54.4	53.6	53.2	42.3	42.9	42.2	41.8
Avalon Avalon Baptist Place	CF44 9NQ	Dwelling	48.7	49.1	48.3	48.8	37.8	38.2	37.5	37.9
Jalna Jalna Baptist Place	CF44 9NQ	Dwelling	49.4	50.0	49.0	49.4	38.4	38.9	38.1	38.4
Plas Nant Plas Nant Baptist Place	CF44 9NQ	Dwelling	47.8	47.9	47.1	48.0	37.0	37.1	36.4	37.2
10 Baptist Place	CF44 9NQ	Dwelling	50.6	50.8	48.7	49.7	39.5	39.7	37.8	38.7
11 Baptist Place	CF44 9NQ	Dwelling	48.7	49.1	48.2	48.8	37.8	38.1	37.4	37.9
1 Brecon Close	CF44 9NR	Dwelling	44.9	45.5	45.1	45.7	34.4	34.9	34.6	35.1
2 Brecon Close	CF44 9NR	Dwelling	46.8	47.3	46.7	47.2	36.1	36.5	36.0	36.5
3 Brecon Close	CF44 9NR	Dwelling	49.4	49.6	49.0	49.7	38.5	38.6	38.1	38.7
4 Brecon Close	CF44 9NR	Dwelling	48.7	49.4	48.6	49.0	37.8	38.4	37.7	38.1
5 Brecon Close	CF44 9NR	Dwelling	48.4	48.8	48.1	48.7	37.5	37.9	37.3	37.8
6 Brecon Close	CF44 9NR	Dwelling	53.9	54.6	53.6	54.0	42.5	43.1	42.2	42.5
7 Brecon Close	CF44 9NR	Dwelling	46.8	47.1	46.6	47.0	36.1	36.4	35.9	36.3
8 Brecon Close	CF44 9NR	Dwelling	53.8	54.4	53.4	53.8	42.4	42.9	42.1	42.4
9 Brecon Close	CF44 9NR	Dwelling	54.9	55.7	54.6	55.0	43.4	44.1	43.1	43.5
10 Brecon Close	CF44 9NR	Dwelling	51.3	51.6	51.2	51.8	40.2	40.4	40.0	40.6
110A Brecon Road	CF44 9NS	Dwelling	66.9	67.5	66.7	66.1	54.2	54.7	54.0	53.5
90A Brecon Road	CF44 9NS	Dwelling	66.6	67.3	66.4	65.7	53.9	54.6	53.7	53.1
90B Brecon Road	CF44 9NS	Dwelling	66.5	67.2	66.3	65.6	53.8	54.4	53.6	53.0
90C Brecon Road	CF44 9NS	Dwelling	66.4	67.1	66.2	65.5	53.7	54.3	53.5	52.9
94A Brecon Road	CF44 9NS	Dwelling	65.7	66.4	65.5	64.8	53.1	53.8	52.9	52.3
94B Brecon Road	CF44 9NS	Dwelling	65.6	66.4	65.4	64.7	53.1	53.7	52.9	52.2
94C Brecon Road	CF44 9NS	Dwelling	65.7	66.4	65.5	64.8	53.1	53.7	52.9	52.3
94D Brecon Road	CF44 9NS	Dwelling	47.4	47.6	46.8	47.3	36.7	36.9	36.1	36.5
94E Brecon Road	CF44 9NS	Dwelling	65.7	66.4	65.5	64.8	53.1	53.8	52.9	52.3
94F Brecon Road	CF44 9NS	Dwelling	65.7	66.4	65.5	64.8	53.1	53.8	52.9	52.3
Angorfa Angorfa Brecon Road	CF44 9NS	Dwelling	66.9	67.3	66.8	66.2	54.2	54.6	54.1	53.6
Black Rock Black Rock Brecon Road	CF44 9NS	Dwelling	63.4	64.1	63.2	62.5	51.1	51.7	50.8	50.2
Brecon Road	CF44 9NS	Dwelling	66.6	67.3	66.4	65.8	54.0	54.6	53.8	53.2
Brecon Road	CF44 9NS	Dwelling	47.9	48.4	47.3	47.7	37.1	37.6	36.6	36.9
Heol Taleri Heol Taleri Brecon Road	CF44 9NS	Dwelling	60.5	61.2	60.3	59.6	48.4	49.1	48.2	47.6
Maespergwm Maespergwm Brecon Road	CF44 9NS	Dwelling	49.7	50.3	49.3	49.4	38.7	39.3	38.4	38.4
Sunnyview Sunnyview Brecon Road	CF44 9NS	Dwelling	49.0	49.5	48.4	48.8	38.1	38.5	37.6	37.9
Sunnyville Sunnyville Brecon Road	CF44 9NS	Dwelling	62.2	62.6	62.1	61.6	50.0	50.3	49.8	49.4
87 Brecon Road	CF44 9NS	Dwelling	66.6	67.3	66.5	65.8	54.0	54.6	53.8	53.2
88 Brecon Road	CF44 9NS	Dwelling	66.6	67.4	66.5	65.8	54.0	54.6	53.8	53.2
90 Brecon Road	CF44 9NS	Dwelling	66.8	67.5	66.6	65.9	54.1	54.8	54.0	53.3
91 Brecon Road	CF44 9NS	Dwelling	65.7	66.5	65.6	64.9	53.1	53.8	53.0	52.4
Ty Cornel 92 Brecon Road	CF44 9NS	Dwelling	56.9	57.7	56.7	56.1	45.2	45.9	45.0	44.5
94 Brecon Road	CF44 9NS	Dwelling	47.8	48.0	47.3	47.7	37.0	37.2	36.5	36.9
95 Brecon Road	CF44 9NS	Dwelling	45.6	45.9	45.5	46.0	35.0	35.3	34.9	35.3
96 Brecon Road	CF44 9NS	Dwelling	66.8	67.5	66.6	65.9	54.1	54.7	53.9	53.3
97 Brecon Road	CF44 9NS	Dwelling	46.4	46.5	46.0	46.5	35.7	35.8	35.4	35.8
98 Brecon Road	CF44 9NS	Dwelling	49.1	49.3	48.5	49.0	38.2	38.4	37.7	38.1
99 Brecon Road	CF44 9NS	Dwelling	49.0	49.1	48.5	49.0	38.1	38.2	37.7	38.1
100 Brecon Road	CF44 9NS	Dwelling	49.1	49.3	48.5	49.0	38.2	38.4	37.6	38.1
101 Brecon Road	CF44 9NS	Dwelling	48.5	48.7	48.0	48.5	37.6	37.8	37.2	37.6
102 Brecon Road	CF44 9NS	Dwelling	47.4	47.9	47.1	47.3	36.7	37.1	36.4	36.6
103 Brecon Road	CF44 9NS	Dwelling	48.9	48.9	48.5	49.0	38.0	38.0	37.6	38.1
105 Brecon Road	CF44 9NS	Dwelling	48.6	48.8	48.2	48.7	37.7	37.9	37.3	37.8
107 Brecon Road	CF44 9NS	Dwelling	64.5	65.2	64.3	63.6	52.0	52.6	51.8	51.2
108 Brecon Road	CF44 9NS	Dwelling	47.6	48.2	47.2	47.5	36.8	37.3	36.5	36.7
111 Brecon Road	CF44 9NS	Dwelling	52.6	53.0	51.7	51.8	41.3	41.7	40.5	40.6
Caraway 114 Brecon Road	CF44 9NS	Dwelling	53.3	53.9	53.6	53.7	42.0	42.5	42.2	42.3
5A Cynon Terrace	CF44 9NT	Dwelling	47.7	48.1	47.2	47.6	36.9	37.2	36.4	36.8
1 Cynon Terrace	CF44 9NT	Dwelling	56.9	57.4	56.7	56.4	45.2	45.6	45.0	44.7
3 Cynon Terrace	CF44 9NT	Dwelling	54.9	55.4	54.6	54.4	43.4	43.8	43.2	42.9
4 Cynon Terrace	CF44 9NT	Dwelling	48.0	48.4	47.5	47.9	37.2	37.6	36.7	37.1
5 Cynon Terrace	CF44 9NT	Dwelling	53.3	53.7	52.9	52.8	41.9	42.3	41.6	41.5
6 Cynon Terrace	CF44 9NT	Dwelling	52.7	53.1	52.3	52.3	41.4	41.8	41.0	41.0

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
7 Cynon Terrace	CF44 9NT	Dwelling	48.0	48.4	47.4	47.9	37.2	37.5	36.6	37.1
8 Cynon Terrace	CF44 9NT	Dwelling	51.9	52.4	51.4	51.5	40.7	41.1	40.3	40.4
9 Cynon Terrace	CF44 9NT	Dwelling	47.5	47.8	47.0	47.5	36.7	37.0	36.2	36.7
10 Cynon Terrace	CF44 9NT	Dwelling	50.4	50.9	49.8	50.1	39.4	39.8	38.8	39.1
11 Cynon Terrace	CF44 9NT	Dwelling	47.3	47.6	46.7	47.3	36.5	36.8	36.0	36.5
12 Cynon Terrace	CF44 9NT	Dwelling	46.9	47.4	46.5	47.1	36.2	36.7	35.9	36.3
13 Cynon Terrace	CF44 9NT	Dwelling	46.7	47.2	46.3	46.9	36.0	36.5	35.7	36.2
14 Cynon Terrace	CF44 9NT	Dwelling	46.1	46.3	45.5	46.1	35.4	35.7	34.9	35.4
15 Cynon Terrace	CF44 9NT	Dwelling	46.9	47.2	46.4	47.0	36.2	36.5	35.7	36.2
16 Cynon Terrace	CF44 9NT	Dwelling	46.9	47.2	46.4	47.0	36.2	36.4	35.7	36.2
17 Cynon Terrace	CF44 9NT	Dwelling	46.6	46.9	46.1	46.7	36.0	36.2	35.5	36.0
18 Cynon Terrace	CF44 9NT	Dwelling	48.1	48.5	47.6	48.0	37.2	37.6	36.8	37.2
19 Cynon Terrace	CF44 9NT	Dwelling	47.8	47.8	47.5	48.1	37.0	37.0	36.7	37.3
20 Cynon Terrace	CF44 9NT	Dwelling	47.3	47.8	46.7	47.0	36.5	37.0	36.0	36.2
21 Cynon Terrace	CF44 9NT	Dwelling	49.4	50.0	48.8	49.0	38.4	39.0	37.9	38.1
22 Cynon Terrace	CF44 9NT	Dwelling	50.4	50.3	49.2	50.0	39.3	39.3	38.2	39.0
23 Cynon Terrace	CF44 9NT	Dwelling	50.4	50.3	49.2	50.1	39.3	39.2	38.3	39.1
24 Cynon Terrace	CF44 9NT	Dwelling	50.4	50.3	49.3	50.2	39.4	39.3	38.4	39.1
25 Cynon Terrace	CF44 9NT	Dwelling	50.2	50.0	49.1	50.0	39.1	39.0	38.2	38.9
26 Cynon Terrace	CF44 9NT	Dwelling	50.2	50.1	49.0	49.9	39.2	39.0	38.1	38.9
27 Cynon Terrace	CF44 9NT	Dwelling	49.6	49.6	48.6	49.4	38.6	38.6	37.7	38.4
28 Cynon Terrace	CF44 9NT	Dwelling	49.6	49.8	48.7	49.4	38.7	38.8	37.8	38.5
29 Cynon Terrace	CF44 9NT	Dwelling	49.4	49.6	48.5	49.2	38.4	38.6	37.6	38.2
30 Cynon Terrace	CF44 9NT	Dwelling	49.4	49.6	48.5	49.2	38.4	38.6	37.7	38.2
31 Cynon Terrace	CF44 9NT	Dwelling	49.8	50.1	49.1	49.7	38.8	39.0	38.2	38.7
1A Tramway	CF44 9NU	Dwelling	52.3	52.2	51.6	52.7	41.1	40.9	40.4	41.4
1B Tramway	CF44 9NU	Dwelling	48.4	48.7	47.4	48.3	37.5	37.8	36.7	37.4
6A Tramway	CF44 9NU	Dwelling	48.6	48.5	48.1	48.9	37.7	37.6	37.3	38.0
Bryn Y Gog Bryn-Y-Gog Main House Tramway	CF44 9NU	Dwelling	51.3	51.6	50.5	51.3	40.1	40.4	39.4	40.1
Woodlands Woodlands Tramway	CF44 9NU	Dwelling	46.7	47.1	46.5	47.0	36.1	36.4	35.8	36.2
1 Tramway	CF44 9NU	Dwelling	63.5	63.7	58.4	59.5	51.2	51.3	46.5	47.6
2 Tramway	CF44 9NU	Dwelling	47.3	47.7	46.6	47.4	36.6	36.9	35.9	36.6
3 Tramway	CF44 9NU	Dwelling	50.8	51.3	49.4	49.9	39.7	40.1	38.4	38.9
4 Tramway	CF44 9NU	Dwelling	48.7	49.1	47.8	48.4	37.8	38.2	37.0	37.5
The Minstrels 6 Tramway	CF44 9NU	Dwelling	48.9	49.2	48.2	49.0	38.0	38.2	37.3	38.1
15A Cross Street	CF44 9NW	Dwelling	48.4	49.5	49.5	49.2	37.5	38.6	38.5	38.2
Glas Y Dorlan Glas-Y-Dorlan Cross Street	CF44 9NW	Dwelling	55.3	55.9	55.2	55.2	43.8	44.3	43.7	43.6
Jafhica House Jafhica Cross Street	CF44 9NW	Dwelling	53.3	53.8	53.1	53.3	42.0	42.4	41.8	41.9
1 Cross Street	CF44 9NW	Dwelling	54.8	56.4	56.7	56.1	43.3	44.8	45.0	44.4
2 Cross Street	CF44 9NW	Dwelling	52.2	53.7	53.9	53.4	41.0	42.3	42.5	42.0
3 Cross Street	CF44 9NW	Dwelling	51.4	52.7	52.8	52.4	40.2	41.4	41.5	41.2
4 Cross Street	CF44 9NW	Dwelling	48.7	49.6	49.4	49.4	37.8	38.7	38.5	38.4
5 Cross Street	CF44 9NW	Dwelling	47.7	48.6	48.3	48.2	36.9	37.7	37.5	37.3
6 Cross Street	CF44 9NW	Dwelling	52.3	52.9	52.3	52.5	41.0	41.6	41.0	41.2
7 Cross Street	CF44 9NW	Dwelling	53.5	54.0	53.3	53.4	42.1	42.6	41.9	42.0
8 Cross Street	CF44 9NW	Dwelling	54.7	55.3	54.6	54.5	43.2	43.8	43.1	43.0
9 Cross Street	CF44 9NW	Dwelling	55.0	55.6	54.8	54.8	43.5	44.0	43.3	43.3
10 Cross Street	CF44 9NW	Dwelling	56.5	57.1	56.2	56.0	44.8	45.4	44.6	44.4
11 Cross Street	CF44 9NW	Dwelling	46.8	47.1	46.5	47.0	36.1	36.4	35.9	36.2
Groesffordd 12 Cross Street	CF44 9NW	Dwelling	47.6	47.7	47.3	47.7	36.8	36.9	36.6	36.9
Swn Yr Afon 75-76 Tramway	CF44 9NY	Dwelling	50.5	50.6	50.6	51.0	39.4	39.5	39.5	39.9
87A Tramway	CF44 9NY	Dwelling	47.1	47.4	47.0	47.5	36.4	36.6	36.3	36.7
Min Yr Awel Min-Yr-Awel Tramway	CF44 9NY	Dwelling	47.8	48.9	48.7	48.5	37.0	38.0	37.8	37.6
Saundersville Tramway	CF44 9NY	Dwelling	48.5	48.7	48.7	49.3	37.7	37.8	37.8	38.3
Ty Bryn Ty Bryn Tramway	CF44 9NY	Dwelling	47.6	47.8	47.7	48.1	36.9	37.0	36.9	37.3
66 Tramway	CF44 9NY	Dwelling	48.7	48.8	48.4	48.8	37.8	37.9	37.5	37.9
73 Tramway	CF44 9NY	Dwelling	48.9	48.9	49.0	49.5	38.0	38.0	38.0	38.5
74 Tramway	CF44 9NY	Dwelling	49.4	49.5	49.2	49.7	38.4	38.5	38.3	38.7
77 Tramway	CF44 9NY	Dwelling	49.4	49.6	49.6	50.1	38.4	38.6	38.6	39.0
78 Tramway	CF44 9NY	Dwelling	46.0	46.3	46.2	46.7	35.4	35.7	35.6	36.0
80 Tramway	CF44 9NY	Dwelling	46.7	47.5	47.4	47.5	36.0	36.8	36.6	36.7
81 Tramway	CF44 9NY	Dwelling	48.6	49.0	49.1	49.5	37.8	38.1	38.2	38.5
82 Tramway	CF44 9NY	Dwelling	50.7	50.9	49.9	50.5	39.6	39.8	38.9	39.4
86 Tramway	CF44 9NY	Dwelling	47.0	47.5	47.2	47.5	36.3	36.8	36.4	36.7
87 Tramway	CF44 9NY	Dwelling	48.0	48.3	47.9	48.4	37.2	37.5	37.1	37.6
88 Tramway	CF44 9NY	Dwelling	49.8	49.9	49.4	50.2	38.8	38.9	38.4	39.2
90 Tramway	CF44 9NY	Dwelling	49.1	49.8	49.2	49.5	38.2	38.8	38.3	38.5
1 Redhill Close	CF44 9NZ	Dwelling	59.2	58.5	58.5	59.2	47.2	46.7	46.7	47.3
2 Redhill Close	CF44 9NZ	Dwelling	60.9	60.9	60.8	61.3	48.8	48.8	48.7	49.2
3 Redhill Close	CF44 9NZ	Dwelling	58.3	58.3	58.2	58.8	46.5	46.4	46.4	46.9
4 Redhill Close	CF44 9NZ	Dwelling	55.8	56.0	55.8	56.3	44.2	44.4	44.2	44.7
5 Redhill Close	CF44 9NZ	Dwelling	57.7	58.7	58.4	58.8	45.9	46.8	46.5	46.9
6 Redhill Close	CF44 9NZ	Dwelling	57.5	58.3	58.3	58.8	45.7	46.5	46.4	46.9
7 Redhill Close	CF44 9NZ	Dwelling	56.2	57.0	57.0	57.5	44.6	45.3	45.3	45.7
27A Tramway	CF44 9PA	Dwelling	48.5	48.6	48.0	48.6	37.6	37.8	37.2	37.7
28-29 Tramway	CF44 9PA	Dwelling	46.3	46.7	46.0	46.3	35.6	36.0	35.3	35.6
Brynsiriol 45A Tramway	CF44 9PA	Dwelling	47.2	47.6	46.7	47.1	36.5	36.8	36.0	36.4
60A Tramway	CF44 9PA	Dwelling	50.6	51.0	50.5	50.7	39.6	39.9	39.4	39.6
Tramway	CF44 9PA	Dwelling	47.5	48.0	47.4	47.7	36.7	37.2	36.6	36.9
Old Age Pensioners Hall Tramway	CF44 9PA	OSR	45.8	46.2	45.2	45.6	35.2	35.5	34.7	35.0
Tramway	CF44 9PA	Dwelling	47.4	47.5	47.2	47.9	36.6	36.7	36.5	37.1
Ty Coch Ty Coch Tramway	CF44 9PA	Dwelling	49.0	48.9	48.7	49.4	38.1	38.0	37.8	38.4
Ty Cornel Ty-Cornel Tramway	CF44 9PA	Dwelling	47.3	47.6	47.1	47.5	36.5	36.8	36.3	36.7
13 Tramway	CF44 9PA	Dwelling	48.3	48.6	47.9	48.5	37.5	37.7	37.1	37.6
Brookside 14 Tramway	CF44 9PA	Dwelling	47.7	47.9	47.5	48.1	36.9	37.1	36.8	37.2
15 Tramway	CF44 9PA	Dwelling	49.3	49.4	48.9	49.5	38.4	38.5	38.0	38.5
16 Tramway	CF44 9PA	Dwelling	48.1	48.2	48.2	48.7	37.3	37.4	37.3	37.8
26 Tramway	CF44 9PA	Dwelling	48.3	48.3	47.9	48.5	37.5	37.4	37.1	37.7
30 Tramway	CF44 9PA	Dwelling	45.4	46.0	45.0	45.3	34.8	35.4	34.5	34.7
31 Tramway	CF44 9PA	Dwelling	47.8	47.9	47.5	48.0	37.0	37.1	36.7	37.2
33 Tramway	CF44 9PA	Dwelling	47.4	47.6	47.1	47.6	36.6	36.8	36.4	36.8
34 Tramway	CF44 9PA	Dwelling	46.3	46.5	46.1	46.6	35.7	35.8	35.5	35.9
35 Tramway	CF44 9PA	Dwelling	47.4	47.7	47.1	47.6	36.7	36.9	36.4	36.8
36 Tramway	CF44 9PA	Dwelling	49.1	48.9	48.4	49.0	38.2	38.0	37.5	38.1
37 Tramway	CF44 9PA	Dwelling	48.6	48.5	48.0	48.6	37.7	37.6	37.2	37.7
38 Tramway	CF44 9PA	Dwelling	48.8	48.7	48.2	48.8	37.9	37.9	37.3	37.9
39 Tramway	CF44 9PA	Dwelling	48.4	48.5	47.8	48.4	37.6	37.6	37.0	37.5
41 Tramway	CF44 9PA	Dwelling	47.7	47.8	47.5	48.0	36.9	37.0	36.7	37.2
42 Tramway	CF44 9PA	Dwelling	47.0	47.1	46.8	47.3	36.3	36.3	36.1	36.6
45 Tramway	CF44 9PA	Dwelling	59.1	59.7	58.8	58.3	47.2	47.7	46.9	46.5
Tan Y Groes 47 Tramway	CF44 9PA	Dwelling	46.6	47.0	46.2	46.6	35.9	36.3	35.6	35.9
50 Tramway	CF44 9PA	Dwelling	46.8	47.0	46.4	46.9	36.1	36.3	35.8	36.2
51 Tramway	CF44 9PA	Dwelling	49.9	49.8	49.8	50.3	38.9	38.8	38.8	39.3
52 Tramway	CF44 9PA	Dwelling	48.9	48.8	48.8	49.3	38.0	37.9	37.9	38.4
54 Tramway	CF44 9PA	Dwelling	49.8	49.8	49.4	50.0	38.8	38.8	38.5	39.0
55 Tramway	CF44 9PA	Dwelling	49.6	49.5	49.3	49.9	38.6	38.5	38.3	38.9
56 Tramway	CF44 9PA	Dwelling	49.5	49.4	49.2	49.9	38.6	38.5	38.3	38.8

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
Tyr Orsaf Dan 59 Tramway	CF44 9PA	Dwelling	49.3	49.5	48.7	49.3	38.3	38.5	37.8	38.3
60 Tramway	CF44 9PA	Dwelling	45.9	46.5	45.7	46.1	35.3	35.8	35.1	35.4
61 Tramway	CF44 9PA	Dwelling	50.3	51.2	50.7	50.5	39.2	40.1	39.6	39.5
62 Tramway	CF44 9PA	Dwelling	50.0	51.2	50.9	50.5	39.0	40.0	39.8	39.5
Flat 1 63 Tramway	CF44 9PA	Dwelling	53.4	54.7	55.0	54.5	42.0	43.2	43.5	43.1
Flat 2 63 Tramway	CF44 9PA	Dwelling	53.4	54.7	55.0	54.5	42.0	43.2	43.5	43.1
22B Merthyr Road	CF44 9PB	Dwelling	46.3	47.1	46.7	46.8	35.7	36.4	36.0	36.1
23A Merthyr Road	CF44 9PB	Dwelling	58.8	61.0	61.4	60.4	46.9	48.9	49.3	48.4
Bethel House Bethel House Bethel Place	CF44 9PB	Dwelling	59.6	61.4	61.7	60.9	47.6	49.2	49.5	48.8
Former Nebo Chapel Nebo Chapel Merthyr Road	CF44 9PB	Dwelling	53.3	54.5	54.4	54.1	42.0	43.0	42.9	42.7
Place Of Worship Merthyr Road	CF44 9PB	OSR	48.0	49.0	48.9	48.8	37.2	38.1	38.0	37.9
Scout Hall Merthyr Road	CF44 9PB	OSR	50.7	51.2	51.1	51.3	39.6	40.1	40.0	40.1
Herons Way 12 Merthyr Road	CF44 9PB	Dwelling	56.8	58.6	58.9	58.2	45.1	46.7	47.0	46.4
18 Merthyr Road	CF44 9PB	Dwelling	59.7	61.8	62.3	61.3	47.7	49.6	50.0	49.1
19 Merthyr Road	CF44 9PB	Dwelling	59.5	61.6	62.1	61.0	47.5	49.4	49.8	48.9
23 Merthyr Road	CF44 9PB	Dwelling	59.1	61.3	61.7	60.7	47.2	49.1	49.5	48.6
24 Merthyr Road	CF44 9PB	Dwelling	58.7	60.8	61.3	60.3	46.8	48.7	49.1	48.2
25 Merthyr Road	CF44 9PB	Dwelling	58.4	60.6	61.0	60.0	46.6	48.5	48.9	48.0
26 Merthyr Road	CF44 9PB	Dwelling	59.5	61.7	62.1	61.1	47.5	49.5	49.9	48.9
27 Merthyr Road	CF44 9PB	Dwelling	59.2	61.4	61.8	60.8	47.3	49.2	49.6	48.7
28 Merthyr Road	CF44 9PB	Dwelling	59.3	61.4	61.9	60.8	47.3	49.2	49.6	48.7
29 Merthyr Road	CF44 9PB	Dwelling	59.2	61.3	61.8	60.7	47.2	49.1	49.6	48.6
30 Merthyr Road	CF44 9PB	Dwelling	59.3	61.4	61.9	60.8	47.3	49.2	49.7	48.7
31 Merthyr Road	CF44 9PB	Dwelling	59.3	61.5	61.9	60.9	47.4	49.3	49.7	48.8
32 Merthyr Road	CF44 9PB	Dwelling	58.9	61.0	61.5	60.4	47.0	48.9	49.3	48.4
33 Merthyr Road	CF44 9PB	Dwelling	59.7	61.8	62.3	61.2	47.8	49.6	50.0	49.1
1 Bethel Place	CF44 9PD	Dwelling	59.2	61.0	61.3	60.5	47.3	48.9	49.1	48.4
2 Bethel Place	CF44 9PD	Dwelling	59.2	61.0	61.2	60.5	47.3	48.9	49.1	48.4
3 Bethel Place	CF44 9PD	Dwelling	59.2	60.9	61.2	60.4	47.2	48.8	49.0	48.4
4 Bethel Place	CF44 9PD	Dwelling	59.1	60.9	61.2	60.4	47.2	48.8	49.0	48.4
5 Bethel Place	CF44 9PD	Dwelling	59.0	60.8	61.1	60.3	47.1	48.7	48.9	48.3
6 Bethel Place	CF44 9PD	Dwelling	57.6	59.4	59.7	58.9	45.9	47.4	47.7	47.0
7 Bethel Place	CF44 9PD	Dwelling	59.2	60.9	61.2	60.5	47.2	48.8	49.1	48.4
10 Bethel Place	CF44 9PD	Dwelling	47.7	47.4	47.8	48.6	36.9	36.6	37.0	37.7
13 Bethel Place	CF44 9PD	Dwelling	44.3	44.5	44.0	44.6	33.9	34.0	33.6	34.1
14 Bethel Place	CF44 9PD	Dwelling	44.4	44.5	44.1	44.7	34.0	34.1	33.7	34.2
17 Bethel Place	CF44 9PD	Dwelling	48.8	48.9	48.6	49.2	37.9	38.0	37.7	38.3
20 Bethel Place	CF44 9PD	Dwelling	45.2	45.2	45.1	45.8	34.7	34.7	34.6	35.2
23 Bethel Place	CF44 9PD	Dwelling	43.6	44.0	43.4	43.8	33.2	33.6	33.0	33.4
26 Bethel Place	CF44 9PD	Dwelling	44.4	44.4	44.5	45.2	34.0	33.9	34.1	34.7
27 Bethel Place	CF44 9PD	Dwelling	48.5	49.4	48.6	48.6	37.7	38.4	37.7	37.8
32 Bethel Place	CF44 9PD	Dwelling	47.9	47.5	47.7	48.5	37.1	36.8	36.9	37.7
33 Bethel Place	CF44 9PD	Dwelling	49.3	49.1	49.2	50.0	38.3	38.1	38.3	39.0
34 Bethel Place	CF44 9PD	Dwelling	49.8	50.1	49.6	50.1	38.8	39.1	38.6	39.1
35 Bethel Place	CF44 9PD	Dwelling	49.5	49.7	49.3	50.0	38.6	38.7	38.4	38.9
36 Bethel Place	CF44 9PD	Dwelling	47.6	47.4	47.1	47.9	36.8	36.6	36.4	37.1
37 Bethel Place	CF44 9PD	Dwelling	46.7	46.4	46.3	47.1	36.0	35.8	35.7	36.3
38 Bethel Place	CF44 9PD	Dwelling	47.0	46.7	46.6	47.4	36.3	36.0	36.0	36.6
39 Bethel Place	CF44 9PD	Dwelling	46.9	46.6	46.5	47.3	36.2	35.9	35.8	36.5
40 Bethel Place	CF44 9PD	Dwelling	45.8	45.6	45.5	46.2	35.2	35.0	34.9	35.5
41 Bethel Place	CF44 9PD	Dwelling	48.7	48.7	48.4	49.1	37.8	37.8	37.5	38.1
42 Bethel Place	CF44 9PD	Dwelling	44.9	44.8	44.5	45.2	34.4	34.3	34.1	34.7
43 Bethel Place	CF44 9PD	Dwelling	44.8	44.8	44.4	45.1	34.3	34.3	34.0	34.6
44 Bethel Place	CF44 9PD	Dwelling	44.7	44.7	44.3	45.0	34.2	34.2	33.9	34.4
45 Bethel Place	CF44 9PD	Dwelling	44.8	44.8	44.4	45.1	34.3	34.3	34.0	34.5
46 Bethel Place	CF44 9PD	Dwelling	44.8	44.8	44.3	45.0	34.3	34.3	33.9	34.4
47 Bethel Place	CF44 9PD	Dwelling	48.0	48.2	47.5	48.1	37.2	37.3	36.8	37.3
48 Bethel Place	CF44 9PD	Dwelling	47.9	48.1	47.4	48.0	37.1	37.2	36.6	37.1
49 Bethel Place	CF44 9PD	Dwelling	49.4	49.5	48.9	49.7	38.5	38.5	38.0	38.7
Plas Y Felin Plas-Y-Felin Swansea Road	CF44 9PE	Dwelling	53.7	55.6	56.0	55.2	42.3	44.1	44.4	43.7
25 Swansea Road	CF44 9PE	Dwelling	58.3	60.4	60.8	59.7	46.5	48.3	48.7	47.7
Flat 1 28 Flat A Swansea Road	CF44 9PE	Dwelling	58.5	60.5	60.8	59.8	46.6	48.4	48.7	47.8
44 Swansea Road	CF44 9PE	Dwelling	58.6	60.6	61.1	60.1	46.7	48.6	48.9	48.1
45 Swansea Road	CF44 9PE	Dwelling	58.8	60.9	61.4	60.3	46.9	48.8	49.2	48.3
Blaenant House Blaenant House Swansea Road	CF44 9PF	Dwelling	59.4	61.1	61.3	60.5	47.4	48.9	49.1	48.5
Cornelly Cornelly Swansea Road	CF44 9PF	Dwelling	58.8	60.5	60.7	59.9	46.9	48.5	48.6	47.9
35 Swansea Road	CF44 9PF	Dwelling	59.6	61.4	61.7	60.8	47.6	49.3	49.5	48.7
36 Swansea Road	CF44 9PF	Dwelling	59.5	61.3	61.6	60.7	47.6	49.2	49.4	48.6
37 Swansea Road	CF44 9PF	Dwelling	59.8	61.6	61.8	61.0	47.8	49.4	49.6	48.9
38 Swansea Road	CF44 9PF	Dwelling	59.4	61.2	61.4	60.6	47.4	49.0	49.2	48.5
39 Swansea Road	CF44 9PF	Dwelling	59.2	60.9	61.1	60.3	47.3	48.8	49.0	48.3
40 Swansea Road	CF44 9PF	Dwelling	59.2	60.9	61.1	60.3	47.3	48.8	48.9	48.2
41 Swansea Road	CF44 9PF	Dwelling	59.2	60.9	61.1	60.3	47.3	48.8	48.9	48.2
1 Maescynon	CF44 9PG	Dwelling	59.1	60.4	60.4	60.0	47.2	48.4	48.4	48.0
2 Maescynon	CF44 9PG	Dwelling	59.0	60.2	60.2	59.8	47.1	48.2	48.1	47.8
3 Maescynon	CF44 9PG	Dwelling	58.4	59.5	59.3	59.1	46.5	47.5	47.4	47.2
4 Maescynon	CF44 9PG	Dwelling	58.3	59.3	59.1	59.0	46.5	47.4	47.2	47.0
5 Maescynon	CF44 9PG	Dwelling	48.2	48.4	48.1	48.8	37.4	37.5	37.3	37.9
6 Maescynon	CF44 9PG	Dwelling	48.8	48.8	48.7	49.5	37.9	37.9	37.9	38.5
7 Maescynon	CF44 9PG	Dwelling	48.9	48.9	48.9	49.6	38.0	38.0	38.0	38.6
8 Maescynon	CF44 9PG	Dwelling	48.3	48.3	48.1	48.9	37.5	37.4	37.3	38.0
9 Maescynon	CF44 9PG	Dwelling	49.1	49.0	48.9	49.7	38.1	38.1	38.0	38.7
10 Maescynon	CF44 9PG	Dwelling	54.5	54.5	54.6	55.4	43.0	43.1	43.1	43.8
11 Maescynon	CF44 9PG	Dwelling	46.6	46.3	46.6	47.5	35.9	35.6	36.0	36.7
12 Maescynon	CF44 9PG	Dwelling	49.3	48.9	49.0	49.9	38.4	38.0	38.1	38.9
13 Maescynon	CF44 9PG	Dwelling	45.2	44.7	45.0	46.0	34.6	34.2	34.5	35.4
14 Maescynon	CF44 9PG	Dwelling	45.1	44.6	45.0	46.0	34.6	34.1	34.5	35.3
15 Maescynon	CF44 9PG	Dwelling	44.0	43.7	43.8	44.7	33.6	33.3	33.4	34.2
16 Maescynon	CF44 9PG	Dwelling	54.7	54.9	54.8	55.6	43.2	43.4	43.3	44.0
17 Maescynon	CF44 9PG	Dwelling	58.2	59.0	58.9	59.0	46.4	47.1	47.0	47.0
18 Maescynon	CF44 9PG	Dwelling	58.6	59.5	59.5	59.5	46.7	47.5	47.5	47.5
19 Maescynon	CF44 9PG	Dwelling	58.7	59.8	59.8	59.6	46.8	47.8	47.8	47.6
20 Maescynon	CF44 9PG	Dwelling	59.0	60.2	60.2	60.0	47.1	48.2	48.2	48.0
21 Maescynon	CF44 9PG	Dwelling	52.1	52.2	52.6	53.4	40.9	40.9	41.3	42.1
22 Maescynon	CF44 9PG	Dwelling	54.6	54.7	54.5	55.3	43.1	43.2	43.0	43.8
23 Maescynon	CF44 9PG	Dwelling	51.5	51.4	51.3	52.2	40.3	40.3	40.2	41.0
24 Maescynon	CF44 9PG	Dwelling	44.3	43.7	43.8	44.9	33.8	33.3	33.4	34.4
25 Maescynon	CF44 9PG	Dwelling	48.5	48.0	48.1	49.1	37.7	37.2	37.2	38.1
26 Maescynon	CF44 9PG	Dwelling	44.7	44.1	44.2	45.3	34.2	33.6	33.8	34.7
27 Maescynon	CF44 9PG	Dwelling	48.8	48.3	48.4	49.4	37.9	37.4	37.5	38.4
28 Maescynon	CF44 9PG	Dwelling	45.1	44.6	44.9	45.9	34.6	34.1	34.4	35.3
29 Maescynon	CF44 9PG	Dwelling	52.7	52.6	52.4	53.3	41.4	41.3	41.1	42.0
30 Maescynon	CF44 9PG	Dwelling	51.9	52.1	51.9	52.8	40.7	40.8	40.7	41.5
31 Maescynon	CF44 9PG	Dwelling	47.7	47.9	48.4	49.2	36.9	37.1	37.5	38.3
32 Maescynon	CF44 9PG	Dwelling	50.0	50.2	49.8	50.7	39.0	39.2	38.8	39.6
33 Maescynon	CF44 9PG	Dwelling	44.1	43.9	43.8	44.6	33.7	33.5	33.4	34.1
34 Maescynon	CF44 9PG	Dwelling	44.2	44.0	43.9	44.8	33.7	33.6	33.5	34.3

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
35 Maescynon	CF44 9PG	Dwelling	52.2	52.2	52.1	53.0	41.0	40.9	40.9	41.7
36 Maescynon	CF44 9PG	Dwelling	44.3	44.2	44.2	45.0	33.9	33.8	33.8	34.5
37 Maescynon	CF44 9PG	Dwelling	51.8	51.8	51.6	52.5	40.6	40.6	40.4	41.2
38 Maescynon	CF44 9PG	Dwelling	44.0	44.0	44.0	44.8	33.6	33.5	33.6	34.3
39 Maescynon	CF44 9PG	Dwelling	44.2	44.2	44.5	45.3	33.8	33.8	34.0	34.8
40 Maescynon	CF44 9PG	Dwelling	44.3	44.4	44.8	45.6	33.8	33.9	34.3	35.0
41 Maescynon	CF44 9PG	Dwelling	44.7	44.8	44.8	45.7	34.2	34.3	34.3	35.1
42 Maescynon	CF44 9PG	Dwelling	44.3	44.2	44.3	45.2	33.8	33.8	33.9	34.6
43 Maescynon	CF44 9PG	Dwelling	44.6	44.4	44.3	45.2	34.1	34.0	33.9	34.7
44 Maescynon	CF44 9PG	Dwelling	50.8	50.8	50.6	51.5	39.7	39.7	39.5	40.3
45 Maescynon	CF44 9PG	Dwelling	47.9	47.8	47.6	48.5	37.1	37.0	36.8	37.6
46 Maescynon	CF44 9PG	Dwelling	44.4	44.3	44.6	45.5	33.9	33.8	34.1	34.9
47 Maescynon	CF44 9PG	Dwelling	50.1	50.0	49.8	50.7	39.1	39.0	38.8	39.6
48 Maescynon	CF44 9PG	Dwelling	48.6	48.4	48.4	49.3	37.7	37.5	37.5	38.3
49 Maescynon	CF44 9PG	Dwelling	47.8	47.5	47.4	48.3	37.0	36.7	36.6	37.4
50 Maescynon	CF44 9PG	Dwelling	51.7	51.6	51.4	52.3	40.5	40.4	40.2	41.0
51 Maescynon	CF44 9PG	Dwelling	44.4	43.9	43.9	44.9	34.0	33.5	33.5	34.4
52 Maescynon	CF44 9PG	Dwelling	43.5	43.0	43.1	44.1	33.2	32.7	32.8	33.7
53 Maescynon	CF44 9PG	Dwelling	43.4	42.9	42.9	43.9	33.0	32.6	32.6	33.5
54 Maescynon	CF44 9PG	Dwelling	50.4	50.3	50.3	51.2	39.4	39.3	39.3	40.1
55 Maescynon	CF44 9PG	Dwelling	43.8	43.5	43.4	44.4	33.4	33.1	33.1	33.9
56 Maescynon	CF44 9PG	Dwelling	51.4	51.2	51.3	52.2	40.2	40.0	40.1	40.9
57 Maescynon	CF44 9PG	Dwelling	49.1	48.9	48.2	49.2	38.2	38.0	37.4	38.2
58 Maescynon	CF44 9PG	Dwelling	45.2	44.7	45.2	46.3	34.6	34.2	34.7	35.6
59 Maescynon	CF44 9PG	Dwelling	44.2	43.4	44.0	45.1	33.7	33.1	33.6	34.5
60 Maescynon	CF44 9PG	Dwelling	50.0	49.9	49.6	50.5	39.0	38.9	38.6	39.4
61 Maescynon	CF44 9PH	Dwelling	50.7	50.4	50.5	51.4	39.6	39.4	39.4	40.3
62 Maescynon	CF44 9PH	Dwelling	44.9	44.9	45.2	46.0	34.4	34.4	34.7	35.4
63 Maescynon	CF44 9PH	Dwelling	43.9	43.5	43.7	44.6	33.5	33.1	33.3	34.1
64 Maescynon	CF44 9PH	Dwelling	44.1	43.7	43.9	44.8	33.7	33.3	33.5	34.3
65 Maescynon	CF44 9PH	Dwelling	43.7	43.4	43.5	44.4	33.4	33.0	33.1	33.9
66 Maescynon	CF44 9PH	Dwelling	44.0	43.6	43.7	44.6	33.6	33.2	33.3	34.1
67 Maescynon	CF44 9PH	Dwelling	43.3	42.9	43.0	43.9	32.9	32.6	32.7	33.5
68 Maescynon	CF44 9PH	Dwelling	48.1	47.9	47.8	48.7	37.2	37.1	37.0	37.8
69 Maescynon	CF44 9PH	Dwelling	45.8	46.1	45.7	46.4	35.2	35.5	35.1	35.7
70 Maescynon	CF44 9PH	Dwelling	46.1	46.6	46.2	46.8	35.5	35.9	35.5	36.1
71 Maescynon	CF44 9PH	Dwelling	47.7	47.7	47.8	48.7	36.9	36.9	37.0	37.8
72 Maescynon	CF44 9PH	Dwelling	46.9	46.8	47.2	48.1	36.2	36.1	36.4	37.2
73 Maescynon	CF44 9PH	Dwelling	45.9	46.4	46.0	46.6	35.3	35.7	35.4	35.9
74 Maescynon	CF44 9PH	Dwelling	48.6	49.1	48.6	49.1	37.7	38.1	37.7	38.1
75 Maescynon	CF44 9PH	Dwelling	45.5	45.4	45.4	46.2	34.9	34.9	34.8	35.6
76 Maescynon	CF44 9PH	Dwelling	44.0	44.2	44.1	44.8	33.5	33.8	33.6	34.3
77 Maescynon	CF44 9PH	Dwelling	44.0	43.9	43.6	44.5	33.6	33.5	33.2	34.0
78 Maescynon	CF44 9PH	Dwelling	44.3	44.4	44.3	45.1	33.8	33.9	33.9	34.5
79 Maescynon	CF44 9PH	Dwelling	44.2	44.4	44.2	44.9	33.8	33.9	33.7	34.4
80 Maescynon	CF44 9PH	Dwelling	44.0	44.2	44.1	44.8	33.6	33.7	33.6	34.3
81 Maescynon	CF44 9PH	Dwelling	46.7	46.7	46.4	47.2	36.0	36.0	35.7	36.5
82 Maescynon	CF44 9PH	Dwelling	43.5	42.9	43.0	44.0	33.1	32.6	32.7	33.6
83 Maescynon	CF44 9PH	Dwelling	47.4	47.7	47.0	47.7	36.7	37.0	36.3	36.9
84 Maescynon	CF44 9PH	Dwelling	42.9	42.9	42.6	43.4	32.6	32.6	32.3	33.1
85 Maescynon	CF44 9PH	Dwelling	47.2	47.2	47.1	47.9	36.5	36.5	36.3	37.1
86 Maescynon	CF44 9PH	Dwelling	47.1	47.1	46.8	47.6	36.4	36.3	36.1	36.8
87 Maescynon	CF44 9PH	Dwelling	47.2	47.2	46.9	47.7	36.4	36.4	36.2	36.9
88 Maescynon	CF44 9PH	Dwelling	44.4	44.5	44.3	45.2	34.0	34.0	33.9	34.6
89 Maescynon	CF44 9PH	Dwelling	47.8	47.9	47.4	48.2	37.0	37.1	36.6	37.3
90 Maescynon	CF44 9PH	Dwelling	43.5	42.9	43.1	44.2	33.1	32.6	32.8	33.7
91 Maescynon	CF44 9PH	Dwelling	46.6	46.3	46.2	47.2	36.0	35.6	35.6	36.4
92 Maescynon	CF44 9PH	Dwelling	46.6	46.3	46.1	47.1	36.0	35.6	35.5	36.4
93 Maescynon	CF44 9PH	Dwelling	47.6	47.1	47.3	48.3	36.9	36.4	36.5	37.4
94 Maescynon	CF44 9PH	Dwelling	47.1	46.7	46.8	47.8	36.4	36.0	36.1	37.0
95 Maescynon	CF44 9PH	Dwelling	45.3	44.4	45.1	46.2	34.7	34.0	34.6	35.6
96 Maescynon	CF44 9PH	Dwelling	45.4	44.5	45.3	46.4	34.9	34.1	34.7	35.7
97 Maescynon	CF44 9PH	Dwelling	44.9	44.8	44.8	45.7	34.4	34.3	34.3	35.1
98 Maescynon	CF44 9PH	Dwelling	51.0	50.8	50.7	51.7	39.9	39.7	39.7	40.5
99 Maescynon	CF44 9PH	Dwelling	49.0	48.5	48.6	49.6	38.1	37.7	37.8	38.6
100 Maescynon	CF44 9PH	Dwelling	47.2	47.5	46.2	46.8	36.4	36.7	35.6	36.1
103 Maescynon	CF44 9PH	Dwelling	50.1	49.9	49.8	50.7	39.1	38.9	38.8	39.6
104 Maescynon	CF44 9PH	Dwelling	43.5	43.3	43.1	43.9	33.1	33.0	32.8	33.5
105 Maescynon	CF44 9PH	Dwelling	43.1	42.8	42.7	43.6	32.8	32.5	32.4	33.2
106 Maescynon	CF44 9PH	Dwelling	43.3	43.0	42.9	43.8	33.0	32.7	32.6	33.4
107 Maescynon	CF44 9PH	Dwelling	43.3	42.9	42.9	43.8	32.9	32.6	32.6	33.4
108 Maescynon	CF44 9PH	Dwelling	43.5	43.1	43.1	44.0	33.1	32.8	32.8	33.6
109 Maescynon	CF44 9PH	Dwelling	43.2	42.8	42.8	43.7	32.9	32.5	32.5	33.3
110 Maescynon	CF44 9PH	Dwelling	44.6	44.4	44.3	45.2	34.2	34.0	33.9	34.7
111 Maescynon	CF44 9PH	Dwelling	49.2	49.2	47.6	48.4	38.3	38.3	36.9	37.6
112 Maescynon	CF44 9PH	Dwelling	44.1	44.0	43.9	44.8	33.7	33.6	33.5	34.3
113 Maescynon	CF44 9PH	Dwelling	44.6	44.8	44.6	45.4	34.2	34.3	34.1	34.8
114 Maescynon	CF44 9PH	Dwelling	44.3	44.4	44.4	45.1	33.9	34.0	33.9	34.6
115 Maescynon	CF44 9PH	Dwelling	47.3	47.1	46.7	47.5	36.5	36.4	36.0	36.7
116 Maescynon	CF44 9PH	Dwelling	43.3	42.8	42.7	43.7	33.0	32.5	32.5	33.3
117 Maescynon	CF44 9PH	Dwelling	43.3	42.7	42.8	43.8	33.0	32.4	32.5	33.4
118 Maescynon	CF44 9PH	Dwelling	43.2	42.6	42.6	43.7	32.8	32.3	32.3	33.3
119 Maescynon	CF44 9PH	Dwelling	43.5	42.9	43.0	44.1	33.1	32.6	32.7	33.6
120 Maescynon	CF44 9PH	Dwelling	43.4	42.8	43.0	44.0	33.1	32.5	32.7	33.6
Cwrt Maescynon 1 Maescynon	CF44 9PL	Dwelling	45.5	45.4	45.3	46.2	35.0	34.9	34.7	35.6
Berth Loyd Farm Berthlwyd Cottage Cottage Maescynon	CF44 9PN	Dwelling	48.0	46.9	47.7	48.9	37.2	36.2	36.9	38.0
Dan Y Muallt Maescynon	CF44 9PN	Dwelling	46.7	45.7	46.6	47.8	36.0	35.1	35.9	37.0
Berth Lwyd Farm Farmhouse Maescynon	CF44 9PN	Dwelling	45.5	44.6	45.4	46.7	34.9	34.1	34.8	36.0
Swn Y Nant Swyn-Y-Nant Swansea Road	CF44 9PN	Dwelling	48.7	48.1	48.2	49.3	37.8	37.2	37.4	38.3
50 Bethel Place	CF44 9PP	Dwelling	48.0	48.0	47.5	48.2	37.2	37.2	36.8	37.4
51 Bethel Place	CF44 9PP	Dwelling	48.4	49.0	48.1	48.4	37.6	38.1	37.3	37.6
52 Bethel Place	CF44 9PP	Dwelling	47.0	47.7	46.8	47.1	36.3	36.9	36.1	36.3
53 Bethel Place	CF44 9PP	Dwelling	47.1	47.8	46.9	47.1	36.4	37.0	36.2	36.4
54 Bethel Place	CF44 9PP	Dwelling	45.9	45.5	45.6	46.4	35.3	34.9	35.0	35.7
55 Bethel Place	CF44 9PP	Dwelling	44.0	44.2	43.7	44.3	33.6	33.8	33.3	33.8
57 Bethel Place	CF44 9PP	Dwelling	46.5	47.2	46.5	46.7	35.9	36.5	35.9	36.0
58 Bethel Place	CF44 9PP	Dwelling	44.7	45.0	44.6	45.0	34.2	34.5	34.1	34.5
59 Bethel Place	CF44 9PP	Dwelling	46.6	47.3	46.7	46.9	35.9	36.6	36.0	36.2
61 Bethel Place	CF44 9PP	Dwelling	45.2	45.9	45.4	45.6	34.7	35.3	34.9	35.1
62 Bethel Place	CF44 9PP	Dwelling	44.6	45.1	44.5	45.0	34.1	34.6	34.1	34.4
63 Bethel Place	CF44 9PP	Dwelling	45.0	45.7	45.2	45.5	34.5	35.1	34.7	34.9
65 Bethel Place	CF44 9PP	Dwelling	45.0	45.7	45.2	45.5	34.5	35.1	34.7	34.9
66 Bethel Place	CF44 9PP	Dwelling	50.5	51.7	51.4	51.1	39.4	40.5	40.2	40.0
71 Bethel Place	CF44 9PP	Dwelling	52.3	53.9	53.9	53.3	41.1	42.4	42.5	42.0
72 Bethel Place	CF44 9PP	Dwelling	53.3	55.0	55.2	54.6	42.0	43.5	43.7	43.1
76 Bethel Place	CF44 9PP	Dwelling	55.7	57.7	58.1	57.1	44.1	45.9	46.2	45.4
77 Bethel Place	CF44 9PP	Dwelling	55.7	57.7	58.1	57.1	44.1	45.9	46.2	45.4

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
1 Tai'R Briallu	CF44 9PQ	Dwelling	56.7	58.5	58.9	58.1	45.0	46.6	47.0	46.3
2 Tai'R Briallu	CF44 9PQ	Dwelling	56.4	58.2	58.6	57.9	44.8	46.4	46.7	46.0
3 Tai'R Briallu	CF44 9PQ	Dwelling	52.2	52.3	52.9	53.7	41.0	41.1	41.6	42.3
Llys Cynon	CF44 9PR	Dwelling	54.2	54.3	53.7	54.6	42.8	42.8	42.3	43.1
Riverside Lodge Riverside Lodge Llys Cynon	CF44 9PR	Dwelling	56.6	55.9	56.4	57.5	45.0	44.3	44.7	45.7
1 Llys Cynon	CF44 9PR	Dwelling	51.3	51.4	50.7	51.6	40.2	40.3	39.6	40.4
2 Llys Cynon	CF44 9PR	Dwelling	49.9	49.8	49.7	50.5	38.9	38.8	38.7	39.5
3 Llys Cynon	CF44 9PR	Dwelling	48.5	48.2	48.3	49.3	37.6	37.3	37.5	38.4
4 Llys Cynon	CF44 9PR	Dwelling	45.8	46.1	46.1	46.6	35.2	35.5	35.5	35.9
5 Llys Cynon	CF44 9PR	Dwelling	49.8	49.8	49.8	50.7	38.8	38.8	38.8	39.6
6 Llys Cynon	CF44 9PR	Dwelling	47.2	47.5	47.7	48.1	36.5	36.7	36.9	37.3
7 Llys Cynon	CF44 9PR	Dwelling	47.1	48.1	48.2	48.2	36.3	37.3	37.4	37.3
8 Llys Cynon	CF44 9PR	Dwelling	48.5	49.5	49.8	49.6	37.6	38.6	38.8	38.7
9 Llys Cynon	CF44 9PR	Dwelling	51.7	51.7	50.9	51.8	40.5	40.5	39.8	40.6
10 Llys Cynon	CF44 9PR	Dwelling	50.0	50.1	50.0	50.7	39.0	39.1	39.0	39.6
11 Llys Cynon	CF44 9PR	Dwelling	49.6	49.5	49.5	50.4	38.6	38.6	38.5	39.4
12 Llys Cynon	CF44 9PR	Dwelling	50.2	50.4	50.4	51.0	39.2	39.3	39.3	39.9
13 Llys Cynon	CF44 9PR	Dwelling	50.1	50.0	50.0	51.0	39.1	39.0	39.0	39.9
14 Llys Cynon	CF44 9PR	Dwelling	47.4	48.1	48.2	48.4	36.7	37.3	37.4	37.5
16 Llys Cynon	CF44 9PR	Dwelling	48.3	49.3	49.5	49.4	37.5	38.3	38.5	38.5
17 Llys Cynon	CF44 9PR	Dwelling	51.7	51.7	51.2	52.1	40.5	40.5	40.0	40.8
18 Llys Cynon	CF44 9PR	Dwelling	50.6	50.6	50.6	51.3	39.5	39.5	39.6	40.2
19 Llys Cynon	CF44 9PR	Dwelling	50.2	50.1	50.1	51.1	39.2	39.0	39.1	40.0
20 Llys Cynon	CF44 9PR	Dwelling	50.3	50.5	50.5	51.1	39.2	39.4	39.5	39.9
21 Llys Cynon	CF44 9PR	Dwelling	50.1	50.1	50.2	51.1	39.1	39.1	39.1	39.9
22 Llys Cynon	CF44 9PR	Dwelling	48.3	49.1	49.3	49.4	37.4	38.1	38.4	38.4
23 Llys Cynon	CF44 9PR	Dwelling	51.6	51.6	51.3	52.3	40.4	40.4	40.2	41.0
24 Llys Cynon	CF44 9PR	Dwelling	51.1	51.2	50.9	51.8	40.0	40.0	39.8	40.6
25 Llys Cynon	CF44 9PR	Dwelling	49.7	49.6	49.8	50.7	38.7	38.6	38.8	39.6
26 Llys Cynon	CF44 9PR	Dwelling	50.4	50.8	50.8	51.3	39.4	39.7	39.7	40.1
27 Llys Cynon	CF44 9PR	Dwelling	51.7	51.7	51.3	52.3	40.5	40.5	40.2	41.0
28 Llys Cynon	CF44 9PR	Dwelling	48.8	49.6	49.9	49.9	37.9	38.6	38.9	38.9
29 Llys Cynon	CF44 9PR	Dwelling	50.6	50.9	50.9	51.4	39.6	39.8	39.8	40.2
30 Llys Cynon	CF44 9PR	Dwelling	50.3	50.6	50.6	51.1	39.2	39.5	39.5	39.9
31 Llys Cynon	CF44 9PR	Dwelling	47.1	47.6	47.7	48.0	36.4	36.8	36.9	37.1
32 Llys Cynon	CF44 9PR	Dwelling	46.8	47.4	47.4	47.7	36.1	36.7	36.6	36.9
33 Llys Cynon	CF44 9PR	Dwelling	53.0	53.1	52.2	53.2	41.6	41.8	40.9	41.8
34 Llys Cynon	CF44 9PR	Dwelling	50.3	49.5	50.1	51.2	39.2	38.5	39.1	40.1
35 Llys Cynon	CF44 9PR	Dwelling	55.1	54.3	55.4	56.5	43.6	42.9	43.9	44.8
36 Llys Cynon	CF44 9PR	Dwelling	55.2	54.3	55.5	56.6	43.6	42.9	43.9	44.9
37 Llys Cynon	CF44 9PR	Dwelling	48.7	48.1	49.5	50.6	37.8	37.2	38.6	39.5
38 Llys Cynon	CF44 9PR	Dwelling	50.8	49.9	51.2	52.3	39.7	38.9	40.1	41.1
39 Llys Cynon	CF44 9PR	Dwelling	57.6	56.8	57.7	58.7	45.9	45.1	45.9	46.8
40 Llys Cynon	CF44 9PR	Dwelling	54.6	54.2	54.8	55.8	43.1	42.8	43.3	44.2
41 Llys Cynon	CF44 9PR	Dwelling	53.6	53.6	54.2	55.3	42.3	42.2	42.8	43.7
42 Llys Cynon	CF44 9PR	Dwelling	51.8	51.6	51.6	52.6	40.6	40.4	40.5	41.3
43 Llys Cynon	CF44 9PR	Dwelling	52.2	52.1	52.1	53.2	41.0	40.9	40.9	41.9
The Croft 44 Llys Cynon	CF44 9PR	Dwelling	53.4	53.4	53.4	54.5	42.1	42.1	42.1	43.0
45 Llys Cynon	CF44 9PR	Dwelling	54.4	54.2	54.4	55.4	43.0	42.7	42.9	43.9
46 Llys Cynon	CF44 9PR	Dwelling	54.5	54.4	54.4	55.4	43.0	42.9	42.9	43.8
47 Llys Cynon	CF44 9PR	Dwelling	50.5	50.5	50.4	51.2	39.4	39.4	39.3	40.0
48 Llys Cynon	CF44 9PR	Dwelling	50.7	50.8	50.7	51.4	39.6	39.7	39.6	40.2
49 Llys Cynon	CF44 9PR	Dwelling	50.7	50.8	50.8	51.4	39.6	39.7	39.7	40.2
50 Llys Cynon	CF44 9PR	Dwelling	50.7	50.9	50.8	51.5	39.6	39.8	39.7	40.3
51 Llys Cynon	CF44 9PR	Dwelling	50.7	50.9	50.9	51.5	39.6	39.8	39.8	40.3
52 Llys Cynon	CF44 9PR	Dwelling	51.7	51.3	51.6	52.6	40.5	40.1	40.4	41.3
53 Llys Cynon	CF44 9PR	Dwelling	52.0	51.8	51.9	52.8	40.7	40.6	40.6	41.5
54 Llys Cynon	CF44 9PR	Dwelling	52.0	51.7	52.0	52.9	40.8	40.6	40.7	41.6
55 Llys Cynon	CF44 9PR	Dwelling	52.2	51.9	52.0	53.0	41.0	40.7	40.8	41.6
56 Llys Cynon	CF44 9PR	Dwelling	51.4	51.3	51.2	52.1	40.2	40.2	40.0	40.8
Riverside Cottage 57 Llys Cynon	CF44 9PR	Dwelling	51.9	51.7	51.7	52.6	40.7	40.5	40.5	41.3
58 Llys Cynon	CF44 9PR	Dwelling	53.1	52.8	52.7	53.7	41.8	41.5	41.4	42.3
59 Llys Cynon	CF44 9PR	Dwelling	52.4	52.5	52.2	53.3	41.2	41.2	41.0	41.9
60 Llys Cynon	CF44 9PR	Dwelling	52.3	52.0	52.5	53.5	41.1	40.8	41.2	42.1
61 Llys Cynon	CF44 9PR	Dwelling	53.7	53.6	53.8	54.8	42.3	42.2	42.4	43.3
62 Llys Cynon	CF44 9PR	Dwelling	49.7	49.4	49.8	50.8	38.8	38.5	38.8	39.7
63 Llys Cynon	CF44 9PR	Dwelling	47.3	47.5	47.6	48.1	36.5	36.8	36.8	37.2
64 Llys Cynon	CF44 9PR	Dwelling	47.2	47.4	47.4	48.0	36.5	36.6	36.7	37.1
Beacons View 1 Beacons View Rhigos Road	CF44 9PS	Dwelling	59.6	60.8	60.5	61.0	47.6	48.7	48.4	48.9
12A Rhigos Road	CF44 9PS	Dwelling	59.7	60.7	60.6	61.2	47.7	48.7	48.5	49.0
Beacons View 2 Beacons View Rhigos Road	CF44 9PS	Dwelling	54.1	55.1	54.6	55.1	42.7	43.6	43.1	43.6
Beacons View 3 Beacons View Rhigos Road	CF44 9PS	Dwelling	57.3	58.1	57.9	58.4	45.5	46.2	46.1	46.6
Beacons View 4 Beacons View Rhigos Road	CF44 9PS	Dwelling	57.1	57.9	57.7	58.3	45.4	46.1	45.9	46.4
Brodawel Brodawel Redhill Close	CF44 9PS	Dwelling	58.9	59.1	57.7	58.2	47.0	47.2	45.9	46.4
Brynawel Brynawel Bungalow Rhigos Road	CF44 9PS	Dwelling	55.8	56.3	55.8	56.3	44.2	44.6	44.2	44.6
Bryn Coch Bryncoch Redhill Close	CF44 9PS	Dwelling	59.3	59.3	59.3	59.9	47.4	47.3	47.4	47.9
Cartref Melys Gartref Rhigos Road	CF44 9PS	Dwelling	51.2	51.8	51.3	51.9	40.1	40.6	40.2	40.7
Cherry Trees Cherry Trees Redhill Close	CF44 9PS	Dwelling	62.0	63.0	62.8	63.4	49.8	50.7	50.5	51.0
Conifers Conifers Redhill Close	CF44 9PS	Dwelling	56.6	57.6	57.2	57.7	44.9	45.8	45.5	45.9
Crud Yr Awel Crud Yr Awel Redhill Close	CF44 9PS	Dwelling	54.8	54.5	53.9	54.5	43.3	43.0	42.5	43.1
Greensleeves Greensleeves Redhill Close	CF44 9PS	Dwelling	53.2	53.4	53.2	53.8	41.9	42.1	41.9	42.4
Hawthorns Hawthorns Redhill Close	CF44 9PS	Dwelling	55.8	56.1	55.8	56.3	44.2	44.5	44.2	44.6
Highcroft High Croft Redhill Close	CF44 9PS	Dwelling	56.6	56.1	55.8	56.4	44.9	44.5	44.2	44.7
Hollybush Holly Bush Redhill Close	CF44 9PS	Dwelling	59.4	60.2	60.0	60.6	47.4	48.1	48.0	48.5
Rhian Fa Rhianfa Redhill Close	CF44 9PS	Dwelling	57.0	57.6	56.8	56.8	45.3	45.8	45.1	45.1
Tree Tops Treetops Redhill Close	CF44 9PS	Dwelling	56.7	57.7	57.3	57.8	45.1	45.9	45.6	46.0
Ty Ionawr Ty Ionawr Rhigos Road	CF44 9PS	Dwelling	54.9	56.1	55.9	56.4	43.4	44.4	44.3	44.7
1 Rhigos Road	CF44 9PS	Dwelling	47.6	48.0	47.3	47.8	36.8	37.2	36.6	37.0
The Bungalow 3 Rhigos Road	CF44 9PS	Dwelling	48.6	48.9	48.1	48.7	37.7	38.0	37.3	37.8
Am Nawr 4 Rhigos Road	CF44 9PS	Dwelling	54.6	55.4	54.2	54.6	43.2	43.8	42.8	43.1
5 Rhigos Road	CF44 9PS	Dwelling	47.9	48.6	47.6	48.0	37.1	37.7	36.8	37.2
6 Rhigos Road	CF44 9PS	Dwelling	52.4	52.8	51.9	52.4	41.1	41.5	40.7	41.1
Penydre 7 Rhigos Road	CF44 9PS	Dwelling	47.6	48.1	47.3	47.8	36.9	37.3	36.6	37.0
8 Rhigos Road	CF44 9PS	Dwelling	64.7	66.1	65.9	66.5	52.2	53.4	53.3	53.8
9 Rhigos Road	CF44 9PS	Dwelling	64.5	65.8	65.7	66.3	52.0	53.2	53.1	53.6
10 Rhigos Road	CF44 9PS	Dwelling	64.5	65.8	65.7	66.3	52.0	53.2	53.1	53.7
11 Rhigos Road	CF44 9PS	Dwelling	64.1	65.5	65.3	65.9	51.7	52.9	52.8	53.3
Sancroft 12 Rhigos Road	CF44 9PS	Dwelling	59.9	60.9	60.8	61.4	47.9	48.8	48.7	49.2
14 Rhigos Road	CF44 9PS	Dwelling	57.6	58.3	57.8	58.4	45.8	46.5	46.0	46.5
15 Rhigos Road	CF44 9PS	Dwelling	54.1	54.5	54.2	54.8	42.7	43.0	42.7	43.3
16 Rhigos Road	CF44 9PS	Dwelling	54.1	54.4	54.1	54.7	42.7	42.9	42.7	43.2
17 Rhigos Road	CF44 9PS	Dwelling	55.0	55.8	55.6	56.1	43.5	44.2	44.0	44.5
2A Flat A Meadow Lane	CF44 9PU	Dwelling	55.2	55.5	55.0	55.6	43.7	44.0	43.5	44.0
1 Meadow Lane	CF44 9PU	Dwelling	54.8	55.0	54.5	55.1	43.3	43.5	43.0	43.6
3 Meadow Lane	CF44 9PU	Dwelling	52.8	53.4	52.2	52.8	41.5	42.0	41.0	41.5
5 Meadow Lane	CF44 9PU	Dwelling	54.2	54.6	53.5	54.1	42.8	43.1	42.1	42.6
Leacroft 6 Meadow Lane	CF44 9PU	Dwelling	49.4	49.9	48.9	49.5	38.5	38.9	38.0	38.5

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
7 Meadow Lane	CF44 9PU	Dwelling	53.1	53.7	52.6	53.1	41.8	42.3	41.3	41.8
8 Meadow Lane	CF44 9PU	Dwelling	52.3	52.8	52.0	52.6	41.0	41.5	40.8	41.3
Maes Yr Awel 9 Meadow Lane	CF44 9PU	Dwelling	52.5	53.0	52.1	52.7	41.2	41.7	40.9	41.4
10 Meadow Lane	CF44 9PU	Dwelling	52.5	53.0	52.4	53.0	41.2	41.7	41.1	41.7
11 Meadow Lane	CF44 9PU	Dwelling	55.5	55.8	55.5	55.9	44.0	44.2	43.9	44.3
12 Meadow Lane	CF44 9PU	Dwelling	57.3	57.4	57.2	57.7	45.5	45.7	45.4	45.9
1 Briar Way	CF44 9PW	Dwelling	69.8	69.8	69.9	70.1	56.8	56.8	56.9	57.1
2 Briar Way	CF44 9PW	Dwelling	66.5	67.2	66.4	66.7	53.9	54.5	53.8	54.0
3 Briar Way	CF44 9PW	Dwelling	57.3	57.4	57.3	57.6	45.5	45.7	45.5	45.8
4 Briar Way	CF44 9PW	Dwelling	56.2	56.4	56.1	56.5	44.6	44.8	44.5	44.8
5 Briar Way	CF44 9PW	Dwelling	54.9	55.2	54.7	55.1	43.4	43.7	43.2	43.6
6 Briar Way	CF44 9PW	Dwelling	54.4	54.7	54.1	54.6	43.0	43.3	42.7	43.1
7 Briar Way	CF44 9PW	Dwelling	53.0	53.4	52.7	53.1	41.7	42.1	41.4	41.8
8 Briar Way	CF44 9PW	Dwelling	53.2	53.7	52.9	53.4	41.9	42.3	41.6	42.0
9 Briar Way	CF44 9PW	Dwelling	52.7	53.2	52.3	52.8	41.4	41.8	41.1	41.5
10 Briar Way	CF44 9PW	Dwelling	53.0	53.5	52.6	53.1	41.7	42.1	41.4	41.8
11 Briar Way	CF44 9PW	Dwelling	52.8	53.3	52.5	53.0	41.5	42.0	41.2	41.7
12 Briar Way	CF44 9PW	Dwelling	52.4	52.9	52.0	52.5	41.1	41.6	40.8	41.2
13 Briar Way	CF44 9PW	Dwelling	53.0	53.4	52.6	53.1	41.6	42.1	41.3	41.7
14 Briar Way	CF44 9PW	Dwelling	54.5	55.0	54.2	54.6	43.0	43.5	42.7	43.2
15 Briar Way	CF44 9PW	Dwelling	54.2	54.8	53.9	54.4	42.8	43.3	42.5	42.9
16 Briar Way	CF44 9PW	Dwelling	54.0	54.5	53.7	54.2	42.6	43.0	42.3	42.7
17 Briar Way	CF44 9PW	Dwelling	53.6	54.0	53.3	53.8	42.2	42.6	41.9	42.4
18 Briar Way	CF44 9PW	Dwelling	53.3	53.8	53.1	53.7	42.0	42.4	41.8	42.3
19 Briar Way	CF44 9PW	Dwelling	53.1	53.6	52.9	53.4	41.8	42.2	41.6	42.0
20 Briar Way	CF44 9PW	Dwelling	53.0	53.5	52.7	53.3	41.7	42.1	41.4	41.9
21 Briar Way	CF44 9PW	Dwelling	53.2	53.6	52.8	53.4	41.9	42.2	41.5	42.0
22 Briar Way	CF44 9PW	Dwelling	53.1	53.4	52.6	53.2	41.8	42.1	41.3	41.9
23 Briar Way	CF44 9PW	Dwelling	53.0	53.3	52.4	53.0	41.7	42.0	41.1	41.7
24 Briar Way	CF44 9PW	Dwelling	52.9	53.2	52.2	52.8	41.6	41.8	41.0	41.5
25 Briar Way	CF44 9PW	Dwelling	52.6	53.0	51.8	52.4	41.4	41.6	40.6	41.1
26 Briar Way	CF44 9PW	Dwelling	52.8	53.3	52.1	52.7	41.5	41.9	40.9	41.4
27 Briar Way	CF44 9PW	Dwelling	51.1	51.7	50.7	51.2	40.0	40.5	39.6	40.1
28 Briar Way	CF44 9PW	Dwelling	52.5	53.1	51.9	52.5	41.3	41.7	40.7	41.2
29 Briar Way	CF44 9PW	Dwelling	48.9	49.3	48.4	48.9	38.0	38.3	37.5	38.0
30 Briar Way	CF44 9PW	Dwelling	52.8	53.3	52.0	52.6	41.5	41.9	40.8	41.3
31 Briar Way	CF44 9PW	Dwelling	53.5	53.6	52.7	53.3	42.1	42.3	41.4	42.0
32 Briar Way	CF44 9PW	Dwelling	52.5	53.0	52.0	52.5	41.2	41.7	40.8	41.3
33 Briar Way	CF44 9PW	Dwelling	49.6	49.8	49.1	49.6	38.6	38.8	38.2	38.6
34 Briar Way	CF44 9PW	Dwelling	51.9	52.4	51.3	51.9	40.7	41.2	40.2	40.7
35 Briar Way	CF44 9PW	Dwelling	52.6	53.0	52.0	52.5	41.3	41.7	40.8	41.3
36 Briar Way	CF44 9PW	Dwelling	50.2	50.4	49.8	50.2	39.2	39.3	38.8	39.1
37 Briar Way	CF44 9PW	Dwelling	53.6	53.9	53.1	53.6	42.3	42.5	41.8	42.2
38 Briar Way	CF44 9PW	Dwelling	56.6	56.7	56.4	56.7	44.9	45.0	44.7	45.0
39 Briar Way	CF44 9PW	Dwelling	56.4	56.6	56.2	56.6	44.7	44.9	44.6	44.9
40 Briar Way	CF44 9PW	Dwelling	52.8	53.1	52.6	53.0	41.5	41.7	41.3	41.7
41 Briar Way	CF44 9PW	Dwelling	54.8	55.1	54.5	55.0	43.3	43.6	43.0	43.5
42 Briar Way	CF44 9PW	Dwelling	54.1	54.4	53.5	54.1	42.6	42.9	42.2	42.7
43 Briar Way	CF44 9PW	Dwelling	54.1	54.4	53.4	54.0	42.7	42.9	42.0	42.6
44 Briar Way	CF44 9PW	Dwelling	58.5	58.6	58.4	58.8	46.6	46.7	46.5	46.9
45 Briar Way	CF44 9PW	Dwelling	59.4	59.5	59.4	59.7	47.4	47.5	47.4	47.7
46 Briar Way	CF44 9PW	Dwelling	60.6	60.6	60.6	60.9	48.5	48.5	48.6	48.8
47 Briar Way	CF44 9PW	Dwelling	62.7	62.7	62.8	63.0	50.4	50.4	50.5	50.7
9-10 Tower Road	CF44 9PY	Dwelling	51.0	51.6	50.3	50.8	39.9	40.4	39.3	39.7
Bank View Bank View Tower Road	CF44 9PY	Dwelling	56.8	57.5	54.5	54.6	45.1	45.7	43.0	43.1
Broadlands Broadlands Tower Road	CF44 9PY	Dwelling	56.5	57.0	54.9	55.4	44.8	45.3	43.4	43.8
Bryndwr Bryndwr Tower Road	CF44 9PY	Dwelling	52.7	53.2	51.8	52.3	41.5	41.8	40.6	41.1
Derryranane Derryronane Tower Road	CF44 9PY	Dwelling	57.4	58.0	55.6	56.0	45.7	46.1	44.0	44.3
Fairview Fairview Tower Road	CF44 9PY	Dwelling	53.1	53.6	52.0	52.6	41.8	42.2	40.8	41.3
Glenman Glenman Tower Road	CF44 9PY	Dwelling	52.2	52.8	51.4	51.9	41.0	41.5	40.3	40.7
Greenore Greenore Tower Road	CF44 9PY	Dwelling	55.1	55.7	53.3	53.6	43.6	44.1	41.9	42.2
Hillside Hillside Tower Road	CF44 9PY	Dwelling	60.2	60.9	57.4	57.3	48.1	48.8	45.6	45.6
Hirwaun Recreation Ground Hirwaun Bowls Club Tower Road	CF44 9PY	OSR	47.6	48.3	54.9	55.8	36.8	37.4	43.4	44.2
Hirwaun Recreation Ground Hirwaun Welfare Hall Tower Road	CF44 9PY	OSR	48.0	48.7	61.2	62.3	37.2	37.8	49.0	50.0
Lyndhurst Lyndhurst Tower Road	CF44 9PY	Dwelling	53.2	53.8	52.4	52.9	41.9	42.4	41.1	41.6
Min Yr Awel Min-Yr-Awel Tower Road	CF44 9PY	Dwelling	53.2	53.6	52.1	52.6	41.9	42.2	40.8	41.3
Rose Villa Roseville Tower Road	CF44 9PY	Dwelling	53.3	53.8	50.9	51.1	42.0	42.4	39.8	39.9
Roycome Royaume Tower Road	CF44 9PY	Dwelling	53.5	54.1	52.3	52.8	42.2	42.6	41.0	41.5
Swn Yr Awel Swn-Yr-Awel Tower Road	CF44 9PY	Dwelling	55.6	56.0	54.6	55.2	44.1	44.4	43.1	43.6
Three Winds Three Winds Tower Road	CF44 9PY	Dwelling	58.5	59.1	56.3	56.6	46.7	47.2	44.6	44.9
1 Tower Road	CF44 9PY	Dwelling	50.1	50.1	49.4	50.0	39.1	39.1	38.4	38.9
4 Tower Road	CF44 9PY	Dwelling	51.4	52.1	50.1	50.4	40.2	40.9	39.1	39.4
5 Tower Road	CF44 9PY	Dwelling	51.5	52.1	50.7	51.3	40.4	40.9	39.7	40.1
Bryncethin 6 Tower Road	CF44 9PY	Dwelling	53.0	53.5	52.3	52.9	41.7	42.1	41.1	41.5
7 Tower Road	CF44 9PY	Dwelling	50.9	51.4	50.4	50.9	39.8	40.2	39.3	39.8
8 Tower Road	CF44 9PY	Dwelling	50.4	51.0	49.9	50.4	39.3	39.9	38.9	39.3
11 Tower Road	CF44 9PY	Dwelling	56.0	56.7	53.9	54.1	44.4	45.0	42.5	42.7
1 Bryncynon	CF44 9PZ	Dwelling	58.7	60.1	60.0	59.5	46.8	48.0	48.0	47.5
2 Bryncynon	CF44 9PZ	Dwelling	58.9	60.3	60.2	59.7	47.0	48.2	48.2	47.7
3 Bryncynon	CF44 9PZ	Dwelling	58.9	60.3	60.3	59.8	47.0	48.2	48.2	47.8
4 Bryncynon	CF44 9PZ	Dwelling	58.8	60.2	60.2	59.7	46.9	48.2	48.2	47.7
5 Bryncynon	CF44 9PZ	Dwelling	45.4	45.5	45.8	46.7	34.9	34.9	35.2	36.0
6 Bryncynon	CF44 9PZ	Dwelling	44.6	44.3	44.2	45.1	34.1	33.8	33.8	34.5
7 Bryncynon	CF44 9PZ	Dwelling	45.0	44.6	44.6	45.5	34.5	34.1	34.1	34.9
8 Bryncynon	CF44 9PZ	Dwelling	49.4	49.5	49.3	50.1	38.5	38.6	38.4	39.1
9 Bryncynon	CF44 9PZ	Dwelling	47.7	47.7	47.4	48.2	36.9	36.9	36.6	37.3
10 Bryncynon	CF44 9PZ	Dwelling	45.8	46.2	45.7	46.4	35.2	35.5	35.1	35.7
11 Bryncynon	CF44 9PZ	Dwelling	46.2	46.5	46.2	46.9	35.5	35.8	35.6	36.2
12 Bryncynon	CF44 9PZ	Dwelling	48.7	48.6	48.7	49.6	37.8	37.7	37.8	38.6
13 Bryncynon	CF44 9PZ	Dwelling	44.2	44.0	44.2	45.1	33.7	33.6	33.8	34.5
14 Bryncynon	CF44 9PZ	Dwelling	44.0	43.6	43.9	44.8	33.5	33.2	33.5	34.3
15 Bryncynon	CF44 9PZ	Dwelling	44.4	44.0	44.2	45.2	33.9	33.5	33.8	34.6
16 Bryncynon	CF44 9PZ	Dwelling	44.9	44.6	44.8	45.7	34.4	34.1	34.3	35.1
17 Bryncynon	CF44 9PZ	Dwelling	53.4	53.5	52.5	53.4	42.0	42.2	41.2	42.0
18 Bryncynon	CF44 9PZ	Dwelling	53.2	53.4	52.2	53.0	41.9	42.0	41.0	41.7
19 Bryncynon	CF44 9PZ	Dwelling	46.4	46.2	46.5	47.4	35.7	35.5	35.8	36.6
20 Bryncynon	CF44 9PZ	Dwelling	49.6	49.4	49.3	50.2	38.6	38.5	38.4	39.2
21 Bryncynon	CF44 9PZ	Dwelling	49.9	50.5	50.5	50.8	38.9	39.4	39.4	39.7
22 Bryncynon	CF44 9PZ	Dwelling	58.6	59.8	59.6	59.3	46.7	47.8	47.6	47.3
23 Bryncynon	CF44 9PZ	Dwelling	58.4	59.6	59.4	59.1	46.5	47.6	47.4	47.1
24 Bryncynon	CF44 9PZ	Dwelling	58.6	59.8	59.6	59.3	46.7	47.8	47.6	47.4
25 Bryncynon	CF44 9PZ	Dwelling	58.4	59.6	59.4	59.1	46.5	47.6	47.4	47.1
Longmeadow 1 Meadow Lane	CF44 9QD	Dwelling	54.6	54.7	53.9	54.6	43.1	43.2	42.5	43.1
Longmeadow 2 Meadow Lane	CF44 9QD	Dwelling	54.9	55.0	54.2	54.9	43.4	43.5	42.7	43.4
Long Meadow 3 Meadow Lane	CF44 9QD	Dwelling	52.5	52.9	52.3	52.9	41.3	41.6	41.0	41.5
Heids Heids Long Meadow Close	CF44 9QE	Dwelling	50.3	50.9	49.6	49.7	39.3	39.8	38.6	38.7
1 Long Meadow Close	CF44 9QE	Dwelling	52.0	52.4	51.4	51.9	40.8	41.2	40.3	40.7

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
2 Long Meadow Close	CF44 9QE	Dwelling	51.7	52.0	51.1	51.6	40.5	40.8	39.9	40.4
3 Long Meadow Close	CF44 9QE	Dwelling	51.4	51.8	50.9	51.4	40.2	40.6	39.8	40.2
4 Long Meadow Close	CF44 9QE	Dwelling	49.1	49.8	48.4	48.7	38.2	38.8	37.6	37.8
5 Long Meadow Close	CF44 9QE	Dwelling	49.3	49.8	48.2	48.4	38.4	38.8	37.4	37.5
Ivy Cottages 1 Tramway	CF44 9QF	Dwelling	50.3	50.7	49.5	50.2	39.2	39.6	38.6	39.2
Ivy Cottages 2 Tramway	CF44 9QF	Dwelling	49.9	50.2	49.1	50.0	38.9	39.1	38.2	39.0
Ivy Cottages 3 Tramway	CF44 9QF	Dwelling	50.1	50.4	49.1	50.1	39.1	39.3	38.2	39.0
Ivy Cottages 4 Tramway	CF44 9QF	Dwelling	47.0	47.4	46.6	47.3	36.3	36.6	35.9	36.6
Ivy Cottages 5 Tramway	CF44 9QF	Dwelling	48.0	48.4	47.3	48.0	37.2	37.5	36.5	37.2
54A Cae Felin Parc	CF44 9QG	Dwelling	48.3	49.3	49.5	49.4	37.5	38.3	38.6	38.5
1 Cae Felin Parc	CF44 9QG	Dwelling	54.5	56.5	56.9	56.0	43.1	44.8	45.2	44.4
2 Cae Felin Parc	CF44 9QG	Dwelling	57.2	59.2	59.5	58.7	45.5	47.2	47.5	46.8
3 Cae Felin Parc	CF44 9QG	Dwelling	45.6	45.5	45.5	46.2	35.0	34.9	34.9	35.5
4 Cae Felin Parc	CF44 9QG	Dwelling	45.6	46.4	46.4	46.4	35.0	35.7	35.7	35.8
5 Cae Felin Parc	CF44 9QG	Dwelling	45.6	46.3	46.3	46.3	35.0	35.7	35.6	35.7
6 Cae Felin Parc	CF44 9QG	Dwelling	46.7	47.4	47.4	47.6	36.0	36.6	36.6	36.8
7 Cae Felin Parc	CF44 9QG	Dwelling	45.1	45.9	45.8	45.8	34.6	35.3	35.2	35.2
8 Cae Felin Parc	CF44 9QG	Dwelling	45.3	46.1	45.9	46.0	34.8	35.4	35.2	35.4
9 Cae Felin Parc	CF44 9QG	Dwelling	46.4	47.0	46.9	47.2	35.8	36.3	36.2	36.5
10 Cae Felin Parc	CF44 9QG	Dwelling	46.2	46.7	46.6	46.8	35.5	36.0	35.9	36.1
11 Cae Felin Parc	CF44 9QG	Dwelling	45.6	46.2	46.0	46.2	35.0	35.5	35.4	35.6
12 Cae Felin Parc	CF44 9QG	Dwelling	46.9	47.2	47.3	47.7	36.2	36.5	36.5	36.9
13 Cae Felin Parc	CF44 9QG	Dwelling	45.9	46.4	46.3	46.7	35.2	35.7	35.7	36.0
14 Cae Felin Parc	CF44 9QG	Dwelling	52.2	52.5	51.7	52.3	41.0	41.2	40.5	41.1
15 Cae Felin Parc	CF44 9QG	Dwelling	46.5	46.5	46.6	47.3	35.8	35.8	35.9	36.5
16 Cae Felin Parc	CF44 9QG	Dwelling	49.7	49.7	49.8	50.5	38.7	38.7	38.8	39.4
17 Cae Felin Parc	CF44 9QG	Dwelling	48.3	49.1	49.3	49.3	37.4	38.2	38.4	38.4
18 Cae Felin Parc	CF44 9QG	Dwelling	48.3	49.0	49.1	49.3	37.5	38.1	38.2	38.4
19 Cae Felin Parc	CF44 9QG	Dwelling	51.5	52.6	52.6	52.4	40.3	41.3	41.3	41.1
20 Cae Felin Parc	CF44 9QG	Dwelling	54.5	56.1	56.2	55.6	43.0	44.5	44.6	44.0
21 Cae Felin Parc	CF44 9QG	Dwelling	56.9	58.9	59.4	58.5	45.2	47.0	47.4	46.6
22 Cae Felin Parc	CF44 9QG	Dwelling	58.2	60.2	60.6	59.7	46.4	48.2	48.5	47.7
23 Cae Felin Parc	CF44 9QG	Dwelling	54.3	55.9	56.0	55.3	42.8	44.3	44.4	43.8
24 Cae Felin Parc	CF44 9QG	Dwelling	48.3	49.8	49.9	49.5	37.5	38.8	38.9	38.6
25 Cae Felin Parc	CF44 9QG	Dwelling	52.2	53.4	53.1	52.8	41.0	42.0	41.7	41.5
26 Cae Felin Parc	CF44 9QG	Dwelling	50.3	50.9	50.9	51.1	39.3	39.8	39.8	40.0
27 Cae Felin Parc	CF44 9QG	Dwelling	47.0	48.0	47.8	47.8	36.3	37.2	37.0	37.0
28 Cae Felin Parc	CF44 9QG	Dwelling	45.3	45.3	45.2	46.0	34.8	34.8	34.7	35.3
29 Cae Felin Parc	CF44 9QG	Dwelling	45.6	45.5	45.4	46.2	35.0	34.9	34.8	35.5
30 Cae Felin Parc	CF44 9QG	Dwelling	52.4	52.5	51.3	52.2	41.2	41.2	40.1	40.9
31 Cae Felin Parc	CF44 9QG	Dwelling	44.5	44.7	44.2	44.9	34.0	34.2	33.8	34.4
32 Cae Felin Parc	CF44 9QG	Dwelling	46.0	45.8	45.9	46.8	35.4	35.2	35.3	36.1
33 Cae Felin Parc	CF44 9QG	Dwelling	50.3	50.3	49.8	50.7	39.3	39.2	38.8	39.6
34 Cae Felin Parc	CF44 9QG	Dwelling	50.6	51.2	51.4	51.7	39.5	40.0	40.2	40.5
35 Cae Felin Parc	CF44 9QG	Dwelling	49.0	49.6	49.6	49.9	38.0	38.6	38.6	38.9
36 Cae Felin Parc	CF44 9QG	Dwelling	48.1	49.0	49.2	49.1	37.2	38.0	38.2	38.2
37 Cae Felin Parc	CF44 9QG	Dwelling	47.5	48.9	49.1	48.7	36.8	38.0	38.1	37.8
38 Cae Felin Parc	CF44 9QG	Dwelling	53.8	55.4	55.7	55.1	42.4	43.8	44.1	43.6
39 Cae Felin Parc	CF44 9QG	Dwelling	48.7	50.0	50.3	50.0	37.9	39.0	39.2	38.9
40 Cae Felin Parc	CF44 9QG	Dwelling	48.1	48.2	47.9	48.7	37.3	37.3	37.1	37.8
41 Cae Felin Parc	CF44 9QG	Dwelling	50.5	50.9	51.1	51.4	39.5	39.8	39.9	40.3
42 Cae Felin Parc	CF44 9QG	Dwelling	44.4	44.5	44.3	45.0	34.0	34.0	33.8	34.5
43 Cae Felin Parc	CF44 9QG	Dwelling	45.6	46.2	46.3	46.4	35.0	35.6	35.6	35.8
44 Cae Felin Parc	CF44 9QG	Dwelling	49.0	48.9	48.7	49.7	38.1	38.0	37.8	38.7
45 Cae Felin Parc	CF44 9QG	Dwelling	50.1	50.0	50.2	51.1	39.1	39.0	39.2	39.9
46 Cae Felin Parc	CF44 9QG	Dwelling	51.6	51.6	50.4	51.3	40.4	40.5	39.3	40.1
47 Cae Felin Parc	CF44 9QG	Dwelling	46.4	47.5	47.7	47.5	35.8	36.8	36.9	36.7
48 Cae Felin Parc	CF44 9QG	Dwelling	47.9	47.9	47.7	48.5	37.1	37.1	36.9	37.6
49 Cae Felin Parc	CF44 9QG	Dwelling	46.5	47.0	47.1	47.4	35.9	36.3	36.4	36.6
50 Cae Felin Parc	CF44 9QG	Dwelling	45.4	46.2	46.1	46.3	34.9	35.6	35.5	35.6
51 Cae Felin Parc	CF44 9QG	Dwelling	50.6	50.8	50.9	51.4	39.5	39.7	39.8	40.2
52 Cae Felin Parc	CF44 9QG	Dwelling	50.4	50.3	50.3	51.0	39.3	39.3	39.3	39.9
53 Cae Felin Parc	CF44 9QG	Dwelling	51.4	51.5	50.4	51.2	40.2	40.4	39.3	40.0
54 Cae Felin Parc	CF44 9QG	Dwelling	46.7	47.2	47.3	47.6	36.0	36.5	36.6	36.8
55 Cae Felin Parc	CF44 9QG	Dwelling	51.3	51.2	51.2	52.1	40.2	40.1	40.1	40.9
56 Cae Felin Parc	CF44 9QG	Dwelling	50.8	51.0	51.0	51.6	39.7	39.9	39.9	40.4
57 Cae Felin Parc	CF44 9QG	Dwelling	49.1	49.0	48.8	49.8	38.1	38.1	37.9	38.8
58 Cae Felin Parc	CF44 9QG	Dwelling	47.4	47.3	47.2	48.1	36.7	36.6	36.5	37.3
59 Cae Felin Parc	CF44 9QG	Dwelling	45.7	45.9	45.9	46.4	35.1	35.3	35.3	35.8
1 Denbeigh Court	CF44 9QH	Dwelling	60.8	61.0	59.7	61.8	48.7	48.8	47.7	49.6
2 Denbeigh Court	CF44 9QH	Dwelling	61.5	60.3	59.3	60.6	49.4	48.3	47.4	48.6
3 Denbeigh Court	CF44 9QH	Dwelling	59.9	59.8	58.7	60.4	47.9	47.8	46.8	48.4
4 Denbeigh Court	CF44 9QH	Dwelling	56.0	56.0	54.8	56.6	44.3	44.4	43.3	44.9
5 Denbeigh Court	CF44 9QH	Dwelling	60.5	60.4	59.4	61.2	48.5	48.3	47.5	49.0
6 Denbeigh Court	CF44 9QH	Dwelling	61.2	61.0	60.1	61.8	49.0	48.9	48.0	49.6
7 Denbeigh Court	CF44 9QH	Dwelling	66.5	65.7	64.1	65.8	53.8	53.1	51.6	53.2
8 Denbeigh Court	CF44 9QH	Dwelling	61.1	60.7	60.0	61.7	49.0	48.6	48.0	49.5
9 Denbeigh Court	CF44 9QH	Dwelling	56.6	56.4	55.7	57.3	44.9	44.7	44.2	45.6
10 Denbeigh Court	CF44 9QH	Dwelling	59.7	59.1	58.6	59.9	47.7	47.2	46.7	47.9
11 Denbeigh Court	CF44 9QH	Dwelling	60.2	59.3	58.7	60.0	48.2	47.3	46.9	47.9
12 Denbeigh Court	CF44 9QH	Dwelling	67.7	65.9	64.7	65.8	54.9	53.3	52.2	53.2
13 Denbeigh Court	CF44 9QH	Dwelling	67.0	65.2	64.3	65.3	54.3	52.6	51.9	52.8
14 Denbeigh Court	CF44 9QH	Dwelling	54.0	52.8	52.1	53.4	42.6	41.5	40.9	42.0
15 Denbeigh Court	CF44 9QH	Dwelling	54.0	52.8	52.1	53.3	42.6	41.5	40.9	42.0
16 Denbeigh Court	CF44 9QH	Dwelling	53.8	52.6	51.8	53.0	42.4	41.3	40.6	41.7
17 Denbeigh Court	CF44 9QH	Dwelling	54.1	52.7	51.8	52.9	42.7	41.4	40.6	41.6
18 Denbeigh Court	CF44 9QH	Dwelling	58.6	57.1	56.4	57.6	46.8	45.4	44.8	45.8
19 Denbeigh Court	CF44 9QH	Dwelling	53.7	52.4	51.7	52.9	42.3	41.1	40.5	41.6
20 Denbeigh Court	CF44 9QH	Dwelling	53.4	52.1	51.5	52.7	42.1	40.9	40.4	41.4
21 Denbeigh Court	CF44 9QH	Dwelling	53.6	52.3	51.7	52.9	42.2	41.0	40.5	41.6
22 Denbeigh Court	CF44 9QH	Dwelling	53.4	52.0	51.5	52.6	42.0	40.8	40.4	41.4
23 Denbeigh Court	CF44 9QH	Dwelling	53.3	52.0	51.7	52.8	42.0	40.8	40.5	41.5
24 Denbeigh Court	CF44 9QH	Dwelling	57.3	55.9	56.0	57.2	45.6	44.2	44.4	45.4
25 Denbeigh Court	CF44 9QH	Dwelling	66.0	64.5	64.2	65.3	53.4	52.0	51.8	52.7
26 Denbeigh Court	CF44 9QH	Dwelling	64.3	62.7	62.4	63.5	51.8	50.4	50.1	51.1
27 Denbeigh Court	CF44 9QH	Dwelling	56.6	55.7	55.8	56.9	44.9	44.1	44.2	45.2
28 Denbeigh Court	CF44 9QH	Dwelling	61.6	62.4	59.6	62.7	49.4	50.2	47.6	50.4
29 Denbeigh Court	CF44 9QH	Dwelling	61.7	62.5	59.9	63.0	49.6	50.2	47.9	50.7
30 Denbeigh Court	CF44 9QH	Dwelling	56.1	56.4	55.2	57.6	44.5	44.7	43.6	45.8
31 Denbeigh Court	CF44 9QH	Dwelling	56.2	56.4	55.3	57.6	44.6	44.7	43.8	45.8
32 Denbeigh Court	CF44 9QH	Dwelling	52.1	51.2	50.9	52.1	40.9	40.1	39.8	40.9
33 Denbeigh Court	CF44 9QH	Dwelling	61.5	59.9	59.6	60.7	49.3	47.9	47.6	48.6
34 Denbeigh Court	CF44 9QH	Dwelling	53.0	52.3	51.7	53.1	41.7	41.1	40.5	41.8
35 Denbeigh Court	CF44 9QH	Dwelling	60.3	60.8	59.4	62.2	48.2	48.7	47.5	49.9
60 Cae Felin Parc	CF44 9QQ	Dwelling	47.6	47.9	47.9	48.4	36.8	37.1	37.1	37.6
61 Cae Felin Parc	CF44 9QQ	Dwelling	49.0	48.9	48.8	49.8	38.1	37.9	37.9	38.8
62 Cae Felin Parc	CF44 9QQ	Dwelling	51.5	51.4	51.4	52.2	40.4	40.2	40.2	40.9

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
63 Cae Felin Parc	CF44 9QQ	Dwelling	49.2	49.0	49.0	50.1	38.2	38.1	38.1	39.1
64 Cae Felin Parc	CF44 9QQ	Dwelling	46.8	46.6	46.4	47.4	36.1	35.9	35.7	36.6
65 Cae Felin Parc	CF44 9QQ	Dwelling	54.6	54.5	54.0	55.0	43.1	43.1	42.6	43.5
66 Cae Felin Parc	CF44 9QQ	Dwelling	45.7	46.1	45.7	46.4	35.1	35.5	35.1	35.7
67 Cae Felin Parc	CF44 9QQ	Dwelling	47.5	47.5	47.2	48.1	36.8	36.7	36.4	37.3
68 Cae Felin Parc	CF44 9QQ	Dwelling	50.6	50.5	50.3	51.2	39.5	39.4	39.3	40.1
69 Cae Felin Parc	CF44 9QQ	Dwelling	47.8	47.6	47.5	48.5	37.0	36.8	36.7	37.6
70 Cae Felin Parc	CF44 9QQ	Dwelling	47.1	47.3	47.4	47.9	36.4	36.6	36.6	37.1
71 Cae Felin Parc	CF44 9QQ	Dwelling	46.9	47.1	47.2	47.7	36.2	36.4	36.4	36.9
72 Cae Felin Parc	CF44 9QQ	Dwelling	47.1	47.3	47.4	47.9	36.4	36.6	36.6	37.1
73 Cae Felin Parc	CF44 9QQ	Dwelling	46.5	46.9	46.8	47.2	35.8	36.2	36.1	36.5
74 Cae Felin Parc	CF44 9QQ	Dwelling	46.5	46.9	46.8	47.2	35.9	36.2	36.1	36.5
75 Cae Felin Parc	CF44 9QQ	Dwelling	46.6	46.9	46.8	47.3	35.9	36.2	36.1	36.6
76 Cae Felin Parc	CF44 9QQ	Dwelling	46.5	46.7	46.6	47.2	35.8	36.0	36.0	36.4
77 Cae Felin Parc	CF44 9QQ	Dwelling	47.1	47.3	47.3	47.9	36.4	36.5	36.6	37.1
78 Cae Felin Parc	CF44 9QQ	Dwelling	47.1	47.3	47.3	47.8	36.3	36.5	36.5	37.0
79 Cae Felin Parc	CF44 9QQ	Dwelling	47.0	47.2	47.3	47.8	36.3	36.5	36.5	37.0
80 Cae Felin Parc	CF44 9QQ	Dwelling	47.0	47.3	47.3	47.8	36.3	36.6	36.6	37.0
81 Cae Felin Parc	CF44 9QQ	Dwelling	46.7	47.0	47.0	47.5	36.0	36.2	36.3	36.7
82 Cae Felin Parc	CF44 9QQ	Dwelling	46.3	46.5	46.5	47.1	35.7	35.8	35.8	36.3
83 Cae Felin Parc	CF44 9QQ	Dwelling	46.6	46.6	46.6	47.2	35.9	35.9	35.9	36.5
84 Cae Felin Parc	CF44 9QQ	Dwelling	46.4	46.3	46.3	47.0	35.7	35.7	35.7	36.3
85 Cae Felin Parc	CF44 9QQ	Dwelling	46.3	46.4	46.4	47.0	35.6	35.7	35.7	36.2
86 Cae Felin Parc	CF44 9QQ	Dwelling	46.3	46.4	46.4	47.0	35.6	35.8	35.8	36.2
87 Cae Felin Parc	CF44 9QQ	Dwelling	45.9	46.1	46.1	46.7	35.3	35.5	35.5	36.0
88 Cae Felin Parc	CF44 9QQ	Dwelling	46.0	46.2	46.2	46.8	35.4	35.6	35.5	36.1
89 Cae Felin Parc	CF44 9QQ	Dwelling	45.1	45.5	45.3	45.7	34.6	34.9	34.7	35.1
90 Cae Felin Parc	CF44 9QQ	Dwelling	45.0	45.3	45.1	45.7	34.5	34.7	34.6	35.1
91 Cae Felin Parc	CF44 9QQ	Dwelling	48.0	48.1	47.7	48.6	37.2	37.3	36.9	37.7
92 Cae Felin Parc	CF44 9QQ	Dwelling	47.9	47.9	47.6	48.6	37.1	37.1	36.8	37.7
93 Cae Felin Parc	CF44 9QQ	Dwelling	45.8	45.9	45.8	46.5	35.2	35.3	35.2	35.8
94 Cae Felin Parc	CF44 9QQ	Dwelling	46.0	46.1	46.0	46.7	35.4	35.4	35.4	36.0
95 Cae Felin Parc	CF44 9QQ	Dwelling	45.2	45.4	45.3	45.9	34.6	34.8	34.7	35.3
96 Cae Felin Parc	CF44 9QQ	Dwelling	45.1	45.3	45.2	45.8	34.6	34.8	34.7	35.2
97 Cae Felin Parc	CF44 9QQ	Dwelling	44.7	45.0	44.7	45.3	34.2	34.4	34.3	34.7
98 Cae Felin Parc	CF44 9QQ	Dwelling	45.0	45.2	45.0	45.5	34.4	34.6	34.5	35.0
99 Cae Felin Parc	CF44 9QQ	Dwelling	45.2	45.3	45.2	45.8	34.6	34.7	34.7	35.2
100 Cae Felin Parc	CF44 9QQ	Dwelling	45.6	45.7	45.6	46.2	35.0	35.1	35.1	35.6
101 Cae Felin Parc	CF44 9QQ	Dwelling	45.1	45.3	45.2	45.8	34.6	34.8	34.7	35.2
102 Cae Felin Parc	CF44 9QQ	Dwelling	46.3	46.4	46.4	47.0	35.7	35.7	35.7	36.2
103 Cae Felin Parc	CF44 9QQ	Dwelling	46.0	46.2	46.2	46.7	35.4	35.5	35.5	36.0
104 Cae Felin Parc	CF44 9QQ	Dwelling	44.7	45.3	44.9	45.2	34.2	34.7	34.4	34.7
105 Cae Felin Parc	CF44 9QQ	Dwelling	45.5	46.0	45.8	46.1	35.0	35.4	35.2	35.5
106 Cae Felin Parc	CF44 9QQ	Dwelling	44.9	45.4	45.2	45.6	34.4	34.8	34.7	35.0
107 Cae Felin Parc	CF44 9QQ	Dwelling	47.6	47.9	47.8	48.2	36.8	37.1	37.0	37.4
108 Cae Felin Parc	CF44 9QQ	Dwelling	46.7	46.3	46.8	47.7	36.1	35.6	36.1	36.9
109 Cae Felin Parc	CF44 9QQ	Dwelling	48.4	49.6	49.4	49.1	37.5	38.6	38.4	38.1
110 Cae Felin Parc	CF44 9QQ	Dwelling	47.2	48.5	48.5	48.2	36.5	37.6	37.6	37.4
111 Cae Felin Parc	CF44 9QQ	Dwelling	50.7	52.4	52.7	52.1	39.7	41.1	41.4	40.9
112 Cae Felin Parc	CF44 9QQ	Dwelling	57.1	59.2	59.6	58.6	45.3	47.2	47.6	46.7
1 Oakbrook Drive	CF44 9QS	Dwelling	54.5	54.5	55.1	56.2	43.0	43.0	43.6	44.6
2 Oakbrook Drive	CF44 9QS	Dwelling	50.2	49.5	50.0	51.0	39.2	38.5	39.0	39.8
3 Oakbrook Drive	CF44 9QS	Dwelling	46.5	46.4	48.5	49.5	35.8	35.8	37.6	38.5
4 Oakbrook Drive	CF44 9QS	Dwelling	50.2	50.4	51.6	52.6	39.1	39.3	40.4	41.4
5 Oakbrook Drive	CF44 9QS	Dwelling	50.0	50.2	51.2	52.3	39.0	39.1	40.1	41.1
6 Oakbrook Drive	CF44 9QS	Dwelling	52.1	52.2	52.8	53.9	40.8	40.9	41.5	42.5
7 Oakbrook Drive	CF44 9QS	Dwelling	50.1	49.7	50.9	52.0	39.1	38.7	39.8	40.8
8 Oakbrook Drive	CF44 9QS	Dwelling	55.0	56.9	57.4	56.5	43.5	45.2	45.6	44.8
9 Oakbrook Drive	CF44 9QS	Dwelling	57.6	59.6	60.1	59.1	45.8	47.7	48.1	47.2
10 Oakbrook Drive	CF44 9QS	Dwelling	54.9	56.8	57.3	56.4	43.4	45.1	45.5	44.7
11 Oakbrook Drive	CF44 9QS	Dwelling	58.2	60.2	60.6	59.7	46.4	48.1	48.5	47.7
12 Oakbrook Drive	CF44 9QS	Dwelling	56.3	58.3	58.8	57.8	44.7	46.5	46.9	46.0
13 Oakbrook Drive	CF44 9QS	Dwelling	53.7	55.7	56.1	55.2	42.3	44.1	44.5	43.7
14 Oakbrook Drive	CF44 9QS	Dwelling	57.0	58.7	59.2	58.4	45.3	46.8	47.2	46.6
15 Oakbrook Drive	CF44 9QS	Dwelling	57.9	59.7	60.1	59.3	46.1	47.7	48.1	47.4
16 Oakbrook Drive	CF44 9QS	Dwelling	57.6	59.3	59.7	59.0	45.9	47.3	47.7	47.1
17 Oakbrook Drive	CF44 9QS	Dwelling	50.0	51.4	51.7	51.3	39.0	40.2	40.5	40.1
18 Oakbrook Drive	CF44 9QS	Dwelling	55.3	57.2	57.6	56.8	43.8	45.5	45.8	45.1
1 Oakland Close	CF44 9QT	Dwelling	64.6	63.1	63.7	64.8	52.1	50.8	51.3	52.3
2 Oakland Close	CF44 9QT	Dwelling	56.7	56.7	56.9	58.0	45.0	45.1	45.1	46.1
1 Moorland Close	CF44 9QU	Dwelling	56.2	55.9	57.3	58.4	44.6	44.3	45.5	46.5
2 Moorland Close	CF44 9QU	Dwelling	53.3	52.7	53.8	54.9	42.0	41.5	42.4	43.4
3 Moorland Close	CF44 9QU	Dwelling	57.6	56.8	57.7	58.6	45.8	45.1	45.9	46.7
4 Moorland Close	CF44 9QU	Dwelling	52.3	53.4	53.7	53.5	41.1	42.0	42.3	42.1
5 Moorland Close	CF44 9QU	Dwelling	56.3	57.6	58.0	57.5	44.7	45.9	46.2	45.8
11A The Pines	CF44 9QW	Dwelling	53.4	54.4	54.8	54.6	42.1	42.9	43.3	43.1
1 The Pines	CF44 9QW	Dwelling	56.2	55.3	56.3	57.4	44.5	43.8	44.7	45.7
2 The Pines	CF44 9QW	Dwelling	57.8	56.4	57.7	58.8	46.0	44.7	45.9	46.9
3 The Pines	CF44 9QW	Dwelling	56.8	56.3	56.8	58.0	45.1	44.7	45.1	46.1
4 The Pines	CF44 9QW	Dwelling	61.7	61.3	61.4	62.5	49.5	49.1	49.2	50.2
5 The Pines	CF44 9QW	Dwelling	54.5	54.5	55.3	56.3	43.0	43.1	43.7	44.6
6 The Pines	CF44 9QW	Dwelling	60.8	60.5	60.7	61.9	48.7	48.5	48.6	49.7
7 The Pines	CF44 9QW	Dwelling	54.3	54.9	55.2	55.6	42.8	43.3	43.7	44.0
8 The Pines	CF44 9QW	Dwelling	60.4	60.1	60.3	61.4	48.3	48.1	48.2	49.2
9 The Pines	CF44 9QW	Dwelling	55.9	57.2	57.6	57.1	44.3	45.5	45.8	45.4
10 The Pines	CF44 9QW	Dwelling	58.5	58.7	58.6	59.7	46.6	46.8	46.7	47.7
11 The Pines	CF44 9QW	Dwelling	52.9	53.8	54.2	54.0	41.6	42.4	42.8	42.6
12 The Pines	CF44 9QW	Dwelling	57.2	57.3	57.4	58.5	45.5	45.6	45.6	46.6
14 The Pines	CF44 9QW	Dwelling	56.6	56.6	56.3	57.4	44.9	45.0	44.7	45.7
15 The Pines	CF44 9QW	Dwelling	56.4	57.2	57.6	57.5	44.8	45.5	45.8	45.7
16 The Pines	CF44 9QW	Dwelling	57.9	58.1	57.7	58.8	46.1	46.3	45.9	46.9
17 The Pines	CF44 9QW	Dwelling	55.7	56.5	56.9	56.8	44.1	44.8	45.2	45.1
18 The Pines	CF44 9QW	Dwelling	48.6	48.6	50.8	51.9	37.7	37.7	39.7	40.7
19 The Pines	CF44 9QW	Dwelling	57.7	58.7	59.1	58.8	45.9	46.8	47.2	46.9
20 The Pines	CF44 9QW	Dwelling	55.6	55.7	55.7	56.8	44.0	44.1	44.1	45.1
21 The Pines	CF44 9QW	Dwelling	50.2	51.6	51.9	51.5	39.2	40.4	40.7	40.3
1 Meadow Close	CF44 9QX	Dwelling	56.7	55.7	56.5	57.5	45.0	44.1	44.8	45.8
2 Meadow Close	CF44 9QX	Dwelling	56.7	55.5	56.5	57.6	45.0	44.0	44.8	45.8
3 Meadow Close	CF44 9QX	Dwelling	57.7	56.5	57.9	59.0	45.9	44.8	46.1	47.1
4 Meadow Close	CF44 9QX	Dwelling	60.2	58.8	60.8	62.0	48.2	46.9	48.7	49.7
5 Meadow Close	CF44 9QX	Dwelling	61.5	60.2	62.1	63.2	49.3	48.1	49.8	50.9
6 Meadow Close	CF44 9QX	Dwelling	64.3	63.0	64.6	65.8	51.9	50.7	52.1	53.2
7 Meadow Close	CF44 9QX	Dwelling	63.9	62.4	63.5	64.6	51.5	50.2	51.2	52.1
8 Meadow Close	CF44 9QX	Dwelling	53.3	52.2	53.9	54.9	42.0	41.0	42.5	43.4
9 Meadow Close	CF44 9QX	Dwelling	63.9	62.4	62.8	63.9	51.5	50.2	50.5	51.5
10 Meadow Close	CF44 9QX	Dwelling	59.8	58.5	60.2	61.3	47.8	46.6	48.1	49.1
11 Meadow Close	CF44 9QX	Dwelling	58.4	57.4	58.8	59.9	46.5	45.6	46.9	47.9

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
12 Meadow Close	CF44 9QX	Dwelling	56.9	55.9	57.1	58.2	45.2	44.3	45.4	46.3
13 Meadow Close	CF44 9QX	Dwelling	60.2	58.9	60.9	62.1	48.2	47.0	48.8	49.8
1 Riverside	CF44 9QY	Dwelling	54.4	54.4	53.8	55.0	43.0	43.0	42.4	43.5
2 Riverside	CF44 9QY	Dwelling	53.8	53.8	52.9	54.2	42.4	42.4	41.6	42.7
3 Riverside	CF44 9QY	Dwelling	59.8	59.0	59.1	60.2	47.8	47.1	47.2	48.1
4 Riverside	CF44 9QY	Dwelling	59.7	58.3	57.8	58.9	47.7	46.5	46.0	47.0
5 Riverside	CF44 9QY	Dwelling	53.5	52.6	52.4	53.3	42.1	41.3	41.1	42.0
6 Riverside	CF44 9QY	Dwelling	53.2	52.3	51.9	52.8	41.9	41.1	40.7	41.5
7 Riverside	CF44 9QY	Dwelling	53.5	52.6	52.3	53.2	42.1	41.4	41.1	41.8
1 Greenwood Drive	CF44 9QZ	Dwelling	60.3	60.5	60.1	61.1	48.2	48.4	48.1	48.9
2 Greenwood Drive	CF44 9QZ	Dwelling	53.9	55.0	55.5	55.1	42.5	43.5	43.9	43.6
3 Greenwood Drive	CF44 9QZ	Dwelling	63.7	63.9	63.6	64.3	51.4	51.5	51.2	51.8
4 Greenwood Drive	CF44 9QZ	Dwelling	51.2	52.0	52.3	52.2	40.1	40.8	41.1	41.0
5 Greenwood Drive	CF44 9QZ	Dwelling	58.3	57.1	59.2	60.3	46.5	45.3	47.2	48.3
6 Greenwood Drive	CF44 9QZ	Dwelling	57.1	55.9	56.9	57.9	45.4	44.3	45.2	46.1
7 Greenwood Drive	CF44 9QZ	Dwelling	57.5	56.2	58.1	59.3	45.8	44.6	46.3	47.3
8 Greenwood Drive	CF44 9QZ	Dwelling	52.2	52.4	53.5	54.3	40.9	41.1	42.1	42.8
9 Greenwood Drive	CF44 9QZ	Dwelling	61.4	60.7	61.6	62.7	49.3	48.6	49.4	50.4
10 Greenwood Drive	CF44 9QZ	Dwelling	52.1	52.3	53.6	54.4	40.9	41.0	42.2	42.9
11 Greenwood Drive	CF44 9QZ	Dwelling	61.2	59.9	61.5	62.7	49.1	47.9	49.4	50.4
12 Greenwood Drive	CF44 9QZ	Dwelling	56.5	55.6	56.4	57.5	44.9	44.0	44.8	45.7
13 Greenwood Drive	CF44 9QZ	Dwelling	59.7	58.5	59.9	61.0	47.7	46.6	47.9	48.8
15 Greenwood Drive	CF44 9QZ	Dwelling	52.2	51.2	53.0	54.1	41.0	40.0	41.7	42.7
17 Greenwood Drive	CF44 9QZ	Dwelling	59.9	59.7	60.5	61.6	47.9	47.7	48.4	49.4
Arosfa Arosfa Foundry Road	CF44 9RA	Dwelling	50.8	51.2	50.4	51.0	39.7	40.1	39.4	39.9
Bron Nant Bron-Nant Foundry Road	CF44 9RA	Dwelling	52.2	52.7	51.8	52.3	41.0	41.4	40.6	41.1
Brooklands Brooklands Foundry Road	CF44 9RA	Dwelling	51.8	52.3	51.3	51.9	40.6	41.1	40.2	40.7
Brookwood Brookwood Foundry Road	CF44 9RA	Dwelling	48.9	49.3	48.5	49.1	38.0	38.3	37.6	38.2
Foundry House Foundry House Foundry Road	CF44 9RA	Dwelling	47.4	47.6	46.8	47.4	36.6	36.8	36.1	36.6
Foundry Road	CF44 9RA	Dwelling	52.5	52.9	52.0	52.6	41.3	41.6	40.8	41.3
Glenbrook Glenbrook Foundry Road	CF44 9RA	Dwelling	49.7	50.2	49.5	50.0	38.7	39.2	38.5	39.0
Hillside Hillside Foundry Road	CF44 9RA	Dwelling	49.6	50.1	49.3	49.8	38.6	39.1	38.3	38.8
Preswylfa Preswylfa Foundry Road	CF44 9RA	Dwelling	52.0	52.5	51.7	52.2	40.8	41.2	40.5	40.9
Sharwood House Sherwood Foundry Road	CF44 9RA	Dwelling	49.2	49.7	48.9	49.5	38.3	38.7	38.0	38.5
Y Bwthyn Y Bwthyn Foundry Road	CF44 9RA	Dwelling	51.3	51.7	50.8	51.4	40.1	40.5	39.7	40.2
Zion English Baptist Church Foundry Road	CF44 9RA	OSR	49.9	50.4	49.7	50.3	38.9	39.4	38.7	39.2
1 Foundry Road	CF44 9RA	Dwelling	52.1	52.5	51.7	52.2	40.9	41.2	40.5	40.9
Manse 2 Foundry Road	CF44 9RA	Dwelling	52.3	52.7	52.0	52.5	41.0	41.4	40.8	41.2
Gorof House 3 Foundry Road	CF44 9RA	Dwelling	51.8	52.2	51.5	52.0	40.6	41.0	40.4	40.8
Afallon 4 Foundry Road	CF44 9RA	Dwelling	49.2	49.7	49.0	49.5	38.3	38.7	38.1	38.5
5 Foundry Road	CF44 9RA	Dwelling	48.8	49.3	48.5	49.0	37.9	38.3	37.6	38.1
6 Foundry Road	CF44 9RA	Dwelling	52.5	52.9	52.0	52.6	41.3	41.6	40.8	41.3
7 Foundry Road	CF44 9RA	Dwelling	52.4	52.8	52.1	52.4	41.1	41.5	40.9	41.2
8 Foundry Road	CF44 9RA	Dwelling	52.0	52.6	51.7	51.2	40.8	41.3	40.5	40.1
9 Foundry Road	CF44 9RA	Dwelling	57.6	58.4	57.5	56.9	45.9	46.5	45.7	45.2
Hirwaun Y M C A Manchester Place	CF44 9RB	OSR	50.6	51.2	50.3	50.8	39.5	40.1	39.2	39.7
Llanvirn Bungalow Llanvirn Manchester Place	CF44 9RB	Dwelling	51.0	51.6	50.3	50.6	39.9	40.4	39.2	39.5
Maes Y Fan Maesyfan Manchester Place	CF44 9RB	Dwelling	50.3	50.9	49.7	50.1	39.3	39.8	38.7	39.1
1 Manchester Place	CF44 9RB	Dwelling	54.8	55.3	53.6	54.0	43.3	43.7	42.2	42.6
2 Manchester Place	CF44 9RB	Dwelling	50.2	50.5	49.7	50.2	39.2	39.4	38.7	39.2
3 Manchester Place	CF44 9RB	Dwelling	50.7	51.2	50.4	50.9	39.6	40.0	39.3	39.8
4 Manchester Place	CF44 9RB	Dwelling	53.9	54.4	53.2	53.6	42.5	42.9	41.9	42.2
5 Manchester Place	CF44 9RB	Dwelling	52.4	53.1	51.7	52.2	41.2	41.7	40.5	40.9
6 Manchester Place	CF44 9RB	Dwelling	52.0	52.2	51.1	51.5	40.8	41.0	40.0	40.3
7 Manchester Place	CF44 9RB	Dwelling	53.2	53.8	52.3	52.8	41.9	42.4	41.1	41.5
8 Manchester Place	CF44 9RB	Dwelling	52.9	53.5	52.0	52.5	41.6	42.1	40.8	41.2
9 Manchester Place	CF44 9RB	Dwelling	52.8	53.4	52.1	52.6	41.5	42.0	40.9	41.3
10 Manchester Place	CF44 9RB	Dwelling	53.6	54.2	52.8	53.3	42.3	42.7	41.5	41.9
11 Manchester Place	CF44 9RB	Dwelling	49.2	49.2	48.4	48.9	38.3	38.2	37.5	38.0
12 Manchester Place	CF44 9RB	Dwelling	48.9	48.8	48.1	48.6	38.0	37.9	37.2	37.7
13 Manchester Place	CF44 9RB	Dwelling	53.4	54.0	52.6	53.1	42.1	42.6	41.3	41.8
14 Manchester Place	CF44 9RB	Dwelling	49.7	49.6	48.9	49.4	38.7	38.6	38.0	38.4
15 Manchester Place	CF44 9RB	Dwelling	49.8	49.6	48.9	49.5	38.8	38.6	38.0	38.5
16 Manchester Place	CF44 9RB	Dwelling	53.9	54.3	53.3	53.9	42.5	42.9	42.0	42.5
Ger Y Mynydd 1 Long Meadow Close	CF44 9RD	Dwelling	50.4	51.1	49.4	49.6	39.4	40.0	38.4	38.6
Ger Y Mynydd 2 Long Meadow Close	CF44 9RD	Dwelling	50.5	51.2	49.3	49.5	39.5	40.0	38.3	38.6
Ger Y Mynydd 3 Long Meadow Close	CF44 9RD	Dwelling	51.2	51.7	49.7	50.0	40.0	40.6	38.7	39.0
Ger Y Mynydd 4 Long Meadow Close	CF44 9RD	Dwelling	51.1	51.7	49.5	49.8	39.9	40.5	38.6	38.8
Ger Y Mynydd 5 Long Meadow Close	CF44 9RD	Dwelling	51.1	51.8	49.3	49.5	39.9	40.6	38.4	38.5
Ger Y Mynydd 6 Long Meadow Close	CF44 9RD	Dwelling	51.3	52.0	49.4	49.5	40.2	40.8	38.4	38.6
Ger Y Mynydd 7 Long Meadow Close	CF44 9RD	Dwelling	54.7	55.4	52.5	52.6	43.2	43.8	41.2	41.3
Ger Y Mynydd 8 Long Meadow Close	CF44 9RD	Dwelling	55.1	55.8	52.7	52.8	43.5	44.2	41.4	41.5
Ger Y Mynydd 9 Long Meadow Close	CF44 9RD	Dwelling	56.4	57.1	53.8	53.9	44.7	45.4	42.4	42.5
Ger Y Mynydd 10 Long Meadow Close	CF44 9RD	Dwelling	57.5	58.2	54.6	54.5	45.8	46.4	43.1	43.1
Ger Y Mynydd 11 Long Meadow Close	CF44 9RD	Dwelling	49.5	49.9	47.8	48.1	38.5	38.9	37.0	37.2
Ger Y Mynydd 12 Long Meadow Close	CF44 9RD	Dwelling	49.5	50.0	47.7	48.0	38.5	39.0	36.9	37.1
Ger Y Mynydd 13 Long Meadow Close	CF44 9RD	Dwelling	50.7	51.2	48.7	48.9	39.6	40.0	37.8	38.0
Ger Y Mynydd 14 Long Meadow Close	CF44 9RD	Dwelling	50.2	50.6	48.2	48.4	39.1	39.5	37.4	37.6
Ger Y Mynydd 15 Long Meadow Close	CF44 9RD	Dwelling	50.4	50.9	48.4	48.6	39.3	39.8	37.5	37.7
Ger Y Mynydd 16 Long Meadow Close	CF44 9RD	Dwelling	55.3	56.0	52.1	51.7	43.7	44.3	40.8	40.5
Ger Y Mynydd 17 Long Meadow Close	CF44 9RD	Dwelling	53.4	54.0	50.9	50.7	42.0	42.6	39.8	39.6
Ger Y Mynydd 18 Long Meadow Close	CF44 9RD	Dwelling	53.1	53.7	50.6	50.4	41.8	42.3	39.5	39.3
Ger Y Mynydd 19 Long Meadow Close	CF44 9RD	Dwelling	53.0	53.7	50.5	50.3	41.7	42.3	39.4	39.3
Ger Y Mynydd 20 Long Meadow Close	CF44 9RD	Dwelling	52.6	53.3	50.0	49.8	41.4	41.9	39.0	38.8
Ger Y Mynydd 21 Long Meadow Close	CF44 9RD	Dwelling	52.8	53.5	50.1	50.0	41.5	42.1	39.1	38.9
Ger Y Mynydd 22 Long Meadow Close	CF44 9RD	Dwelling	52.7	53.4	50.0	49.8	41.4	42.0	38.9	38.8
Ger Y Mynydd 23 Long Meadow Close	CF44 9RD	Dwelling	52.5	53.1	49.7	49.5	41.2	41.8	38.7	38.6
Ger Y Mynydd 24 Long Meadow Close	CF44 9RD	Dwelling	52.4	53.1	49.6	49.4	41.2	41.8	38.7	38.4
Ger Y Mynydd 25 Long Meadow Close	CF44 9RD	Dwelling	50.2	50.9	47.7	47.7	39.1	39.8	36.9	36.9
Ger Y Mynydd 26 Long Meadow Close	CF44 9RD	Dwelling	50.6	51.1	49.2	49.5	39.5	39.9	38.3	38.6
Ger Y Mynydd 27 Long Meadow Close	CF44 9RD	Dwelling	50.1	50.6	48.8	49.2	39.1	39.5	37.9	38.3
Ger Y Mynydd 28 Long Meadow Close	CF44 9RD	Dwelling	49.7	50.4	48.7	49.1	38.7	39.3	37.9	38.2
Ger Y Mynydd 29 Long Meadow Close	CF44 9RD	Dwelling	49.5	50.2	48.7	49.0	38.6	39.2	37.8	38.1
15 The Haven	CF44 9RH	Dwelling	52.2	52.6	51.2	51.7	40.9	41.3	40.1	40.5
30 The Haven	CF44 9RH	Dwelling	52.2	52.6	51.2	51.7	40.9	41.3	40.1	40.5
31 The Haven	CF44 9RH	Dwelling	52.2	52.6	51.2	51.7	40.9	41.3	40.1	40.5
32 The Haven	CF44 9RH	Dwelling	52.2	52.6	51.2	51.7	40.9	41.3	40.1	40.5
1 Caswell Close	CF44 9RL	Dwelling	50.5	50.8	48.4	48.7	39.4	39.7	37.5	37.8
2 Caswell Close	CF44 9RL	Dwelling	54.8	55.5	52.0	52.0	43.3	43.9	40.8	40.8
3 Caswell Close	CF44 9RL	Dwelling	50.7	51.3	47.6	47.6	39.6	40.1	36.9	36.8
4 Caswell Close	CF44 9RL	Dwelling	51.1	51.8	48.0	47.8	40.0	40.6	37.1	37.0
5 Caswell Close	CF44 9RL	Dwelling	52.0	52.6	49.1	49.2	40.8	41.3	38.2	38.2
6 Caswell Close	CF44 9RL	Dwelling	51.5	52.2	48.4	48.2	40.3	41.0	37.5	37.4
7 Caswell Close	CF44 9RL	Dwelling	51.5	52.3	48.5	48.4	40.4	41.0	37.7	37.5
8 Caswell Close	CF44 9RL	Dwelling	51.5	52.2	48.7	48.7	40.4	40.9	37.8	37.8
9 Caswell Close	CF44 9RL	Dwelling	49.7	50.4	47.2	47.2	38.7	39.4	36.5	36.5
10 Caswell Close	CF44 9RL	Dwelling	51.0	51.3	48.8	49.2	39.8	40.2	37.9	38.2

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
11 Caswell Close	CF44 9RL	Dwelling	51.3	51.7	49.3	49.6	40.2	40.5	38.3	38.6
12 Caswell Close	CF44 9RL	Dwelling	51.8	52.2	49.9	50.2	40.6	40.9	38.8	39.2
13 Caswell Close	CF44 9RL	Dwelling	52.4	53.1	49.6	49.5	41.1	41.8	38.6	38.6
14 Caswell Close	CF44 9RL	Dwelling	49.7	50.3	47.3	47.4	38.7	39.2	36.5	36.6
15 Caswell Close	CF44 9RL	Dwelling	53.1	53.8	50.3	50.3	41.8	42.4	39.2	39.2
16 Caswell Close	CF44 9RL	Dwelling	49.8	50.4	47.3	47.4	38.8	39.3	36.5	36.6
17 Caswell Close	CF44 9RL	Dwelling	49.9	50.3	48.0	48.3	38.9	39.3	37.2	37.4
18 Caswell Close	CF44 9RL	Dwelling	49.7	50.1	47.9	48.2	38.7	39.1	37.1	37.3
19 Caswell Close	CF44 9RL	Dwelling	49.7	50.1	47.8	48.1	38.7	39.1	37.0	37.3
20 Caswell Close	CF44 9RL	Dwelling	49.6	50.0	47.7	48.0	38.6	39.0	36.9	37.2
21 Caswell Close	CF44 9RL	Dwelling	49.3	49.8	47.3	47.5	38.4	38.8	36.6	36.8
22 Caswell Close	CF44 9RL	Dwelling	49.3	49.5	47.5	47.9	38.3	38.6	36.8	37.1
23 Caswell Close	CF44 9RL	Dwelling	49.2	49.5	47.4	47.8	38.2	38.5	36.6	37.0
24 Caswell Close	CF44 9RL	Dwelling	48.8	49.2	46.9	47.3	37.9	38.2	36.2	36.5
25 Caswell Close	CF44 9RL	Dwelling	49.4	49.8	47.5	47.9	38.5	38.8	36.8	37.1
26 Caswell Close	CF44 9RL	Dwelling	51.3	51.7	49.5	49.9	40.1	40.6	38.6	38.9
27 Limeslade Close	CF44 9RN	Dwelling	50.9	51.6	48.2	48.2	39.8	40.4	37.4	37.3
28 Limeslade Close	CF44 9RN	Dwelling	52.0	52.4	49.8	50.1	40.8	41.2	38.8	39.0
29 Limeslade Close	CF44 9RN	Dwelling	50.6	51.3	47.8	47.7	39.5	40.1	37.0	36.9
30 Limeslade Close	CF44 9RN	Dwelling	51.6	52.1	49.4	49.6	40.4	40.8	38.5	38.7
31 Limeslade Close	CF44 9RN	Dwelling	51.5	52.0	49.1	49.3	40.4	40.7	38.2	38.3
32 Limeslade Close	CF44 9RN	Dwelling	51.9	52.5	49.8	50.0	40.7	41.2	38.8	39.0
33 Limeslade Close	CF44 9RN	Dwelling	66.6	67.4	62.2	61.4	53.9	54.6	49.9	49.3
34 Limeslade Close	CF44 9RN	Dwelling	51.0	51.7	48.3	48.3	39.9	40.5	37.5	37.4
35 Limeslade Close	CF44 9RN	Dwelling	66.1	66.9	61.8	61.1	53.5	54.2	49.6	48.9
36 Limeslade Close	CF44 9RN	Dwelling	50.7	51.3	48.1	48.1	39.6	40.2	37.3	37.3
37 Limeslade Close	CF44 9RN	Dwelling	64.4	65.2	60.2	59.5	52.0	52.7	48.2	47.5
38 Limeslade Close	CF44 9RN	Dwelling	50.5	51.1	47.9	48.0	39.4	40.0	37.1	37.1
47 Limeslade Close	CF44 9RN	Dwelling	49.1	49.4	47.4	47.8	38.2	38.4	36.6	37.0
48 Limeslade Close	CF44 9RN	Dwelling	49.3	49.6	47.6	48.0	38.4	38.6	36.8	37.1
49 Limeslade Close	CF44 9RN	Dwelling	50.2	50.6	48.7	49.1	39.2	39.5	37.8	38.2
50 Limeslade Close	CF44 9RN	Dwelling	48.9	49.2	47.2	47.6	38.0	38.3	36.4	36.8
51 Limeslade Close	CF44 9RN	Dwelling	49.2	49.3	47.8	48.3	38.2	38.3	37.0	37.5
52 Limeslade Close	CF44 9RN	Dwelling	49.3	49.6	47.9	48.4	38.4	38.6	37.1	37.5
53 Limeslade Close	CF44 9RN	Dwelling	49.5	49.8	48.1	48.5	38.5	38.8	37.2	37.6
54 Limeslade Close	CF44 9RN	Dwelling	48.6	48.9	47.0	47.4	37.7	38.0	36.3	36.6
55 Limeslade Close	CF44 9RN	Dwelling	49.3	49.7	47.8	48.2	38.4	38.7	37.0	37.4
57 Langland Close	CF44 9RP	Dwelling	49.1	49.5	47.6	48.0	38.2	38.5	36.8	37.2
58 Langland Close	CF44 9RP	Dwelling	48.9	49.1	47.3	47.8	38.0	38.2	36.6	37.0
59 Langland Close	CF44 9RP	Dwelling	49.3	49.5	47.7	48.2	38.4	38.5	36.9	37.3
72 Langland Close	CF44 9RP	Dwelling	52.4	52.8	50.9	51.3	41.1	41.5	39.8	40.1
73 Langland Close	CF44 9RP	Dwelling	49.0	49.3	47.9	48.3	38.1	38.4	37.1	37.5
74 Langland Close	CF44 9RP	Dwelling	48.9	49.2	47.8	48.2	38.0	38.3	37.0	37.4
75 Langland Close	CF44 9RP	Dwelling	48.6	49.0	47.4	47.8	37.7	38.1	36.6	37.0
76 Langland Close	CF44 9RP	Dwelling	49.6	49.8	48.6	49.2	38.7	38.8	37.7	38.2
77 Langland Close	CF44 9RP	Dwelling	53.4	53.9	52.2	52.6	42.0	42.5	40.9	41.4
82 Langland Close	CF44 9RP	Dwelling	48.0	48.6	46.1	46.4	37.2	37.7	35.5	35.7
83 Langland Close	CF44 9RP	Dwelling	53.8	54.5	52.0	52.2	42.4	43.0	40.8	40.9
84 Langland Close	CF44 9RP	Dwelling	48.6	49.0	47.2	47.6	37.7	38.1	36.5	36.8
89 Langland Close	CF44 9RP	Dwelling	53.9	54.5	52.8	53.2	42.5	43.0	41.5	41.9
90 Langland Close	CF44 9RP	Dwelling	48.9	49.3	47.8	48.2	38.0	38.3	37.0	37.4
91 Langland Close	CF44 9RP	Dwelling	48.6	48.9	47.5	47.9	37.7	38.0	36.7	37.1
92 Langland Close	CF44 9RP	Dwelling	48.5	48.7	47.2	47.7	37.6	37.8	36.5	36.9
93 Langland Close	CF44 9RP	Dwelling	48.3	48.5	47.0	47.5	37.5	37.6	36.3	36.7
94 Langland Close	CF44 9RP	Dwelling	48.1	48.3	46.7	47.3	37.3	37.4	36.1	36.5
95 Langland Close	CF44 9RP	Dwelling	48.6	48.9	47.2	47.7	37.8	38.0	36.5	36.9
96 Langland Close	CF44 9RP	Dwelling	48.6	48.9	47.5	48.0	37.7	38.0	36.7	37.2
97 Langland Close	CF44 9RP	Dwelling	49.2	49.8	48.1	48.6	38.2	38.8	37.3	37.7
98 Langland Close	CF44 9RP	Dwelling	48.3	48.6	47.2	47.7	37.5	37.7	36.5	36.9
1 Tramway Close	CF44 9RQ	Dwelling	49.5	49.9	48.6	49.1	38.5	38.9	37.7	38.2
2 Tramway Close	CF44 9RQ	Dwelling	48.8	49.3	48.3	48.8	37.9	38.3	37.4	37.9
3 Tramway Close	CF44 9RQ	Dwelling	48.1	48.5	47.7	48.3	37.2	37.6	36.9	37.4
4 Tramway Close	CF44 9RQ	Dwelling	48.2	48.6	47.9	48.5	37.4	37.7	37.1	37.6
5 Tramway Close	CF44 9RQ	Dwelling	48.0	48.4	48.4	48.9	37.2	37.5	37.5	38.0
6 Tramway Close	CF44 9RQ	Dwelling	54.5	54.1	54.5	55.4	43.0	42.7	43.0	43.8
7 Tramway Close	CF44 9RQ	Dwelling	47.4	47.8	48.0	48.7	36.7	37.0	37.2	37.8
8 Tramway Close	CF44 9RQ	Dwelling	51.8	51.6	51.6	52.6	40.6	40.4	40.4	41.3
9 Tramway Close	CF44 9RQ	Dwelling	48.0	48.7	48.1	48.5	37.2	37.8	37.3	37.6
Mount Pleasant 2 Mount Pleasant Penderyn Road	CF44 9RT	Dwelling	50.5	49.6	51.0	51.8	39.4	38.6	39.9	40.6
Brooklyn House Brooklyn House Challis Row	CF44 9RU	Dwelling	53.0	53.1	52.8	53.5	41.7	41.8	41.5	42.1
Bryn Hir Bryn Hir Penderyn Road	CF44 9RU	Dwelling	55.4	55.4	55.5	56.1	43.9	43.8	43.9	44.5
Bryn Y Gaer Cemetery Lodge Bryn Y Gaer Lodge Rhigos Road	CF44 9RU	Dwelling	51.2	51.0	51.6	52.3	40.1	39.9	40.4	41.0
Brynffynon Brynffynon Penderyn Road	CF44 9RU	Dwelling	59.0	59.8	59.1	59.6	47.1	47.8	47.2	47.6
Challis House Challis House Penderyn Road	CF44 9RU	Dwelling	51.5	51.8	51.4	52.1	40.3	40.6	40.3	40.8
Chanrick Chanrick Penderyn Road	CF44 9RU	Dwelling	53.8	54.6	54.0	54.4	42.4	43.2	42.6	42.9
Fairways Fairways Penderyn Road	CF44 9RU	Dwelling	45.8	46.2	45.9	46.6	35.2	35.6	35.3	35.9
Hillcrest Hillcrest Penderyn Road	CF44 9RU	Dwelling	51.3	51.6	51.1	51.7	40.1	40.5	39.9	40.5
Marden Marden Penderyn Road	CF44 9RU	Dwelling	53.4	53.7	53.2	53.9	42.1	42.3	41.9	42.5
Penderyn Road	CF44 9RU	Dwelling	59.3	60.1	59.4	59.9	47.4	48.0	47.5	47.9
Railway Cottage Railway View Cottage Challis Row	CF44 9RU	Dwelling	55.1	55.4	55.0	55.6	43.6	43.8	43.4	44.0
Redwood Redwood Penderyn Road	CF44 9RU	Dwelling	55.9	56.6	56.0	56.5	44.3	44.9	44.4	44.8
Rose Cottage Rose Cottage Penderyn Road	CF44 9RU	Dwelling	48.7	49.1	48.7	49.4	37.8	38.2	37.9	38.5
Springfield Springfield Penderyn Road	CF44 9RU	Dwelling	53.2	53.5	53.1	53.8	41.9	42.2	41.8	42.4
Swn Y Gwynt Swn Y Gwynt Penderyn Road	CF44 9RU	Dwelling	59.2	60.0	59.3	59.8	47.3	48.0	47.4	47.8
The Try Line The Try Line Penderyn Road	CF44 9RU	Dwelling	62.4	63.3	62.6	63.0	50.2	51.0	50.3	50.6
Ty Gwyn Ty Gwyn Bute Terrace	CF44 9RU	Dwelling	45.1	45.5	45.4	46.1	34.6	34.9	34.8	35.4
Ty Hyfryd Ty Hyfryd Penderyn Road	CF44 9RU	Dwelling	51.4	51.7	51.4	52.0	40.3	40.5	40.2	40.8
Ty Mesen Ty Mesen Penderyn Road	CF44 9RU	Dwelling	56.3	56.9	56.5	57.0	44.7	45.2	44.8	45.2
111 Rhosilli Close	CF44 9RW	Dwelling	50.4	50.8	48.4	48.6	39.4	39.7	37.5	37.8
112 Rhosilli Close	CF44 9RW	Dwelling	50.3	50.7	48.6	49.0	39.3	39.6	37.7	38.1
113 Rhosilli Close	CF44 9RW	Dwelling	51.0	51.4	48.7	48.9	39.8	40.2	37.8	38.0
114 Rhosilli Close	CF44 9RW	Dwelling	51.2	51.7	49.4	49.7	40.1	40.5	38.5	38.7
115 Rhosilli Close	CF44 9RW	Dwelling	53.3	53.8	51.0	51.2	42.0	42.4	39.9	40.1
116 Rhosilli Close	CF44 9RW	Dwelling	54.0	54.6	51.5	51.7	42.6	43.1	40.4	40.5
117 Rhosilli Close	CF44 9RW	Dwelling	67.3	68.1	62.9	62.1	54.5	55.2	50.6	49.8
118 Rhosilli Close	CF44 9RW	Dwelling	65.9	66.7	61.9	61.1	53.3	54.0	49.7	49.0
1 Fairview	CF44 9RY	Dwelling	52.6	53.2	52.9	53.4	41.4	41.8	41.6	42.1
2 Fairview	CF44 9RY	Dwelling	55.8	56.3	55.9	56.4	44.2	44.7	44.3	44.7
3 Fairview	CF44 9RY	Dwelling	54.1	54.8	54.2	54.7	42.7	43.3	42.8	43.2
4 Fairview	CF44 9RY	Dwelling	51.6	52.2	51.7	52.2	40.4	41.0	40.5	40.9
5 Fairview	CF44 9RY	Dwelling	50.7	51.3	50.8	51.3	39.6	40.1	39.7	40.1
6 Fairview	CF44 9RY	Dwelling	50.9	51.3	51.0	51.6	39.8	40.2	39.9	40.4
7 Fairview	CF44 9RY	Dwelling	49.9	50.4	50.0	50.5	38.9	39.3	38.9	39.4
8 Fairview	CF44 9RY	Dwelling	49.0	49.4	49.1	49.6	38.1	38.4	38.1	38.6
9 Fairview	CF44 9RY	Dwelling	51.8	52.2	51.9	52.5	40.6	41.0	40.7	41.2
10 Fairview	CF44 9RY	Dwelling	51.7	52.0	51.7	52.3	40.5	40.8	40.5	41.1
11 Fairview	CF44 9RY	Dwelling	49.2	49.6	49.3	49.8	38.3	38.7	38.4	38.8

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
12 Fairview	CF44 9RY	Dwelling	48.5	48.9	48.5	49.1	37.6	38.0	37.7	38.1
13 Fairview	CF44 9RY	Dwelling	51.0	51.3	51.1	51.7	39.8	40.2	39.9	40.5
14 Fairview	CF44 9RY	Dwelling	47.8	48.3	48.0	48.6	37.0	37.5	37.1	37.7
15 Fairview	CF44 9RY	Dwelling	50.6	51.0	50.6	51.2	39.6	39.9	39.5	40.0
16 Fairview	CF44 9RY	Dwelling	47.7	48.0	47.8	48.3	36.9	37.2	37.0	37.5
17 Fairview	CF44 9RY	Dwelling	47.7	47.9	47.7	48.3	36.9	37.1	36.9	37.4
18 Fairview	CF44 9RY	Dwelling	46.3	46.8	46.9	47.5	35.7	36.1	36.1	36.7
19 Fairview	CF44 9RY	Dwelling	50.2	50.5	50.2	50.8	39.2	39.4	39.2	39.7
20 Fairview	CF44 9RY	Dwelling	49.5	49.8	49.6	50.3	38.6	38.8	38.6	39.2
21 Fairview	CF44 9RY	Dwelling	47.6	47.8	47.6	48.2	36.8	37.0	36.8	37.3
22 Fairview	CF44 9RY	Dwelling	49.9	50.2	50.0	50.6	38.9	39.2	38.9	39.5
23 Fairview	CF44 9RY	Dwelling	47.2	47.3	47.2	47.8	36.4	36.6	36.5	37.0
24 Fairview	CF44 9RY	Dwelling	51.1	51.2	51.0	51.7	40.0	40.1	39.9	40.5
25 Fairview	CF44 9RY	Dwelling	47.3	47.7	47.5	48.1	36.6	37.0	36.7	37.3
26 Fairview	CF44 9RY	Dwelling	50.2	50.5	50.1	50.8	39.2	39.4	39.1	39.7
27 Fairview	CF44 9RY	Dwelling	47.0	47.4	47.1	47.8	36.3	36.7	36.4	37.0
28 Fairview	CF44 9RY	Dwelling	50.1	50.2	49.8	50.5	39.1	39.1	38.8	39.4
30 Fairview	CF44 9RY	Dwelling	44.8	44.6	44.7	45.4	34.3	34.1	34.2	34.8
1 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	52.9	53.2	52.6	53.2	41.6	41.9	41.3	41.9
2 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	50.5	50.7	50.2	50.9	39.5	39.6	39.2	39.7
3 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	52.9	53.3	52.6	53.2	41.6	41.9	41.3	41.9
4 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	51.5	51.6	51.0	51.6	40.4	40.4	39.8	40.4
5 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	50.8	51.2	50.3	51.0	39.7	40.1	39.3	39.8
6 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	51.3	51.7	50.9	51.5	40.1	40.5	39.7	40.3
7 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	50.7	51.3	50.7	51.2	39.6	40.1	39.6	40.1
8 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	47.3	47.6	47.1	47.6	36.5	36.8	36.3	36.8
9 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	51.5	51.9	51.4	52.1	40.3	40.7	40.3	40.9
10 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	50.1	50.8	50.4	51.0	39.1	39.7	39.3	39.9
11 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	53.5	53.6	53.2	54.0	42.2	42.2	41.9	42.5
12 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	52.2	52.6	52.0	52.7	40.9	41.3	40.8	41.4
13 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	54.7	55.0	54.4	55.1	43.3	43.5	42.9	43.5
14 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	52.3	52.5	52.2	52.9	41.1	41.2	41.0	41.6
15 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	54.4	54.7	54.1	54.8	42.9	43.2	42.7	43.3
16 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	53.4	53.5	53.2	53.9	42.0	42.2	41.8	42.5
17 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	52.8	52.9	52.6	53.3	41.5	41.6	41.3	41.9
18 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	57.7	58.2	57.7	58.2	45.9	46.4	45.9	46.3
19 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	58.2	58.8	58.2	58.7	46.3	46.9	46.3	46.8
20 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	58.9	59.6	59.0	59.4	47.0	47.6	47.1	47.5
21 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	53.7	54.4	53.7	54.2	42.3	43.0	42.3	42.7
22 Cae Bryn Hyfryd	CF44 9RZ	Dwelling	45.3	45.6	45.2	45.9	34.7	35.0	34.7	35.3
29 Fairview	CF44 9SA	Dwelling	49.3	49.3	49.3	50.0	38.4	38.4	38.4	38.9
31 Fairview	CF44 9SA	Dwelling	51.5	51.8	51.6	52.3	40.4	40.6	40.5	41.1
32 Fairview	CF44 9SA	Dwelling	46.8	47.1	47.5	48.2	36.1	36.4	36.7	37.4
33 Fairview	CF44 9SA	Dwelling	49.9	50.2	49.9	50.6	38.9	39.2	38.9	39.5
35 Fairview	CF44 9SA	Dwelling	46.2	46.4	46.2	46.9	35.6	35.7	35.6	36.2
38 Fairview	CF44 9SA	Dwelling	45.1	45.4	45.5	46.2	34.6	34.8	34.9	35.6
39 Fairview	CF44 9SA	Dwelling	50.0	50.3	50.2	50.8	39.0	39.3	39.1	39.7
40 Fairview	CF44 9SA	Dwelling	49.2	49.4	49.2	49.9	38.2	38.4	38.3	38.9
41 Fairview	CF44 9SA	Dwelling	51.3	51.5	51.3	52.0	40.2	40.4	40.2	40.8
42 Fairview	CF44 9SA	Dwelling	45.9	46.3	46.4	47.1	35.3	35.7	35.8	36.4
43 Fairview	CF44 9SA	Dwelling	47.1	47.2	47.2	47.8	36.4	36.5	36.5	37.0
44 Fairview	CF44 9SA	Dwelling	47.2	47.6	47.8	48.5	36.4	36.8	37.0	37.6
45 Fairview	CF44 9SA	Dwelling	49.7	49.8	49.7	50.4	38.8	38.8	38.8	39.3
46 Fairview	CF44 9SA	Dwelling	47.7	48.0	47.8	48.5	36.9	37.2	37.0	37.6
47 Fairview	CF44 9SA	Dwelling	46.7	46.7	46.8	47.5	36.0	36.0	36.1	36.7
48 Fairview	CF44 9SA	Dwelling	46.4	46.6	46.3	46.9	35.8	35.9	35.6	36.2
49 Fairview	CF44 9SA	Dwelling	47.5	47.7	47.4	48.0	36.7	36.9	36.6	37.1
Kendon Court Flat 1 Kendon Court Flat 1 High Street	CF44 9SB	Dwelling	56.8	58.6	58.8	58.0	45.1	46.7	46.9	46.2
Kendon Court Flat 10 Kendon Court Flat 10 High Street	CF44 9SB	Dwelling	57.3	59.1	59.3	58.5	45.5	47.2	47.4	46.6
Kendon Court Flat 11 Kendon Court Flat 11 High Street	CF44 9SB	Dwelling	57.3	59.1	59.3	58.5	45.5	47.2	47.4	46.6
Kendon Court Flat 14 Kendon Court Flat 14 High Street	CF44 9SB	Dwelling	48.5	49.1	48.5	48.8	37.7	38.2	37.6	37.9
Kendon Court Flat 17 Kendon Court Flat 17 High Street	CF44 9SB	Dwelling	46.9	47.5	47.0	47.2	36.2	36.8	36.3	36.5
Kendon Court Flat 20 Kendon Court Flat 20 High Street	CF44 9SB	Dwelling	47.0	47.6	47.1	47.4	36.3	36.8	36.4	36.6
Kendon Court Flat 5 Kendon Court Flat 5 High Street	CF44 9SB	Dwelling	58.0	59.8	60.1	59.2	46.1	47.8	48.1	47.3
Kendon Court Flat 7 Kendon Court Flat 7 High Street	CF44 9SB	Dwelling	56.3	58.1	58.2	57.4	44.7	46.3	46.4	45.7
The Pines The Pines Garth Grove	CF44 9SD	Dwelling	54.1	54.7	54.2	54.7	42.7	43.2	42.7	43.2
1 Garth Grove	CF44 9SD	Dwelling	49.5	49.8	49.6	50.3	38.5	38.8	38.7	39.3
2 Garth Grove	CF44 9SD	Dwelling	49.3	49.7	49.6	50.2	38.4	38.7	38.6	39.1
3 Garth Grove	CF44 9SD	Dwelling	51.5	51.8	51.4	52.1	40.4	40.6	40.3	40.9
4 Garth Grove	CF44 9SD	Dwelling	54.0	54.5	54.1	54.6	42.6	43.1	42.6	43.1
5 Garth Grove	CF44 9SD	Dwelling	52.5	53.0	52.4	53.0	41.3	41.6	41.2	41.6
6 Garth Grove	CF44 9SD	Dwelling	55.9	56.6	56.0	56.5	44.3	44.9	44.4	44.8
7 Garth Grove	CF44 9SD	Dwelling	58.3	59.1	58.4	58.9	46.5	47.2	46.6	46.9
8 Garth Grove	CF44 9SD	Dwelling	57.6	58.4	57.7	58.2	45.9	46.5	45.9	46.3
9 Garth Grove	CF44 9SD	Dwelling	57.5	58.3	57.6	58.1	45.7	46.4	45.8	46.2
10 Garth Grove	CF44 9SD	Dwelling	56.0	56.7	56.1	56.6	44.4	45.0	44.5	44.9
11 Garth Grove	CF44 9SD	Dwelling	52.2	52.9	52.3	52.8	41.0	41.6	41.1	41.5
12 Garth Grove	CF44 9SD	Dwelling	48.3	48.6	48.4	49.0	37.4	37.7	37.5	38.1
14 Garth Grove	CF44 9SD	Dwelling	53.9	54.5	54.0	54.5	42.5	43.0	42.6	43.0
15 Garth Grove	CF44 9SD	Dwelling	45.3	45.8	45.7	46.3	34.8	35.2	35.1	35.6
16 Garth Grove	CF44 9SD	Dwelling	49.8	50.3	50.2	50.8	38.8	39.2	39.2	39.7
17 Garth Grove	CF44 9SD	Dwelling	43.9	44.2	44.2	44.9	33.5	33.8	33.7	34.4
1 Devonshire Drive	CF44 9SE	Dwelling	49.1	49.2	49.1	49.8	38.1	38.2	38.1	38.8
2 Devonshire Drive	CF44 9SE	Dwelling	48.1	48.1	48.0	48.7	37.3	37.3	37.2	37.8
3 Devonshire Drive	CF44 9SE	Dwelling	46.8	46.9	46.7	47.4	36.1	36.2	36.0	36.6
4 Devonshire Drive	CF44 9SE	Dwelling	47.4	47.7	47.3	48.0	36.6	36.9	36.5	37.2
5 Devonshire Drive	CF44 9SE	Dwelling	46.2	46.5	46.6	47.3	35.6	35.8	35.9	36.6
6 Devonshire Drive	CF44 9SE	Dwelling	46.0	46.0	46.1	46.9	35.4	35.4	35.4	36.1
7 Devonshire Drive	CF44 9SE	Dwelling	49.3	49.5	49.2	49.8	38.4	38.5	38.2	38.8
8 Devonshire Drive	CF44 9SE	Dwelling	47.4	47.6	47.5	48.2	36.6	36.8	36.7	37.4
9 Devonshire Drive	CF44 9SE	Dwelling	49.9	50.1	49.7	50.4	38.9	39.0	38.7	39.3
10 Devonshire Drive	CF44 9SE	Dwelling	47.1	47.4	47.4	48.1	36.4	36.6	36.6	37.3
11 Devonshire Drive	CF44 9SE	Dwelling	46.4	46.6	46.6	47.3	35.7	35.9	35.9	36.6
12 Devonshire Drive	CF44 9SE	Dwelling	46.0	46.4	46.3	47.1	35.4	35.7	35.7	36.3
13 Devonshire Drive	CF44 9SE	Dwelling	50.4	50.5	50.3	51.0	39.4	39.4	39.2	39.9
18 Devonshire Drive	CF44 9SE	Dwelling	50.8	51.0	50.6	51.3	39.7	39.9	39.5	40.1
19 Devonshire Drive	CF44 9SE	Dwelling	51.2	51.5	51.1	51.7	40.1	40.3	39.9	40.5
20 Devonshire Drive	CF44 9SE	Dwelling	50.8	51.0	50.6	51.3	39.7	39.9	39.6	40.1
21 Devonshire Drive	CF44 9SE	Dwelling	52.8	53.1	52.8	53.5	41.5	41.8	41.5	42.1
22 Devonshire Drive	CF44 9SE	Dwelling	46.4	46.8	46.6	47.3	35.7	36.1	35.9	36.6
23 Devonshire Drive	CF44 9SE	Dwelling	52.5	52.8	52.5	53.1	41.3	41.5	41.2	41.8
24 Devonshire Drive	CF44 9SE	Dwelling	48.8	49.2	48.6	49.3	37.9	38.2	37.7	38.3
25 Devonshire Drive	CF44 9SE	Dwelling	48.0	48.4	48.1	48.7	37.2	37.6	37.2	37.8
26 Devonshire Drive	CF44 9SE	Dwelling	49.2	49.5	49.1	49.8	38.3	38.5	38.2	38.8
2 Penmark Row	CF44 9SF	Dwelling	55.9	56.6	56.0	56.5	44.3	44.9	44.4	44.8
3 Penmark Row	CF44 9SF	Dwelling	55.0	55.4	54.9	55.5	43.4	43.9	43.4	43.9
4 Penmark Row	CF44 9SF	Dwelling	49.0	49.7	49.1	49.6	38.1	38.7	38.2	38.6

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
5 Penmark Row	CF44 9SF	Dwelling	54.9	55.3	54.9	55.4	43.4	43.7	43.4	43.8
6 Penmark Row	CF44 9SF	Dwelling	54.0	54.4	53.6	54.2	42.6	42.9	42.2	42.8
7 Penmark Row	CF44 9SF	Dwelling	54.5	54.9	54.3	54.9	43.0	43.4	42.8	43.3
8 Penmark Row	CF44 9SF	Dwelling	53.7	54.1	53.5	54.1	42.4	42.6	42.1	42.7
9 Penmark Row	CF44 9SF	Dwelling	53.2	53.5	52.8	53.4	41.8	42.1	41.5	42.1
10 Penmark Row	CF44 9SF	Dwelling	53.0	53.3	52.6	53.2	41.7	41.9	41.3	41.9
11 Penmark Row	CF44 9SF	Dwelling	52.7	53.0	52.3	53.0	41.4	41.6	41.1	41.7
12 Penmark Row	CF44 9SF	Dwelling	50.1	50.3	50.0	50.6	39.1	39.3	39.0	39.6
13 Penmark Row	CF44 9SF	Dwelling	52.4	52.6	51.9	52.5	41.2	41.4	40.7	41.2
14 Penmark Row	CF44 9SF	Dwelling	49.6	49.8	49.2	49.8	38.7	38.8	38.2	38.8
15 Penmark Row	CF44 9SF	Dwelling	57.2	57.9	57.2	57.7	45.5	46.1	45.5	45.9
16 Penmark Row	CF44 9SF	Dwelling	52.4	53.2	52.6	53.0	41.2	41.9	41.3	41.7
17 Penmark Row	CF44 9SF	Dwelling	49.6	50.3	49.7	50.2	38.6	39.2	38.7	39.2
18 Penmark Row	CF44 9SF	Dwelling	49.9	50.5	50.0	50.5	38.9	39.4	39.0	39.4
19 Penmark Row	CF44 9SF	Dwelling	49.1	49.7	49.2	49.7	38.2	38.7	38.3	38.7
20 Penmark Row	CF44 9SF	Dwelling	47.6	48.1	47.9	48.5	36.8	37.2	37.1	37.7
21 Penmark Row	CF44 9SF	Dwelling	48.1	48.5	48.1	48.7	37.3	37.6	37.3	37.8
Brookside Bungalow Brookside Bungalow Bute Terrace	CF44 9SG	Dwelling	52.3	52.6	52.2	52.8	41.0	41.4	40.9	41.5
1 Bute Terrace	CF44 9SG	Dwelling	47.5	48.0	47.7	48.3	36.7	37.2	36.9	37.5
2 Bute Terrace	CF44 9SG	Dwelling	47.4	48.0	47.3	47.8	36.6	37.2	36.6	37.0
3 Bute Terrace	CF44 9SG	Dwelling	47.2	47.8	47.2	47.7	36.5	37.0	36.5	36.9
4 Bute Terrace	CF44 9SG	Dwelling	52.8	53.2	52.6	53.2	41.5	41.8	41.3	41.8
5 Bute Terrace	CF44 9SG	Dwelling	47.1	47.6	47.0	47.5	36.4	36.8	36.2	36.7
6 Bute Terrace	CF44 9SG	Dwelling	47.1	47.5	46.9	47.5	36.4	36.8	36.2	36.7
7 Bute Terrace	CF44 9SG	Dwelling	52.8	53.2	52.5	53.1	41.5	41.9	41.2	41.7
8 Bute Terrace	CF44 9SG	Dwelling	52.6	53.0	52.5	53.1	41.3	41.7	41.3	41.8
9 Bute Terrace	CF44 9SG	Dwelling	54.2	54.8	54.1	54.6	42.8	43.3	42.7	43.1
10 Bute Terrace	CF44 9SG	Dwelling	55.1	55.6	54.9	55.4	43.6	44.0	43.4	43.8
11 Bute Terrace	CF44 9SG	Dwelling	51.7	52.5	51.8	52.2	40.5	41.3	40.6	40.9
12 Bute Terrace	CF44 9SG	Dwelling	56.0	56.6	56.0	56.5	44.3	44.9	44.4	44.8
Bute Place 1 Penderyn Road	CF44 9SH	Dwelling	48.3	48.9	48.1	48.5	37.5	38.0	37.2	37.7
Bute Place 2 Penderyn Road	CF44 9SH	Dwelling	45.1	45.5	44.7	45.2	34.6	34.9	34.2	34.6
Bute Place 3 Penderyn Road	CF44 9SH	Dwelling	51.6	52.0	51.1	51.7	40.5	40.8	40.0	40.5
Bute Place 4 Penderyn Road	CF44 9SH	Dwelling	49.0	49.1	48.8	49.5	38.1	38.1	37.9	38.5
1A High Street	CF44 9SL	Dwelling	61.3	62.3	61.3	61.1	49.2	50.0	49.1	49.0
1B High Street	CF44 9SL	Dwelling	61.9	62.9	61.9	61.8	49.7	50.6	49.7	49.6
Flat Above The Cardiff Arms Hotel High Street	CF44 9SL	Dwelling	57.9	60.0	60.4	59.4	46.1	48.0	48.3	47.4
Hirwaun Health Centre Hirwaun Health Centre High Street	CF44 9SL	OSR	49.8	50.6	50.3	50.7	38.8	39.5	39.3	39.6
The Vicarage The Vicarage High Street	CF44 9SL	Dwelling	54.9	56.5	56.7	56.0	43.4	44.9	45.0	44.3
Hirwaun Village Hall Village Hall High Street	CF44 9SL	OSR	58.0	59.6	59.8	59.1	46.2	47.6	47.8	47.2
1 High Street	CF44 9SL	Dwelling	48.8	50.1	50.1	49.7	37.9	39.1	39.0	38.7
4 High Street	CF44 9SL	Dwelling	47.4	47.6	47.3	47.9	36.7	36.8	36.5	37.1
26 High Street	CF44 9SL	Dwelling	55.1	56.7	56.9	56.3	43.5	45.0	45.2	44.6
27 High Street	CF44 9SL	Dwelling	54.2	55.8	55.9	55.4	42.8	44.2	44.3	43.8
28 High Street	CF44 9SL	Dwelling	55.6	57.1	57.2	56.7	44.0	45.4	45.5	45.0
29 High Street	CF44 9SL	Dwelling	55.3	56.7	56.9	56.4	43.7	45.0	45.1	44.7
30 High Street	CF44 9SL	Dwelling	51.8	53.1	53.2	52.8	40.6	41.8	41.8	41.5
Hirwaun Rugby Club 32 High Street	CF44 9SL	OSR	56.0	57.6	57.7	57.1	44.4	45.8	45.9	45.4
81A High Street	CF44 9SN	Dwelling	58.8	60.5	60.6	59.9	46.9	48.4	48.5	47.9
Bronwydd House Bronwydd House High Street	CF44 9SN	Dwelling	53.9	55.9	56.3	55.3	42.5	44.3	44.6	43.8
79 High Street	CF44 9SN	Dwelling	54.1	56.1	56.5	55.5	42.7	44.5	44.8	43.9
Ablerise 80 High Street	CF44 9SN	Dwelling	58.4	60.3	60.5	59.6	46.6	48.2	48.4	47.7
81 High Street	CF44 9SN	Dwelling	57.8	59.5	59.7	58.9	46.0	47.6	47.7	47.0
82 High Street	CF44 9SN	Dwelling	52.4	54.2	54.4	53.5	41.1	42.8	43.0	42.2
83 High Street	CF44 9SN	Dwelling	53.5	55.4	55.7	54.8	42.1	43.9	44.1	43.3
84 High Street	CF44 9SN	Dwelling	58.6	60.3	60.3	59.6	46.7	48.2	48.3	47.6
85 High Street	CF44 9SN	Dwelling	58.3	60.0	60.0	59.3	46.5	48.0	48.0	47.3
86 High Street	CF44 9SN	Dwelling	59.2	60.8	60.8	60.1	47.3	48.7	48.7	48.1
87 High Street	CF44 9SN	Dwelling	59.2	60.7	60.6	59.9	47.3	48.6	48.5	47.9
88 High Street	CF44 9SN	Dwelling	60.7	62.1	61.8	61.2	48.6	49.9	49.6	49.0
St Lleurwgs Hall Cylch Meithrin Station Road	CF44 9SS	OSR	49.0	49.2	48.7	49.3	38.1	38.2	37.8	38.3
St Lleurwgs Hall Station Road	CF44 9SS	OSR	49.0	49.2	48.7	49.3	38.1	38.2	37.8	38.3
19 Davies Row	CF44 9SS	Dwelling	47.3	47.9	47.3	47.7	36.5	37.1	36.6	36.9
20 Davies Row	CF44 9SS	Dwelling	43.1	43.4	42.7	43.2	32.8	33.0	32.4	32.9
21 Davies Row	CF44 9SS	Dwelling	43.1	43.4	42.8	43.3	32.8	33.1	32.5	32.9
23 Davies Row	CF44 9SS	Dwelling	49.0	49.4	48.8	49.3	38.1	38.5	37.9	38.3
1A Station Road	CF44 9ST	Dwelling	43.7	43.8	43.5	44.1	33.3	33.4	33.1	33.6
Old Church Hall Station Road	CF44 9ST	OSR	49.6	50.1	49.7	50.3	38.7	39.0	38.7	39.2
St Lleurwgs Church Station Road	CF44 9ST	OSR	49.0	49.3	48.8	49.4	38.1	38.4	37.9	38.5
32 Station Road	CF44 9ST	Dwelling	43.3	43.6	43.1	43.6	32.9	33.2	32.7	33.2
33 Station Road	CF44 9ST	Dwelling	48.9	49.2	49.1	49.7	38.0	38.3	38.1	38.7
34 Station Road	CF44 9ST	Dwelling	42.9	43.2	42.7	43.2	32.6	32.9	32.4	32.9
35 Station Road	CF44 9ST	Dwelling	48.8	49.1	48.9	49.5	37.9	38.2	38.0	38.5
36 Station Road	CF44 9ST	Dwelling	48.8	49.1	48.9	49.5	37.9	38.2	38.0	38.5
37 Station Road	CF44 9ST	Dwelling	48.0	48.3	47.8	48.5	37.2	37.4	37.0	37.6
38 Station Road	CF44 9ST	Dwelling	48.4	48.7	48.3	49.0	37.6	37.8	37.5	38.1
39 Station Road	CF44 9ST	Dwelling	47.8	48.0	47.7	48.3	37.0	37.2	36.9	37.5
40 Station Road	CF44 9ST	Dwelling	48.1	48.3	48.1	48.8	37.3	37.5	37.3	37.9
41 Station Road	CF44 9ST	Dwelling	45.0	45.2	45.0	45.7	34.5	34.7	34.5	35.1
4 Heol Uchel	CF44 9SU	Dwelling	56.7	58.6	59.0	58.1	45.0	46.7	47.1	46.3
5 Heol Uchel	CF44 9SU	Dwelling	56.9	58.8	59.2	58.3	45.2	46.9	47.2	46.4
7 Heol Uchel	CF44 9SU	Dwelling	56.4	58.3	58.7	57.8	44.7	46.5	46.8	46.0
9 Heol Uchel	CF44 9SU	Dwelling	56.4	58.3	58.7	57.8	44.7	46.5	46.8	46.0
11 Heol Uchel	CF44 9SU	Dwelling	56.9	58.9	59.3	58.4	45.2	47.0	47.3	46.5
53A High Street	CF44 9SW	Dwelling	52.6	53.7	53.4	53.2	41.3	42.3	42.1	41.9
Flat 2 At 70 70B High Street	CF44 9SW	Dwelling	56.9	59.0	59.3	58.4	45.2	47.1	47.4	46.5
72A High Street	CF44 9SW	Dwelling	50.7	51.0	50.4	50.9	39.7	39.9	39.4	39.8
Denise Adams Dental Surgery Dental Surgery 70A High Street	CF44 9SW	OSR	57.5	59.5	59.8	58.9	45.7	47.5	47.8	47.0
High Street	CF44 9SW	Dwelling	58.0	60.2	60.7	59.5	46.2	48.2	48.6	47.5
High Street	CF44 9SW	Dwelling	56.0	57.8	58.2	57.4	44.4	46.0	46.4	45.7
Flat Above 70C High Street	CF44 9SW	Dwelling	57.0	59.0	59.4	58.4	45.3	47.1	47.4	46.6
Flat Above 73A High Street	CF44 9SW	Dwelling	47.0	47.7	47.4	47.4	36.3	36.9	36.6	36.7
Flat Above Tramway	CF44 9SW	Dwelling	47.5	48.9	49.1	48.7	36.7	38.0	38.1	37.8
High Street	CF44 9SW	Dwelling	56.0	57.8	58.2	57.4	44.4	46.0	46.4	45.7
High Street	CF44 9SW	Dwelling	57.5	59.6	59.9	59.0	45.8	47.6	47.9	47.0
Rhondda Cynon Taf Cbc Hirwaun Library Hirwaun Library High Street	CF44 9SW	OSR	57.5	59.4	59.7	58.8	45.8	47.5	47.7	46.9
Maes Y Garreg Maesygarreg High Street	CF44 9SW	Dwelling	49.7	50.2	49.9	50.0	38.7	39.2	38.9	39.0
Rowancroft Rowencroft High Street	CF44 9SW	Dwelling	52.9	54.5	54.5	53.9	41.6	43.0	43.0	42.4
38 High Street	CF44 9SW	Dwelling	58.0	60.3	60.8	59.6	46.2	48.3	48.7	47.6
53 High Street	CF44 9SW	Dwelling	52.8	53.9	53.6	53.3	41.5	42.5	42.2	42.0
Flat 2 Flat 2 54 High Street	CF44 9SW	Dwelling	54.4	55.7	55.4	55.1	43.0	44.1	43.9	43.6
56 High Street	CF44 9SW	Dwelling	56.1	57.9	58.1	57.4	44.5	46.1	46.3	45.6
57 High Street	CF44 9SW	Dwelling	56.5	58.5	58.8	57.9	44.9	46.6	46.9	46.1
69 High Street	CF44 9SW	Dwelling	55.9	57.8	58.1	57.3	44.3	46.0	46.3	45.5
Flat 1 At 70 70 High Street	CF44 9SW	Dwelling	57.5	59.5	59.8	58.9	45.7	47.5	47.8	47.0
78 High Street	CF44 9SW	Dwelling	58.7	60.9	61.3	60.2	46.8	48.8	49.2	48.2
Riverside Riverside The Pandy	CF44 9SY	Dwelling	44.7	45.2	44.8	45.3	34.2	34.7	34.3	34.8

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
River View Riverview The Pandy	CF44 9SY	Dwelling	46.5	46.9	46.4	46.9	35.9	36.2	35.7	36.2
The Pandy	CF44 9SY	Dwelling	43.2	43.2	42.8	43.6	32.9	32.8	32.5	33.2
1 The Pandy	CF44 9SY	Dwelling	43.4	43.9	43.7	44.3	33.0	33.5	33.3	33.9
2 The Pandy	CF44 9SY	Dwelling	43.6	44.2	44.1	44.7	33.2	33.7	33.7	34.2
3 The Pandy	CF44 9SY	Dwelling	45.2	45.5	45.3	45.9	34.6	35.0	34.7	35.3
7 The Pandy	CF44 9SY	Dwelling	44.8	45.2	44.6	45.2	34.3	34.6	34.1	34.6
10 The Pandy	CF44 9SY	Dwelling	43.2	43.2	42.8	43.6	32.9	32.8	32.5	33.2
20 The Pandy	CF44 9SY	Dwelling	43.3	43.3	42.9	43.7	33.0	33.0	32.6	33.3
Greenfield 16A Station Road	CF44 9TA	Dwelling	48.5	48.8	48.0	48.7	37.6	37.9	37.2	37.8
Hyland Place 59 Highland Place Station Road	CF44 9TA	Dwelling	46.4	47.0	46.2	46.7	35.7	36.3	35.6	36.0
59A Station Road	CF44 9TA	Dwelling	48.0	48.0	47.3	48.0	37.2	37.1	36.6	37.2
Hyland Place 60A Highland Place Station Road	CF44 9TA	Dwelling	45.7	46.1	45.9	46.6	35.1	35.5	35.3	35.9
Hyland Place Station Road	CF44 9TA	Dwelling	44.1	44.5	44.7	45.4	33.7	34.0	34.2	34.8
7 Station Road	CF44 9TA	Dwelling	47.3	47.3	46.8	47.5	36.5	36.6	36.1	36.7
8 Station Road	CF44 9TA	Dwelling	45.7	45.8	45.2	45.9	35.1	35.2	34.7	35.3
9 Station Road	CF44 9TA	Dwelling	48.8	48.8	48.6	49.3	37.9	37.9	37.7	38.3
10 Station Road	CF44 9TA	Dwelling	48.3	48.4	48.2	48.9	37.5	37.6	37.4	38.0
11 Station Road	CF44 9TA	Dwelling	51.3	51.6	50.3	50.8	40.2	40.4	39.2	39.7
12 Station Road	CF44 9TA	Dwelling	48.5	48.5	47.9	48.6	37.6	37.7	37.1	37.7
13 Station Road	CF44 9TA	Dwelling	44.9	44.8	44.4	45.1	34.4	34.3	33.9	34.6
14 Station Road	CF44 9TA	Dwelling	41.1	41.4	40.8	41.4	31.0	31.2	30.7	31.2
15 Station Road	CF44 9TA	Dwelling	49.2	49.5	48.3	48.9	38.2	38.5	37.5	38.0
16 Station Road	CF44 9TA	Dwelling	43.8	43.8	43.6	44.3	33.4	33.4	33.2	33.8
17 Station Road	CF44 9TA	Dwelling	49.0	49.3	48.6	49.2	38.1	38.3	37.7	38.3
18 Station Road	CF44 9TA	Dwelling	43.3	43.3	43.1	43.8	32.9	33.0	32.8	33.4
19 Station Road	CF44 9TA	Dwelling	48.4	48.7	48.2	48.9	37.5	37.8	37.4	38.0
20 Station Road	CF44 9TA	Dwelling	48.3	48.6	48.2	48.9	37.4	37.7	37.4	38.0
21 Station Road	CF44 9TA	Dwelling	48.2	48.6	48.2	48.8	37.4	37.7	37.3	37.9
22 Station Road	CF44 9TA	Dwelling	48.8	49.2	48.7	49.4	37.9	38.2	37.8	38.4
23 Station Road	CF44 9TA	Dwelling	48.3	48.7	48.3	49.0	37.5	37.8	37.5	38.1
24 Station Road	CF44 9TA	Dwelling	48.5	48.9	48.5	49.1	37.7	38.0	37.6	38.2
25 Station Road	CF44 9TA	Dwelling	48.7	49.1	48.5	49.2	37.8	38.2	37.7	38.2
26 Station Road	CF44 9TA	Dwelling	48.7	49.1	48.4	49.1	37.8	38.1	37.6	38.1
27 Station Road	CF44 9TA	Dwelling	48.2	48.6	48.0	48.7	37.4	37.7	37.2	37.8
28 Station Road	CF44 9TA	Dwelling	48.3	48.7	48.2	48.8	37.5	37.8	37.4	37.9
29 Station Road	CF44 9TA	Dwelling	48.6	48.7	48.3	49.0	37.7	37.8	37.5	38.1
30 Station Road	CF44 9TA	Dwelling	48.7	48.9	48.5	49.2	37.8	38.0	37.7	38.2
31 Station Road	CF44 9TA	Dwelling	48.8	49.0	48.7	49.3	37.9	38.1	37.8	38.4
42 Station Road	CF44 9TA	Dwelling	48.4	48.6	48.4	49.1	37.5	37.7	37.5	38.1
45 Station Road	CF44 9TA	Dwelling	46.8	47.4	46.9	47.4	36.1	36.6	36.2	36.6
46 Station Road	CF44 9TA	Dwelling	47.7	47.8	47.0	47.7	36.9	37.0	36.3	36.9
47 Station Road	CF44 9TA	Dwelling	47.7	47.8	47.1	47.8	36.9	37.0	36.4	37.0
48 Station Road	CF44 9TA	Dwelling	48.0	48.0	47.4	48.0	37.1	37.2	36.6	37.2
50 Station Road	CF44 9TA	Dwelling	48.2	48.3	47.6	48.2	37.4	37.4	36.8	37.4
51 Station Road	CF44 9TA	Dwelling	48.0	48.1	47.3	48.0	37.2	37.2	36.6	37.2
52 Station Road	CF44 9TA	Dwelling	48.4	48.5	47.8	48.5	37.5	37.6	37.0	37.6
53 Station Road	CF44 9TA	Dwelling	48.6	48.7	47.9	48.6	37.7	37.8	37.1	37.7
54 Station Road	CF44 9TA	Dwelling	48.5	48.8	48.2	48.8	37.6	37.9	37.3	37.9
55 Station Road	CF44 9TA	Dwelling	48.5	48.5	47.7	48.4	37.6	37.6	36.9	37.6
56 Station Road	CF44 9TA	Dwelling	48.3	48.3	47.5	48.2	37.5	37.4	36.7	37.4
57 Station Road	CF44 9TA	Dwelling	45.3	44.9	44.4	45.2	34.8	34.4	33.9	34.6
58 Station Road	CF44 9TA	Dwelling	48.3	48.3	47.5	48.2	37.5	37.4	36.7	37.4
59 Station Road	CF44 9TA	Dwelling	47.8	47.8	47.0	47.7	37.0	37.0	36.3	36.9
1 John Street	CF44 9TB	Dwelling	45.5	46.0	45.3	45.9	34.9	35.4	34.8	35.3
2 John Street	CF44 9TB	Dwelling	45.7	46.3	45.6	46.2	35.1	35.6	35.0	35.5
3 John Street	CF44 9TB	Dwelling	45.9	46.3	45.7	46.3	35.3	35.7	35.1	35.6
4 John Street	CF44 9TB	Dwelling	46.2	46.6	45.8	46.5	35.5	35.9	35.2	35.8
5 John Street	CF44 9TB	Dwelling	46.2	46.6	46.0	46.6	35.6	35.9	35.4	35.9
6 John Street	CF44 9TB	Dwelling	46.0	46.4	45.7	46.4	35.4	35.7	35.2	35.7
7 John Street	CF44 9TB	Dwelling	48.1	48.4	47.8	48.5	37.3	37.6	37.0	37.6
9 John Street	CF44 9TB	Dwelling	48.0	48.3	47.8	48.5	37.2	37.5	37.0	37.6
10 John Street	CF44 9TB	Dwelling	45.8	46.3	45.7	46.3	35.2	35.6	35.1	35.6
11 John Street	CF44 9TB	Dwelling	45.9	46.3	46.0	46.6	35.3	35.7	35.3	35.9
12 John Street	CF44 9TB	Dwelling	47.0	47.5	47.2	47.8	36.3	36.7	36.4	37.0
13 John Street	CF44 9TB	Dwelling	46.8	47.3	47.0	47.6	36.1	36.5	36.2	36.8
14 John Street	CF44 9TB	Dwelling	47.2	47.6	47.2	47.8	36.5	36.9	36.4	37.0
15 John Street	CF44 9TB	Dwelling	49.3	49.6	48.8	49.5	38.4	38.6	37.9	38.5
16 John Street	CF44 9TB	Dwelling	49.4	49.7	48.7	49.3	38.5	38.7	37.8	38.3
17 John Street	CF44 9TB	Dwelling	46.1	46.7	46.2	46.8	35.5	36.0	35.5	36.1
18 John Street	CF44 9TB	Dwelling	48.1	48.5	47.9	48.6	37.3	37.6	37.1	37.7
19 John Street	CF44 9TB	Dwelling	48.7	48.8	48.5	49.3	37.8	37.9	37.7	38.4
Brynheulog Brynheulog Ty Bruce Lane	CF44 9TD	Dwelling	41.2	41.1	41.0	41.7	31.0	31.0	30.8	31.5
Dolphin House Dolphin House Station Road	CF44 9TD	Dwelling	47.1	47.3	46.8	47.5	36.3	36.5	36.1	36.8
Rhoslyn Rhoslyn Ty Bruce Lane	CF44 9TD	Dwelling	46.1	46.4	46.2	47.0	35.5	35.7	35.6	36.2
Shalom Shalom Ty Bruce Lane	CF44 9TD	Dwelling	45.9	46.2	45.9	46.6	35.3	35.5	35.3	36.0
Ty Bruce Villa Ty Bruce Villa Ty Bruce Lane	CF44 9TD	Dwelling	47.4	46.8	47.6	48.6	36.6	36.1	36.8	37.7
Ty Ceirios Ty Ceirios Ty Bruce Lane	CF44 9TD	Dwelling	42.8	42.7	42.6	43.4	32.5	32.4	32.3	33.0
Ty Gavenny Ty Gavenny Ty Bruce Lane	CF44 9TD	Dwelling	41.3	41.1	40.9	41.7	31.1	31.0	30.8	31.5
Ty Gwyn Bungalow Ty Gwyn Bungalow Ty Bruce Lane	CF44 9TD	Dwelling	43.4	43.8	43.6	44.3	33.0	33.4	33.2	33.9
Ty Lon Ty Lon Ty Bruce Lane	CF44 9TD	Dwelling	45.7	45.9	45.7	46.4	35.1	35.3	35.1	35.7
Ty Teulu Ty Teulu Ty Bruce Lane	CF44 9TD	Dwelling	41.7	41.4	41.5	42.5	31.5	31.2	31.4	32.2
Yr Hen Berllan Yr Hen Berllan Ty Bruce Lane	CF44 9TD	Dwelling	46.4	46.7	46.5	47.2	35.7	36.0	35.9	36.5
Llanfair Cefndon Terrace	CF44 9TE	Dwelling	49.1	48.8	49.2	50.1	38.2	37.9	38.2	39.1
1 Cefndon Terrace	CF44 9TE	Dwelling	47.2	47.5	47.1	47.7	36.5	36.7	36.3	36.9
2 Cefndon Terrace	CF44 9TE	Dwelling	47.7	48.1	47.4	48.1	37.0	37.2	36.7	37.3
3 Cefndon Terrace	CF44 9TE	Dwelling	47.5	47.8	47.3	48.0	36.8	37.0	36.6	37.2
4 Cefndon Terrace	CF44 9TE	Dwelling	41.7	41.3	41.2	42.1	31.5	31.2	31.1	31.9
5 Cefndon Terrace	CF44 9TE	Dwelling	41.7	41.3	41.2	42.1	31.5	31.2	31.1	31.9
6 Cefndon Terrace	CF44 9TE	Dwelling	48.5	48.8	48.1	48.8	37.7	37.9	37.2	37.9
7 Cefndon Terrace	CF44 9TE	Dwelling	46.4	46.8	46.4	47.0	35.8	36.1	35.7	36.3
8 Cefndon Terrace	CF44 9TE	Dwelling	47.3	47.7	47.2	47.9	36.6	36.9	36.5	37.1
9 Cefndon Terrace	CF44 9TE	Dwelling	43.9	44.2	44.0	44.6	33.5	33.8	33.5	34.2
10 Cefndon Terrace	CF44 9TE	Dwelling	44.3	44.8	44.7	45.3	33.9	34.3	34.2	34.8
11 Cefndon Terrace	CF44 9TE	Dwelling	42.1	41.7	41.7	42.7	31.9	31.5	31.5	32.4
13 Cefndon Terrace	CF44 9TE	Dwelling	47.3	46.9	47.1	48.0	36.6	36.2	36.4	37.2
14 Cefndon Terrace	CF44 9TE	Dwelling	46.9	46.4	46.6	47.6	36.2	35.7	36.0	36.8
15 Cefndon Terrace	CF44 9TE	Dwelling	46.1	46.0	46.1	47.0	35.5	35.3	35.5	36.3
6A Station Road	CF44 9TF	Dwelling	46.1	46.4	46.1	46.8	35.5	35.8	35.5	36.1
6B Station Road	CF44 9TF	Dwelling	47.4	47.8	47.4	48.0	36.7	37.0	36.6	37.2
Gwernffrwd Gwern Ffrwd Station Road	CF44 9TF	Dwelling	42.8	42.4	42.3	43.2	32.5	32.2	32.1	32.9
Platform One Platform One Station Road	CF44 9TF	Dwelling	43.7	44.0	43.9	44.6	33.3	33.6	33.5	34.1
1 Station Road	CF44 9TF	Dwelling	45.6	45.4	45.2	46.0	35.1	34.9	34.7	35.4
2 Station Road	CF44 9TF	Dwelling	42.7	42.3	42.3	43.1	32.4	32.0	32.0	32.8
3 Station Road	CF44 9TF	Dwelling	41.7	41.7	41.5	42.3	31.5	31.5	31.4	32.0
63 Station Road	CF44 9TF	Dwelling	46.4	46.7	46.0	46.7	35.7	36.0	35.4	36.0
64 Station Road	CF44 9TF	Dwelling	41.6	41.2	41.2	42.1	31.4	31.1	31.1	31.8
65 Station Road	CF44 9TF	Dwelling	43.6	43.9	43.8	44.5	33.2	33.5	33.4	34.0

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
66 Station Road	CF44 9TF	Dwelling	41.7	41.4	41.3	42.2	31.5	31.2	31.1	31.9
67 Station Road	CF44 9TF	Dwelling	42.7	42.6	42.2	43.1	32.4	32.3	32.0	32.8
68 Station Road	CF44 9TF	Dwelling	47.0	47.3	46.5	47.1	36.3	36.6	35.8	36.4
69 Station Road	CF44 9TF	Dwelling	42.3	41.9	41.9	42.8	32.1	31.7	31.7	32.5
1 Elm Grove	CF44 9TG	Dwelling	40.8	40.9	40.7	41.4	30.7	30.8	30.6	31.2
2 Elm Grove	CF44 9TG	Dwelling	41.9	41.5	41.5	42.4	31.7	31.3	31.3	32.1
3 Elm Grove	CF44 9TG	Dwelling	45.9	45.7	45.6	46.4	35.3	35.1	35.0	35.7
4 Elm Grove	CF44 9TG	Dwelling	43.1	43.1	42.9	43.6	32.8	32.8	32.6	33.2
5 Elm Grove	CF44 9TG	Dwelling	42.8	42.3	42.4	43.3	32.5	32.0	32.1	32.9
6 Elm Grove	CF44 9TG	Dwelling	42.7	42.2	42.3	43.2	32.4	32.0	32.0	32.8
7 Elm Grove	CF44 9TG	Dwelling	42.8	42.3	42.4	43.3	32.5	32.0	32.1	32.9
8 Elm Grove	CF44 9TG	Dwelling	45.8	45.6	45.5	46.3	35.2	35.0	34.9	35.6
9 Elm Grove	CF44 9TG	Dwelling	43.3	43.4	43.1	43.9	33.0	33.0	32.8	33.5
10 Elm Grove	CF44 9TG	Dwelling	42.7	42.2	42.3	43.2	32.4	32.0	32.1	32.9
11 Elm Grove	CF44 9TG	Dwelling	42.7	42.2	42.3	43.2	32.4	31.9	32.0	32.8
12 Elm Grove	CF44 9TG	Dwelling	42.4	41.8	41.9	42.8	32.1	31.6	31.7	32.5
13 Elm Grove	CF44 9TG	Dwelling	41.2	41.4	41.1	41.8	31.0	31.2	31.0	31.6
14 Elm Grove	CF44 9TG	Dwelling	42.7	42.2	42.3	43.2	32.4	31.9	32.1	32.8
15 Elm Grove	CF44 9TG	Dwelling	42.5	42.0	42.1	43.0	32.3	31.8	31.9	32.7
16 Elm Grove	CF44 9TG	Dwelling	42.9	42.4	42.5	43.4	32.6	32.2	32.2	33.0
17 Elm Grove	CF44 9TG	Dwelling	44.1	44.2	44.2	44.9	33.7	33.7	33.8	34.4
18 Elm Grove	CF44 9TG	Dwelling	43.8	44.0	43.5	44.2	33.4	33.6	33.2	33.7
19 Elm Grove	CF44 9TG	Dwelling	43.3	43.1	43.0	43.9	33.0	32.8	32.7	33.4
1A Railway Terrace	CF44 9TH	Dwelling	45.6	45.5	45.2	46.0	35.0	34.9	34.7	35.4
1 Railway Terrace	CF44 9TH	Dwelling	49.1	49.2	49.0	49.7	38.2	38.3	38.1	38.7
2 Railway Terrace	CF44 9TH	Dwelling	41.6	42.0	41.8	42.5	31.5	31.8	31.6	32.2
3 Railway Terrace	CF44 9TH	Dwelling	45.5	45.7	45.6	46.3	34.9	35.1	35.0	35.6
4 Railway Terrace	CF44 9TH	Dwelling	40.4	40.6	40.5	41.1	30.4	30.6	30.4	31.0
5 Railway Terrace	CF44 9TH	Dwelling	46.3	46.6	46.5	47.2	35.7	35.9	35.8	36.5
10 Railway Terrace	CF44 9TH	Dwelling	46.6	46.4	46.5	47.2	36.0	35.8	35.8	36.5
11 Railway Terrace	CF44 9TH	Dwelling	43.3	42.9	43.1	43.9	33.0	32.6	32.7	33.5
Bryngwyn 12 Railway Terrace	CF44 9TH	Dwelling	47.2	47.4	47.1	47.8	36.5	36.6	36.4	37.0
13 Railway Terrace	CF44 9TH	Dwelling	45.8	45.7	45.5	46.3	35.2	35.1	34.9	35.6
Broniestyn Terrace 1 Penyard Road	CF44 9TL	Dwelling	48.3	48.6	48.0	48.6	37.5	37.7	37.2	37.8
Broniestyn Terrace 2 Penyard Road	CF44 9TL	Dwelling	41.9	41.8	41.6	42.3	31.7	31.6	31.4	32.1
Broniestyn Terrace 3 Penyard Road	CF44 9TL	Dwelling	49.0	49.2	48.7	49.3	38.0	38.2	37.8	38.4
Broniestyn Terrace 4 Penyard Road	CF44 9TL	Dwelling	49.2	49.4	48.9	49.5	38.3	38.5	38.0	38.6
Broniestyn Terrace 5 Penyard Road	CF44 9TL	Dwelling	47.3	47.5	47.0	47.6	36.6	36.8	36.2	36.8
Broniestyn Terrace 6 Penyard Road	CF44 9TL	Dwelling	42.7	42.4	42.5	43.3	32.4	32.1	32.2	32.9
Broniestyn Terrace 7 Penyard Road	CF44 9TL	Dwelling	47.4	47.5	47.3	48.0	36.7	36.8	36.5	37.2
Broniestyn Terrace 8 Penyard Road	CF44 9TL	Dwelling	46.6	46.8	46.4	47.1	35.9	36.1	35.8	36.4
Broniestyn Terrace 9 Penyard Road	CF44 9TL	Dwelling	49.5	49.7	49.3	50.0	38.6	38.7	38.3	38.9
Broniestyn Terrace 10 Penyard Road	CF44 9TL	Dwelling	46.7	46.9	46.5	47.2	36.0	36.2	35.9	36.5
Broniestyn Terrace 11 Penyard Road	CF44 9TL	Dwelling	46.8	47.0	46.5	47.2	36.1	36.3	35.9	36.5
Broniestyn Terrace 12 Penyard Road	CF44 9TL	Dwelling	49.8	50.0	49.5	50.2	38.8	38.9	38.5	39.1
Broniestyn Terrace 13 Penyard Road	CF44 9TL	Dwelling	43.2	42.9	43.1	43.9	32.8	32.6	32.8	33.5
Hollydene Bungalow Hollydene Brynsiriol	CF44 9TN	Dwelling	45.7	45.8	46.3	47.1	35.1	35.2	35.6	36.4
1 Brynsiriol	CF44 9TN	Dwelling	47.1	47.1	47.2	48.0	36.4	36.4	36.5	37.1
2 Brynsiriol	CF44 9TN	Dwelling	44.8	44.9	44.4	45.1	34.3	34.4	33.9	34.5
3 Brynsiriol	CF44 9TN	Dwelling	41.0	40.7	40.8	41.6	30.9	30.6	30.7	31.4
4 Brynsiriol	CF44 9TN	Dwelling	47.7	48.0	47.5	48.1	36.9	37.1	36.7	37.2
5 Brynsiriol	CF44 9TN	Dwelling	43.4	42.9	42.9	43.8	33.0	32.6	32.6	33.4
6 Brynsiriol	CF44 9TN	Dwelling	47.8	48.0	47.5	48.2	37.0	37.2	36.7	37.3
7 Brynsiriol	CF44 9TN	Dwelling	41.1	40.8	40.7	41.6	31.0	30.7	30.6	31.4
8 Brynsiriol	CF44 9TN	Dwelling	42.9	43.2	43.0	43.7	32.6	32.8	32.7	33.3
9 Brynsiriol	CF44 9TN	Dwelling	44.9	44.9	44.5	45.3	34.4	34.3	34.0	34.7
10 Brynsiriol	CF44 9TN	Dwelling	46.1	45.8	45.5	46.4	35.4	35.2	35.0	35.7
11 Brynsiriol	CF44 9TN	Dwelling	40.2	40.1	39.8	40.6	30.2	30.0	29.8	30.5
12 Brynsiriol	CF44 9TN	Dwelling	43.4	42.9	43.1	44.0	33.1	32.6	32.7	33.6
13 Brynsiriol	CF44 9TN	Dwelling	40.6	40.3	40.4	41.2	30.5	30.3	30.3	31.1
14 Brynsiriol	CF44 9TN	Dwelling	41.3	41.6	41.6	42.3	31.2	31.4	31.4	32.0
15 Brynsiriol	CF44 9TN	Dwelling	46.8	46.9	46.7	47.3	36.1	36.2	36.0	36.6
16 Brynsiriol	CF44 9TN	Dwelling	43.2	42.9	43.0	43.8	32.9	32.6	32.7	33.4
17 Brynsiriol	CF44 9TN	Dwelling	48.1	48.2	47.3	47.9	37.3	37.4	36.5	37.1
18 Brynsiriol	CF44 9TN	Dwelling	47.3	47.4	47.2	47.9	36.6	36.7	36.4	37.1
19 Brynsiriol	CF44 9TN	Dwelling	48.3	48.4	48.2	48.9	37.5	37.5	37.3	38.0
20 Brynsiriol	CF44 9TN	Dwelling	45.9	46.0	45.8	46.6	35.3	35.3	35.2	35.9
21 Brynsiriol	CF44 9TN	Dwelling	47.0	47.1	47.1	47.8	36.3	36.4	36.3	37.0
22 Brynsiriol	CF44 9TN	Dwelling	43.5	43.1	43.2	44.0	33.1	32.8	32.9	33.6
23 Brynsiriol	CF44 9TN	Dwelling	46.6	46.5	46.2	46.9	35.9	35.9	35.5	36.2
24 Brynsiriol	CF44 9TN	Dwelling	41.9	41.6	41.4	42.3	31.7	31.5	31.3	32.0
25 Brynsiriol	CF44 9TN	Dwelling	48.8	48.8	48.7	49.4	37.9	37.9	37.8	38.4
26 Brynsiriol	CF44 9TN	Dwelling	46.4	46.9	47.1	47.8	35.7	36.2	36.4	37.0
27 Brynsiriol	CF44 9TN	Dwelling	45.5	46.0	46.4	47.1	34.9	35.4	35.7	36.4
28 Brynsiriol	CF44 9TN	Dwelling	43.3	42.9	43.0	43.9	33.0	32.6	32.7	33.5
29 Brynsiriol	CF44 9TN	Dwelling	45.8	46.3	46.3	47.0	35.2	35.6	35.6	36.3
30 Brynsiriol	CF44 9TN	Dwelling	44.5	45.0	45.3	46.0	34.0	34.4	34.7	35.4
31 Brynsiriol	CF44 9TN	Dwelling	45.7	46.2	46.6	47.3	35.1	35.6	35.9	36.6
32 Brynsiriol	CF44 9TN	Dwelling	42.8	42.3	42.3	43.2	32.5	32.1	32.1	32.9
33 Brynsiriol	CF44 9TN	Dwelling	48.7	48.8	48.6	49.4	37.8	37.9	37.7	38.4
34 Brynsiriol	CF44 9TN	Dwelling	45.7	45.9	46.4	47.2	35.1	35.3	35.7	36.4
35 Brynsiriol	CF44 9TN	Dwelling	48.0	48.0	47.9	48.7	37.2	37.2	37.1	37.8
Primrose Cottage 1 Primrose Cottages Penyard Road	CF44 9TP	Dwelling	48.9	49.2	49.0	49.6	38.0	38.3	38.0	38.6
Primrose Cottage 2 Primrose Cottages Penyard Road	CF44 9TP	Dwelling	48.7	48.9	48.6	49.3	37.8	38.0	37.7	38.3
Primrose Cottage 3 Primrose Cottages Penyard Road	CF44 9TP	Dwelling	47.6	48.2	48.0	48.6	36.8	37.4	37.2	37.7
Primrose Cottage 4 Primrose Cottages Penyard Road	CF44 9TP	Dwelling	47.7	48.0	47.6	48.2	36.9	37.2	36.8	37.4
Benson House Benson House John'S Lane	CF44 9TQ	Dwelling	47.5	47.5	47.5	48.2	36.7	36.8	36.7	37.4
Bryn Bungalow Bryn Bungalow John'S Lane	CF44 9TQ	Dwelling	57.4	58.7	58.6	58.2	45.7	46.8	46.7	46.4
Bryngolwg Bryngolwg John'S Lane	CF44 9TQ	Dwelling	58.3	60.1	60.4	59.6	46.5	48.1	48.3	47.6
Chez Nous Chez Nous John'S Lane	CF44 9TQ	Dwelling	50.8	50.9	50.9	51.5	39.7	39.8	39.7	40.3
Crescent View Bungalow Crescent View Bungalow John'S Lane	CF44 9TQ	Dwelling	49.7	50.7	50.5	50.4	38.7	39.6	39.4	39.4
Cwm Nant House Cwmnant House John'S Lane	CF44 9TQ	Dwelling	46.7	46.8	46.9	47.7	36.0	36.1	36.2	36.9
Cynon House Cynon House John'S Lane	CF44 9TQ	Dwelling	47.6	47.7	47.7	48.5	36.8	36.9	36.9	37.6
Fairfield Fairfield John'S Lane	CF44 9TQ	Dwelling	47.6	47.8	47.7	48.5	36.8	37.0	36.9	37.6
Glen View Glenview John'S Lane	CF44 9TQ	Dwelling	56.6	57.7	57.5	57.2	44.9	45.9	45.7	45.5
Golwg Y Afon Golwg Yr Afon John'S Lane	CF44 9TQ	Dwelling	47.3	47.5	47.6	48.3	36.5	36.8	36.8	37.5
High Field Highfield John'S Lane	CF44 9TQ	Dwelling	47.6	48.0	47.9	48.6	36.9	37.1	37.1	37.7
Irisville Bungalow Irisville Bungalow John'S Lane	CF44 9TQ	Dwelling	56.4	57.6	57.4	57.1	44.8	45.8	45.7	45.4
John'S Lane	CF44 9TQ	Dwelling	47.8	47.9	47.6	48.4	37.0	37.1	36.8	37.5
Littlebrook Littlebrook John'S Lane	CF44 9TQ	Dwelling	46.7	46.8	47.0	47.8	36.0	36.1	36.3	37.0
Lladnaem Lladnaem John'S Lane	CF44 9TQ	Dwelling	58.7	60.4	60.7	59.9	46.8	48.4	48.6	47.9
Llamedos Llamedos John'S Lane	CF44 9TQ	Dwelling	46.5	46.8	46.6	47.3	35.9	36.1	36.0	36.5
Maes Y Bryn Maesbryn John'S Lane	CF44 9TQ	Dwelling	46.7	46.4	46.3	47.2	36.0	35.7	35.7	36.4
Mynydd Du Mynydd Du John'S Lane	CF44 9TQ	Dwelling	47.7	47.9	47.8	48.5	36.9	37.1	37.0	37.6
Newhaven Newhaven John'S Lane	CF44 9TQ	Dwelling	48.2	47.9	47.8	48.7	37.4	37.1	37.0	37.8
Rosswood Rosswood John'S Lane	CF44 9TQ	Dwelling	47.8	48.1	47.9	48.6	37.0	37.2	37.1	37.7
Swn Yr Afon Swn-Yr-Afon John'S Lane	CF44 9TQ	Dwelling	47.0	47.3	47.1	47.7	36.2	36.5	36.3	36.9

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
Ty Coch John'S Lane	CF44 9TQ	Dwelling	43.5	43.9	44.3	45.1	33.1	33.5	33.9	34.5
Ty Newydd Ty Newydd John'S Lane	CF44 9TQ	Dwelling	43.5	43.9	44.3	45.1	33.1	33.5	33.9	34.5
Warren Bungalow Warren Bungalow John'S Lane	CF44 9TQ	Dwelling	56.7	57.8	57.6	57.3	45.0	46.0	45.8	45.6
Westville Bungalow Westville Bungalow John'S Lane	CF44 9TQ	Dwelling	49.3	48.6	49.4	50.4	38.3	37.8	38.5	39.3
Wyndamere Wyndham Mere John'S Lane	CF44 9TQ	Dwelling	48.2	47.7	48.0	48.9	37.3	36.9	37.2	38.0
Hafod Bungalow Penyard Road	CF44 9TR	Dwelling	47.4	47.5	47.6	48.3	36.6	36.7	36.8	37.5
Lisburn Rise 1 Penyard Road	CF44 9TR	Dwelling	45.5	45.6	45.8	46.5	35.0	35.0	35.2	35.8
Lisburn Rise 2 Penyard Road	CF44 9TR	Dwelling	45.5	45.7	45.6	46.3	34.9	35.2	35.1	35.7
Lisburn Rise 3 Penyard Road	CF44 9TR	Dwelling	45.7	45.6	45.6	46.4	35.1	35.0	35.1	35.7
Lisburn Rise 4 Penyard Road	CF44 9TR	Dwelling	44.7	44.9	44.8	45.4	34.3	34.4	34.3	34.9
Lisburn Rise 5 Penyard Road	CF44 9TR	Dwelling	43.7	43.6	43.4	44.1	33.3	33.2	33.0	33.7
Lisburn Rise 6 Penyard Road	CF44 9TR	Dwelling	43.4	43.2	43.3	44.0	33.0	32.8	33.0	33.6
Lisburn Rise 7 Penyard Road	CF44 9TR	Dwelling	44.0	43.9	44.0	44.7	33.6	33.5	33.6	34.2
Lisburn Rise 8 Penyard Road	CF44 9TR	Dwelling	44.3	44.2	44.4	45.0	33.9	33.8	33.9	34.5
Lisburn Rise 9 Penyard Road	CF44 9TR	Dwelling	44.1	44.4	44.2	44.8	33.7	33.9	33.7	34.3
Lisburn Rise 10 Penyard Road	CF44 9TR	Dwelling	45.4	45.3	45.3	46.0	34.9	34.8	34.8	35.4
Lisburn Rise 11 Penyard Road	CF44 9TR	Dwelling	46.0	46.0	45.8	46.5	35.4	35.3	35.2	35.8
Lisburn Rise 12 Four Winds Penyard Road	CF44 9TR	Dwelling	44.3	44.3	44.4	45.0	33.9	33.8	33.9	34.5
Auburn Rise 1 Penyard Road	CF44 9TS	Dwelling	44.3	44.6	44.4	45.1	33.9	34.1	34.0	34.5
Auburn Rise 2 Penyard Road	CF44 9TS	Dwelling	44.0	44.3	44.0	44.7	33.6	33.8	33.6	34.2
Auburn Rise 3 Penyard Road	CF44 9TS	Dwelling	43.7	43.8	43.7	44.4	33.3	33.4	33.3	33.9
Auburn Rise 4 Penyard Road	CF44 9TS	Dwelling	43.7	43.9	43.6	44.2	33.3	33.5	33.2	33.7
Auburn Rise 5 Penyard Road	CF44 9TS	Dwelling	43.5	43.8	43.3	43.9	33.1	33.4	32.9	33.5
Auburn Rise 6 Penyard Road	CF44 9TS	Dwelling	44.8	44.9	44.5	45.2	34.3	34.4	34.0	34.7
Auburn Rise 7 Penyard Road	CF44 9TS	Dwelling	45.9	45.8	45.5	46.2	35.3	35.2	34.9	35.6
Auburn Rise 8 Penyard Road	CF44 9TS	Dwelling	44.3	44.6	44.3	44.9	33.9	34.1	33.8	34.4
Auburn Rise 9 Penyard Road	CF44 9TS	Dwelling	43.2	43.6	43.1	43.7	32.9	33.2	32.8	33.4
Crawshay Street	CF44 9TT	Dwelling	49.5	49.6	49.5	50.2	38.6	38.6	38.5	39.2
11 Crawshay Street	CF44 9TT	Dwelling	43.0	42.8	42.6	43.4	32.6	32.5	32.3	33.0
12 Crawshay Street	CF44 9TT	Dwelling	46.0	46.4	45.6	46.1	35.4	35.8	35.0	35.5
13 Crawshay Street	CF44 9TT	Dwelling	45.5	45.8	46.0	46.7	35.0	35.2	35.4	36.0
14 Crawshay Street	CF44 9TT	Dwelling	47.2	47.5	47.2	47.9	36.5	36.7	36.4	37.0
15 Crawshay Street	CF44 9TT	Dwelling	42.9	42.6	42.5	43.4	32.6	32.3	32.3	33.0
16 Crawshay Street	CF44 9TT	Dwelling	43.5	43.5	43.1	43.9	33.1	33.1	32.8	33.5
17 Crawshay Street	CF44 9TT	Dwelling	42.7	42.5	42.4	43.2	32.5	32.2	32.1	32.9
18 Crawshay Street	CF44 9TT	Dwelling	48.5	48.6	48.2	48.9	37.6	37.7	37.3	38.0
19 Crawshay Street	CF44 9TT	Dwelling	42.8	42.5	42.4	43.2	32.5	32.2	32.2	32.9
20 Crawshay Street	CF44 9TT	Dwelling	42.4	42.3	42.1	42.8	32.2	32.1	31.8	32.5
21 Crawshay Street	CF44 9TT	Dwelling	42.7	42.5	42.4	43.2	32.5	32.2	32.1	32.8
22 Crawshay Street	CF44 9TT	Dwelling	49.3	49.4	49.0	49.7	38.4	38.4	38.0	38.7
23 Crawshay Street	CF44 9TT	Dwelling	42.7	42.5	42.4	43.2	32.5	32.2	32.1	32.8
24 Crawshay Street	CF44 9TT	Dwelling	49.0	49.0	48.8	49.6	38.1	38.1	37.9	38.6
25 Crawshay Street	CF44 9TT	Dwelling	46.7	46.8	46.4	47.1	36.0	36.1	35.8	36.4
27 Crawshay Street	CF44 9TT	Dwelling	42.7	42.5	42.4	43.2	32.5	32.2	32.1	32.8
29 Crawshay Street	CF44 9TT	Dwelling	42.8	42.5	42.4	43.2	32.5	32.3	32.1	32.8
31 Crawshay Street	CF44 9TT	Dwelling	42.8	42.6	42.5	43.2	32.5	32.3	32.2	32.9
33 Crawshay Street	CF44 9TT	Dwelling	42.9	42.8	42.6	43.3	32.6	32.5	32.3	33.0
35 Crawshay Street	CF44 9TT	Dwelling	42.9	42.8	42.6	43.3	32.6	32.5	32.3	32.9
Ty Mawr Farm Annex At Ty Mawr Tudor Avenue	CF44 9TU	Dwelling	50.6	50.7	50.6	51.3	39.5	39.6	39.5	40.1
Ty Mawr Farm Ty Mawr Cottage Farmhouse Tudor Avenue	CF44 9TU	Dwelling	49.6	49.7	49.7	50.5	38.6	38.7	38.7	39.4
Bryntirion Bryntirion Penyard Road	CF44 9TW	Dwelling	42.6	42.6	42.4	43.1	32.3	32.4	32.2	32.7
Cwrt Y Vil Cwrt Y Fil Penyard Road	CF44 9TW	Dwelling	46.7	47.3	47.1	47.7	36.0	36.5	36.3	36.9
Maesyrhydiau Farm Farmhouse Penyard Road	CF44 9TW	Dwelling	48.2	48.5	48.2	48.9	37.4	37.6	37.3	38.0
Varteg Varteg Penyard Road	CF44 9TW	Dwelling	40.8	40.7	40.5	41.2	30.7	30.6	30.4	31.1
1 Tudor Avenue	CF44 9TY	Dwelling	48.2	48.7	47.9	48.4	37.4	37.8	37.1	37.6
2 Tudor Avenue	CF44 9TY	Dwelling	43.4	44.0	44.4	45.0	33.1	33.6	33.9	34.5
3 Tudor Avenue	CF44 9TY	Dwelling	46.6	47.2	46.9	47.4	35.9	36.5	36.2	36.7
4 Tudor Avenue	CF44 9TY	Dwelling	43.8	44.4	44.9	45.6	33.4	33.9	34.4	35.0
5 Tudor Avenue	CF44 9TY	Dwelling	47.2	47.8	47.4	47.9	36.4	37.0	36.6	37.1
6 Tudor Avenue	CF44 9TY	Dwelling	43.3	43.9	44.2	44.9	33.0	33.5	33.8	34.4
7 Tudor Avenue	CF44 9TY	Dwelling	46.8	47.4	47.2	47.8	36.1	36.7	36.4	37.0
8 Tudor Avenue	CF44 9TY	Dwelling	49.4	49.4	49.3	50.0	38.4	38.5	38.3	39.0
9 Tudor Avenue	CF44 9TY	Dwelling	43.6	43.3	42.9	43.8	33.2	33.0	32.6	33.4
10 Tudor Avenue	CF44 9TY	Dwelling	41.2	41.2	40.8	41.5	31.1	31.0	30.7	31.3
11 Tudor Avenue	CF44 9TY	Dwelling	41.8	41.9	41.5	42.2	31.6	31.7	31.4	32.0
12 Tudor Avenue	CF44 9TY	Dwelling	46.6	46.8	46.2	46.9	36.0	36.1	35.6	36.1
13 Tudor Avenue	CF44 9TY	Dwelling	41.0	41.1	40.6	41.2	30.9	30.9	30.5	31.1
14 Tudor Avenue	CF44 9TY	Dwelling	43.1	42.9	42.8	43.6	32.8	32.6	32.5	33.2
15 Tudor Avenue	CF44 9TY	Dwelling	40.6	40.8	40.4	41.0	30.6	30.7	30.3	30.9
16 Tudor Avenue	CF44 9TY	Dwelling	40.1	40.2	39.8	40.4	30.1	30.2	29.8	30.3
17 Tudor Avenue	CF44 9TY	Dwelling	43.9	43.8	43.7	44.5	33.5	33.4	33.3	34.0
18 Tudor Avenue	CF44 9TY	Dwelling	45.1	45.7	45.9	46.5	34.5	35.1	35.3	35.9
19 Tudor Avenue	CF44 9TY	Dwelling	45.9	46.5	46.9	47.6	35.3	35.8	36.2	36.9
20 Tudor Avenue	CF44 9TY	Dwelling	49.8	49.9	49.7	50.5	38.8	38.8	38.7	39.4
1 Station Close	CF44 9TZ	Dwelling	44.6	44.8	44.4	45.1	34.2	34.3	34.0	34.6
2 Station Close	CF44 9TZ	Dwelling	44.5	44.6	44.3	45.0	34.0	34.1	33.9	34.5
3 Station Close	CF44 9TZ	Dwelling	47.3	47.5	47.2	47.9	36.5	36.7	36.4	37.1
4 Station Close	CF44 9TZ	Dwelling	47.1	47.2	47.0	47.7	36.3	36.5	36.2	36.9
5 Station Close	CF44 9TZ	Dwelling	47.4	47.6	47.1	47.8	36.6	36.8	36.4	37.0
6 Station Close	CF44 9TZ	Dwelling	47.6	47.9	47.5	48.2	36.9	37.1	36.7	37.3
7 Station Close	CF44 9TZ	Dwelling	47.3	47.5	47.3	48.1	36.6	36.8	36.6	37.2
8 Station Close	CF44 9TZ	Dwelling	47.5	47.7	47.5	48.2	36.7	36.9	36.7	37.3
9 Station Close	CF44 9TZ	Dwelling	48.1	48.3	48.1	48.8	37.3	37.5	37.3	37.9
10 Station Close	CF44 9TZ	Dwelling	48.3	48.5	48.2	48.9	37.4	37.6	37.3	38.0
11 Station Close	CF44 9TZ	Dwelling	47.3	47.3	47.1	47.9	36.5	36.5	36.3	37.1
12 Station Close	CF44 9TZ	Dwelling	48.5	48.2	48.4	49.3	37.6	37.3	37.6	38.4
1 Richmond Drive	CF44 9UA	Dwelling	46.8	47.3	47.4	48.0	36.1	36.5	36.6	37.2
2 Richmond Drive	CF44 9UA	Dwelling	46.3	46.3	46.4	47.2	35.6	35.7	35.7	36.5
4 Richmond Drive	CF44 9UA	Dwelling	46.2	46.6	46.5	47.2	35.6	36.0	35.8	36.5
5 Richmond Drive	CF44 9UA	Dwelling	46.0	46.4	46.2	46.9	35.4	35.8	35.6	36.2
6 Richmond Drive	CF44 9UA	Dwelling	46.1	46.6	46.3	47.0	35.5	35.9	35.7	36.3
7 Richmond Drive	CF44 9UA	Dwelling	46.1	46.5	46.3	47.0	35.5	35.9	35.6	36.2
8 Richmond Drive	CF44 9UA	Dwelling	46.0	46.4	46.1	46.8	35.4	35.8	35.5	36.1
Minafon 9 Richmond Drive	CF44 9UA	Dwelling	46.1	46.5	46.2	46.8	35.5	35.8	35.5	36.1
10 Richmond Drive	CF44 9UA	Dwelling	46.2	46.7	46.4	47.1	35.6	36.0	35.7	36.3
11 Richmond Drive	CF44 9UA	Dwelling	46.2	46.7	46.4	47.0	35.6	36.0	35.7	36.3
12 Richmond Drive	CF44 9UA	Dwelling	45.7	45.9	46.1	46.8	35.1	35.3	35.4	36.1
13 Richmond Drive	CF44 9UA	Dwelling	49.0	49.3	49.1	49.7	38.1	38.4	38.1	38.7
14 Richmond Drive	CF44 9UA	Dwelling	48.9	49.1	48.9	49.6	38.0	38.2	37.9	38.6
15 Richmond Drive	CF44 9UA	Dwelling	47.6	47.7	47.5	48.2	36.8	36.9	36.7	37.4
16 Richmond Drive	CF44 9UA	Dwelling	47.3	47.4	47.1	47.8	36.6	36.7	36.3	37.0
17 Richmond Drive	CF44 9UA	Dwelling	49.1	49.2	49.2	50.0	38.2	38.2	38.3	39.0
18 Richmond Drive	CF44 9UA	Dwelling	48.0	48.3	48.1	48.7	37.2	37.5	37.2	37.8
19 Richmond Drive	CF44 9UA	Dwelling	48.6	48.6	48.6	49.4	37.7	37.8	37.7	38.4
20 Richmond Drive	CF44 9UA	Dwelling	46.1	46.6	46.4	47.1	35.5	35.9	35.7	36.3
21 Richmond Drive	CF44 9UA	Dwelling	47.7	48.1	48.1	48.8	36.9	37.2	37.3	37.9
Beacons View Bungalow Beacons View Bungalow Rhigos Road	CF44 9UD	Dwelling	55.4	55.6	55.4	55.8	43.9	44.0	43.9	44.2

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
Cartref Cartref Rhigos Road	CF44 9UD	Dwelling	59.4	60.5	61.7	62.5	47.4	48.4	49.5	50.2
Maesglas Farm Farmhouse Rhigos Road	CF44 9UD	Dwelling	71.3	72.5	71.6	72.5	58.2	59.2	58.5	59.2
Willows Farm Farmhouse Rhigos Road	CF44 9UD	Dwelling	62.6	63.7	65.1	66.0	50.3	51.3	52.6	53.3
Maesypant Farm Farmhouse Rhigos Road	CF44 9UG	Dwelling	53.5	54.0	52.7	53.3	42.2	42.6	41.4	41.9
The Fairways The Fairways Rhigos Road	CF44 9UG	Dwelling	55.9	55.5	56.1	56.4	44.3	43.9	44.5	44.8
Fifth Avenue Buckleys Bungalow Buckleys Bungalow Hirwaun Industrial Estate	CF44 9UN	Dwelling	57.5	55.5	58.2	59.1	45.7	43.9	46.4	47.2
Fifth Avenue Fith Avenue Guest House Hirwaun Industrial Estate	CF44 9UN	OSR	57.5	55.5	58.2	59.1	45.7	43.9	46.4	47.2
Fifth Avenue Fifth Avenue House Hirwaun Industrial Estate	CF44 9UP	Dwelling	56.4	54.4	57.1	58.0	44.8	42.9	45.3	46.1
Second Caravan Halt Road	CF44 9UP	Dwelling	60.1	58.1	60.6	61.5	48.1	46.2	48.5	49.3
The Chalet At Stable View Stable View Halt Road	CF44 9UW	OSR	57.1	55.1	57.6	58.6	45.4	43.5	45.9	46.7
Tai Cwplau Farm Tai Cwplau Farmhouse Halt Road	CF44 9UW	Dwelling	53.2	51.3	53.7	54.6	41.9	40.1	42.3	43.1
Fir Tree View 1 Gwaelodygarth	CF47 8BX	Dwelling	58.4	58.3	57.8	58.3	46.6	46.5	46.0	46.4
Fir Tree View 2 Gwaelodygarth	CF47 8BX	Dwelling	60.8	60.8	60.2	60.6	48.7	48.7	48.2	48.5
Fir Tree View 3 Gwaelodygarth	CF47 8BX	Dwelling	61.7	61.7	61.1	61.4	49.5	49.5	48.9	49.2
Fir Tree View 4 Gwaelodygarth	CF47 8BX	Dwelling	56.7	56.9	56.6	57.0	45.0	45.2	44.9	45.3
Fir Tree View 5 The Nest Gwaelodygarth	CF47 8BX	Dwelling	57.9	58.0	57.8	58.2	46.1	46.2	46.0	46.3
Bramblewood Bramblewood Gwaelodygarth Close	CF47 8DX	Dwelling	47.0	47.3	46.7	47.3	36.3	36.6	36.0	36.6
Glyder Glyder Gwaelodygarth Close	CF47 8DX	Dwelling	47.2	47.5	46.9	47.6	36.5	36.7	36.2	36.8
Melita House Melita House Gwaelodygarth Close	CF47 8DX	Dwelling	46.6	46.8	46.2	46.9	36.0	36.1	35.6	36.2
Newlyn Newlyn Gwaelodygarth Close	CF47 8DX	Dwelling	49.6	49.7	49.1	49.7	38.7	38.7	38.2	38.7
Red Roses Red Roses Gwaelodygarth Close	CF47 8DX	Dwelling	49.9	50.1	49.5	50.2	38.9	39.1	38.5	39.1
Rheidol Rheidol Gwaelodygarth Close	CF47 8DX	Dwelling	46.9	47.1	46.5	47.1	36.2	36.4	35.8	36.4
The Spinney The Spinney Gwaelodygarth Close	CF47 8DX	Dwelling	51.1	51.1	50.5	51.1	40.0	40.0	39.4	40.0
West Winds West Winds Gwaelodygarth Close	CF47 8DX	Dwelling	46.4	46.5	45.9	46.5	35.8	35.8	35.3	35.9
1 Gwaelodygarth Close	CF47 8DX	Dwelling	50.2	50.4	49.8	50.5	39.2	39.4	38.8	39.4
2 Gwaelodygarth Close	CF47 8DX	Dwelling	49.6	49.8	49.2	49.9	38.7	38.8	38.3	38.8
12 Cyfarthfa Court Cyfarthfa Court	CF47 8EY	Dwelling	45.4	45.7	45.2	45.9	34.9	35.1	34.6	35.3
13 Cyfarthfa Court Cyfarthfa Court	CF47 8EY	Dwelling	46.4	46.6	46.1	46.8	35.8	35.9	35.5	36.1
14 Cyfarthfa Court Cyfarthfa Court	CF47 8EY	Dwelling	45.5	45.8	45.1	45.9	34.9	35.2	34.6	35.3
15 Cyfarthfa Court Cyfarthfa Court	CF47 8EY	Dwelling	42.9	43.1	42.6	43.3	32.6	32.8	32.3	32.9
16 Cyfarthfa Court Cyfarthfa Court	CF47 8EY	Dwelling	44.5	44.6	44.2	44.8	34.0	34.1	33.7	34.3
17 Cyfarthfa Court Cyfarthfa Court	CF47 8EY	Dwelling	43.0	43.2	42.7	43.4	32.7	32.8	32.4	33.0
18 Cyfarthfa Court Cyfarthfa Court	CF47 8EY	Dwelling	44.6	44.9	44.3	45.0	34.1	34.3	33.8	34.4
The Chase The Chase Gwaelodygarth	CF47 8LJ	Dwelling	52.2	52.2	51.6	52.0	41.0	41.0	40.4	40.7
Hirwaun Terrace 1 Gwaunfarren Road	CF47 8LX	Dwelling	47.8	47.8	47.3	47.7	37.0	37.0	36.5	36.9
Hirwaun Terrace 2 Gwaunfarren Road	CF47 8LX	Dwelling	52.1	52.1	51.6	52.0	40.8	40.8	40.4	40.7
Hirwaun Terrace 3 Gwaunfarren Road	CF47 8LX	Dwelling	51.2	51.2	50.7	51.1	40.0	40.1	39.6	40.0
Hirwaun Terrace 4 Gwaunfarren Road	CF47 8LX	Dwelling	52.0	52.1	51.6	52.1	40.8	40.8	40.5	40.9
Hirwaun Terrace 5 Gwaunfarren Road	CF47 8LX	Dwelling	72.0	72.2	71.8	72.2	58.8	59.0	58.6	59.0
Hirwaun Terrace 6 Gwaunfarren Road	CF47 8LX	Dwelling	67.0	67.3	67.0	67.5	54.3	54.5	54.3	54.7
Haulfryn Brecon Road	CF47 8PA	Dwelling	55.2	55.9	55.3	56.0	43.7	44.3	43.7	44.3
Pandy Farm Pandy Farm Brecon Road	CF47 8PA	Dwelling	55.2	55.9	55.3	56.0	43.7	44.3	43.7	44.3
Miniature Railway Store And Messroom Cyfarthfa Park	CF47 8PB	OSR	56.3	56.6	56.0	56.3	44.7	44.9	44.4	44.7
Lyndale 1 Pandy Close	CF47 8PB	Dwelling	58.8	59.2	59.8	59.4	46.9	47.3	47.8	47.4
Dorland 2 Pandy Close	CF47 8PB	Dwelling	61.5	62.0	62.5	62.0	49.4	49.8	50.2	49.8
Bryn Siriol 3 Pandy Close	CF47 8PB	Dwelling	54.2	54.9	54.3	54.9	42.8	43.4	42.9	43.3
Kimberley 4 Pandy Close	CF47 8PB	Dwelling	55.3	55.9	55.4	56.0	43.7	44.3	43.9	44.3
5 Pandy Close	CF47 8PB	Dwelling	54.8	55.5	54.9	55.5	43.3	43.9	43.4	43.9
6 Pandy Close	CF47 8PB	Dwelling	52.7	53.4	52.8	53.5	41.4	42.0	41.5	42.1
Fairoak 7 Pandy Close	CF47 8PB	Dwelling	54.2	55.0	54.3	55.2	42.8	43.5	42.9	43.6
8 Pandy Close	CF47 8PB	Dwelling	55.3	56.1	55.5	56.3	43.8	44.5	43.9	44.6
Bryn Hyfryd 9 Pandy Close	CF47 8PB	Dwelling	55.7	56.5	55.9	56.6	44.1	44.8	44.3	44.9
10 Pandy Close	CF47 8PB	Dwelling	55.1	55.9	55.3	56.1	43.6	44.3	43.7	44.4
11 Pandy Close	CF47 8PB	Dwelling	55.1	55.9	55.3	56.2	43.6	44.3	43.7	44.5
14 Pandy Close	CF47 8PB	Dwelling	53.6	54.4	53.7	54.7	42.2	42.9	42.4	43.2
15 Pandy Close	CF47 8PB	Dwelling	52.5	53.4	52.7	53.7	41.3	42.1	41.4	42.3
Dan Y Castell 16 Pandy Close	CF47 8PB	Dwelling	55.3	56.2	55.5	56.4	43.8	44.6	43.9	44.7
17 Pandy Close	CF47 8PB	Dwelling	52.3	53.1	52.5	53.5	41.1	41.8	41.2	42.1
Ty Heulwen 18 Pandy Close	CF47 8PB	Dwelling	54.8	55.6	54.9	55.9	43.3	44.0	43.4	44.3
19 Pandy Close	CF47 8PB	Dwelling	56.4	57.3	56.5	57.4	44.8	45.5	44.9	45.6
Shemara 20 Pandy Close	CF47 8PB	Dwelling	55.8	56.7	55.9	56.8	44.2	45.0	44.3	45.1
21 Pandy Close	CF47 8PB	Dwelling	54.5	55.3	54.7	55.6	43.0	43.8	43.2	44.0
Cefn Parc 22 Pandy Close	CF47 8PB	Dwelling	54.2	55.1	54.4	55.3	42.8	43.5	42.9	43.7
23 Pandy Close	CF47 8PB	Dwelling	54.0	54.8	54.1	54.9	42.5	43.3	42.6	43.4
24 Pandy Close	CF47 8PB	Dwelling	56.1	56.9	56.2	57.0	44.5	45.2	44.5	45.2
25 Pandy Close	CF47 8PB	Dwelling	54.2	55.0	54.3	55.1	42.8	43.5	42.9	43.6
Jardis 26 Pandy Close	CF47 8PB	Dwelling	53.2	53.9	53.3	54.0	41.8	42.5	41.9	42.6
Tynycoed 27 Pandy Close	CF47 8PB	Dwelling	50.7	51.4	50.9	51.7	39.7	40.3	39.8	40.5
28 Pandy Close	CF47 8PB	Dwelling	52.4	53.1	52.5	53.3	41.2	41.7	41.2	41.9
Cheriton 29 Pandy Close	CF47 8PB	Dwelling	53.0	53.8	53.1	54.0	41.7	42.4	41.8	42.5
30 Pandy Close	CF47 8PB	Dwelling	55.3	56.1	55.5	56.3	43.8	44.5	43.9	44.6
31 Pandy Close	CF47 8PB	Dwelling	55.3	56.1	55.5	56.3	43.8	44.5	43.9	44.6
Tegla 32 Pandy Close	CF47 8PB	Dwelling	55.2	56.0	55.3	56.1	43.7	44.3	43.8	44.5
33 Pandy Close	CF47 8PB	Dwelling	54.8	55.5	54.8	55.6	43.3	43.9	43.3	44.0
34 Pandy Close	CF47 8PB	Dwelling	51.0	51.8	51.1	51.8	39.9	40.6	40.0	40.6
Inglenook 35 Pandy Close	CF47 8PB	Dwelling	50.7	51.3	50.8	51.5	39.6	40.2	39.7	40.3
36 Pandy Close	CF47 8PB	Dwelling	65.5	66.0	66.3	65.8	53.0	53.4	53.6	53.2
Craig-Yr-Eos Flat 1 Brecon Road	CF47 8RB	Dwelling	55.4	56.0	55.5	56.1	43.9	44.4	43.9	44.5
Riverside Bungalow Riverside Bungalow Brecon Road	CF47 8RB	Dwelling	53.0	53.7	53.3	54.2	41.7	42.3	41.9	42.8
Cyfarthfa Villa Cyfarthfa Villa Brecon Road	CF47 8RD	Dwelling	63.2	63.5	63.5	63.6	50.9	51.1	51.1	51.2
Cyfarthfa Castle Cyfarthfa Castle Museum Cyfarthfa Park	CF47 8RE	OSR	51.2	51.8	51.4	52.3	40.1	40.6	40.2	41.0
Cyfarthfa Park Bowling Green Pavilion Cyfarthfa Park	CF47 8RE	OSR	47.9	48.5	48.2	49.1	37.1	37.6	37.3	38.2
Cyfarthfa Park Pandy Field Changing Rooms Cyfarthfa Park	CF47 8RE	OSR	53.9	54.2	53.7	54.1	42.5	42.8	42.3	42.7
Cyfarthfa Park Visitors Centre Cyfarthfa Park	CF47 8RE	OSR	53.6	54.3	53.8	54.6	42.3	42.9	42.4	43.1
Cyfarthfa Castle School House School House Cyfarthfa Park	CF47 8RE	Dwelling	55.9	56.6	55.9	56.7	44.3	44.9	44.3	45.0
The Knoll The Knoll Penybryn	CF47 9AJ	Dwelling	45.5	45.9	45.6	46.3	35.0	35.3	35.0	35.6
13 Penybryn	CF47 9AJ	Dwelling	49.5	49.8	49.5	50.1	38.5	38.8	38.5	39.1
14 Penybryn	CF47 9AJ	Dwelling	45.3	45.6	45.3	46.0	34.8	35.0	34.8	35.4
15 Penybryn	CF47 9AJ	Dwelling	52.7	53.2	52.6	53.3	41.4	41.8	41.4	41.9
16 Penybryn	CF47 9AJ	Dwelling	55.9	56.4	55.9	56.5	44.3	44.8	44.3	44.8
17 Penybryn	CF47 9AJ	Dwelling	50.1	50.4	50.1	50.7	39.1	39.4	39.1	39.6
18 Penybryn	CF47 9AJ	Dwelling	56.0	56.6	56.0	56.6	44.4	44.9	44.4	44.9
19 Penybryn	CF47 9AJ	Dwelling	50.9	51.3	50.9	51.5	39.8	40.1	39.8	40.3
20 Penybryn	CF47 9AJ	Dwelling	63.6	64.2	63.5	64.2	51.2	51.7	51.2	51.7
Darn O Dir Darn O Dir Gwaunfarren Road	CF47 9AP	Dwelling	55.9	56.1	55.8	56.4	44.3	44.5	44.2	44.7
Four Winds Four Winds Gwaunfarren Road	CF47 9AP	Dwelling	67.2	67.5	67.2	67.8	54.5	54.8	54.5	55.0
Gwaunfarren Farm Gwaunfarren Farm Gwaunfarren Road	CF47 9AP	Dwelling	64.7	65.0	64.7	65.3	52.2	52.5	52.2	52.7
Parkland Parkland Gwaunfarren Road	CF47 9AP	Dwelling	52.0	52.3	52.0	52.6	40.8	41.1	40.8	41.3
Penrhys Penrhys Gwaunfarren Road	CF47 9AP	Dwelling	62.3	62.6	62.3	62.9	50.1	50.4	50.1	50.6
Talwyn Talwyn Gwaunfarren Road	CF47 9AP	Dwelling	64.8	65.1	64.8	65.4	52.3	52.6	52.3	52.8
The Croft The Croft Gwaunfarren Road	CF47 9AP	Dwelling	68.7	69.0	68.7	69.3	55.8	56.1	55.8	56.3
The Elms The Elms Gwaunfarren Road	CF47 9AP	Dwelling	63.9	64.2	63.9	64.5	51.5	51.8	51.5	52.0
The Js Bungalow Gwaunfarren Road	CF47 9AP	Dwelling	55.9	56.2	55.9	56.4	44.3	44.6	44.3	44.8
White Roses White Roses Gwaunfarren Road	CF47 9AP	Dwelling	63.7	64.0	63.7	64.3	51.3	51.6	51.3	51.8
Penybryn House Penybryn House Galon Uchaf Road	CF47 9AR	Dwelling	58.6	59.0	58.5	59.1	46.7	47.1	46.6	47.1
Ty Ni 1 Maple Close	CF47 9AS	Dwelling	52.8	52.8	52.2	52.6	41.5	41.5	41.0	41.3
2 Maple Close	CF47 9AS	Dwelling	60.2	60.2	59.5	59.8	48.2	48.2	47.5	47.8

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
3 Maple Close	CF47 9AS	Dwelling	52.1	52.1	51.5	52.0	40.9	40.8	40.4	40.7
4 Maple Close	CF47 9AS	Dwelling	55.8	55.8	55.2	55.5	44.2	44.2	43.6	43.9
5 Maple Close	CF47 9AS	Dwelling	50.3	50.3	49.8	50.3	39.3	39.3	38.8	39.2
6 Maple Close	CF47 9AS	Dwelling	55.3	55.2	54.6	55.0	43.7	43.7	43.1	43.5
7 Maple Close	CF47 9AS	Dwelling	50.7	50.6	50.1	50.6	39.6	39.6	39.1	39.5
8 Maple Close	CF47 9AS	Dwelling	47.3	47.2	46.7	47.3	36.6	36.5	36.0	36.6
9 Maple Close	CF47 9AS	Dwelling	51.1	51.1	50.6	51.1	40.0	40.0	39.5	40.0
10 Maple Close	CF47 9AS	Dwelling	53.1	53.0	52.4	52.9	41.7	41.7	41.2	41.6
11 Maple Close	CF47 9AS	Dwelling	47.2	47.3	46.8	47.3	36.5	36.5	36.1	36.5
12 Maple Close	CF47 9AS	Dwelling	51.7	51.7	51.1	51.6	40.5	40.5	40.0	40.4
13 Maple Close	CF47 9AS	Dwelling	45.9	45.7	45.6	46.2	35.3	35.1	35.0	35.6
14 Maple Close	CF47 9AS	Dwelling	48.7	48.7	48.2	48.6	37.8	37.8	37.3	37.7
15 Maple Close	CF47 9AS	Dwelling	46.6	46.3	46.1	46.8	35.9	35.7	35.4	36.1
16 Maple Close	CF47 9AS	Dwelling	48.4	48.3	47.9	48.4	37.6	37.5	37.1	37.5
17 Maple Close	CF47 9AS	Dwelling	46.6	46.3	46.0	46.7	35.9	35.6	35.4	36.0
19 Maple Close	CF47 9AS	Dwelling	46.7	46.4	46.1	46.9	36.0	35.8	35.5	36.1
21 Maple Close	CF47 9AS	Dwelling	46.8	46.4	46.3	47.0	36.1	35.8	35.6	36.3
23 Maple Close	CF47 9AS	Dwelling	47.2	46.9	46.7	47.4	36.4	36.2	36.0	36.7
2 Poplar Way	CF47 9AT	Dwelling	59.9	59.9	58.8	59.1	47.9	47.9	46.9	47.1
4 Poplar Way	CF47 9AT	Dwelling	58.1	58.1	57.3	57.6	46.3	46.3	45.5	45.8
6 Poplar Way	CF47 9AT	Dwelling	56.1	56.2	55.1	55.5	44.5	44.5	43.6	43.9
8 Poplar Way	CF47 9AT	Dwelling	54.7	54.7	53.9	54.3	43.2	43.2	42.5	42.9
10 Poplar Way	CF47 9AT	Dwelling	53.0	53.1	52.1	52.4	41.7	41.7	40.9	41.1
12 Poplar Way	CF47 9AT	Dwelling	54.0	54.0	53.2	53.6	42.6	42.6	41.9	42.2
14 Poplar Way	CF47 9AT	Dwelling	54.7	54.8	53.8	54.2	43.3	43.3	42.4	42.7
16 Poplar Way	CF47 9AT	Dwelling	53.2	53.2	52.4	52.9	41.8	41.9	41.2	41.5
18 Poplar Way	CF47 9AT	Dwelling	50.6	50.7	49.7	50.1	39.5	39.6	38.7	39.0
20 Poplar Way	CF47 9AT	Dwelling	48.2	48.0	47.5	48.1	37.3	37.2	36.7	37.3
22 Poplar Way	CF47 9AT	Dwelling	51.2	51.0	50.3	51.0	40.1	39.9	39.3	39.9
24 Poplar Way	CF47 9AT	Dwelling	48.6	48.3	47.8	48.5	37.7	37.4	37.0	37.6
26 Poplar Way	CF47 9AT	Dwelling	49.1	48.8	48.3	49.0	38.2	37.9	37.5	38.1
28 Poplar Way	CF47 9AT	Dwelling	49.2	48.9	48.5	49.1	38.2	38.0	37.6	38.2
30 Poplar Way	CF47 9AT	Dwelling	49.1	48.9	48.4	49.1	38.2	38.0	37.6	38.1
Gurnos Community Centre Spruce Tree Grove	CF47 9AU	OSR	49.8	49.7	49.3	50.0	38.8	38.7	38.3	38.9
1 Spruce Tree Grove	CF47 9AU	Dwelling	49.3	49.0	48.8	49.5	38.4	38.1	37.9	38.5
2 Spruce Tree Grove	CF47 9AU	Dwelling	47.8	47.7	47.3	48.0	37.0	36.9	36.5	37.2
3 Spruce Tree Grove	CF47 9AU	Dwelling	49.3	48.9	48.6	49.4	38.4	38.0	37.8	38.4
4 Spruce Tree Grove	CF47 9AU	Dwelling	48.4	48.3	47.7	48.4	37.5	37.5	36.9	37.5
5 Spruce Tree Grove	CF47 9AU	Dwelling	49.2	48.7	48.6	49.4	38.2	37.8	37.7	38.4
6 Spruce Tree Grove	CF47 9AU	Dwelling	48.8	48.7	48.1	48.7	37.9	37.8	37.3	37.8
7 Spruce Tree Grove	CF47 9AU	Dwelling	49.3	49.0	48.8	49.5	38.4	38.1	37.9	38.5
9 Spruce Tree Grove	CF47 9AU	Dwelling	47.9	47.7	47.6	48.3	37.1	36.9	36.8	37.5
11 Spruce Tree Grove	CF47 9AU	Dwelling	48.2	47.9	47.3	48.0	37.4	37.1	36.6	37.2
13 Spruce Tree Grove	CF47 9AU	Dwelling	48.0	47.7	47.6	48.3	37.2	36.9	36.8	37.5
15 Spruce Tree Grove	CF47 9AU	Dwelling	47.8	47.4	47.1	47.9	37.0	36.7	36.4	37.1
17 Spruce Tree Grove	CF47 9AU	Dwelling	48.3	47.8	47.8	48.6	37.5	37.0	37.0	37.7
19 Spruce Tree Grove	CF47 9AU	Dwelling	48.7	48.2	48.2	49.0	37.8	37.4	37.3	38.0
9 Billingham Crescent	CF47 9AW	Dwelling	60.3	60.6	60.3	60.8	48.3	48.5	48.2	48.7
10 Billingham Crescent	CF47 9AW	Dwelling	54.7	55.0	54.6	55.2	43.2	43.4	43.2	43.6
11 Billingham Crescent	CF47 9AW	Dwelling	54.2	54.5	54.2	54.7	42.8	43.0	42.7	43.2
12 Billingham Crescent	CF47 9AW	Dwelling	53.6	53.9	53.5	54.1	42.2	42.4	42.2	42.6
13 Billingham Crescent	CF47 9AW	Dwelling	51.2	51.5	51.2	51.7	40.1	40.3	40.0	40.5
14 Billingham Crescent	CF47 9AW	Dwelling	54.2	54.4	54.1	54.6	42.7	42.9	42.6	43.1
15 Billingham Crescent	CF47 9AW	Dwelling	54.6	54.8	54.4	55.0	43.1	43.3	43.0	43.4
16 Billingham Crescent	CF47 9AW	Dwelling	52.2	52.4	52.1	52.7	41.0	41.2	40.9	41.4
17 Billingham Crescent	CF47 9AW	Dwelling	55.5	55.7	55.4	55.9	43.9	44.1	43.8	44.3
18 Billingham Crescent	CF47 9AW	Dwelling	57.3	57.6	57.2	57.8	45.6	45.8	45.5	46.0
19 Billingham Crescent	CF47 9AW	Dwelling	58.9	59.2	58.9	59.5	47.0	47.3	47.0	47.5
20 Billingham Crescent	CF47 9AW	Dwelling	62.9	63.2	62.9	63.4	50.6	50.9	50.6	51.1
1 Almond Grove	CF47 9AY	Dwelling	50.9	50.9	49.7	50.1	39.8	39.8	38.7	39.1
2 Almond Grove	CF47 9AY	Dwelling	51.6	51.5	50.2	50.7	40.4	40.3	39.1	39.6
3 Almond Grove	CF47 9AY	Dwelling	54.6	54.6	52.8	53.1	43.2	43.2	41.5	41.8
4 Almond Grove	CF47 9AY	Dwelling	51.1	50.9	49.7	50.3	40.0	39.8	38.7	39.3
5 Almond Grove	CF47 9AY	Dwelling	56.7	56.8	54.8	55.0	45.1	45.1	43.3	43.5
6 Almond Grove	CF47 9AY	Dwelling	48.0	47.8	46.8	47.5	37.2	37.0	36.1	36.7
7 Almond Grove	CF47 9AY	Dwelling	62.6	62.7	60.5	60.6	50.3	50.4	48.4	48.5
8 Almond Grove	CF47 9AY	Dwelling	47.9	47.7	46.9	47.6	37.1	36.9	36.2	36.8
9 Almond Grove	CF47 9AY	Dwelling	54.3	54.3	52.7	53.0	42.9	42.9	41.4	41.7
10 Almond Grove	CF47 9AY	Dwelling	48.7	48.7	48.1	48.7	37.8	37.8	37.3	37.8
11 Almond Grove	CF47 9AY	Dwelling	49.7	49.6	48.5	49.0	38.7	38.7	37.6	38.1
12 Almond Grove	CF47 9AY	Dwelling	48.3	47.9	48.0	48.8	37.4	37.1	37.2	37.9
13 Almond Grove	CF47 9AY	Dwelling	49.9	49.8	48.8	49.3	38.9	38.8	37.9	38.4
14 Almond Grove	CF47 9AY	Dwelling	48.1	47.7	47.8	48.6	37.3	36.9	37.0	37.7
15 Almond Grove	CF47 9AY	Dwelling	49.2	49.1	48.3	48.8	38.3	38.2	37.4	37.9
16 Almond Grove	CF47 9AY	Dwelling	48.4	47.9	48.0	48.7	37.5	37.1	37.1	37.8
17 Almond Grove	CF47 9AY	Dwelling	50.7	50.8	49.5	50.0	39.6	39.7	38.6	39.0
18 Almond Grove	CF47 9AY	Dwelling	48.4	48.0	48.1	48.8	37.6	37.2	37.2	37.9
19 Almond Grove	CF47 9AY	Dwelling	50.7	50.8	49.6	50.1	39.6	39.7	38.6	39.0
21 Almond Grove	CF47 9AY	Dwelling	50.0	49.7	49.0	49.7	39.0	38.7	38.1	38.7
23 Almond Grove	CF47 9AY	Dwelling	49.9	49.7	48.9	49.6	38.9	38.7	38.0	38.6
25 Almond Grove	CF47 9AY	Dwelling	50.4	50.2	49.3	50.0	39.4	39.2	38.4	38.9
27 Almond Grove	CF47 9AY	Dwelling	49.9	50.0	48.9	49.5	38.9	38.9	38.0	38.5
29 Almond Grove	CF47 9AY	Dwelling	49.5	49.6	48.7	49.2	38.6	38.6	37.8	38.3
31 Almond Grove	CF47 9AY	Dwelling	46.7	46.5	46.4	47.1	36.0	35.8	35.7	36.4
33 Almond Grove	CF47 9AY	Dwelling	46.9	46.7	46.5	47.3	36.2	36.0	35.9	36.5
35 Almond Grove	CF47 9AY	Dwelling	48.6	48.5	47.9	48.6	37.7	37.7	37.1	37.7
37 Almond Grove	CF47 9AY	Dwelling	49.4	49.1	48.7	49.4	38.4	38.1	37.8	38.4
1 Willow Road	CF47 9BA	Dwelling	48.2	47.6	47.9	48.8	37.4	36.9	37.1	37.9
2 Willow Road	CF47 9BA	Dwelling	48.4	47.9	47.9	48.8	37.6	37.1	37.1	37.9
3 Willow Road	CF47 9BA	Dwelling	48.1	47.5	47.9	48.7	37.3	36.7	37.1	37.8
4 Willow Road	CF47 9BA	Dwelling	48.4	47.9	47.9	48.7	37.6	37.0	37.1	37.8
5 Willow Road	CF47 9BA	Dwelling	48.0	47.4	47.8	48.6	37.2	36.7	37.0	37.7
6 Willow Road	CF47 9BA	Dwelling	48.6	48.1	48.1	48.9	37.7	37.2	37.3	38.0
7 Willow Road	CF47 9BA	Dwelling	47.9	47.3	47.5	48.4	37.1	36.5	36.8	37.5
8 Willow Road	CF47 9BA	Dwelling	48.5	48.0	48.2	49.0	37.6	37.2	37.3	38.0
9 Willow Road	CF47 9BA	Dwelling	47.9	47.4	47.5	48.3	37.1	36.6	36.7	37.5
10 Willow Road	CF47 9BA	Dwelling	50.9	50.5	50.1	50.9	39.8	39.4	39.0	39.7
11 Willow Road	CF47 9BA	Dwelling	48.2	47.5	47.6	48.5	37.3	36.7	36.8	37.6
12 Willow Road	CF47 9BA	Dwelling	49.4	49.4	48.9	49.5	38.5	38.4	38.0	38.6
13 Willow Road	CF47 9BA	Dwelling	48.2	47.5	47.5	48.4	37.4	36.7	36.8	37.6
14 Willow Road	CF47 9BA	Dwelling	49.4	49.4	48.9	49.6	38.5	38.4	38.0	38.6
15 Willow Road	CF47 9BA	Dwelling	47.7	47.5	47.4	48.2	36.9	36.7	36.7	37.3
16 Willow Road	CF47 9BA	Dwelling	49.2	49.2	48.7	49.4	38.3	38.2	37.8	38.4
17 Willow Road	CF47 9BA	Dwelling	47.5	47.3	47.4	48.1	36.8	36.5	36.6	37.3
18 Willow Road	CF47 9BA	Dwelling	48.9	48.8	48.5	49.2	38.0	37.9	37.6	38.3
19 Willow Road	CF47 9BA	Dwelling	47.3	47.0	47.1	47.9	36.5	36.3	36.4	37.1
20 Willow Road	CF47 9BA	Dwelling	48.8	48.6	48.4	49.1	37.9	37.8	37.5	38.1

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
21 Willow Road	CF47 9BA	Dwelling	47.3	47.0	47.1	47.9	36.6	36.3	36.4	37.1
22 Willow Road	CF47 9BA	Dwelling	48.6	48.5	48.3	49.0	37.8	37.6	37.4	38.1
23 Willow Road	CF47 9BA	Dwelling	47.3	47.0	47.1	47.9	36.6	36.3	36.4	37.1
24 Willow Road	CF47 9BA	Dwelling	48.5	48.3	48.1	48.9	37.6	37.4	37.3	38.0
25 Willow Road	CF47 9BA	Dwelling	46.6	46.1	46.5	47.3	35.9	35.5	35.8	36.6
26 Willow Road	CF47 9BA	Dwelling	48.3	48.1	48.0	48.7	37.5	37.3	37.2	37.8
27 Willow Road	CF47 9BA	Dwelling	46.2	45.7	46.2	47.0	35.6	35.1	35.6	36.3
28 Willow Road	CF47 9BA	Dwelling	47.6	47.0	47.5	48.4	36.8	36.3	36.8	37.5
29 Willow Road	CF47 9BA	Dwelling	47.0	46.7	46.8	47.6	36.3	36.0	36.1	36.8
30 Willow Road	CF47 9BA	Dwelling	48.9	48.3	48.7	49.6	38.0	37.4	37.8	38.6
31 Willow Road	CF47 9BA	Dwelling	46.9	46.6	46.7	47.5	36.2	35.9	36.0	36.7
32 Willow Road	CF47 9BA	Dwelling	48.9	48.2	48.7	49.5	38.0	37.4	37.8	38.6
33 Willow Road	CF47 9BA	Dwelling	47.0	46.6	46.8	47.6	36.3	35.9	36.1	36.8
34 Willow Road	CF47 9BA	Dwelling	48.8	48.2	48.6	49.5	37.9	37.4	37.7	38.5
36 Willow Road	CF47 9BA	Dwelling	48.9	48.2	48.6	49.5	37.9	37.4	37.7	38.5
38 Willow Road	CF47 9BA	Dwelling	49.0	48.4	48.6	49.5	38.1	37.5	37.7	38.5
1 Blackthorn Avenue	CF47 9BB	Dwelling	50.4	49.6	50.3	51.2	39.3	38.6	39.2	40.1
2 Blackthorn Avenue	CF47 9BB	Dwelling	48.0	47.4	48.1	49.0	37.2	36.7	37.3	38.1
3 Blackthorn Avenue	CF47 9BB	Dwelling	50.6	49.7	50.4	51.4	39.5	38.7	39.4	40.2
4 Blackthorn Avenue	CF47 9BB	Dwelling	48.1	47.5	48.3	49.1	37.2	36.7	37.4	38.2
5 Blackthorn Avenue	CF47 9BB	Dwelling	48.5	47.8	48.7	49.6	37.6	37.0	37.8	38.6
6 Blackthorn Avenue	CF47 9BB	Dwelling	48.0	47.4	48.2	49.1	37.2	36.7	37.4	38.1
7 Blackthorn Avenue	CF47 9BB	Dwelling	49.5	48.7	49.5	50.4	38.5	37.8	38.5	39.4
8 Blackthorn Avenue	CF47 9BB	Dwelling	48.0	47.4	48.1	49.0	37.2	36.7	37.3	38.0
9 Blackthorn Avenue	CF47 9BB	Dwelling	48.1	47.5	48.2	49.1	37.3	36.7	37.4	38.1
10 Blackthorn Avenue	CF47 9BB	Dwelling	50.3	49.8	50.3	51.2	39.3	38.8	39.3	40.0
11 Blackthorn Avenue	CF47 9BB	Dwelling	48.0	47.3	48.0	48.9	37.1	36.6	37.2	38.0
12 Blackthorn Avenue	CF47 9BB	Dwelling	47.9	47.4	48.0	48.8	37.1	36.6	37.2	37.9
13 Blackthorn Avenue	CF47 9BB	Dwelling	48.0	47.3	47.9	48.8	37.1	36.6	37.1	37.9
14 Blackthorn Avenue	CF47 9BB	Dwelling	46.8	46.4	47.0	47.8	36.1	35.7	36.3	37.0
15 Blackthorn Avenue	CF47 9BB	Dwelling	47.7	47.1	47.6	48.5	36.9	36.4	36.9	37.6
16 Blackthorn Avenue	CF47 9BB	Dwelling	46.7	46.4	46.9	47.7	36.0	35.7	36.2	36.9
17 Blackthorn Avenue	CF47 9BB	Dwelling	47.6	47.1	47.6	48.4	36.8	36.3	36.8	37.5
18 Blackthorn Avenue	CF47 9BB	Dwelling	46.8	46.4	47.1	47.9	36.1	35.8	36.3	37.1
19 Blackthorn Avenue	CF47 9BB	Dwelling	47.5	47.0	47.5	48.3	36.8	36.3	36.7	37.5
20 Blackthorn Avenue	CF47 9BB	Dwelling	47.3	46.9	47.5	48.3	36.6	36.2	36.7	37.5
21 Blackthorn Avenue	CF47 9BB	Dwelling	47.5	47.0	47.4	48.3	36.8	36.3	36.7	37.4
22 Blackthorn Avenue	CF47 9BB	Dwelling	47.5	47.1	47.6	48.5	36.8	36.3	36.9	37.6
23 Blackthorn Avenue	CF47 9BB	Dwelling	47.6	47.1	47.5	48.3	36.8	36.4	36.7	37.4
25 Blackthorn Avenue	CF47 9BB	Dwelling	47.8	47.5	47.7	48.4	37.0	36.7	36.9	37.6
27 Blackthorn Avenue	CF47 9BB	Dwelling	48.7	48.5	48.4	49.1	37.8	37.6	37.5	38.1
29 Blackthorn Avenue	CF47 9BB	Dwelling	51.5	50.9	51.0	51.9	40.4	39.8	39.9	40.7
31 Blackthorn Avenue	CF47 9BB	Dwelling	49.7	48.9	49.3	50.2	38.7	38.0	38.4	39.2
33 Blackthorn Avenue	CF47 9BB	Dwelling	49.7	49.0	49.3	50.3	38.7	38.1	38.4	39.2
35 Blackthorn Avenue	CF47 9BB	Dwelling	49.8	49.1	49.3	50.3	38.8	38.2	38.4	39.2
37 Blackthorn Avenue	CF47 9BB	Dwelling	49.9	49.1	49.4	50.3	38.9	38.2	38.4	39.2
1 Birch Grove	CF47 9BD	Dwelling	49.7	49.1	50.2	51.1	38.7	38.1	39.1	39.9
2 Birch Grove	CF47 9BD	Dwelling	50.0	49.4	50.6	51.4	39.0	38.4	39.5	40.2
3 Birch Grove	CF47 9BD	Dwelling	49.5	48.8	50.0	50.9	38.5	37.9	39.0	39.8
4 Birch Grove	CF47 9BD	Dwelling	51.3	50.6	51.1	52.1	40.2	39.5	40.0	40.8
5 Birch Grove	CF47 9BD	Dwelling	49.4	48.8	50.0	50.9	38.5	37.9	39.0	39.8
6 Birch Grove	CF47 9BD	Dwelling	50.4	50.0	50.5	51.2	39.3	39.0	39.4	40.0
7 Birch Grove	CF47 9BD	Dwelling	49.3	48.6	49.9	50.8	38.3	37.7	38.9	39.7
8 Birch Grove	CF47 9BD	Dwelling	50.2	49.8	50.3	51.0	39.2	38.8	39.2	39.9
9 Birch Grove	CF47 9BD	Dwelling	49.5	48.8	50.0	50.9	38.6	37.9	39.0	39.8
10 Birch Grove	CF47 9BD	Dwelling	50.2	49.8	50.3	51.0	39.2	38.8	39.2	39.9
11 Birch Grove	CF47 9BD	Dwelling	49.2	48.5	49.8	50.7	38.3	37.7	38.8	39.6
12 Birch Grove	CF47 9BD	Dwelling	50.3	49.9	50.3	51.1	39.2	38.9	39.3	39.9
13 Birch Grove	CF47 9BD	Dwelling	49.0	48.3	49.6	50.5	38.1	37.5	38.6	39.4
14 Birch Grove	CF47 9BD	Dwelling	51.5	50.7	51.4	52.3	40.3	39.6	40.2	41.0
15 Birch Grove	CF47 9BD	Dwelling	48.9	48.2	49.5	50.4	38.0	37.4	38.5	39.3
16 Birch Grove	CF47 9BD	Dwelling	49.0	48.3	49.2	50.1	38.1	37.5	38.3	39.0
17 Birch Grove	CF47 9BD	Dwelling	48.8	48.1	49.3	50.2	37.9	37.3	38.4	39.2
18 Birch Grove	CF47 9BD	Dwelling	48.9	48.3	49.1	49.9	38.0	37.4	38.1	38.9
19 Birch Grove	CF47 9BD	Dwelling	50.3	49.7	50.2	51.0	39.2	38.7	39.1	39.9
20 Birch Grove	CF47 9BD	Dwelling	48.8	48.1	48.9	49.7	37.9	37.3	38.0	38.7
21 Birch Grove	CF47 9BD	Dwelling	49.7	48.9	49.4	50.3	38.7	38.0	38.4	39.3
22 Birch Grove	CF47 9BD	Dwelling	48.6	48.0	48.7	49.5	37.7	37.1	37.8	38.5
23 Birch Grove	CF47 9BD	Dwelling	49.7	48.9	49.4	50.4	38.7	38.0	38.5	39.3
24 Birch Grove	CF47 9BD	Dwelling	48.6	47.9	48.7	49.6	37.7	37.1	37.8	38.6
25 Birch Grove	CF47 9BD	Dwelling	49.3	48.5	49.2	50.1	38.4	37.6	38.3	39.1
26 Birch Grove	CF47 9BD	Dwelling	48.1	47.2	48.4	49.3	37.3	36.5	37.5	38.4
27 Birch Grove	CF47 9BD	Dwelling	49.1	48.4	49.1	50.0	38.2	37.5	38.1	39.0
The Tardis 28 Birch Grove	CF47 9BD	Dwelling	48.6	47.9	48.9	49.8	37.7	37.1	38.0	38.8
30 Birch Grove	CF47 9BD	Dwelling	48.6	47.8	48.8	49.7	37.7	37.0	37.9	38.7
32 Birch Grove	CF47 9BD	Dwelling	48.2	47.5	48.5	49.4	37.4	36.7	37.6	38.4
34 Birch Grove	CF47 9BD	Dwelling	48.4	47.7	48.5	49.5	37.6	36.9	37.7	38.5
1 Pine Close	CF47 9BE	Dwelling	48.0	47.3	47.9	48.8	37.2	36.6	37.1	37.9
Flat 1 2 Flat 1 Pine Close	CF47 9BE	Dwelling	49.5	49.1	49.3	50.1	38.6	38.2	38.4	39.1
Flat 3 2 Flat 3 Pine Close	CF47 9BE	Dwelling	47.9	47.3	47.9	48.8	37.1	36.6	37.1	37.9
Flat 5 2 Flat 5 Pine Close	CF47 9BE	Dwelling	47.8	47.0	47.8	48.7	37.0	36.3	37.0	37.8
3 Pine Close	CF47 9BE	Dwelling	48.1	47.5	48.0	48.9	37.3	36.7	37.2	38.0
4 Pine Close	CF47 9BE	Dwelling	50.1	49.5	50.0	50.9	39.1	38.5	39.0	39.8
5 Pine Close	CF47 9BE	Dwelling	48.2	47.5	48.1	49.0	37.3	36.8	37.3	38.0
6 Pine Close	CF47 9BE	Dwelling	47.8	47.2	47.8	48.7	37.0	36.5	37.0	37.8
7 Pine Close	CF47 9BE	Dwelling	48.0	47.3	48.0	48.9	37.2	36.5	37.2	37.9
8 Pine Close	CF47 9BE	Dwelling	47.7	47.1	47.7	48.6	37.0	36.4	36.9	37.7
9 Pine Close	CF47 9BE	Dwelling	47.9	47.3	48.0	48.8	37.1	36.5	37.1	37.9
10 Pine Close	CF47 9BE	Dwelling	47.7	47.1	47.7	48.5	36.9	36.3	36.9	37.7
11 Pine Close	CF47 9BE	Dwelling	48.1	47.5	48.2	49.0	37.3	36.8	37.3	38.1
12 Pine Close	CF47 9BE	Dwelling	47.8	47.2	47.8	48.7	37.0	36.5	37.0	37.8
13 Pine Close	CF47 9BE	Dwelling	48.2	47.6	48.2	49.1	37.3	36.8	37.4	38.1
14 Pine Close	CF47 9BE	Dwelling	50.4	49.8	50.3	51.1	39.4	38.8	39.2	40.0
15 Pine Close	CF47 9BE	Dwelling	47.8	47.2	47.9	48.8	37.0	36.5	37.1	37.9
16 Pine Close	CF47 9BE	Dwelling	47.9	47.3	47.9	48.8	37.1	36.5	37.1	37.9
17 Pine Close	CF47 9BE	Dwelling	48.1	47.5	48.1	49.0	37.3	36.8	37.3	38.1
18 Pine Close	CF47 9BE	Dwelling	48.1	47.4	48.1	49.0	37.2	36.6	37.3	38.1
19 Pine Close	CF47 9BE	Dwelling	48.1	47.5	48.1	49.0	37.3	36.7	37.3	38.1
20 Pine Close	CF47 9BE	Dwelling	49.3	48.6	49.2	50.1	38.3	37.7	38.3	39.1
21 Pine Close	CF47 9BE	Dwelling	48.3	47.7	48.3	49.1	37.5	36.9	37.4	38.2
22 Pine Close	CF47 9BE	Dwelling	46.2	45.9	46.4	47.2	35.6	35.3	35.8	36.4
23 Pine Close	CF47 9BE	Dwelling	48.5	47.9	48.5	49.3	37.6	37.1	37.6	38.4
24 Pine Close	CF47 9BE	Dwelling	49.8	49.4	49.7	50.4	38.8	38.4	38.7	39.3
25 Pine Close	CF47 9BE	Dwelling	52.6	52.1	52.5	53.2	41.3	40.9	41.3	41.9
26 Pine Close	CF47 9BE	Dwelling	50.1	49.7	50.0	50.7	39.0	38.7	39.0	39.6
28 Pine Close	CF47 9BE	Dwelling	50.6	50.3	50.5	51.2	39.5	39.3	39.4	40.0
30 Pine Close	CF47 9BE	Dwelling	53.1	52.6	52.8	53.6	41.8	41.3	41.5	42.2

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
1 Crabapple Close	CF47 9BG	Dwelling	49.4	49.1	50.0	50.7	38.5	38.1	39.0	39.6
2 Crabapple Close	CF47 9BG	Dwelling	51.2	50.4	51.8	52.7	40.1	39.3	40.6	41.4
3 Crabapple Close	CF47 9BG	Dwelling	50.3	49.8	51.1	51.9	39.3	38.8	40.0	40.7
4 Crabapple Close	CF47 9BG	Dwelling	51.2	50.4	51.9	52.8	40.1	39.4	40.7	41.5
5 Crabapple Close	CF47 9BG	Dwelling	52.0	51.4	52.2	53.0	40.8	40.2	41.0	41.7
6 Crabapple Close	CF47 9BG	Dwelling	51.8	51.0	52.4	53.3	40.6	39.9	41.1	41.9
7 Crabapple Close	CF47 9BG	Dwelling	49.5	49.1	50.1	50.8	38.6	38.1	39.1	39.7
8 Crabapple Close	CF47 9BG	Dwelling	52.0	51.2	52.6	53.5	40.8	40.1	41.4	42.2
9 Crabapple Close	CF47 9BG	Dwelling	49.7	49.2	50.4	51.1	38.7	38.3	39.3	40.0
10 Crabapple Close	CF47 9BG	Dwelling	49.5	48.7	50.3	51.2	38.6	37.8	39.2	40.1
12 Crabapple Close	CF47 9BG	Dwelling	49.5	48.6	50.2	51.1	38.5	37.7	39.1	40.0
14 Crabapple Close	CF47 9BG	Dwelling	52.1	51.3	52.6	53.5	40.9	40.2	41.3	42.2
16 Crabapple Close	CF47 9BG	Dwelling	48.7	47.9	49.2	50.1	37.8	37.1	38.3	39.1
18 Crabapple Close	CF47 9BG	Dwelling	51.3	50.5	51.6	52.5	40.2	39.5	40.4	41.2
20 Crabapple Close	CF47 9BG	Dwelling	52.0	51.2	52.4	53.3	40.8	40.1	41.1	41.9
22 Crabapple Close	CF47 9BG	Dwelling	49.2	48.4	49.7	50.6	38.3	37.5	38.7	39.5
24 Crabapple Close	CF47 9BG	Dwelling	50.2	49.4	50.6	51.6	39.2	38.4	39.6	40.4
26 Crabapple Close	CF47 9BG	Dwelling	49.9	49.0	50.4	51.4	38.9	38.1	39.4	40.2
28 Crabapple Close	CF47 9BG	Dwelling	49.4	48.5	49.9	50.8	38.4	37.6	38.9	39.7
30 Crabapple Close	CF47 9BG	Dwelling	48.6	47.8	49.0	49.9	37.7	37.0	38.1	38.9
32 Crabapple Close	CF47 9BG	Dwelling	48.2	47.4	48.4	49.3	37.4	36.7	37.5	38.3
43 Crabapple Close	CF47 9BG	Dwelling	50.7	49.7	50.8	51.8	39.6	38.7	39.7	40.6
45 Crabapple Close	CF47 9BG	Dwelling	51.0	50.0	51.1	52.1	39.9	39.0	40.0	40.9
47 Crabapple Close	CF47 9BG	Dwelling	51.0	50.1	51.3	52.3	39.9	39.1	40.2	41.0
49 Crabapple Close	CF47 9BG	Dwelling	50.2	49.4	50.9	51.9	39.2	38.5	39.8	40.7
51 Crabapple Close	CF47 9BG	Dwelling	50.1	49.3	50.8	51.7	39.1	38.4	39.7	40.5
53 Crabapple Close	CF47 9BG	Dwelling	50.0	49.3	50.5	51.4	39.0	38.4	39.5	40.2
55 Crabapple Close	CF47 9BG	Dwelling	49.7	49.1	50.2	51.0	38.7	38.1	39.1	39.9
57 Crabapple Close	CF47 9BG	Dwelling	51.3	50.7	51.6	52.4	40.2	39.6	40.4	41.1
59 Crabapple Close	CF47 9BG	Dwelling	47.7	47.0	48.1	48.9	36.9	36.3	37.2	38.0
61 Crabapple Close	CF47 9BG	Dwelling	48.0	47.3	48.4	49.3	37.2	36.5	37.5	38.3
63 Crabapple Close	CF47 9BG	Dwelling	48.4	47.6	48.9	49.8	37.5	36.8	37.9	38.8
65 Crabapple Close	CF47 9BG	Dwelling	48.5	47.7	49.0	50.0	37.6	36.9	38.1	38.9
67 Crabapple Close	CF47 9BG	Dwelling	47.4	46.7	47.7	48.6	36.7	36.0	36.9	37.7
69 Crabapple Close	CF47 9BG	Dwelling	47.5	46.8	47.7	48.6	36.7	36.1	36.9	37.7
71 Crabapple Close	CF47 9BG	Dwelling	47.5	46.8	47.8	48.7	36.8	36.1	37.0	37.8
73 Crabapple Close	CF47 9BG	Dwelling	47.8	47.0	48.1	49.0	37.0	36.3	37.2	38.1
75 Crabapple Close	CF47 9BG	Dwelling	48.0	47.2	48.4	49.3	37.2	36.5	37.5	38.3
77 Crabapple Close	CF47 9BG	Dwelling	50.7	50.0	50.8	51.7	39.6	39.0	39.7	40.5
79 Crabapple Close	CF47 9BG	Dwelling	47.6	46.8	47.7	48.6	36.8	36.1	36.9	37.7
81 Crabapple Close	CF47 9BG	Dwelling	50.7	50.0	50.8	51.7	39.6	38.9	39.7	40.5
83 Crabapple Close	CF47 9BG	Dwelling	48.1	47.4	48.3	49.2	37.3	36.6	37.5	38.3
1 Arbutus Close	CF47 9BH	Dwelling	53.7	52.9	54.3	55.3	42.3	41.6	42.9	43.7
2 Arbutus Close	CF47 9BH	Dwelling	54.1	53.2	54.8	55.7	42.7	41.9	43.3	44.1
3 Arbutus Close	CF47 9BH	Dwelling	53.3	52.4	54.0	54.9	41.9	41.1	42.5	43.4
4 Arbutus Close	CF47 9BH	Dwelling	53.8	52.9	54.5	55.5	42.4	41.6	43.1	43.9
5 Arbutus Close	CF47 9BH	Dwelling	52.7	51.9	53.4	54.3	41.4	40.6	42.0	42.9
6 Arbutus Close	CF47 9BH	Dwelling	54.7	53.8	55.3	56.2	43.2	42.4	43.7	44.6
7 Arbutus Close	CF47 9BH	Dwelling	52.5	51.7	53.2	54.1	41.2	40.5	41.8	42.7
8 Arbutus Close	CF47 9BH	Dwelling	55.7	54.7	56.1	57.1	44.2	43.2	44.5	45.4
9 Arbutus Close	CF47 9BH	Dwelling	52.9	52.1	53.5	54.4	41.6	40.9	42.1	42.9
10 Arbutus Close	CF47 9BH	Dwelling	54.3	53.3	54.9	55.8	42.9	42.0	43.4	44.2
11 Arbutus Close	CF47 9BH	Dwelling	50.0	49.2	50.7	51.7	39.0	38.3	39.7	40.5
12 Arbutus Close	CF47 9BH	Dwelling	55.6	54.7	56.0	56.9	44.0	43.2	44.3	45.2
13 Arbutus Close	CF47 9BH	Dwelling	50.2	49.3	51.0	51.9	39.1	38.3	39.8	40.7
14 Arbutus Close	CF47 9BH	Dwelling	51.0	50.1	51.6	52.5	39.9	39.1	40.4	41.2
15 Arbutus Close	CF47 9BH	Dwelling	51.0	50.1	51.8	52.7	39.9	39.1	40.6	41.4
16 Arbutus Close	CF47 9BH	Dwelling	54.0	53.1	54.6	55.5	42.6	41.8	43.1	43.9
18 Arbutus Close	CF47 9BH	Dwelling	49.8	49.0	50.3	51.2	38.8	38.1	39.2	40.1
20 Arbutus Close	CF47 9BH	Dwelling	50.1	49.2	50.6	51.6	39.1	38.3	39.6	40.4
22 Arbutus Close	CF47 9BH	Dwelling	51.0	50.0	51.5	52.5	39.9	39.0	40.3	41.2
24 Arbutus Close	CF47 9BH	Dwelling	53.2	52.2	54.0	54.9	41.8	40.9	42.6	43.4
26 Arbutus Close	CF47 9BH	Dwelling	52.8	51.8	53.0	54.0	41.5	40.6	41.7	42.5
28 Arbutus Close	CF47 9BH	Dwelling	50.5	49.5	50.7	51.6	39.4	38.6	39.6	40.4
30 Arbutus Close	CF47 9BH	Dwelling	50.2	49.3	50.5	51.4	39.2	38.4	39.4	40.2
1 Wellingtonia Close	CF47 9BL	Dwelling	63.3	62.3	63.1	63.9	51.0	50.1	50.7	51.5
2 Wellingtonia Close	CF47 9BL	Dwelling	70.7	70.3	72.3	72.7	57.6	57.2	59.0	59.4
3 Wellingtonia Close	CF47 9BL	Dwelling	60.6	59.6	60.2	61.0	48.5	47.6	48.1	48.9
4 Wellingtonia Close	CF47 9BL	Dwelling	71.0	70.5	72.3	72.7	57.9	57.4	59.0	59.4
5 Wellingtonia Close	CF47 9BL	Dwelling	56.9	56.2	56.8	57.7	45.2	44.5	45.1	45.9
6 Wellingtonia Close	CF47 9BL	Dwelling	63.5	63.4	65.1	65.7	51.2	51.0	52.6	53.1
7 Wellingtonia Close	CF47 9BL	Dwelling	51.7	51.1	51.9	52.7	40.5	40.0	40.7	41.4
8 Wellingtonia Close	CF47 9BL	Dwelling	57.3	57.0	58.6	59.3	45.6	45.3	46.7	47.4
9 Wellingtonia Close	CF47 9BL	Dwelling	50.8	50.2	50.9	51.8	39.7	39.1	39.8	40.6
10 Wellingtonia Close	CF47 9BL	Dwelling	56.2	55.9	57.3	58.1	44.6	44.3	45.6	46.3
11 Wellingtonia Close	CF47 9BL	Dwelling	54.2	53.5	54.3	55.1	42.8	42.1	42.8	43.6
12 Wellingtonia Close	CF47 9BL	Dwelling	55.5	55.1	56.4	57.2	43.9	43.5	44.7	45.5
13 Wellingtonia Close	CF47 9BL	Dwelling	50.8	50.2	51.2	52.0	39.7	39.2	40.0	40.8
14 Wellingtonia Close	CF47 9BL	Dwelling	53.8	53.4	54.8	55.5	42.4	42.0	43.3	43.9
15 Wellingtonia Close	CF47 9BL	Dwelling	52.3	51.4	52.6	53.5	41.1	40.3	41.3	42.1
16 Wellingtonia Close	CF47 9BL	Dwelling	54.7	54.4	55.9	56.6	43.2	42.9	44.3	44.9
17 Wellingtonia Close	CF47 9BL	Dwelling	52.4	51.5	52.5	53.5	41.1	40.3	41.3	42.1
18 Wellingtonia Close	CF47 9BL	Dwelling	56.0	55.8	57.8	58.3	44.3	44.2	46.0	46.5
19 Wellingtonia Close	CF47 9BL	Dwelling	52.7	51.8	52.7	53.6	41.4	40.6	41.4	42.2
20 Wellingtonia Close	CF47 9BL	Dwelling	62.0	61.8	64.1	64.6	49.8	49.6	51.7	52.1
21 Wellingtonia Close	CF47 9BL	Dwelling	53.7	53.0	53.7	54.6	42.3	41.7	42.3	43.1
22 Wellingtonia Close	CF47 9BL	Dwelling	58.6	58.3	60.0	60.6	46.7	46.5	48.0	48.5
24 Wellingtonia Close	CF47 9BL	Dwelling	52.8	52.4	53.7	54.3	41.5	41.2	42.3	42.9
26 Wellingtonia Close	CF47 9BL	Dwelling	52.1	51.6	52.7	53.4	40.9	40.4	41.4	42.1
28 Wellingtonia Close	CF47 9BL	Dwelling	51.8	51.2	52.2	53.0	40.6	40.1	41.0	41.6
30 Wellingtonia Close	CF47 9BL	Dwelling	50.7	50.2	51.0	51.8	39.6	39.1	39.9	40.6
32 Wellingtonia Close	CF47 9BL	Dwelling	54.2	53.7	54.7	55.4	42.8	42.3	43.2	43.8
34 Wellingtonia Close	CF47 9BL	Dwelling	55.4	55.0	56.6	57.2	43.8	43.5	44.9	45.4
36 Wellingtonia Close	CF47 9BL	Dwelling	59.3	59.3	62.0	62.4	47.4	47.4	49.8	50.1
38 Wellingtonia Close	CF47 9BL	Dwelling	59.3	59.4	62.1	62.4	47.4	47.4	49.8	50.1
40 Wellingtonia Close	CF47 9BL	Dwelling	56.3	56.2	58.0	58.4	44.7	44.5	46.2	46.6
42 Wellingtonia Close	CF47 9BL	Dwelling	54.1	53.7	54.9	55.5	42.7	42.3	43.4	43.9
44 Wellingtonia Close	CF47 9BL	Dwelling	50.4	50.0	51.0	51.7	39.4	39.0	39.9	40.5
2 Whitebeam Close	CF47 9BN	Dwelling	62.0	61.1	61.9	62.7	49.8	48.9	49.7	50.5
4 Whitebeam Close	CF47 9BN	Dwelling	61.1	60.1	60.9	61.8	49.0	48.1	48.8	49.6
6 Whitebeam Close	CF47 9BN	Dwelling	59.7	58.8	59.4	60.3	47.8	46.9	47.4	48.2
8 Whitebeam Close	CF47 9BN	Dwelling	55.5	54.7	55.5	56.4	43.9	43.3	43.9	44.7
10 Whitebeam Close	CF47 9BN	Dwelling	60.4	59.4	60.4	61.4	48.4	47.4	48.4	49.2
12 Whitebeam Close	CF47 9BN	Dwelling	58.2	57.2	58.8	59.7	46.4	45.5	46.9	47.7
14 Whitebeam Close	CF47 9BN	Dwelling	58.8	57.8	59.2	60.1	46.9	46.0	47.2	48.1
1 Cypress Close	CF47 9BP	Dwelling	56.0	55.8	56.8	57.3	44.4	44.2	45.1	45.5
2 Cypress Close	CF47 9BP	Dwelling	49.2	48.7	49.4	50.2	38.2	37.8	38.5	39.1

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
3 Cypress Close	CF47 9BP	Dwelling	50.7	50.2	51.3	51.9	39.6	39.1	40.1	40.7
4 Cypress Close	CF47 9BP	Dwelling	49.7	48.9	49.5	50.4	38.7	38.0	38.5	39.3
5 Cypress Close	CF47 9BP	Dwelling	50.4	49.8	50.7	51.4	39.3	38.8	39.6	40.2
6 Cypress Close	CF47 9BP	Dwelling	49.5	48.7	49.4	50.3	38.5	37.8	38.4	39.2
7 Cypress Close	CF47 9BP	Dwelling	52.5	51.7	52.7	53.5	41.3	40.5	41.4	42.1
8 Cypress Close	CF47 9BP	Dwelling	48.8	48.0	48.9	49.8	37.9	37.2	38.0	38.8
9 Cypress Close	CF47 9BP	Dwelling	59.5	59.2	60.5	60.9	47.5	47.3	48.4	48.8
10 Cypress Close	CF47 9BP	Dwelling	47.7	47.1	48.2	49.0	36.9	36.4	37.4	38.1
11 Cypress Close	CF47 9BP	Dwelling	59.7	59.5	61.0	61.4	47.7	47.5	48.8	49.2
12 Cypress Close	CF47 9BP	Dwelling	48.4	47.8	48.6	49.4	37.6	37.0	37.8	38.5
13 Cypress Close	CF47 9BP	Dwelling	60.0	59.9	61.5	61.9	48.0	47.9	49.4	49.7
14 Cypress Close	CF47 9BP	Dwelling	51.3	50.7	51.4	52.2	40.2	39.6	40.2	41.0
15 Cypress Close	CF47 9BP	Dwelling	60.6	60.5	62.4	62.7	48.6	48.5	50.1	50.4
16 Cypress Close	CF47 9BP	Dwelling	47.8	47.1	47.9	48.8	37.0	36.4	37.1	37.9
17 Cypress Close	CF47 9BP	Dwelling	61.7	61.7	63.8	64.1	49.6	49.6	51.4	51.7
18 Cypress Close	CF47 9BP	Dwelling	47.9	47.2	48.0	48.9	37.1	36.4	37.2	38.0
20 Cypress Close	CF47 9BP	Dwelling	48.5	47.7	48.6	49.5	37.6	36.9	37.7	38.6
22 Cypress Close	CF47 9BP	Dwelling	48.1	47.4	48.4	49.3	37.3	36.6	37.6	38.3
24 Cypress Close	CF47 9BP	Dwelling	48.1	47.4	48.5	49.4	37.3	36.6	37.6	38.4
26 Cypress Close	CF47 9BP	Dwelling	56.6	56.5	57.3	57.8	45.0	44.8	45.6	46.0
28 Cypress Close	CF47 9BP	Dwelling	55.5	55.4	56.0	56.5	44.0	43.8	44.4	44.8
30 Cypress Close	CF47 9BP	Dwelling	48.8	48.0	48.9	49.8	37.9	37.2	38.0	38.8
32 Cypress Close	CF47 9BP	Dwelling	53.1	52.7	53.4	54.1	41.8	41.4	42.0	42.6
34 Cypress Close	CF47 9BP	Dwelling	48.2	47.4	48.3	49.2	37.3	36.6	37.5	38.3
36 Cypress Close	CF47 9BP	Dwelling	48.4	47.6	48.5	49.5	37.5	36.8	37.7	38.5
38 Cypress Close	CF47 9BP	Dwelling	51.9	51.1	52.2	53.2	40.7	40.0	41.0	41.8
40 Cypress Close	CF47 9BP	Dwelling	50.0	49.1	50.6	51.5	39.0	38.2	39.5	40.3
42 Cypress Close	CF47 9BP	Dwelling	48.1	47.6	48.4	49.1	37.3	36.8	37.5	38.2
44 Cypress Close	CF47 9BP	Dwelling	49.4	48.9	49.6	50.4	38.4	38.0	38.6	39.3
46 Cypress Close	CF47 9BP	Dwelling	51.2	50.3	51.3	52.2	40.1	39.2	40.2	41.0
48 Cypress Close	CF47 9BP	Dwelling	47.6	46.8	48.5	49.4	36.8	36.1	37.7	38.5
50 Cypress Close	CF47 9BP	Dwelling	49.9	49.1	50.5	51.4	38.9	38.2	39.4	40.2
52 Cypress Close	CF47 9BP	Dwelling	50.4	49.6	51.0	51.9	39.4	38.6	39.8	40.6
54 Cypress Close	CF47 9BP	Dwelling	50.8	50.0	51.3	52.2	39.7	38.9	40.1	40.9
56 Cypress Close	CF47 9BP	Dwelling	51.2	50.3	51.6	52.4	40.0	39.3	40.4	41.2
Larch Close	CF47 9BS	Dwelling	46.6	46.2	46.7	47.5	35.9	35.5	36.0	36.7
1 Larch Close	CF47 9BS	Dwelling	47.3	46.8	47.1	48.0	36.5	36.1	36.4	37.1
2 Larch Close	CF47 9BS	Dwelling	47.4	47.0	47.3	48.1	36.7	36.2	36.6	37.3
3 Larch Close	CF47 9BS	Dwelling	46.7	46.0	46.6	47.5	36.0	35.4	35.9	36.7
4 Larch Close	CF47 9BS	Dwelling	46.6	46.3	46.7	47.5	35.9	35.6	36.0	36.7
5 Larch Close	CF47 9BS	Dwelling	46.4	45.7	46.4	47.3	35.7	35.1	35.8	36.6
6 Larch Close	CF47 9BS	Dwelling	46.0	45.8	46.2	47.0	35.4	35.2	35.6	36.3
7 Larch Close	CF47 9BS	Dwelling	46.6	46.1	46.5	47.3	35.9	35.4	35.8	36.6
8 Larch Close	CF47 9BS	Dwelling	46.5	46.1	46.7	47.5	35.9	35.5	36.0	36.7
9 Larch Close	CF47 9BS	Dwelling	48.4	48.1	48.2	49.0	37.5	37.3	37.3	38.0
10 Larch Close	CF47 9BS	Dwelling	46.9	46.4	46.9	47.8	36.2	35.7	36.2	37.0
11 Larch Close	CF47 9BS	Dwelling	48.3	48.0	48.1	48.9	37.5	37.2	37.3	38.0
12 Larch Close	CF47 9BS	Dwelling	46.6	46.2	46.7	47.6	36.0	35.5	36.1	36.8
13 Larch Close	CF47 9BS	Dwelling	48.2	47.9	48.0	48.7	37.3	37.0	37.1	37.8
14 Larch Close	CF47 9BS	Dwelling	46.8	46.3	46.8	47.6	36.1	35.6	36.1	36.9
15 Larch Close	CF47 9BS	Dwelling	48.2	47.9	48.0	48.8	37.4	37.1	37.2	37.9
16 Larch Close	CF47 9BS	Dwelling	47.8	47.1	47.5	48.4	37.0	36.4	36.7	37.6
17 Larch Close	CF47 9BS	Dwelling	47.5	46.8	47.4	48.3	36.8	36.1	36.6	37.5
18 Larch Close	CF47 9BS	Dwelling	48.4	48.3	48.1	48.8	37.6	37.5	37.3	37.9
19 Larch Close	CF47 9BS	Dwelling	50.2	49.6	50.0	50.9	39.2	38.6	39.0	39.8
20 Larch Close	CF47 9BS	Dwelling	48.2	48.1	47.9	48.6	37.4	37.3	37.1	37.7
21 Larch Close	CF47 9BS	Dwelling	47.8	47.2	47.7	48.5	37.0	36.4	36.9	37.7
Flat 1 22 Flat 1 Larch Close	CF47 9BS	Dwelling	46.7	46.2	46.8	47.6	36.0	35.6	36.1	36.8
Flat 3 22 Flat 3 Larch Close	CF47 9BS	Dwelling	46.8	46.5	46.9	47.7	36.1	35.9	36.2	36.9
Flat 5 22 Flat 5 Larch Close	CF47 9BS	Dwelling	48.4	48.3	48.1	48.8	37.6	37.4	37.2	37.9
23 Larch Close	CF47 9BS	Dwelling	47.5	46.9	47.4	48.3	36.8	36.2	36.6	37.4
24 Larch Close	CF47 9BS	Dwelling	46.0	45.8	45.9	46.7	35.4	35.2	35.3	36.0
25 Larch Close	CF47 9BS	Dwelling	49.9	49.3	49.7	50.6	38.9	38.4	38.7	39.5
26 Larch Close	CF47 9BS	Dwelling	49.5	48.8	49.1	50.0	38.6	37.9	38.1	38.9
27 Larch Close	CF47 9BS	Dwelling	49.8	49.2	49.6	50.5	38.8	38.3	38.6	39.4
28 Larch Close	CF47 9BS	Dwelling	47.4	47.0	47.2	48.1	36.7	36.2	36.5	37.2
29 Larch Close	CF47 9BS	Dwelling	47.3	46.7	47.1	48.0	36.6	36.0	36.4	37.1
Flat 2 1 Flat 2 Palm Road	CF47 9BT	Dwelling	45.6	45.4	45.7	46.4	35.0	34.8	35.1	35.8
Flat 3 1 Flat 3 Palm Road	CF47 9BT	Dwelling	46.4	46.3	46.4	47.1	35.8	35.7	35.7	36.4
Flat 6 1 Flat 6 Palm Road	CF47 9BT	Dwelling	47.7	47.0	47.0	47.9	36.9	36.3	36.3	37.1
2 Palm Road	CF47 9BT	Dwelling	47.2	46.8	46.6	47.5	36.4	36.1	36.0	36.7
3 Palm Road	CF47 9BT	Dwelling	46.5	46.4	46.5	47.2	35.9	35.7	35.8	36.4
4 Palm Road	CF47 9BT	Dwelling	46.9	46.5	46.4	47.3	36.2	35.9	35.8	36.5
5 Palm Road	CF47 9BT	Dwelling	46.7	46.6	46.6	47.3	36.0	35.9	36.0	36.6
6 Palm Road	CF47 9BT	Dwelling	46.9	46.5	46.4	47.3	36.2	35.9	35.8	36.5
7 Palm Road	CF47 9BT	Dwelling	46.8	46.7	46.7	47.4	36.1	36.0	36.0	36.7
8 Palm Road	CF47 9BT	Dwelling	47.7	47.2	47.4	48.3	36.9	36.5	36.7	37.4
9 Palm Road	CF47 9BT	Dwelling	46.8	46.6	46.7	47.4	36.1	36.0	36.0	36.6
10 Palm Road	CF47 9BT	Dwelling	48.6	48.1	48.1	48.9	37.7	37.3	37.2	37.9
11 Palm Road	CF47 9BT	Dwelling	46.9	46.8	46.8	47.5	36.2	36.1	36.1	36.7
12 Palm Road	CF47 9BT	Dwelling	51.0	50.6	50.4	51.2	39.9	39.5	39.3	40.0
13 Palm Road	CF47 9BT	Dwelling	46.9	46.8	46.8	47.5	36.2	36.1	36.1	36.7
14 Palm Road	CF47 9BT	Dwelling	47.5	47.3	47.1	47.8	36.7	36.6	36.4	37.0
15 Palm Road	CF47 9BT	Dwelling	49.5	49.3	49.3	50.0	38.5	38.4	38.3	39.0
16 Palm Road	CF47 9BT	Dwelling	49.7	49.6	49.3	50.1	38.8	38.6	38.4	39.0
Flat 2 17 Flat 2 Palm Road	CF47 9BT	Dwelling	48.8	48.6	48.4	49.2	37.9	37.7	37.6	38.2
Flat 4 17 Flat 4 Palm Road	CF47 9BT	Dwelling	48.8	48.1	48.4	49.2	37.9	37.3	37.5	38.3
Flat 6 17 Flat 6 Palm Road	CF47 9BT	Dwelling	47.3	46.7	47.0	47.9	36.6	36.0	36.3	37.0
18 Palm Road	CF47 9BT	Dwelling	47.5	47.3	47.1	47.9	36.7	36.5	36.4	37.1
19 Palm Road	CF47 9BT	Dwelling	48.9	48.2	48.5	49.4	38.0	37.4	37.6	38.4
20 Palm Road	CF47 9BT	Dwelling	48.2	48.1	47.7	48.4	37.4	37.2	36.9	37.5
21 Palm Road	CF47 9BT	Dwelling	48.6	47.9	48.3	49.1	37.7	37.1	37.4	38.2
22 Palm Road	CF47 9BT	Dwelling	49.7	49.5	49.4	50.1	38.7	38.5	38.4	39.1
23 Palm Road	CF47 9BT	Dwelling	48.4	47.7	48.1	49.0	37.5	36.9	37.3	38.1
24 Palm Road	CF47 9BT	Dwelling	47.3	47.0	47.0	47.8	36.6	36.3	36.3	37.0
25 Palm Road	CF47 9BT	Dwelling	48.6	48.0	48.3	49.2	37.7	37.2	37.5	38.3
26 Palm Road	CF47 9BT	Dwelling	47.1	46.8	46.9	47.7	36.4	36.1	36.2	36.9
28 Palm Road	CF47 9BT	Dwelling	47.2	46.9	47.0	47.8	36.5	36.2	36.3	37.0
30 Palm Road	CF47 9BT	Dwelling	47.2	46.9	47.0	47.8	36.5	36.2	36.3	37.0
32 Palm Road	CF47 9BT	Dwelling	47.2	46.8	47.0	47.8	36.5	36.1	36.3	37.0
34 Palm Road	CF47 9BT	Dwelling	47.8	47.3	47.6	48.5	37.0	36.5	36.8	37.6
Goitre Youth Club Goitre Lane	CF47 9BU	OSR	58.2	58.1	58.5	58.8	46.4	46.3	46.6	46.9
1 Hornbeam Close	CF47 9BW	Dwelling	62.6	61.7	62.0	62.9	50.4	49.5	49.8	50.6
2 Hornbeam Close	CF47 9BW	Dwelling	58.6	57.9	59.1	59.8	46.8	46.1	47.2	47.8
3 Hornbeam Close	CF47 9BW	Dwelling	63.2	62.3	62.5	63.4	50.9	50.0	50.3	51.0
4 Hornbeam Close	CF47 9BW	Dwelling	57.9	57.1	58.2	59.0	46.1	45.4	46.4	47.0
5 Hornbeam Close	CF47 9BW	Dwelling	55.4	54.5	55.7	56.6	43.8	43.0	44.1	44.9

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
6 Hornbeam Close	CF47 9BW	Dwelling	58.2	57.5	58.5	59.2	46.4	45.7	46.6	47.3
7 Hornbeam Close	CF47 9BW	Dwelling	55.4	54.6	55.6	56.4	43.9	43.2	44.0	44.7
8 Hornbeam Close	CF47 9BW	Dwelling	61.5	60.7	61.9	62.6	49.3	48.6	49.7	50.3
9 Hornbeam Close	CF47 9BW	Dwelling	56.6	55.8	56.7	57.5	45.0	44.2	45.0	45.7
1 Penyfan View	CF47 9BX	Dwelling	55.3	54.5	56.0	56.9	43.7	43.0	44.4	45.2
2 Penyfan View	CF47 9BX	Dwelling	54.6	53.8	55.6	56.5	43.1	42.4	44.0	44.8
3 Penyfan View	CF47 9BX	Dwelling	54.4	53.5	55.7	56.6	42.9	42.1	44.1	44.9
4 Penyfan View	CF47 9BX	Dwelling	54.1	53.2	55.4	56.3	42.7	41.8	43.8	44.7
5 Penyfan View	CF47 9BX	Dwelling	52.9	52.2	54.0	54.8	41.6	40.9	42.6	43.3
6 Penyfan View	CF47 9BX	Dwelling	55.5	54.6	56.2	57.1	43.9	43.1	44.6	45.3
7 Penyfan View	CF47 9BX	Dwelling	56.1	55.2	56.9	57.8	44.5	43.7	45.2	46.0
8 Penyfan View	CF47 9BX	Dwelling	56.1	55.3	57.0	57.9	44.5	43.7	45.3	46.1
9 Penyfan View	CF47 9BX	Dwelling	51.8	51.1	52.8	53.6	40.6	40.0	41.5	42.2
10 Penyfan View	CF47 9BX	Dwelling	56.0	55.2	56.9	57.8	44.4	43.7	45.2	46.0
11 Penyfan View	CF47 9BX	Dwelling	56.1	55.2	56.8	57.7	44.5	43.7	45.1	45.9
12 Penyfan View	CF47 9BX	Dwelling	55.9	55.1	56.8	57.6	44.3	43.6	45.1	45.9
13 Penyfan View	CF47 9BX	Dwelling	61.0	60.1	61.1	61.9	48.9	48.0	48.9	49.7
14 Penyfan View	CF47 9BX	Dwelling	54.8	53.9	55.7	56.6	43.3	42.5	44.1	44.9
15 Penyfan View	CF47 9BX	Dwelling	50.0	49.1	50.9	51.8	38.9	38.2	39.8	40.6
16 Penyfan View	CF47 9BX	Dwelling	49.8	48.9	50.8	51.7	38.8	38.0	39.7	40.5
17 Penyfan View	CF47 9BX	Dwelling	54.7	53.8	55.4	56.3	43.2	42.4	43.9	44.7
18 Penyfan View	CF47 9BX	Dwelling	49.9	49.2	50.7	51.6	38.9	38.3	39.6	40.4
19 Penyfan View	CF47 9BX	Dwelling	52.8	51.7	53.4	54.4	41.5	40.5	42.1	42.9
20 Penyfan View	CF47 9BX	Dwelling	54.4	53.5	55.0	55.9	43.0	42.1	43.5	44.3
21 Penyfan View	CF47 9BX	Dwelling	50.1	49.5	51.1	51.9	39.0	38.5	40.0	40.7
22 Penyfan View	CF47 9BX	Dwelling	52.0	51.2	53.2	54.1	40.8	40.1	41.9	42.6
23 Penyfan View	CF47 9BX	Dwelling	52.7	52.0	53.8	54.7	41.4	40.7	42.4	43.2
24 Penyfan View	CF47 9BX	Dwelling	56.3	55.4	57.0	57.9	44.7	43.9	45.3	46.1
25 Penyfan View	CF47 9BX	Dwelling	57.0	56.0	57.3	58.3	45.3	44.4	45.6	46.4
26 Penyfan View	CF47 9BX	Dwelling	57.5	56.4	57.8	58.8	45.7	44.7	46.0	46.9
27 Penyfan View	CF47 9BX	Dwelling	53.4	52.3	54.2	55.2	42.1	41.1	42.7	43.6
28 Penyfan View	CF47 9BX	Dwelling	50.8	49.8	51.6	52.6	39.7	38.8	40.4	41.3
29 Penyfan View	CF47 9BX	Dwelling	54.5	53.5	55.4	56.4	43.1	42.1	43.9	44.7
30 Penyfan View	CF47 9BX	Dwelling	54.9	53.9	55.4	56.4	43.4	42.5	43.9	44.7
31 Penyfan View	CF47 9BX	Dwelling	51.5	50.5	52.5	53.4	40.3	39.4	41.2	42.1
32 Penyfan View	CF47 9BX	Dwelling	51.4	50.4	52.5	53.5	40.2	39.3	41.3	42.1
33 Penyfan View	CF47 9BX	Dwelling	56.4	55.5	56.9	57.8	44.8	44.0	45.2	46.0
34 Penyfan View	CF47 9BX	Dwelling	51.4	50.4	52.7	53.7	40.2	39.3	41.4	42.3
35 Penyfan View	CF47 9BX	Dwelling	50.8	49.8	52.1	53.0	39.7	38.8	40.9	41.7
36 Penyfan View	CF47 9BX	Dwelling	51.7	50.9	52.8	53.7	40.5	39.8	41.5	42.3
37 Penyfan View	CF47 9BX	Dwelling	50.5	49.7	51.5	52.4	39.4	38.7	40.3	41.1
38 Penyfan View	CF47 9BX	Dwelling	58.6	58.2	58.9	59.6	46.7	46.3	47.0	47.6
39 Penyfan View	CF47 9BX	Dwelling	59.7	59.3	59.9	60.5	47.7	47.4	47.8	48.4
40 Penyfan View	CF47 9BX	Dwelling	59.7	59.6	60.0	60.4	47.7	47.6	47.9	48.4
41 Penyfan View	CF47 9BX	Dwelling	57.0	56.7	58.0	58.5	45.3	45.1	46.1	46.6
42 Penyfan View	CF47 9BX	Dwelling	69.3	69.3	68.7	69.0	56.3	56.3	55.8	56.1
43 Penyfan View	CF47 9BX	Dwelling	56.5	56.1	56.8	57.4	44.8	44.5	45.1	45.7
44 Penyfan View	CF47 9BX	Dwelling	56.4	56.0	56.6	57.3	44.8	44.4	45.0	45.6
45 Penyfan View	CF47 9BX	Dwelling	55.3	54.8	55.8	56.6	43.8	43.3	44.2	44.9
46 Penyfan View	CF47 9BX	Dwelling	55.7	55.2	56.1	56.8	44.1	43.6	44.5	45.1
47 Penyfan View	CF47 9BX	Dwelling	50.9	50.2	51.9	52.7	39.8	39.2	40.7	41.4
48 Penyfan View	CF47 9BX	Dwelling	57.4	56.6	58.2	58.9	45.6	44.9	46.4	47.0
Pen Y Dre High School Building No. 3 Goitre Lane	CF47 9BY	OSR	58.0	57.1	58.8	59.6	46.1	45.4	46.9	47.6
Pen Y Dre High School Goitre Lane	CF47 9BY	OSR	58.0	57.1	58.8	59.6	46.1	45.4	46.9	47.6
Pen-Y-Dre School Bungalow Goitre Lane	CF47 9BY	OSR	55.6	55.5	56.3	56.7	44.0	43.9	44.6	45.0
1 Marigold Close	CF47 9DA	Dwelling	54.3	53.9	54.2	54.9	42.9	42.5	42.8	43.4
2 Marigold Close	CF47 9DA	Dwelling	55.0	55.1	54.8	55.2	43.5	43.6	43.3	43.6
3 Marigold Close	CF47 9DA	Dwelling	51.8	51.4	51.7	52.4	40.6	40.3	40.5	41.1
4 Marigold Close	CF47 9DA	Dwelling	54.9	55.0	54.6	55.1	43.4	43.4	43.1	43.6
5 Marigold Close	CF47 9DA	Dwelling	46.7	46.1	47.3	48.2	36.0	35.5	36.6	37.3
6 Marigold Close	CF47 9DA	Dwelling	52.1	51.9	51.9	52.4	40.9	40.7	40.7	41.1
7 Marigold Close	CF47 9DA	Dwelling	51.1	50.9	51.3	52.1	40.0	39.8	40.1	40.8
8 Marigold Close	CF47 9DA	Dwelling	52.1	51.9	51.9	52.4	40.9	40.7	40.7	41.1
9 Marigold Close	CF47 9DA	Dwelling	47.6	47.0	48.1	49.0	36.9	36.3	37.3	38.0
10 Marigold Close	CF47 9DA	Dwelling	48.6	48.6	48.8	49.6	37.7	37.7	37.9	38.6
11 Marigold Close	CF47 9DA	Dwelling	54.7	54.7	55.2	56.1	43.2	43.2	43.6	44.4
12 Marigold Close	CF47 9DA	Dwelling	48.6	48.6	48.8	49.6	37.7	37.7	37.9	38.6
13 Marigold Close	CF47 9DA	Dwelling	49.2	48.9	50.1	50.9	38.3	37.9	39.1	39.8
14 Marigold Close	CF47 9DA	Dwelling	46.9	46.4	47.1	47.8	36.2	35.8	36.3	37.0
15 Marigold Close	CF47 9DA	Dwelling	47.8	47.1	49.1	50.0	37.0	36.4	38.1	39.0
16 Marigold Close	CF47 9DA	Dwelling	46.9	46.4	47.1	47.8	36.2	35.8	36.3	37.0
17 Marigold Close	CF47 9DA	Dwelling	55.4	55.6	55.8	56.7	43.9	44.0	44.2	45.0
18 Marigold Close	CF47 9DA	Dwelling	47.6	47.4	48.0	48.8	36.9	36.7	37.2	37.9
20 Marigold Close	CF47 9DA	Dwelling	47.6	47.4	48.0	48.8	36.9	36.7	37.2	37.9
22 Marigold Close	CF47 9DA	Dwelling	46.7	46.1	47.0	47.7	36.0	35.5	36.2	36.9
24 Marigold Close	CF47 9DA	Dwelling	46.7	46.1	47.0	47.7	36.0	35.5	36.2	36.9
26 Marigold Close	CF47 9DA	Dwelling	47.9	47.7	48.3	49.1	37.1	36.9	37.4	38.2
28 Marigold Close	CF47 9DA	Dwelling	47.9	47.7	48.3	49.1	37.1	36.9	37.4	38.2
30 Marigold Close	CF47 9DA	Dwelling	46.3	45.8	46.7	47.5	35.7	35.2	36.0	36.8
32 Marigold Close	CF47 9DA	Dwelling	46.3	45.8	46.7	47.5	35.7	35.2	36.0	36.8
34 Marigold Close	CF47 9DA	Dwelling	48.2	47.8	48.7	49.4	37.4	37.0	37.8	38.5
36 Marigold Close	CF47 9DA	Dwelling	48.2	47.8	48.7	49.4	37.4	37.0	37.8	38.5
1 Jasmine Close	CF47 9DB	Dwelling	47.0	47.0	47.1	47.9	36.3	36.3	36.4	37.1
3 Jasmine Close	CF47 9DB	Dwelling	47.2	47.1	47.4	48.2	36.5	36.4	36.7	37.3
5 Jasmine Close	CF47 9DB	Dwelling	46.4	46.3	46.6	47.3	35.7	35.6	35.9	36.5
7 Jasmine Close	CF47 9DB	Dwelling	47.3	47.2	47.6	48.3	36.6	36.4	36.8	37.5
9 Jasmine Close	CF47 9DB	Dwelling	49.0	49.1	49.3	50.2	38.0	38.1	38.3	39.2
11 Jasmine Close	CF47 9DB	Dwelling	50.7	50.7	51.1	52.0	39.6	39.6	40.0	40.8
13 Jasmine Close	CF47 9DB	Dwelling	51.6	51.7	51.9	52.8	40.4	40.5	40.7	41.5
Honeysuckle Close	CF47 9DD	OSR	47.4	47.1	47.9	48.7	36.7	36.3	37.1	37.8
Honeysuckle Close	CF47 9DD	Dwelling	47.6	47.2	48.1	48.8	36.8	36.5	37.3	37.9
Honeysuckle Close	CF47 9DD	Dwelling	47.4	47.1	47.9	48.7	36.7	36.3	37.1	37.8
Honeysuckle Close	CF47 9DD	Dwelling	47.2	46.8	47.9	48.6	36.5	36.1	37.1	37.7
Honeysuckle Close	CF47 9DD	Dwelling	50.5	50.2	51.3	52.1	39.5	39.1	40.1	40.9
Honeysuckle Close	CF47 9DD	Dwelling	47.9	47.5	48.3	49.0	37.1	36.8	37.4	38.0
Honeysuckle Close	CF47 9DD	Dwelling	56.3	56.6	56.3	57.2	44.7	44.9	44.7	45.4
1 Honeysuckle Close	CF47 9DD	Dwelling	59.4	59.7	59.0	59.2	47.5	47.7	47.1	47.3
3 Honeysuckle Close	CF47 9DD	Dwelling	55.4	55.7	55.0	55.3	43.9	44.1	43.5	43.7
5 Honeysuckle Close	CF47 9DD	Dwelling	51.8	51.8	51.6	51.9	40.6	40.6	40.4	40.6
7 Honeysuckle Close	CF47 9DD	Dwelling	49.9	49.8	49.7	50.1	38.9	38.8	38.8	39.1
9 Honeysuckle Close	CF47 9DD	Dwelling	49.3	49.2	49.2	49.6	38.3	38.2	38.3	38.7
11 Honeysuckle Close	CF47 9DD	Dwelling	52.6	52.9	52.8	53.6	41.4	41.6	41.5	42.2
45 Honeysuckle Close	CF47 9DD	Dwelling	49.0	48.8	49.8	50.7	38.1	37.9	38.8	39.6
47 Honeysuckle Close	CF47 9DD	Dwelling	47.9	47.7	49.0	49.9	37.1	36.9	38.1	38.9
49 Honeysuckle Close	CF47 9DD	Dwelling	49.0	49.0	49.4	50.3	38.1	38.0	38.4	39.3
51 Honeysuckle Close	CF47 9DD	Dwelling	53.5	53.6	53.8	54.8	42.1	42.2	42.4	43.3
53 Honeysuckle Close	CF47 9DD	Dwelling	49.1	48.9	50.0	50.9	38.1	38.0	38.9	39.8

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
86 Honeysuckle Close	CF47 9DE	Dwelling	54.7	54.9	54.8	55.7	43.2	43.4	43.3	44.1
88 Honeysuckle Close	CF47 9DE	Dwelling	54.6	54.7	54.5	55.5	43.1	43.3	43.1	43.9
90 Honeysuckle Close	CF47 9DE	Dwelling	54.6	54.7	54.5	55.4	43.1	43.2	43.0	43.8
92 Honeysuckle Close	CF47 9DE	Dwelling	54.4	54.6	54.3	55.2	43.0	43.1	42.8	43.7
94 Honeysuckle Close	CF47 9DE	Dwelling	52.6	52.4	52.9	53.5	41.3	41.1	41.6	42.2
1 Bramble Close	CF47 9DF	Dwelling	55.7	56.0	55.3	55.8	44.1	44.3	43.7	44.2
2 Bramble Close	CF47 9DF	Dwelling	53.6	53.6	53.2	53.5	42.2	42.3	41.9	42.1
3 Bramble Close	CF47 9DF	Dwelling	56.0	56.3	55.7	56.3	44.4	44.6	44.1	44.7
4 Bramble Close	CF47 9DF	Dwelling	65.0	65.2	64.5	64.4	52.5	52.6	52.0	51.9
5 Bramble Close	CF47 9DF	Dwelling	55.7	55.9	55.4	56.1	44.1	44.3	43.8	44.4
6 Bramble Close	CF47 9DF	Dwelling	63.8	64.0	62.9	62.9	51.4	51.6	50.6	50.6
7 Bramble Close	CF47 9DF	Dwelling	55.5	55.8	55.3	56.1	44.0	44.2	43.8	44.4
8 Bramble Close	CF47 9DF	Dwelling	53.7	53.8	53.0	53.1	42.3	42.4	41.7	41.8
9 Bramble Close	CF47 9DF	Dwelling	55.1	55.5	55.0	55.8	43.6	43.9	43.5	44.2
10 Bramble Close	CF47 9DF	Dwelling	50.3	50.3	49.5	49.7	39.2	39.3	38.6	38.7
11 Bramble Close	CF47 9DF	Dwelling	52.9	53.0	53.3	54.2	41.6	41.7	42.0	42.8
12 Bramble Close	CF47 9DF	Dwelling	51.4	51.5	51.0	51.2	40.3	40.3	39.9	40.0
14 Bramble Close	CF47 9DF	Dwelling	55.8	55.9	55.2	55.3	44.2	44.3	43.6	43.7
16 Bramble Close	CF47 9DF	Dwelling	48.9	49.0	48.9	49.6	38.0	38.1	38.0	38.6
18 Bramble Close	CF47 9DF	Dwelling	52.8	52.9	52.8	53.6	41.5	41.6	41.5	42.3
20 Bramble Close	CF47 9DF	Dwelling	55.8	55.9	55.0	55.6	44.2	44.3	43.5	44.0
22 Bramble Close	CF47 9DF	Dwelling	46.6	46.5	46.3	46.8	35.9	35.8	35.6	36.1
24 Bramble Close	CF47 9DF	Dwelling	46.6	46.5	46.1	46.7	35.9	35.8	35.5	36.0
26 Bramble Close	CF47 9DF	Dwelling	46.4	46.3	45.8	46.3	35.7	35.7	35.2	35.6
28 Bramble Close	CF47 9DF	Dwelling	46.9	46.8	46.2	46.7	36.2	36.1	35.6	36.0
30 Bramble Close	CF47 9DF	Dwelling	47.1	47.0	46.3	46.7	36.3	36.3	35.6	36.0
32 Bramble Close	CF47 9DF	Dwelling	47.0	47.0	46.2	46.6	36.3	36.3	35.5	35.9
34 Bramble Close	CF47 9DF	Dwelling	46.4	46.4	45.7	46.2	35.8	35.8	35.1	35.5
36 Bramble Close	CF47 9DF	Dwelling	46.6	46.5	45.9	46.5	35.9	35.8	35.3	35.8
38 Bramble Close	CF47 9DF	Dwelling	46.2	46.1	45.7	46.2	35.6	35.5	35.1	35.6
39 Bramble Close	CF47 9DF	Dwelling	55.1	55.3	54.7	55.5	43.6	43.8	43.2	43.9
40 Bramble Close	CF47 9DF	Dwelling	48.3	48.0	49.2	50.0	37.5	37.1	38.2	39.0
41 Bramble Close	CF47 9DF	Dwelling	57.3	57.6	56.9	57.6	45.6	45.8	45.2	45.8
42 Bramble Close	CF47 9DF	Dwelling	46.5	46.5	46.1	46.7	35.9	35.8	35.5	36.0
43 Bramble Close	CF47 9DF	Dwelling	46.3	46.0	46.6	47.3	35.6	35.4	35.9	36.6
44 Bramble Close	CF47 9DF	Dwelling	46.7	46.6	46.5	47.1	36.0	35.9	35.8	36.4
45 Bramble Close	CF47 9DF	Dwelling	46.3	46.0	46.6	47.2	35.6	35.4	35.9	36.5
46 Bramble Close	CF47 9DF	Dwelling	47.2	47.0	47.2	47.9	36.5	36.3	36.5	37.1
47 Bramble Close	CF47 9DF	Dwelling	50.6	50.0	51.6	52.5	39.5	38.9	40.4	41.2
48 Bramble Close	CF47 9DF	Dwelling	46.7	46.5	46.8	47.4	36.0	35.8	36.1	36.7
50 Bramble Close	CF47 9DF	Dwelling	46.3	46.1	46.5	47.2	35.7	35.5	35.8	36.4
52 Bramble Close	CF47 9DF	Dwelling	49.6	49.2	50.6	51.4	38.6	38.3	39.5	40.3
Clover Road Shops Flat 2 Clover Road	CF47 9DG	Dwelling	46.3	45.7	47.9	48.8	35.7	35.1	37.1	37.9
Clover Road Shops Flat 3 Clover Road	CF47 9DG	Dwelling	48.9	48.7	49.5	50.3	38.0	37.8	38.5	39.2
Clover Road Shops Flat 4 Clover Road	CF47 9DG	Dwelling	55.4	55.5	55.8	56.8	43.9	43.9	44.2	45.1
25 Clover Road	CF47 9DG	Dwelling	56.5	56.7	57.2	58.0	44.9	45.0	45.4	46.2
27 Clover Road	CF47 9DG	Dwelling	46.8	46.8	46.7	47.3	36.1	36.1	36.0	36.5
29 Clover Road	CF47 9DG	Dwelling	50.6	50.7	50.1	50.7	39.6	39.6	39.1	39.6
31 Clover Road	CF47 9DG	Dwelling	56.4	56.4	56.3	56.9	44.7	44.8	44.6	45.2
33 Clover Road	CF47 9DG	Dwelling	55.6	55.6	55.2	55.8	44.0	44.0	43.7	44.2
35 Clover Road	CF47 9DG	Dwelling	46.8	46.8	46.2	46.7	36.1	36.1	35.5	36.0
37 Clover Road	CF47 9DG	Dwelling	50.4	50.4	49.7	50.3	39.3	39.3	38.7	39.2
39 Clover Road	CF47 9DG	Dwelling	57.2	57.3	56.9	57.6	45.5	45.6	45.1	45.8
41 Clover Road	CF47 9DG	Dwelling	52.3	52.4	51.0	51.4	41.1	41.1	39.9	40.2
43 Clover Road	CF47 9DG	Dwelling	53.1	53.2	51.7	52.0	41.8	41.8	40.5	40.8
45 Clover Road	CF47 9DG	Dwelling	64.0	64.2	62.1	62.4	51.6	51.7	49.9	50.2
47 Clover Road	CF47 9DG	Dwelling	51.1	51.1	52.2	52.8	40.0	40.0	40.9	41.5
49 Clover Road	CF47 9DG	Dwelling	50.8	50.9	50.2	50.8	39.7	39.8	39.2	39.7
51 Clover Road	CF47 9DG	Dwelling	46.7	46.6	46.4	47.0	36.0	35.9	35.7	36.2
53 Clover Road	CF47 9DG	Dwelling	46.8	46.7	46.4	47.0	36.1	36.0	35.7	36.3
55 Clover Road	CF47 9DG	Dwelling	47.5	47.5	47.1	47.7	36.8	36.7	36.4	36.9
57 Clover Road	CF47 9DG	Dwelling	50.1	49.7	51.6	52.4	39.0	38.7	40.4	41.2
59 Clover Road	CF47 9DG	Dwelling	49.0	49.0	48.9	49.5	38.1	38.0	38.0	38.6
61 Clover Road	CF47 9DG	Dwelling	55.6	55.7	55.4	56.1	44.0	44.1	43.8	44.5
63 Clover Road	CF47 9DG	Dwelling	49.4	49.4	48.9	49.5	38.4	38.4	38.0	38.6
2 Clover Road	CF47 9DH	Dwelling	56.1	56.1	57.0	57.9	44.5	44.4	45.3	46.1
4 Clover Road	CF47 9DH	Dwelling	44.8	44.5	45.5	46.3	34.3	34.0	34.9	35.6
6 Clover Road	CF47 9DH	Dwelling	58.0	58.2	58.2	59.0	46.2	46.3	46.4	47.1
8 Clover Road	CF47 9DH	Dwelling	52.1	52.2	52.9	53.8	40.9	41.0	41.6	42.4
10 Clover Road	CF47 9DH	Dwelling	48.4	48.3	49.1	49.8	37.6	37.4	38.1	38.8
12 Clover Road	CF47 9DH	Dwelling	57.6	57.8	57.9	58.7	45.8	46.0	46.1	46.8
28 Clover Road	CF47 9DH	Dwelling	57.4	57.6	57.6	58.5	45.7	45.9	45.8	46.6
30 Clover Road	CF47 9DH	Dwelling	57.6	57.8	57.9	58.8	45.9	46.0	46.1	46.9
32 Clover Road	CF47 9DH	Dwelling	57.5	57.7	57.8	58.7	45.7	45.9	46.0	46.8
34 Clover Road	CF47 9DH	Dwelling	54.6	54.8	55.3	56.3	43.1	43.3	43.8	44.6
Lavender Road	CF47 9DL	Dwelling	48.5	48.1	49.3	50.2	37.6	37.2	38.4	39.1
2 Lavender Road	CF47 9DL	Dwelling	44.8	44.4	46.0	46.9	34.3	34.0	35.4	36.2
4 Lavender Road	CF47 9DL	Dwelling	45.1	44.8	46.5	47.4	34.6	34.3	35.9	36.6
6 Lavender Road	CF47 9DL	Dwelling	45.2	44.9	46.6	47.5	34.7	34.4	36.0	36.7
8 Lavender Road	CF47 9DL	Dwelling	52.1	51.8	53.8	54.6	40.8	40.6	42.4	43.1
10 Lavender Road	CF47 9DL	Dwelling	47.5	47.3	49.3	50.1	36.8	36.6	38.4	39.0
11 Lavender Road	CF47 9DL	Dwelling	55.9	56.0	56.6	57.5	44.3	44.4	44.9	45.7
12 Lavender Road	CF47 9DL	Dwelling	49.1	48.8	50.7	51.5	38.1	37.9	39.6	40.3
13 Lavender Road	CF47 9DL	Dwelling	55.3	55.5	55.9	56.9	43.8	43.9	44.3	45.2
14 Lavender Road	CF47 9DL	Dwelling	53.5	53.2	55.1	56.1	42.1	41.9	43.6	44.5
15 Lavender Road	CF47 9DL	Dwelling	55.7	55.8	56.3	57.3	44.1	44.2	44.7	45.5
16 Lavender Road	CF47 9DL	Dwelling	45.4	45.0	47.1	47.9	34.9	34.5	36.4	37.1
17 Lavender Road	CF47 9DL	Dwelling	53.2	52.8	54.4	55.4	41.8	41.5	43.0	43.8
18 Lavender Road	CF47 9DL	Dwelling	44.7	44.3	46.1	46.9	34.2	33.9	35.5	36.2
19 Lavender Road	CF47 9DL	Dwelling	56.4	56.6	56.8	57.8	44.7	44.9	45.1	46.0
20 Lavender Road	CF47 9DL	Dwelling	44.5	44.1	45.8	46.7	34.0	33.7	35.2	36.0
21 Lavender Road	CF47 9DL	Dwelling	56.6	56.8	57.1	58.1	45.0	45.1	45.4	46.2
22 Lavender Road	CF47 9DL	Dwelling	48.3	48.0	49.6	50.4	37.4	37.2	38.6	39.3
23 Lavender Road	CF47 9DL	Dwelling	56.1	56.3	56.6	57.6	44.5	44.7	45.0	45.8
24 Lavender Road	CF47 9DL	Dwelling	48.4	48.1	49.8	50.7	37.6	37.3	38.8	39.6
25 Lavender Road	CF47 9DL	Dwelling	54.9	55.0	55.5	56.4	43.3	43.4	43.9	44.7
26 Lavender Road	CF47 9DL	Dwelling	44.2	43.8	45.5	46.3	33.8	33.4	34.9	35.7
27 Lavender Road	CF47 9DL	Dwelling	56.7	56.9	57.3	58.2	45.0	45.2	45.5	46.3
28 Lavender Road	CF47 9DL	Dwelling	48.3	48.1	49.7	50.6	37.5	37.2	38.7	39.5
29 Lavender Road	CF47 9DL	Dwelling	56.5	56.7	57.1	58.0	44.9	45.0	45.3	46.2
30 Lavender Road	CF47 9DL	Dwelling	45.7	45.2	47.5	48.3	35.1	34.7	36.7	37.5
32 Lavender Road	CF47 9DL	Dwelling	44.7	44.3	46.2	47.0	34.2	33.9	35.5	36.3
33 Lavender Road	CF47 9DL	Dwelling	48.9	48.3	50.4	51.4	38.0	37.5	39.4	40.2
34 Lavender Road	CF47 9DL	Dwelling	45.4	44.9	47.0	47.9	34.8	34.4	36.3	37.0
36 Lavender Road	CF47 9DL	Dwelling	48.5	48.3	49.9	50.8	37.7	37.4	38.9	39.7
38 Lavender Road	CF47 9DL	Dwelling	48.9	48.6	50.3	51.1	38.0	37.7	39.2	40.0
40 Lavender Road	CF47 9DL	Dwelling	46.7	46.2	48.8	49.7	36.0	35.5	37.9	38.7

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
42 Lavender Road	CF47 9DL	Dwelling	45.3	44.8	46.8	47.7	34.8	34.3	36.1	36.9
44 Lavender Road	CF47 9DL	Dwelling	45.2	44.7	46.7	47.6	34.7	34.3	36.0	36.8
46 Lavender Road	CF47 9DL	Dwelling	52.0	52.0	53.2	54.1	40.8	40.8	41.8	42.7
48 Lavender Road	CF47 9DL	Dwelling	48.6	48.2	49.8	50.7	37.7	37.4	38.8	39.6
50 Lavender Road	CF47 9DL	Dwelling	48.5	48.1	49.6	50.5	37.6	37.3	38.6	39.4
52 Lavender Road	CF47 9DL	Dwelling	45.5	45.0	46.9	47.8	35.0	34.5	36.2	37.0
54 Lavender Road	CF47 9DL	Dwelling	44.7	44.2	45.8	46.7	34.2	33.7	35.2	36.0
56 Lavender Road	CF47 9DL	Dwelling	45.4	44.8	46.6	47.5	34.9	34.3	35.9	36.7
58 Lavender Road	CF47 9DL	Dwelling	49.1	48.6	50.4	51.2	38.2	37.8	39.3	40.1
60 Lavender Road	CF47 9DL	Dwelling	46.1	45.5	47.3	48.2	35.5	34.9	36.5	37.4
62 Lavender Road	CF47 9DL	Dwelling	49.0	48.6	50.2	51.1	38.1	37.7	39.1	39.9
64 Lavender Road	CF47 9DL	Dwelling	47.3	46.6	48.6	49.6	36.6	35.9	37.8	38.6
1 Heather Road	CF47 9DN	Dwelling	46.1	45.5	47.3	48.1	35.5	34.9	36.5	37.3
2 Heather Road	CF47 9DN	Dwelling	47.6	46.8	48.8	49.7	36.9	36.1	37.9	38.7
3 Heather Road	CF47 9DN	Dwelling	52.3	52.5	52.8	53.8	41.1	41.2	41.5	42.4
4 Heather Road	CF47 9DN	Dwelling	49.7	49.1	50.8	51.7	38.7	38.2	39.7	40.5
5 Heather Road	CF47 9DN	Dwelling	50.8	50.6	51.5	52.3	39.7	39.6	40.3	41.1
6 Heather Road	CF47 9DN	Dwelling	49.3	48.8	50.2	51.1	38.3	37.9	39.2	39.9
7 Heather Road	CF47 9DN	Dwelling	56.4	56.6	56.6	57.5	44.7	44.9	44.9	45.7
8 Heather Road	CF47 9DN	Dwelling	55.6	55.7	56.3	57.2	44.0	44.1	44.6	45.5
9 Heather Road	CF47 9DN	Dwelling	48.1	47.9	48.6	49.4	37.3	37.1	37.7	38.4
10 Heather Road	CF47 9DN	Dwelling	55.8	55.8	56.4	57.4	44.2	44.2	44.8	45.6
11 Heather Road	CF47 9DN	Dwelling	55.6	55.9	55.9	56.8	44.1	44.3	44.3	45.1
12 Heather Road	CF47 9DN	Dwelling	50.5	50.3	51.6	52.5	39.5	39.3	40.4	41.2
13 Heather Road	CF47 9DN	Dwelling	53.6	53.7	54.3	55.3	42.2	42.3	42.8	43.7
16 Heather Road	CF47 9DN	Dwelling	50.1	49.6	51.0	51.8	39.1	38.6	39.9	40.6
18 Heather Road	CF47 9DN	Dwelling	49.7	49.0	50.9	51.8	38.7	38.1	39.8	40.6
20 Heather Road	CF47 9DN	Dwelling	52.4	52.1	53.6	54.6	41.2	40.8	42.3	43.1
22 Heather Road	CF47 9DN	Dwelling	56.4	55.9	57.5	58.5	44.7	44.3	45.7	46.6
24 Heather Road	CF47 9DN	Dwelling	49.9	49.0	50.9	51.9	38.9	38.1	39.8	40.7
26 Heather Road	CF47 9DN	Dwelling	51.4	50.7	52.2	53.1	40.2	39.6	41.0	41.8
59 Heather Road	CF47 9DN	Dwelling	47.6	46.9	49.0	49.9	36.9	36.2	38.1	38.9
61 Heather Road	CF47 9DN	Dwelling	49.9	49.3	51.1	52.0	38.9	38.4	40.0	40.8
63 Heather Road	CF47 9DN	Dwelling	50.5	49.9	52.1	53.0	39.4	38.9	40.9	41.7
65 Heather Road	CF47 9DN	Dwelling	49.7	49.2	51.1	52.0	38.7	38.3	40.0	40.8
1 Lupin Close	CF47 9DP	Dwelling	50.8	50.8	51.1	51.7	39.7	39.7	40.0	40.6
3 Lupin Close	CF47 9DP	Dwelling	54.8	55.2	55.1	55.4	43.3	43.7	43.6	43.8
5 Lupin Close	CF47 9DP	Dwelling	50.7	50.6	51.6	52.3	39.6	39.5	40.4	41.1
7 Lupin Close	CF47 9DP	Dwelling	47.0	46.8	48.6	49.4	36.3	36.1	37.8	38.5
9 Lupin Close	CF47 9DP	Dwelling	49.6	49.5	50.9	51.6	38.6	38.5	39.8	40.4
11 Lupin Close	CF47 9DP	Dwelling	47.3	47.1	48.8	49.6	36.6	36.4	37.9	38.6
13 Lupin Close	CF47 9DP	Dwelling	50.8	50.7	52.1	52.8	39.7	39.6	40.9	41.5
15 Lupin Close	CF47 9DP	Dwelling	50.6	50.5	51.8	52.5	39.5	39.4	40.6	41.2
17 Lupin Close	CF47 9DP	Dwelling	54.9	55.3	55.3	55.6	43.4	43.7	43.7	44.0
19 Lupin Close	CF47 9DP	Dwelling	59.4	59.5	59.9	60.5	47.4	47.6	47.9	48.4
21 Lupin Close	CF47 9DP	Dwelling	52.1	52.1	53.1	53.8	40.9	40.9	41.8	42.4
23 Lupin Close	CF47 9DP	Dwelling	53.0	53.2	53.8	54.6	41.7	41.9	42.4	43.1
25 Lupin Close	CF47 9DP	Dwelling	52.4	52.6	53.3	54.0	41.2	41.3	41.9	42.6
27 Lupin Close	CF47 9DP	Dwelling	53.3	53.6	54.2	54.9	42.0	42.2	42.7	43.4
29 Lupin Close	CF47 9DP	Dwelling	51.3	51.2	52.5	53.3	40.1	40.1	41.3	41.9
31 Lupin Close	CF47 9DP	Dwelling	53.4	53.7	54.1	54.9	42.0	42.3	42.7	43.4
33 Lupin Close	CF47 9DP	Dwelling	52.7	52.7	53.7	54.5	41.4	41.4	42.3	43.0
35 Lupin Close	CF47 9DP	Dwelling	52.0	52.1	52.9	53.7	40.8	40.9	41.6	42.3
37 Lupin Close	CF47 9DP	Dwelling	53.6	53.8	54.4	55.2	42.2	42.4	42.9	43.6
39 Lupin Close	CF47 9DP	Dwelling	52.5	52.6	53.4	54.2	41.3	41.4	42.1	42.8
41 Lupin Close	CF47 9DP	Dwelling	53.7	54.0	54.4	55.2	42.3	42.5	43.0	43.7
43 Lupin Close	CF47 9DP	Dwelling	52.1	52.2	53.0	53.8	40.9	41.0	41.7	42.4
45 Lupin Close	CF47 9DP	Dwelling	53.9	54.2	54.7	55.5	42.5	42.8	43.2	44.0
47 Lupin Close	CF47 9DP	Dwelling	52.0	52.1	53.0	53.8	40.8	40.9	41.6	42.4
49 Lupin Close	CF47 9DP	Dwelling	53.7	53.9	54.5	55.3	42.3	42.5	43.0	43.8
51 Lupin Close	CF47 9DP	Dwelling	51.7	51.5	52.8	53.6	40.5	40.3	41.5	42.2
53 Lupin Close	CF47 9DP	Dwelling	55.5	55.3	56.6	57.5	43.9	43.8	44.9	45.7
55 Lupin Close	CF47 9DP	Dwelling	54.9	54.9	56.0	57.0	43.4	43.4	44.4	45.3
57 Lupin Close	CF47 9DP	Dwelling	52.0	51.6	53.2	54.0	40.8	40.4	41.8	42.6
59 Lupin Close	CF47 9DP	Dwelling	52.5	51.7	53.8	54.8	41.2	40.5	42.4	43.3
61 Lupin Close	CF47 9DP	Dwelling	53.9	53.1	55.5	56.4	42.5	41.7	43.9	44.8
63 Lupin Close	CF47 9DP	Dwelling	53.2	52.4	54.4	55.4	41.9	41.1	43.0	43.8
65 Lupin Close	CF47 9DP	Dwelling	54.3	53.4	55.7	56.6	42.8	42.0	44.1	45.0
67 Lupin Close	CF47 9DP	Dwelling	54.6	54.4	55.9	56.9	43.1	42.9	44.3	45.2
69 Lupin Close	CF47 9DP	Dwelling	53.5	53.6	53.8	54.7	42.1	42.2	42.4	43.2
71 Lupin Close	CF47 9DP	Dwelling	51.3	51.0	52.4	53.2	40.1	39.8	41.1	41.9
73 Lupin Close	CF47 9DP	Dwelling	51.5	51.3	52.6	53.4	40.3	40.2	41.3	42.1
75 Lupin Close	CF47 9DP	Dwelling	51.0	50.7	52.2	53.1	39.9	39.6	41.0	41.7
77 Lupin Close	CF47 9DP	Dwelling	51.9	51.8	53.1	54.0	40.7	40.6	41.8	42.6
79 Lupin Close	CF47 9DP	Dwelling	50.4	50.0	51.7	52.6	39.4	39.0	40.5	41.3
81 Lupin Close	CF47 9DP	Dwelling	47.3	47.2	49.2	50.1	36.5	36.5	38.2	39.1
83 Lupin Close	CF47 9DP	Dwelling	50.3	49.9	51.6	52.4	39.3	38.9	40.4	41.2
85 Lupin Close	CF47 9DP	Dwelling	51.3	51.0	52.8	53.7	40.2	39.8	41.5	42.3
87 Lupin Close	CF47 9DP	Dwelling	50.5	50.0	51.6	52.5	39.4	39.0	40.4	41.2
89 Lupin Close	CF47 9DP	Dwelling	56.4	56.0	57.7	58.5	44.7	44.4	45.9	46.6
91 Lupin Close	CF47 9DP	Dwelling	53.7	53.0	55.4	56.3	42.3	41.7	43.8	44.6
93 Lupin Close	CF47 9DP	Dwelling	52.8	52.1	54.9	55.8	41.5	40.9	43.4	44.2
Prince Charles Hospital Admin Prince Charles Hospital Admin Gurnos Road	CF47 9DQ	OSR	52.2	51.5	52.7	53.6	41.0	40.4	41.4	42.2
Prince Charles Hospital Flats - Block 1 Flat 1 Prince Charles Hospital Flat 1 Gurnos Road	CF47 9DQ	Dwelling	54.3	54.6	54.1	54.5	42.9	43.1	42.7	43.0
Prince Charles Hospital Flats - Block 3 Flat 14 Prince Charles Hospital Flat 14 Gurnos Road	CF47 9DQ	Dwelling	50.8	50.8	50.5	51.1	39.7	39.7	39.5	40.0
Prince Charles Hospital Flats - Block 4 Flat 19 Prince Charles Hospital Flat 19 Gurnos Road	CF47 9DQ	Dwelling	50.5	50.3	50.4	50.8	39.4	39.2	39.3	39.7
Prince Charles Hospital Flats - Block 5 Flat 24 Prince Charles Hospital Flat 24 Gurnos Road	CF47 9DQ	Dwelling	49.1	49.1	48.9	49.6	38.2	38.2	38.0	38.6
Prince Charles Hospital Flats - Block 6 Flat 29 Prince Charles Hospital Flat 29 Gurnos Road	CF47 9DQ	Dwelling	47.8	47.7	47.5	48.2	37.0	36.9	36.7	37.3
Prince Charles Hospital Flats - Block 7 Flat 35 Prince Charles Hospital Flat 35 Gurnos Road	CF47 9DQ	Dwelling	47.5	47.3	47.3	47.9	36.7	36.5	36.5	37.1
Prince Charles Hospital Flats - Block 8 Flat 44 Prince Charles Hospital Flat 44 Gurnos Road	CF47 9DQ	Dwelling	47.1	46.8	46.9	47.7	36.4	36.1	36.2	36.9
Prince Charles Hospital Flats - Block 9 Flat 52 Gurnos Road	CF47 9DQ	Dwelling	49.2	49.0	49.2	49.8	38.3	38.0	38.2	38.8
Prince Charles Hospital Flats - Block 10 Flat 54 Gurnos Road	CF47 9DQ	Dwelling	47.2	46.8	46.9	47.6	36.5	36.1	36.2	36.9
Prince Charles Hospital Flats - Block 2 Flat 8 Prince Charles Hospital Flat 8 Gurnos Road	CF47 9DQ	Dwelling	54.5	54.5	54.2	54.6	43.1	43.1	42.8	43.1
Prince Charles Hospital The Bungalow Gurnos Road	CF47 9DQ	Dwelling	50.6	50.3	50.5	51.1	39.5	39.3	39.4	39.9
1 Forsythia Close	CF47 9DR	Dwelling	53.0	52.2	54.3	55.2	41.7	40.9	42.8	43.7
2 Forsythia Close	CF47 9DR	Dwelling	53.9	52.9	55.0	55.9	42.5	41.6	43.4	44.3
3 Forsythia Close	CF47 9DR	Dwelling	52.1	51.2	53.2	54.2	40.9	40.0	41.9	42.7
4 Forsythia Close	CF47 9DR	Dwelling	54.2	53.2	55.2	56.2	42.7	41.8	43.6	44.5
5 Forsythia Close	CF47 9DR	Dwelling	52.9	52.0	53.9	54.9	41.6	40.8	42.5	43.4
6 Forsythia Close	CF47 9DR	Dwelling	53.3	52.5	54.3	55.3	41.9	41.2	42.9	43.7
7 Forsythia Close	CF47 9DR	Dwelling	56.1	55.2	56.9	57.9	44.5	43.7	45.2	46.0
8 Forsythia Close	CF47 9DR	Dwelling	48.2	47.2	49.4	50.3	37.3	36.5	38.4	39.3
9 Forsythia Close	CF47 9DR	Dwelling	48.8	47.9	49.8	50.8	37.9	37.1	38.8	39.7
10 Forsythia Close	CF47 9DR	Dwelling	57.6	56.8	58.3	59.3	45.9	45.1	46.4	47.4
11 Forsythia Close	CF47 9DR	Dwelling	56.4	55.6	57.2	58.2	44.7	44.0	45.4	46.3
12 Forsythia Close	CF47 9DR	Dwelling	53.4	52.6	55.1	56.0	42.1	41.3	43.5	44.4
13 Forsythia Close	CF47 9DR	Dwelling	48.4	47.9	49.3	50.2	37.5	37.1	38.4	39.2

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
14 Forsythia Close	CF47 9DR	Dwelling	56.2	55.4	56.9	57.9	44.5	43.8	45.2	46.1
15 Forsythia Close	CF47 9DR	Dwelling	54.0	53.4	55.7	56.7	42.6	42.1	44.1	45.0
16 Forsythia Close	CF47 9DR	Dwelling	48.2	47.3	50.0	51.0	37.4	36.6	39.0	39.8
17 Forsythia Close	CF47 9DR	Dwelling	57.0	56.2	58.0	59.0	45.3	44.6	46.2	47.1
18 Forsythia Close	CF47 9DR	Dwelling	54.8	54.0	56.0	57.0	43.3	42.6	44.4	45.3
19 Forsythia Close	CF47 9DR	Dwelling	54.3	53.5	55.7	56.7	42.8	42.1	44.1	45.0
20 Forsythia Close	CF47 9DR	Dwelling	54.9	54.1	56.1	57.1	43.4	42.6	44.5	45.4
21 Forsythia Close	CF47 9DR	Dwelling	56.4	55.6	57.6	58.6	44.8	44.1	45.8	46.7
22 Forsythia Close	CF47 9DR	Dwelling	53.6	52.8	54.9	55.9	42.3	41.5	43.4	44.3
23 Forsythia Close	CF47 9DR	Dwelling	49.9	49.0	51.9	52.8	38.9	38.1	40.6	41.5
24 Forsythia Close	CF47 9DR	Dwelling	49.2	48.3	51.1	52.1	38.2	37.4	40.0	40.8
25 Forsythia Close	CF47 9DR	Dwelling	52.9	52.2	54.1	55.1	41.6	40.9	42.7	43.6
26 Forsythia Close	CF47 9DR	Dwelling	53.1	52.6	54.5	55.5	41.8	41.3	43.1	43.9
27 Forsythia Close	CF47 9DR	Dwelling	51.8	51.2	52.9	53.9	40.6	40.1	41.6	42.5
28 Forsythia Close	CF47 9DR	Dwelling	50.8	50.2	52.5	53.5	39.7	39.2	41.3	42.1
29 Forsythia Close	CF47 9DR	Dwelling	54.1	53.9	55.4	56.4	42.7	42.5	43.8	44.7
30 Forsythia Close	CF47 9DR	Dwelling	54.5	54.1	56.2	57.1	43.0	42.7	44.6	45.4
31 Forsythia Close	CF47 9DR	Dwelling	54.9	54.6	56.8	57.7	43.4	43.1	45.1	45.9
32 Forsythia Close	CF47 9DR	Dwelling	55.6	55.2	57.6	58.5	44.1	43.7	45.8	46.6
33 Forsythia Close	CF47 9DR	Dwelling	57.3	57.2	58.8	59.5	45.6	45.5	46.9	47.5
34 Forsythia Close	CF47 9DR	Dwelling	51.0	50.3	52.1	53.0	39.9	39.3	40.8	41.6
35 Forsythia Close	CF47 9DR	Dwelling	50.4	50.0	51.7	52.6	39.4	39.0	40.5	41.3
36 Forsythia Close	CF47 9DR	Dwelling	58.5	57.9	59.9	60.7	46.7	46.1	47.9	48.6
37 Forsythia Close	CF47 9DR	Dwelling	57.5	56.9	59.2	60.0	45.7	45.2	47.2	48.0
38 Forsythia Close	CF47 9DR	Dwelling	50.7	50.4	53.3	54.2	39.7	39.3	42.0	42.8
39 Forsythia Close	CF47 9DR	Dwelling	54.7	53.7	56.3	57.3	43.2	42.3	44.7	45.6
40 Forsythia Close	CF47 9DR	Dwelling	51.0	50.4	52.8	53.7	39.9	39.4	41.5	42.3
41 Forsythia Close	CF47 9DR	Dwelling	53.2	52.3	54.8	55.8	41.9	41.0	43.3	44.2
42 Forsythia Close	CF47 9DR	Dwelling	54.8	54.0	57.1	58.1	43.3	42.6	45.4	46.2
43 Forsythia Close	CF47 9DR	Dwelling	56.3	55.3	58.2	59.2	44.6	43.8	46.4	47.3
44 Forsythia Close	CF47 9DR	Dwelling	55.3	54.5	57.4	58.3	43.7	43.0	45.6	46.5
45 Forsythia Close	CF47 9DR	Dwelling	55.8	54.8	57.7	58.7	44.2	43.3	45.9	46.8
46 Forsythia Close	CF47 9DR	Dwelling	55.3	54.5	57.1	58.1	43.8	43.0	45.4	46.2
47 Forsythia Close	CF47 9DR	Dwelling	51.8	50.8	53.9	54.9	40.6	39.7	42.5	43.4
48 Forsythia Close	CF47 9DR	Dwelling	52.0	51.0	54.1	55.1	40.8	39.8	42.7	43.6
49 Forsythia Close	CF47 9DR	Dwelling	55.2	54.0	57.0	58.0	43.6	42.6	45.3	46.2
50 Forsythia Close	CF47 9DR	Dwelling	54.9	53.9	56.8	57.8	43.4	42.5	45.1	46.0
51 Forsythia Close	CF47 9DR	Dwelling	51.8	50.7	53.4	54.4	40.6	39.6	42.1	43.0
52 Forsythia Close	CF47 9DR	Dwelling	53.3	52.3	55.4	56.5	42.0	41.0	43.9	44.8
53 Forsythia Close	CF47 9DR	Dwelling	56.1	55.0	57.2	58.2	44.5	43.5	45.5	46.4
54 Forsythia Close	CF47 9DR	Dwelling	53.3	52.1	55.1	56.2	41.9	40.9	43.6	44.5
55 Forsythia Close	CF47 9DR	Dwelling	56.0	54.9	56.9	57.9	44.4	43.4	45.2	46.1
56 Forsythia Close	CF47 9DR	Dwelling	53.4	52.3	55.0	56.0	42.0	41.0	43.4	44.4
57 Forsythia Close	CF47 9DR	Dwelling	55.9	54.8	56.9	57.9	44.3	43.3	45.1	46.0
58 Forsythia Close	CF47 9DS	Dwelling	50.2	49.6	51.7	52.6	39.2	38.6	40.5	41.3
59 Forsythia Close	CF47 9DS	Dwelling	50.9	50.1	52.7	53.7	39.8	39.0	41.4	42.3
60 Forsythia Close	CF47 9DS	Dwelling	51.5	50.7	53.3	54.3	40.4	39.6	42.0	42.9
61 Forsythia Close	CF47 9DS	Dwelling	52.1	51.3	53.9	54.9	40.9	40.1	42.5	43.4
62 Forsythia Close	CF47 9DS	Dwelling	51.7	50.8	53.7	54.7	40.5	39.7	42.3	43.2
63 Forsythia Close	CF47 9DS	Dwelling	52.5	51.6	54.5	55.5	41.2	40.4	43.0	43.9
64 Forsythia Close	CF47 9DS	Dwelling	53.9	52.9	55.9	56.9	42.5	41.6	44.3	45.2
65 Forsythia Close	CF47 9DS	Dwelling	54.6	53.7	56.5	57.5	43.1	42.3	44.9	45.8
66 Forsythia Close	CF47 9DS	Dwelling	57.4	56.5	58.1	59.1	45.7	44.9	46.3	47.2
67 Forsythia Close	CF47 9DS	Dwelling	58.0	57.1	58.6	59.5	46.2	45.4	46.7	47.5
68 Forsythia Close	CF47 9DS	Dwelling	58.3	57.5	59.0	59.9	46.5	45.8	47.1	47.9
69 Forsythia Close	CF47 9DS	Dwelling	58.5	57.8	59.1	60.0	46.6	46.0	47.1	47.9
70 Forsythia Close	CF47 9DS	Dwelling	51.5	50.8	53.0	53.9	40.3	39.7	41.7	42.5
71 Forsythia Close	CF47 9DS	Dwelling	49.6	49.3	50.8	51.6	38.6	38.4	39.7	40.4
72 Forsythia Close	CF47 9DS	Dwelling	50.0	49.5	51.5	52.3	39.0	38.6	40.3	41.0
73 Forsythia Close	CF47 9DS	Dwelling	51.6	50.9	53.4	54.3	40.4	39.7	42.0	42.8
74 Forsythia Close	CF47 9DS	Dwelling	52.0	51.6	52.8	53.5	40.8	40.4	41.5	42.1
75 Forsythia Close	CF47 9DS	Dwelling	50.8	50.2	52.3	53.2	39.7	39.2	41.0	41.8
76 Forsythia Close	CF47 9DS	Dwelling	66.9	67.0	67.4	67.6	54.2	54.3	54.6	54.9
77 Forsythia Close	CF47 9DS	Dwelling	64.1	64.0	64.3	64.7	51.6	51.6	51.9	52.2
78 Forsythia Close	CF47 9DS	Dwelling	51.7	50.9	52.9	53.8	40.5	39.8	41.6	42.4
79 Forsythia Close	CF47 9DS	Dwelling	57.3	56.8	57.9	58.6	45.5	45.1	46.1	46.7
80 Forsythia Close	CF47 9DS	Dwelling	51.2	50.3	52.5	53.5	40.0	39.3	41.3	42.1
81 Forsythia Close	CF47 9DS	Dwelling	53.4	52.6	54.3	55.1	42.1	41.3	42.8	43.6
82 Forsythia Close	CF47 9DS	Dwelling	52.3	51.4	53.4	54.4	41.0	40.3	42.1	42.9
83 Forsythia Close	CF47 9DS	Dwelling	54.0	53.6	54.7	55.4	42.6	42.2	43.2	43.8
86 Forsythia Close	CF47 9DS	Dwelling	50.5	50.2	51.3	52.0	39.5	39.2	40.2	40.8
Prince Charles Hospital Wards 3 To 4 And 9 And 19 Gurnos Road	CF47 9DT	Dwelling	52.2	51.5	52.7	53.6	41.0	40.4	41.4	42.2
1 Fernhill Close	CF47 9DU	Dwelling	57.3	56.4	57.7	58.6	45.6	44.7	45.9	46.7
2 Fernhill Close	CF47 9DU	Dwelling	53.8	53.0	54.5	55.4	42.4	41.6	43.0	43.8
3 Fernhill Close	CF47 9DU	Dwelling	50.5	50.0	51.3	52.1	39.4	39.0	40.1	40.8
4 Fernhill Close	CF47 9DU	Dwelling	52.3	51.6	53.4	54.3	41.0	40.4	42.0	42.8
5 Fernhill Close	CF47 9DU	Dwelling	49.9	49.5	50.5	51.2	38.9	38.6	39.4	40.1
6 Fernhill Close	CF47 9DU	Dwelling	51.1	50.5	52.1	52.9	40.0	39.5	40.8	41.6
7 Fernhill Close	CF47 9DU	Dwelling	46.9	46.3	47.3	48.1	36.2	35.6	36.5	37.3
8 Fernhill Close	CF47 9DU	Dwelling	51.6	50.8	52.6	53.5	40.4	39.7	41.3	42.1
9 Fernhill Close	CF47 9DU	Dwelling	53.0	52.1	53.8	54.7	41.7	40.9	42.4	43.2
10 Fernhill Close	CF47 9DU	Dwelling	51.3	50.7	52.3	53.1	40.2	39.6	41.1	41.8
11 Fernhill Close	CF47 9DU	Dwelling	52.4	51.8	52.7	53.5	41.1	40.6	41.4	42.1
12 Fernhill Close	CF47 9DU	Dwelling	51.2	50.6	52.1	53.0	40.0	39.5	40.9	41.6
13 Fernhill Close	CF47 9DU	Dwelling	51.9	51.4	52.1	52.9	40.7	40.3	40.9	41.6
14 Fernhill Close	CF47 9DU	Dwelling	50.7	50.2	51.6	52.4	39.6	39.1	40.4	41.2
15 Fernhill Close	CF47 9DU	Dwelling	52.5	51.9	52.8	53.7	41.2	40.7	41.5	42.3
16 Fernhill Close	CF47 9DU	Dwelling	50.6	50.0	50.8	51.6	39.5	39.0	39.7	40.4
2 Lupin Close	CF47 9DW	Dwelling	55.2	55.4	56.0	56.7	43.7	43.8	44.3	45.0
4 Lupin Close	CF47 9DW	Dwelling	55.5	55.7	56.5	57.2	43.9	44.1	44.8	45.5
6 Lupin Close	CF47 9DW	Dwelling	55.0	55.0	56.0	56.9	43.4	43.4	44.4	45.1
8 Lupin Close	CF47 9DW	Dwelling	54.8	54.7	55.8	56.7	43.3	43.2	44.2	45.0
10 Lupin Close	CF47 9DW	Dwelling	56.0	55.8	57.0	58.0	44.4	44.2	45.3	46.2
12 Lupin Close	CF47 9DW	Dwelling	55.8	55.5	56.9	57.8	44.2	44.0	45.2	46.0
14 Lupin Close	CF47 9DW	Dwelling	54.7	54.5	55.8	56.7	43.2	43.0	44.2	45.0
16 Lupin Close	CF47 9DW	Dwelling	47.2	46.8	48.8	49.6	36.5	36.1	37.9	38.6
18 Lupin Close	CF47 9DW	Dwelling	50.8	50.6	52.3	53.2	39.7	39.5	41.1	41.9
20 Lupin Close	CF47 9DW	Dwelling	47.1	46.6	48.8	49.7	36.4	35.9	37.9	38.7
22 Lupin Close	CF47 9DW	Dwelling	48.3	47.8	50.0	50.9	37.5	37.0	39.0	39.8
24 Lupin Close	CF47 9DW	Dwelling	48.0	47.4	49.7	50.6	37.2	36.7	38.7	39.5
26 Lupin Close	CF47 9DW	Dwelling	50.5	50.0	52.0	52.9	39.4	39.0	40.8	41.6
28 Lupin Close	CF47 9DW	Dwelling	50.6	50.1	52.1	53.0	39.5	39.1	40.8	41.7
30 Lupin Close	CF47 9DW	Dwelling	48.7	48.1	50.2	51.1	37.8	37.3	39.1	40.0
32 Lupin Close	CF47 9DW	Dwelling	49.4	48.9	50.9	51.8	38.5	38.0	39.8	40.6
34 Lupin Close	CF47 9DW	Dwelling	47.2	46.5	48.6	49.5	36.5	35.9	37.7	38.5
36 Lupin Close	CF47 9DW	Dwelling	49.2	48.6	50.6	51.5	38.3	37.7	39.5	40.3
38 Lupin Close	CF47 9DW	Dwelling	49.7	49.0	51.0	51.9	38.7	38.1	39.9	40.7

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
40 Lupin Close	CF47 9DW	Dwelling	51.7	51.1	53.0	54.0	40.5	40.0	41.7	42.6
42 Lupin Close	CF47 9DW	Dwelling	50.4	49.5	52.4	53.4	39.3	38.5	41.1	42.0
44 Lupin Close	CF47 9DW	Dwelling	50.0	49.1	52.0	52.9	39.0	38.2	40.7	41.6
46 Lupin Close	CF47 9DW	Dwelling	49.8	49.0	51.7	52.6	38.8	38.1	40.5	41.3
48 Lupin Close	CF47 9DW	Dwelling	55.2	55.0	56.3	57.3	43.7	43.4	44.6	45.6
50 Lupin Close	CF47 9DW	Dwelling	51.0	50.2	52.8	53.8	39.9	39.1	41.5	42.4
52 Lupin Close	CF47 9DW	Dwelling	50.9	50.0	52.7	53.7	39.8	38.9	41.4	42.3
54 Lupin Close	CF47 9DW	Dwelling	48.8	48.0	50.5	51.5	37.9	37.1	39.4	40.3
56 Lupin Close	CF47 9DW	Dwelling	52.3	51.4	54.1	55.1	41.1	40.2	42.7	43.6
58 Lupin Close	CF47 9DW	Dwelling	51.0	50.1	52.7	53.7	39.9	39.0	41.4	42.3
60 Lupin Close	CF47 9DW	Dwelling	51.7	50.8	53.4	54.4	40.5	39.7	42.0	42.9
1 Pen-Y-Dre	CF47 9DY	Dwelling	56.4	56.3	59.4	60.2	44.8	44.7	47.5	48.2
2 Pen-Y-Dre	CF47 9DY	Dwelling	51.9	52.0	53.7	54.4	40.7	40.8	42.3	42.9
3 Pen-Y-Dre	CF47 9DY	Dwelling	51.9	51.2	53.3	54.2	40.7	40.1	42.0	42.7
4 Pen-Y-Dre	CF47 9DY	Dwelling	60.0	59.1	61.4	62.3	48.0	47.2	49.2	50.0
5 Pen-Y-Dre	CF47 9DY	Dwelling	48.5	48.0	52.3	53.2	37.6	37.2	41.0	41.8
6 Pen-Y-Dre	CF47 9DY	Dwelling	52.3	51.7	54.2	55.1	41.1	40.5	42.7	43.5
7 Pen-Y-Dre	CF47 9DY	Dwelling	58.3	57.3	59.6	60.6	46.5	45.6	47.6	48.5
8 Pen-Y-Dre	CF47 9DY	Dwelling	52.6	52.0	54.1	55.0	41.3	40.7	42.7	43.5
9 Pen-Y-Dre	CF47 9DY	Dwelling	54.1	53.2	56.4	57.4	42.7	41.9	44.8	45.7
10 Pen-Y-Dre	CF47 9DY	Dwelling	53.9	53.0	56.5	57.5	42.5	41.7	44.8	45.7
11 Pen-Y-Dre	CF47 9DY	Dwelling	52.0	51.2	55.3	56.2	40.8	40.1	43.7	44.6
12 Pen-Y-Dre	CF47 9DY	Dwelling	50.9	50.2	54.4	55.3	39.8	39.2	42.9	43.8
13 Pen-Y-Dre	CF47 9DY	Dwelling	55.2	54.2	57.5	58.5	43.7	42.8	45.7	46.6
14 Pen-Y-Dre	CF47 9DY	Dwelling	53.7	52.7	55.1	56.1	42.3	41.4	43.6	44.5
15 Pen-Y-Dre	CF47 9DY	Dwelling	55.7	54.7	58.4	59.4	44.1	43.2	46.5	47.4
16 Pen-Y-Dre	CF47 9DY	Dwelling	56.5	55.5	59.0	60.0	44.8	43.9	47.1	48.0
1 Thomas Dyke Close	CF47 9DZ	Dwelling	63.4	63.7	63.3	63.9	51.0	51.3	51.0	51.5
2 Thomas Dyke Close	CF47 9DZ	Dwelling	56.9	57.2	56.9	57.5	45.2	45.5	45.2	45.7
3 Thomas Dyke Close	CF47 9DZ	Dwelling	57.2	57.5	57.2	57.8	45.5	45.7	45.5	46.0
4 Thomas Dyke Close	CF47 9DZ	Dwelling	51.1	51.4	51.1	51.7	40.0	40.2	40.0	40.5
Lower Flat 5 Thomas Dyke Close	CF47 9DZ	Dwelling	51.7	52.1	51.7	52.3	40.6	40.8	40.5	41.0
Upper Flat 6 Thomas Dyke Close	CF47 9DZ	Dwelling	51.7	52.1	51.7	52.3	40.6	40.8	40.5	41.0
7 Thomas Dyke Close	CF47 9DZ	Dwelling	48.6	49.0	48.5	49.2	37.7	38.1	37.7	38.2
8 Thomas Dyke Close	CF47 9DZ	Dwelling	48.8	49.2	48.7	49.3	37.9	38.2	37.8	38.4
9 Thomas Dyke Close	CF47 9DZ	Dwelling	48.5	48.9	48.4	49.1	37.7	38.0	37.5	38.1
10 Thomas Dyke Close	CF47 9DZ	Dwelling	44.9	45.2	45.0	45.6	34.4	34.7	34.4	35.0
Lower Flat 11 Thomas Dyke Close	CF47 9DZ	Dwelling	50.6	51.0	50.5	51.2	39.6	39.8	39.5	40.0
Upper Flat 12 Thomas Dyke Close	CF47 9DZ	Dwelling	50.6	51.0	50.5	51.2	39.6	39.8	39.5	40.0
13 Thomas Dyke Close	CF47 9DZ	Dwelling	49.2	49.5	49.2	49.8	38.3	38.5	38.3	38.8
14 Thomas Dyke Close	CF47 9DZ	Dwelling	48.9	49.2	48.9	49.5	38.0	38.3	38.0	38.5
22 Thomas Dyke Close	CF47 9DZ	Dwelling	49.9	50.3	49.9	50.5	38.9	39.2	38.9	39.4
23 Thomas Dyke Close	CF47 9DZ	Dwelling	56.0	56.3	56.0	56.5	44.4	44.6	44.4	44.8
24 Thomas Dyke Close	CF47 9DZ	Dwelling	55.0	55.3	55.0	55.6	43.5	43.8	43.5	44.0
25 Thomas Dyke Close	CF47 9DZ	Dwelling	52.8	53.1	52.8	53.4	41.5	41.8	41.5	42.0
26 Thomas Dyke Close	CF47 9DZ	Dwelling	56.6	56.9	56.5	57.1	44.9	45.2	44.8	45.4
27 Thomas Dyke Close	CF47 9DZ	Dwelling	55.8	56.1	55.8	56.4	44.2	44.5	44.2	44.7
28 Thomas Dyke Close	CF47 9DZ	Dwelling	57.2	57.5	57.2	57.8	45.5	45.8	45.5	46.0
Lower Flat 29 Thomas Dyke Close	CF47 9DZ	Dwelling	64.2	64.5	64.2	64.8	51.8	52.1	51.8	52.3
Upper Flat 30 Thomas Dyke Close	CF47 9DZ	Dwelling	64.2	64.5	64.2	64.8	51.8	52.1	51.8	52.3
31 Thomas Dyke Close	CF47 9DZ	Dwelling	66.3	66.6	66.3	66.9	53.7	54.0	53.7	54.2
Lower Flat 32 Thomas Dyke Close	CF47 9DZ	Dwelling	65.3	65.6	65.3	65.9	52.8	53.1	52.8	53.2
Upper Flat 33 Thomas Dyke Close	CF47 9DZ	Dwelling	65.3	65.6	65.3	65.9	52.8	53.1	52.8	53.2
1 Pen Gurnos	CF47 9EA	Dwelling	65.7	65.5	65.9	66.3	53.1	52.9	53.3	53.6
2 Pen Gurnos	CF47 9EA	Dwelling	63.7	63.4	63.9	64.4	51.3	51.0	51.5	51.9
3 Pen Gurnos	CF47 9EA	Dwelling	57.5	57.0	58.6	59.3	45.7	45.3	46.7	47.4
4 Pen Gurnos	CF47 9EA	Dwelling	56.4	55.9	57.7	58.5	44.8	44.3	45.9	46.6
5 Pen Gurnos	CF47 9EA	Dwelling	56.0	55.0	58.9	59.9	44.4	43.4	47.0	47.9
6 Pen Gurnos	CF47 9EA	Dwelling	56.3	55.3	59.1	60.2	44.7	43.7	47.2	48.1
7 Pen Gurnos	CF47 9EA	Dwelling	57.6	56.5	60.0	61.0	45.8	44.9	48.0	48.9
8 Pen Gurnos	CF47 9EA	Dwelling	57.0	55.8	59.5	60.6	45.2	44.2	47.6	48.5
9 Pen Gurnos	CF47 9EA	Dwelling	56.0	55.0	58.3	59.3	44.4	43.4	46.4	47.3
10 Pen Gurnos	CF47 9EA	Dwelling	57.0	55.9	58.5	59.6	45.3	44.3	46.7	47.6
11 Pen Gurnos	CF47 9EA	Dwelling	55.7	54.7	56.5	57.5	44.1	43.2	44.9	45.7
12 Pen Gurnos	CF47 9EA	Dwelling	53.3	52.6	56.1	57.0	41.9	41.3	44.5	45.3
13 Pen Gurnos	CF47 9EA	Dwelling	56.8	55.9	58.9	59.9	45.1	44.3	47.0	47.8
14 Pen Gurnos	CF47 9EA	Dwelling	57.0	56.1	59.2	60.1	45.3	44.5	47.2	48.1
15 Pen Gurnos	CF47 9EA	Dwelling	57.5	56.7	59.6	60.5	45.8	45.0	47.6	48.4
16 Pen Gurnos	CF47 9EA	Dwelling	57.9	57.0	59.8	60.8	46.1	45.3	47.8	48.7
17 Pen Gurnos	CF47 9EA	Dwelling	58.6	58.0	60.6	61.4	46.7	46.2	48.5	49.3
18 Pen Gurnos	CF47 9EA	Dwelling	55.8	55.1	57.1	57.9	44.2	43.6	45.4	46.1
19 Pen Gurnos	CF47 9EA	Dwelling	55.9	55.3	57.3	58.1	44.3	43.7	45.5	46.3
20 Pen Gurnos	CF47 9EA	Dwelling	54.5	53.8	56.2	57.1	43.1	42.4	44.5	45.3
21 Pen Gurnos	CF47 9EA	Dwelling	56.5	55.7	57.9	58.8	44.8	44.1	46.1	46.9
22 Pen Gurnos	CF47 9EA	Dwelling	56.6	55.9	57.9	58.8	45.0	44.2	46.1	46.9
23 Pen Gurnos	CF47 9EA	Dwelling	56.3	55.7	57.7	58.5	44.6	44.2	46.0	46.7
24 Pen Gurnos	CF47 9EA	Dwelling	56.9	56.3	58.3	59.1	45.2	44.7	46.5	47.2
25 Pen Gurnos	CF47 9EA	Dwelling	56.9	56.4	58.5	59.3	45.2	44.7	46.6	47.4
26 Pen Gurnos	CF47 9EA	Dwelling	55.6	54.8	57.5	58.4	44.0	43.3	45.7	46.5
27 Pen Gurnos	CF47 9EA	Dwelling	57.2	56.7	58.1	58.8	45.4	45.0	46.2	46.9
28 Pen Gurnos	CF47 9EA	Dwelling	57.8	57.4	58.7	59.4	46.0	45.6	46.8	47.4
29 Pen Gurnos	CF47 9EA	Dwelling	60.8	59.9	61.5	62.4	48.7	47.9	49.3	50.1
30 Pen Gurnos	CF47 9EA	Dwelling	61.4	61.3	62.0	62.5	49.2	49.1	49.8	50.3
31 Pen Gurnos	CF47 9EA	Dwelling	64.3	64.3	64.6	64.9	51.9	51.8	52.1	52.4
32 Pen Gurnos	CF47 9EA	Dwelling	66.3	66.3	66.4	66.7	53.7	53.7	53.7	54.0
Ty Gwaunfarren Residential Home Penyfan View	CF47 9EB	Dwelling	47.8	47.1	48.8	49.6	37.0	36.4	37.9	38.6
1 Parc Brychan	CF47 9EF	Dwelling	45.8	47.9	46.9	47.2	35.2	37.1	36.2	36.5
2 Parc Brychan	CF47 9EF	Dwelling	46.9	48.7	47.8	48.3	36.2	37.9	37.0	37.4
3 Parc Brychan	CF47 9EF	Dwelling	46.7	49.1	48.0	48.2	36.0	38.2	37.2	37.4
4 Parc Brychan	CF47 9EF	Dwelling	47.7	50.2	48.9	49.1	36.9	39.2	38.0	38.1
5 Parc Brychan	CF47 9EF	Dwelling	50.1	52.3	51.2	51.6	39.1	41.0	40.1	40.4
6 Parc Brychan	CF47 9EF	Dwelling	48.5	51.0	49.8	49.9	37.6	39.9	38.8	38.9
7 Parc Brychan	CF47 9EF	Dwelling	52.3	54.4	53.4	53.7	41.1	43.0	42.0	42.3
8 Parc Brychan	CF47 9EF	Dwelling	45.9	47.0	46.7	47.5	35.3	36.3	36.0	36.7
9 Parc Brychan	CF47 9EF	Dwelling	43.1	44.1	43.7	44.4	32.7	33.7	33.3	34.0
10 Parc Brychan	CF47 9EF	Dwelling	47.0	47.7	47.4	48.3	36.2	36.9	36.6	37.4
11 Parc Brychan	CF47 9EF	Dwelling	48.2	50.1	49.1	49.5	37.4	39.1	38.2	38.5
12 Parc Brychan	CF47 9EF	Dwelling	50.3	52.1	51.2	51.7	39.3	40.9	40.1	40.5
13 Parc Brychan	CF47 9EF	Dwelling	47.9	50.0	48.9	49.2	37.1	39.0	38.0	38.3
14 Parc Brychan	CF47 9EF	Dwelling	50.1	52.0	50.9	51.3	39.1	40.8	39.8	40.1
15 Parc Brychan	CF47 9EF	Dwelling	46.2	47.9	47.3	47.8	35.6	37.1	36.5	37.0
16 Parc Brychan	CF47 9EF	Dwelling	47.2	48.6	48.0	48.7	36.5	37.7	37.2	37.8
17 Parc Brychan	CF47 9EF	Dwelling	47.9	48.9	48.5	49.3	37.1	38.0	37.7	38.3
18 Parc Brychan	CF47 9EF	Dwelling	46.2	47.4	46.9	47.6	35.6	36.7	36.2	36.8
19 Parc Brychan	CF47 9EF	Dwelling	45.6	46.3	46.2	47.1	35.1	35.7	35.6	36.4
35 Greenfield Terrace	CF47 9HN	Dwelling	52.2	53.7	52.8	53.2	40.9	42.3	41.5	41.9
36 Greenfield Terrace	CF47 9HN	Dwelling	44.2	44.9	44.5	45.4	33.8	34.3	34.0	34.8

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
37 Greenfield Terrace	CF47 9HN	Dwelling	41.4	42.1	41.8	42.6	31.3	31.9	31.6	32.3
38 Greenfield Terrace	CF47 9HN	Dwelling	46.1	46.8	46.4	47.3	35.5	36.1	35.8	36.6
1 Marshall Crescent	CF47 9JA	Dwelling	59.7	60.7	60.0	61.2	47.7	48.6	48.0	49.1
2 Marshall Crescent	CF47 9JA	Dwelling	67.8	68.8	68.0	69.2	55.0	55.9	55.2	56.2
3 Marshall Crescent	CF47 9JA	Dwelling	69.8	70.9	69.7	71.0	56.8	57.8	56.7	57.9
4 Marshall Crescent	CF47 9JA	Dwelling	67.7	68.8	67.9	69.1	54.9	55.9	55.1	56.1
5 Marshall Crescent	CF47 9JA	Dwelling	57.8	58.9	58.1	59.2	46.0	47.0	46.2	47.3
6 Marshall Crescent	CF47 9JA	Dwelling	65.7	66.7	66.1	67.3	53.1	54.0	53.5	54.5
7 Marshall Crescent	CF47 9JA	Dwelling	69.5	70.6	69.4	70.7	56.5	57.5	56.5	57.6
8 Marshall Crescent	CF47 9JA	Dwelling	68.7	69.8	68.5	69.8	55.8	56.8	55.7	56.8
9 Marshall Crescent	CF47 9JA	Dwelling	50.7	51.4	51.7	52.6	39.7	40.3	40.5	41.3
10 Marshall Crescent	CF47 9JA	Dwelling	68.2	69.3	67.9	69.1	55.4	56.4	55.1	56.2
11 Marshall Crescent	CF47 9JA	Dwelling	49.4	50.0	49.8	50.8	38.4	39.0	38.8	39.7
12 Marshall Crescent	CF47 9JA	Dwelling	66.2	67.2	66.2	67.4	53.5	54.5	53.5	54.6
13 Marshall Crescent	CF47 9JA	Dwelling	51.0	51.7	51.9	52.7	39.9	40.5	40.7	41.4
14 Marshall Crescent	CF47 9JA	Dwelling	68.5	69.6	68.4	69.7	55.6	56.6	55.6	56.7
15 Marshall Crescent	CF47 9JA	Dwelling	50.5	51.1	50.7	51.6	39.4	39.9	39.6	40.4
16 Marshall Crescent	CF47 9JA	Dwelling	67.4	68.5	67.4	68.7	54.7	55.7	54.7	55.8
17 Marshall Crescent	CF47 9JA	Dwelling	51.6	52.3	52.3	53.1	40.4	41.1	41.0	41.8
18 Marshall Crescent	CF47 9JA	Dwelling	65.2	66.3	65.3	66.5	52.7	53.6	52.7	53.9
20 Marshall Crescent	CF47 9JA	Dwelling	62.0	63.1	62.1	63.3	49.8	50.7	49.9	50.9
22 Marshall Crescent	CF47 9JA	Dwelling	59.7	60.7	59.6	60.8	47.7	48.6	47.6	48.7
24 Marshall Crescent	CF47 9JA	Dwelling	54.9	55.8	55.3	56.4	43.4	44.2	43.7	44.7
26 Marshall Crescent	CF47 9JA	Dwelling	56.4	57.3	56.7	57.8	44.7	45.6	45.0	46.0
28 Marshall Crescent	CF47 9JA	Dwelling	50.0	50.6	51.0	51.9	39.0	39.6	39.9	40.7
30 Marshall Crescent	CF47 9JA	Dwelling	52.8	53.4	53.1	54.1	41.5	42.0	41.8	42.7
32 Marshall Crescent	CF47 9JA	Dwelling	50.1	50.9	50.9	51.8	39.1	39.8	39.8	40.6
34 Marshall Crescent	CF47 9JA	Dwelling	46.5	47.0	47.0	47.9	35.8	36.3	36.3	37.1
36 Marshall Crescent	CF47 9JA	Dwelling	50.1	50.8	50.9	51.7	39.1	39.7	39.8	40.5
1 Mitchell Crescent	CF47 9JB	Dwelling	67.2	67.8	67.0	68.2	54.5	55.0	54.3	55.3
2 Mitchell Crescent	CF47 9JB	Dwelling	61.3	61.9	60.8	62.0	49.2	49.7	48.7	49.7
3 Mitchell Crescent	CF47 9JB	Dwelling	64.1	64.7	63.8	64.9	51.7	52.3	51.4	52.4
4 Mitchell Crescent	CF47 9JB	Dwelling	64.0	64.8	64.0	65.2	51.6	52.3	51.6	52.6
5 Mitchell Crescent	CF47 9JB	Dwelling	64.4	65.0	64.3	65.4	52.0	52.5	51.8	52.8
6 Mitchell Crescent	CF47 9JB	Dwelling	63.5	64.4	63.5	64.7	51.1	52.0	51.1	52.2
7 Mitchell Crescent	CF47 9JB	Dwelling	61.9	62.4	61.4	62.6	49.7	50.1	49.3	50.3
8 Mitchell Crescent	CF47 9JB	Dwelling	63.7	64.6	63.6	64.8	51.3	52.2	51.2	52.3
9 Mitchell Crescent	CF47 9JB	Dwelling	62.0	62.5	61.6	62.7	49.8	50.2	49.4	50.4
10 Mitchell Crescent	CF47 9JB	Dwelling	56.7	57.3	56.8	57.9	45.0	45.6	45.1	46.1
11 Mitchell Crescent	CF47 9JB	Dwelling	57.2	57.4	57.0	58.0	45.4	45.7	45.3	46.2
12 Mitchell Crescent	CF47 9JB	Dwelling	63.8	64.7	63.8	65.1	51.4	52.2	51.4	52.5
13 Mitchell Crescent	CF47 9JB	Dwelling	51.3	51.3	50.9	51.9	40.2	40.1	39.8	40.7
14 Mitchell Crescent	CF47 9JB	Dwelling	61.0	61.9	61.2	62.4	48.8	49.7	49.0	50.2
15 Mitchell Crescent	CF47 9JB	Dwelling	63.0	63.6	62.7	63.8	50.7	51.3	50.4	51.4
16 Mitchell Crescent	CF47 9JB	Dwelling	62.8	63.7	62.9	64.1	50.5	51.3	50.6	51.7
17 Mitchell Crescent	CF47 9JB	Dwelling	62.4	63.0	62.1	63.2	50.1	50.7	49.8	50.8
18 Mitchell Crescent	CF47 9JB	Dwelling	62.5	63.4	62.6	63.8	50.2	51.1	50.3	51.4
19 Mitchell Crescent	CF47 9JB	Dwelling	61.3	62.0	61.1	62.2	49.2	49.8	48.9	49.9
20 Mitchell Crescent	CF47 9JB	Dwelling	63.6	64.5	63.6	64.8	51.2	52.1	51.2	52.3
21 Mitchell Crescent	CF47 9JB	Dwelling	62.9	63.5	62.7	63.8	50.6	51.1	50.4	51.4
22 Mitchell Crescent	CF47 9JB	Dwelling	61.1	62.1	61.1	62.3	49.0	49.8	49.0	50.1
23 Mitchell Crescent	CF47 9JB	Dwelling	63.3	64.0	63.6	64.7	50.9	51.6	51.2	52.2
24 Mitchell Crescent	CF47 9JB	Dwelling	64.5	65.5	64.5	65.6	52.0	52.9	52.0	53.1
25 Mitchell Crescent	CF47 9JB	Dwelling	61.9	62.8	62.6	63.7	49.7	50.5	50.3	51.3
26 Mitchell Crescent	CF47 9JD	Dwelling	59.5	60.5	59.8	60.9	47.5	48.4	47.8	48.8
27 Mitchell Crescent	CF47 9JD	Dwelling	65.8	66.6	66.3	67.4	53.2	54.0	53.7	54.6
28 Mitchell Crescent	CF47 9JD	Dwelling	64.0	64.7	64.0	64.8	51.6	52.2	51.6	52.3
29 Mitchell Crescent	CF47 9JD	Dwelling	60.6	61.5	61.3	62.4	48.5	49.3	49.2	50.1
30 Mitchell Crescent	CF47 9JD	Dwelling	54.0	54.7	54.2	55.1	42.5	43.2	42.8	43.6
31 Mitchell Crescent	CF47 9JD	Dwelling	57.4	58.3	58.4	59.5	45.6	46.4	46.6	47.5
32 Mitchell Crescent	CF47 9JD	Dwelling	56.3	57.0	56.2	57.2	44.7	45.3	44.5	45.5
33 Mitchell Crescent	CF47 9JD	Dwelling	64.0	64.8	64.1	65.1	51.6	52.3	51.7	52.5
34 Mitchell Crescent	CF47 9JD	Dwelling	54.5	55.2	54.9	55.7	43.1	43.7	43.4	44.1
35 Mitchell Crescent	CF47 9JD	Dwelling	57.3	58.0	57.2	58.2	45.6	46.1	45.5	46.3
36 Mitchell Crescent	CF47 9JD	Dwelling	58.0	58.6	58.1	58.8	46.2	46.7	46.3	46.9
37 Mitchell Crescent	CF47 9JD	Dwelling	58.2	58.9	58.3	59.1	46.4	47.0	46.4	47.2
38 Mitchell Crescent	CF47 9JD	Dwelling	54.6	55.2	54.8	55.8	43.1	43.7	43.3	44.2
39 Mitchell Crescent	CF47 9JD	Dwelling	53.3	54.0	53.4	54.3	42.0	42.5	42.1	42.8
40 Mitchell Crescent	CF47 9JD	Dwelling	53.9	54.5	53.9	54.8	42.5	43.0	42.5	43.3
41 Mitchell Crescent	CF47 9JD	Dwelling	58.2	58.9	58.3	59.1	46.4	47.0	46.5	47.1
42 Mitchell Crescent	CF47 9JD	Dwelling	55.8	56.5	56.0	56.7	44.2	44.8	44.4	45.0
43 Mitchell Crescent	CF47 9JD	Dwelling	53.3	53.9	53.4	54.2	42.0	42.5	42.1	42.7
45 Mitchell Crescent	CF47 9JD	Dwelling	58.8	59.4	58.9	59.7	46.9	47.5	47.0	47.7
47 Mitchell Crescent	CF47 9JD	Dwelling	51.2	51.4	51.1	52.0	40.1	40.2	40.0	40.8
49 Mitchell Crescent	CF47 9JD	Dwelling	50.6	50.8	50.6	51.5	39.6	39.7	39.5	40.3
51 Mitchell Crescent	CF47 9JD	Dwelling	57.5	58.0	57.5	58.3	45.7	46.2	45.8	46.4
53 Mitchell Crescent	CF47 9JD	Dwelling	50.1	50.3	50.1	51.0	39.0	39.2	39.1	39.8
44 Mitchell Crescent	CF47 9JE	Dwelling	47.8	48.5	48.0	48.7	37.0	37.6	37.2	37.8
46 Mitchell Crescent	CF47 9JE	Dwelling	66.6	67.3	66.6	67.3	53.9	54.5	53.9	54.5
48 Mitchell Crescent	CF47 9JE	Dwelling	65.9	66.6	65.9	66.6	53.3	53.9	53.3	53.9
50 Mitchell Crescent	CF47 9JE	Dwelling	66.9	67.6	66.8	67.5	54.2	54.8	54.1	54.8
52 Mitchell Crescent	CF47 9JE	Dwelling	65.6	66.3	65.5	66.3	53.0	53.7	53.0	53.6
54 Mitchell Crescent	CF47 9JE	Dwelling	67.6	68.3	67.6	68.3	54.9	55.5	54.8	55.4
79 Mitchell Crescent	CF47 9JE	Dwelling	52.0	52.4	52.1	52.8	40.8	41.2	40.8	41.5
81 Mitchell Crescent	CF47 9JE	Dwelling	50.7	50.9	50.8	51.6	39.7	39.8	39.7	40.4
83 Mitchell Crescent	CF47 9JE	Dwelling	48.6	48.7	48.6	49.5	37.8	37.8	37.8	38.5
85 Mitchell Crescent	CF47 9JE	Dwelling	51.3	51.6	51.3	52.1	40.2	40.4	40.2	40.8
55 Mitchell Crescent	CF47 9JF	Dwelling	53.0	53.3	52.8	53.7	41.7	42.0	41.5	42.3
57 Mitchell Crescent	CF47 9JF	Dwelling	50.3	50.9	50.5	51.2	39.3	39.8	39.4	40.1
59 Mitchell Crescent	CF47 9JF	Dwelling	55.9	56.7	55.9	56.7	44.3	45.0	44.3	45.0
61 Mitchell Crescent	CF47 9JF	Dwelling	61.3	62.0	61.3	62.0	49.2	49.8	49.1	49.8
63 Mitchell Crescent	CF47 9JF	Dwelling	56.4	57.1	56.5	57.2	44.8	45.4	44.8	45.5
65 Mitchell Crescent	CF47 9JF	Dwelling	60.4	61.1	60.4	61.1	48.4	49.0	48.3	49.0
67 Mitchell Crescent	CF47 9JF	Dwelling	56.0	56.6	56.0	56.8	44.4	45.0	44.4	45.1
69 Mitchell Crescent	CF47 9JF	Dwelling	60.6	61.3	60.6	61.3	48.6	49.2	48.5	49.1
71 Mitchell Crescent	CF47 9JF	Dwelling	50.2	50.6	50.2	51.0	39.2	39.5	39.2	39.9
73 Mitchell Crescent	CF47 9JF	Dwelling	50.6	51.0	50.6	51.4	39.5	39.8	39.6	40.2
75 Mitchell Crescent	CF47 9JF	Dwelling	64.6	65.3	64.5	65.3	52.1	52.7	52.1	52.7
77 Mitchell Crescent	CF47 9JF	Dwelling	64.5	65.2	64.5	65.2	52.1	52.7	52.0	52.7
1 Hillcrest	CF47 9JG	Dwelling	45.4	45.8	46.0	46.8	34.9	35.2	35.4	36.1
2 Hillcrest	CF47 9JG	Dwelling	45.6	46.0	46.2	47.1	35.0	35.4	35.6	36.3
3 Hillcrest	CF47 9JG	Dwelling	45.9	46.3	46.5	47.4	35.3	35.7	35.8	36.6
4 Hillcrest	CF47 9JG	Dwelling	46.3	46.8	47.0	47.9	35.7	36.1	36.3	37.0
5 Hillcrest	CF47 9JG	Dwelling	46.8	47.3	47.6	48.5	36.1	36.5	36.8	37.6
6 Hillcrest	CF47 9JG	Dwelling	47.0	47.5	47.8	48.7	36.3	36.7	37.0	37.8
7 Hillcrest	CF47 9JG	Dwelling	46.9	47.4	47.6	48.5	36.2	36.6	36.8	37.6
8 Hillcrest	CF47 9JG	Dwelling	47.5	48.0	48.0	48.9	36.7	37.2	37.2	38.0

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
9 Hillcrest	CF47 9JG	Dwelling	49.8	50.8	50.4	51.1	38.8	39.7	39.3	39.9
10 Hillcrest	CF47 9JG	Dwelling	51.3	52.2	51.9	52.6	40.2	40.9	40.7	41.3
11 Hillcrest	CF47 9JG	Dwelling	50.2	51.2	50.9	51.7	39.2	40.0	39.8	40.5
12 Hillcrest	CF47 9JG	Dwelling	48.7	49.2	49.2	50.1	37.8	38.3	38.3	39.1
13 Hillcrest	CF47 9JG	Dwelling	48.2	48.7	48.7	49.6	37.3	37.8	37.8	38.6
14 Hillcrest	CF47 9JG	Dwelling	47.1	47.6	47.7	48.6	36.3	36.8	36.9	37.7
15 Hillcrest	CF47 9JG	Dwelling	46.6	47.1	47.3	48.2	35.9	36.4	36.6	37.4
16 Hillcrest	CF47 9JG	Dwelling	46.4	46.8	47.1	47.9	35.7	36.1	36.3	37.1
17 Hillcrest	CF47 9JG	Dwelling	46.8	47.2	47.4	48.3	36.1	36.5	36.7	37.5
18 Hillcrest	CF47 9JG	Dwelling	46.1	46.5	46.7	47.6	35.5	35.9	36.0	36.8
19 Hillcrest	CF47 9JG	Dwelling	46.8	47.2	47.4	48.2	36.1	36.5	36.7	37.4
20 Hillcrest	CF47 9JG	Dwelling	47.2	47.5	47.7	48.5	36.5	36.7	36.9	37.6
21 Hillcrest	CF47 9JG	Dwelling	50.5	51.1	50.8	51.6	39.5	40.0	39.7	40.4
22 Hillcrest	CF47 9JG	Dwelling	46.2	46.8	46.6	47.4	35.6	36.1	36.0	36.7
23 Hillcrest	CF47 9JG	Dwelling	46.9	47.5	47.3	48.1	36.2	36.8	36.6	37.3
24 Hillcrest	CF47 9JG	Dwelling	50.5	51.1	50.8	51.5	39.4	40.0	39.7	40.3
25 Hillcrest	CF47 9JG	Dwelling	46.7	47.1	47.2	48.0	36.0	36.4	36.5	37.2
26 Hillcrest	CF47 9JG	Dwelling	47.1	47.7	47.8	48.6	36.4	36.9	37.0	37.8
27 Hillcrest	CF47 9JG	Dwelling	48.0	48.7	48.7	49.5	37.2	37.8	37.8	38.5
28 Hillcrest	CF47 9JG	Dwelling	48.7	49.6	49.5	50.3	37.8	38.6	38.5	39.3
29 Hillcrest	CF47 9JG	Dwelling	49.4	50.3	50.2	51.0	38.5	39.2	39.2	39.9
30 Hillcrest	CF47 9JG	Dwelling	48.2	48.7	49.0	49.9	37.3	37.8	38.1	38.9
31 Hillcrest	CF47 9JG	Dwelling	52.3	53.0	52.6	53.4	41.1	41.7	41.3	42.0
32 Hillcrest	CF47 9JG	Dwelling	48.3	48.9	49.1	49.9	37.5	38.0	38.1	38.9
33 Hillcrest	CF47 9JG	Dwelling	48.9	49.5	49.5	50.3	38.0	38.5	38.6	39.3
34 Hillcrest	CF47 9JG	Dwelling	47.5	48.0	48.1	48.9	36.7	37.2	37.2	38.0
35 Hillcrest	CF47 9JG	Dwelling	45.6	46.1	45.9	46.8	35.1	35.5	35.3	36.1
Martyrs Club & Institute Ltd Flat 1 Roberts Avenue	CF47 9JH	Dwelling	51.8	52.2	52.3	53.2	40.6	41.0	41.1	41.8
Martyrs Club & Institute Ltd Roberts Avenue	CF47 9JH	OSR	51.8	52.2	52.3	53.2	40.6	41.0	41.1	41.8
1 Roberts Avenue	CF47 9JH	Dwelling	55.7	56.3	55.7	56.4	44.2	44.6	44.1	44.7
2 Roberts Avenue	CF47 9JH	Dwelling	56.0	56.6	56.1	56.7	44.4	44.9	44.4	45.0
3 Roberts Avenue	CF47 9JH	Dwelling	48.2	48.5	48.4	49.2	37.3	37.7	37.5	38.3
4 Roberts Avenue	CF47 9JH	Dwelling	47.2	47.7	47.4	48.2	36.5	36.9	36.6	37.3
5 Roberts Avenue	CF47 9JH	Dwelling	49.9	50.3	50.3	51.2	38.9	39.3	39.2	40.0
6 Roberts Avenue	CF47 9JH	Dwelling	48.2	48.8	48.4	49.1	37.4	37.9	37.5	38.2
7 Roberts Avenue	CF47 9JH	Dwelling	51.3	51.6	51.8	52.7	40.1	40.4	40.6	41.4
8 Roberts Avenue	CF47 9JH	Dwelling	48.8	49.2	49.1	49.9	37.9	38.3	38.1	38.9
9 Roberts Avenue	CF47 9JH	Dwelling	52.2	52.8	52.6	53.4	41.0	41.5	41.3	42.0
10 Roberts Avenue	CF47 9JH	Dwelling	46.2	46.6	46.5	47.3	35.6	36.0	35.8	36.5
11 Roberts Avenue	CF47 9JH	Dwelling	53.7	54.2	54.0	54.8	42.3	42.7	42.5	43.3
12 Roberts Avenue	CF47 9JH	Dwelling	49.8	50.2	49.8	50.7	38.8	39.2	38.8	39.6
The Tudors The Tudors Roberts Avenue	CF47 9JJ	Dwelling	53.2	53.8	53.8	54.6	41.9	42.4	42.4	43.1
14 Roberts Avenue	CF47 9JJ	Dwelling	48.3	48.8	48.8	49.6	37.5	37.9	37.9	38.6
16 Roberts Avenue	CF47 9JJ	Dwelling	51.1	51.3	51.3	52.2	40.0	40.1	40.1	41.0
18 Roberts Avenue	CF47 9JJ	Dwelling	50.9	51.3	51.3	52.2	39.8	40.1	40.2	41.0
20 Roberts Avenue	CF47 9JJ	Dwelling	50.6	50.8	50.8	51.7	39.5	39.7	39.7	40.5
22 Roberts Avenue	CF47 9JJ	Dwelling	50.3	50.5	50.5	51.4	39.2	39.5	39.4	40.3
24 Roberts Avenue	CF47 9JJ	Dwelling	51.7	51.9	51.9	52.8	40.5	40.7	40.7	41.5
26 Roberts Avenue	CF47 9JJ	Dwelling	50.9	51.1	51.1	52.0	39.8	40.0	40.0	40.8
28 Roberts Avenue	CF47 9JJ	Dwelling	50.4	50.3	50.5	51.4	39.4	39.3	39.4	40.2
29 Roberts Avenue	CF47 9JJ	Dwelling	49.9	50.4	50.7	51.6	38.9	39.4	39.6	40.4
30 Roberts Avenue	CF47 9JJ	Dwelling	50.9	51.1	51.1	52.0	39.8	40.0	40.0	40.8
31 Roberts Avenue	CF47 9JJ	Dwelling	51.9	52.5	52.3	53.2	40.7	41.2	41.0	41.9
32 Roberts Avenue	CF47 9JJ	Dwelling	54.4	54.6	54.4	55.4	43.0	43.1	43.0	43.8
33 Roberts Avenue	CF47 9JJ	Dwelling	50.7	51.3	51.2	52.1	39.6	40.1	40.1	40.9
34 Roberts Avenue	CF47 9JJ	Dwelling	48.3	48.7	48.6	49.6	37.5	37.8	37.7	38.6
35 Roberts Avenue	CF47 9JJ	Dwelling	52.3	52.6	52.5	53.4	41.1	41.3	41.2	42.1
36 Roberts Avenue	CF47 9JJ	Dwelling	54.7	54.9	54.7	55.7	43.2	43.3	43.2	44.1
37 Roberts Avenue	CF47 9JJ	Dwelling	52.4	52.8	52.9	53.8	41.1	41.5	41.5	42.4
39 Roberts Avenue	CF47 9JJ	Dwelling	52.4	53.0	52.6	53.6	41.2	41.7	41.3	42.2
41 Roberts Avenue	CF47 9JJ	Dwelling	50.8	51.1	50.9	51.9	39.7	40.0	39.8	40.6
43 Roberts Avenue	CF47 9JJ	Dwelling	49.6	50.1	49.9	50.9	38.6	39.1	38.9	39.8
45 Roberts Avenue	CF47 9JJ	Dwelling	50.8	51.4	51.6	52.6	39.7	40.2	40.4	41.3
47 Roberts Avenue	CF47 9JJ	Dwelling	54.9	55.2	55.1	56.0	43.4	43.7	43.5	44.4
49 Roberts Avenue	CF47 9JJ	Dwelling	51.1	51.4	51.3	52.3	40.0	40.2	40.2	41.0
51 Roberts Avenue	CF47 9JJ	Dwelling	50.6	51.2	51.4	52.3	39.6	40.1	40.2	41.1
53 Roberts Avenue	CF47 9JJ	Dwelling	48.1	48.5	48.3	49.3	37.3	37.6	37.5	38.4
55 Roberts Avenue	CF47 9JJ	Dwelling	51.5	51.4	51.2	52.1	40.4	40.3	40.0	40.9
57 Roberts Avenue	CF47 9JJ	Dwelling	48.9	49.3	49.7	50.6	38.0	38.4	38.7	39.5
59 Roberts Avenue	CF47 9JJ	Dwelling	48.0	48.3	48.1	49.1	37.2	37.5	37.3	38.1
61 Roberts Avenue	CF47 9JJ	Dwelling	52.0	52.0	52.0	52.9	40.8	40.8	40.8	41.6
63 Roberts Avenue	CF47 9JJ	Dwelling	52.1	52.0	52.1	53.0	40.9	40.7	40.8	41.7
5 Rocky Road	CF47 9JL	Dwelling	50.2	50.8	51.0	52.0	39.1	39.7	39.9	40.7
6 Rocky Road	CF47 9JL	Dwelling	45.0	45.5	45.1	46.0	34.5	34.9	34.5	35.4
7 Rocky Road	CF47 9JL	Dwelling	48.3	48.9	48.6	49.5	37.4	37.9	37.7	38.5
8 Rocky Road	CF47 9JL	Dwelling	47.2	47.6	47.1	48.1	36.4	36.9	36.3	37.2
9 Rocky Road	CF47 9JL	Dwelling	47.7	48.4	47.8	48.8	37.0	37.6	37.0	37.9
10 Rocky Road	CF47 9JL	Dwelling	48.5	49.1	48.4	49.4	37.6	38.2	37.6	38.5
11 Rocky Road	CF47 9JL	Dwelling	51.9	52.6	51.9	53.0	40.7	41.4	40.7	41.6
12 Rocky Road	CF47 9JL	Dwelling	52.9	53.6	52.8	53.9	41.6	42.2	41.5	42.4
13 Rocky Road	CF47 9JL	Dwelling	52.8	53.6	52.8	53.9	41.5	42.2	41.5	42.5
14 Rocky Road	CF47 9JL	Dwelling	54.6	55.3	54.4	55.5	43.1	43.7	43.0	43.9
15 Rocky Road	CF47 9JL	Dwelling	53.5	54.2	53.1	54.2	42.1	42.8	41.8	42.7
16 Rocky Road	CF47 9JL	Dwelling	56.1	56.7	55.6	56.6	44.4	45.0	44.0	44.9
17 Rocky Road	CF47 9JL	Dwelling	52.8	53.4	52.7	53.8	41.5	42.0	41.4	42.4
18 Rocky Road	CF47 9JL	Dwelling	52.0	52.4	51.9	53.0	40.7	41.2	40.7	41.7
19 Rocky Road	CF47 9JL	Dwelling	53.4	54.0	53.1	54.1	42.1	42.6	41.7	42.6
20 Rocky Road	CF47 9JL	Dwelling	53.1	53.0	52.5	53.5	41.7	41.7	41.2	42.1
21 Rocky Road	CF47 9JL	Dwelling	53.5	53.7	53.0	54.0	42.2	42.3	41.7	42.6
22 Rocky Road	CF47 9JL	Dwelling	51.5	51.6	50.9	51.9	40.3	40.4	39.8	40.7
23 Rocky Road	CF47 9JL	Dwelling	50.4	50.5	49.7	50.7	39.4	39.4	38.7	39.6
24 Rocky Road	CF47 9JL	Dwelling	54.8	54.7	54.0	55.0	43.3	43.2	42.5	43.5
25 Rocky Road	CF47 9JL	Dwelling	54.3	54.3	53.5	54.5	42.9	42.8	42.1	43.0
26 Rocky Road	CF47 9JL	Dwelling	61.1	61.1	60.7	61.7	49.0	49.0	48.6	49.5
27 Rocky Road	CF47 9JL	Dwelling	55.1	55.0	54.2	55.2	43.6	43.5	42.8	43.7
28 Rocky Road	CF47 9JL	Dwelling	62.9	62.7	62.6	63.6	50.6	50.4	50.3	51.2
29 Rocky Road	CF47 9JL	Dwelling	63.4	63.6	63.0	64.0	51.1	51.2	50.7	51.5
30 Rocky Road	CF47 9JL	Dwelling	56.1	56.0	55.1	56.1	44.5	44.3	43.6	44.5
31 Rocky Road	CF47 9JL	Dwelling	65.0	65.0	64.6	65.6	52.5	52.5	52.1	53.0
32 Rocky Road	CF47 9JL	Dwelling	56.5	56.4	55.5	56.5	44.9	44.8	43.9	44.8
33 Rocky Road	CF47 9JL	Dwelling	53.8	53.8	52.8	53.7	42.4	42.4	41.5	42.4
34 Rocky Road	CF47 9JL	Dwelling	54.1	54.3	53.2	54.2	42.7	42.8	41.9	42.8
35 Rocky Road	CF47 9JL	Dwelling	60.9	61.1	60.7	61.7	48.8	49.0	48.6	49.5
36 Rocky Road	CF47 9JL	Dwelling	54.8	55.0	53.9	54.9	43.3	43.4	42.5	43.4
Avoca Avoca Rocky Road	CF47 9JN	Dwelling	47.7	48.3	48.2	49.1	36.9	37.4	37.3	38.1
Glendewlaine Glendewlaine Rocky Road	CF47 9JN	Dwelling	47.6	48.3	48.3	49.2	36.8	37.4	37.4	38.3
Hazeldene Hazeldene Rocky Road	CF47 9JN	Dwelling	48.4	49.0	48.5	49.4	37.5	38.1	37.6	38.4

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
Linter Linter Rocky Road	CF47 9JN	Dwelling	50.7	51.4	50.9	51.8	39.6	40.2	39.8	40.6
Meriel Meriel Rocky Road	CF47 9JN	Dwelling	48.9	49.5	49.2	50.1	38.0	38.5	38.2	39.1
Wattisham Wattisham Rocky Road	CF47 9JN	Dwelling	46.3	47.5	47.1	47.9	35.7	36.7	36.4	37.1
1 Rocky Road	CF47 9JN	Dwelling	51.1	51.7	51.3	52.2	39.9	40.5	40.2	41.0
2 Rocky Road	CF47 9JN	Dwelling	48.7	49.4	48.6	49.4	37.8	38.5	37.8	38.4
3 Rocky Road	CF47 9JN	Dwelling	51.2	51.9	51.5	52.3	40.0	40.7	40.3	41.0
4 Rocky Road	CF47 9JN	Dwelling	50.6	51.4	50.9	51.7	39.5	40.2	39.8	40.5
Cwm Graig Bungalows 1 Cwm Graig Bungalows Rocky Road	CF47 9JW	Dwelling	47.2	49.0	48.0	48.5	36.4	38.1	37.2	37.6
Cwm Graig Bungalows 2 Cwm Graig Bungalows Rocky Road	CF47 9JW	Dwelling	49.3	50.9	49.9	50.4	38.3	39.8	38.9	39.3
Cwm Graig Bungalows 3 Cwm Graig Bungalows Rocky Road	CF47 9JW	Dwelling	48.3	49.0	48.6	49.5	37.5	38.1	37.7	38.5
Cwm Graig Bungalows 4 Cwm Graig Bungalows Rocky Road	CF47 9JW	Dwelling	49.6	51.0	50.2	50.8	38.6	39.9	39.2	39.7
Cwm Graig Bungalows 5 Cwm Graig Bungalows Rocky Road	CF47 9JW	Dwelling	48.5	49.9	49.0	49.6	37.6	38.8	38.1	38.6
Cwm Graig Bungalows 6 Cwm Graig Bungalows Rocky Road	CF47 9JW	Dwelling	48.0	49.5	48.7	49.3	37.2	38.5	37.8	38.3
4 Gurnos Road	CF47 9NH	Dwelling	57.7	57.6	57.0	57.5	45.9	45.8	45.2	45.7
6 Gurnos Road	CF47 9NH	Dwelling	56.4	56.3	55.7	56.1	44.7	44.6	44.1	44.5
8 Gurnos Road	CF47 9NH	Dwelling	54.9	54.7	53.9	54.5	43.4	43.2	42.5	43.0
26 Caerhendy Street	CF47 9NJ	Dwelling	51.3	52.5	51.8	52.4	40.1	41.2	40.6	41.1
27 Caerhendy Street	CF47 9NJ	Dwelling	51.2	52.6	51.8	52.3	40.0	41.4	40.6	41.0
28 Caerhendy Street	CF47 9NJ	Dwelling	48.0	49.3	48.7	49.3	37.2	38.3	37.8	38.3
29 Caerhendy Street	CF47 9NJ	Dwelling	50.0	51.2	50.6	51.2	39.0	40.1	39.6	40.1
30 Caerhendy Street	CF47 9NJ	Dwelling	51.5	53.1	52.3	52.7	40.4	41.8	41.0	41.4
31 Caerhendy Street	CF47 9NJ	Dwelling	50.3	52.3	51.1	51.5	39.3	41.0	40.0	40.3
32 Caerhendy Street	CF47 9NJ	Dwelling	51.7	53.6	52.5	52.9	40.5	42.2	41.2	41.6
33 Caerhendy Street	CF47 9NJ	Dwelling	49.8	51.2	50.4	50.9	38.8	40.0	39.3	39.8
34 Caerhendy Street	CF47 9NJ	Dwelling	48.0	49.4	48.6	49.1	37.2	38.4	37.7	38.2
35 Caerhendy Street	CF47 9NJ	Dwelling	53.0	54.8	53.6	54.0	41.7	43.3	42.2	42.6
Morig 1 Gurnos Road	CF47 9NL	Dwelling	47.7	47.6	47.0	47.6	36.9	36.8	36.3	36.8
3 Gurnos Road	CF47 9NL	Dwelling	51.7	51.7	50.9	51.5	40.5	40.5	39.8	40.3
5 Gurnos Road	CF47 9NL	Dwelling	48.0	48.1	47.5	48.0	37.2	37.3	36.7	37.2
Romana 7 Gurnos Road	CF47 9NL	Dwelling	48.3	48.4	47.8	48.3	37.5	37.6	37.0	37.4
9 Gurnos Road	CF47 9NL	Dwelling	47.2	47.2	46.6	47.1	36.5	36.4	35.9	36.4
11 Gurnos Road	CF47 9NN	Dwelling	53.9	53.9	53.2	53.6	42.5	42.5	41.9	42.2
13 Gurnos Road	CF47 9NN	Dwelling	53.4	53.4	52.7	53.2	42.1	42.1	41.4	41.8
15 Gurnos Road	CF47 9NN	Dwelling	52.7	52.7	52.0	52.5	41.4	41.4	40.8	41.2
17 Gurnos Road	CF47 9NN	Dwelling	53.7	53.7	53.1	53.5	42.4	42.4	41.7	42.1
19 Gurnos Road	CF47 9NN	Dwelling	49.2	49.2	48.6	49.1	38.3	38.3	37.8	38.2
21 Gurnos Road	CF47 9NN	Dwelling	50.1	50.2	49.6	50.0	39.1	39.1	38.6	39.0
23 Gurnos Road	CF47 9NN	Dwelling	49.4	49.5	48.8	49.3	38.5	38.5	37.9	38.3
25 Gurnos Road	CF47 9NN	Dwelling	48.5	48.5	47.9	48.4	37.6	37.6	37.1	37.5
27 Gurnos Road	CF47 9NN	Dwelling	49.7	49.8	49.1	49.6	38.8	38.8	38.2	38.6
29 Gurnos Road	CF47 9NN	Dwelling	55.1	55.1	54.4	54.8	43.6	43.6	43.0	43.3
40 Elm Grove	CF47 9NP	Dwelling	44.9	45.1	44.6	45.3	34.3	34.6	34.2	34.8
42 Elm Grove	CF47 9NP	Dwelling	50.4	50.6	50.1	50.7	39.4	39.5	39.1	39.6
44 Elm Grove	CF47 9NP	Dwelling	47.9	48.1	47.6	48.2	37.1	37.3	36.9	37.3
46 Elm Grove	CF47 9NP	Dwelling	50.5	50.7	50.2	50.7	39.5	39.6	39.2	39.6
48 Elm Grove	CF47 9NP	Dwelling	50.9	51.1	50.6	51.1	39.8	40.0	39.5	40.0
50 Elm Grove	CF47 9NP	Dwelling	48.1	48.3	47.8	48.4	37.3	37.5	37.0	37.6
52 Elm Grove	CF47 9NP	Dwelling	51.5	51.7	51.1	51.7	40.3	40.5	40.0	40.5
54 Elm Grove	CF47 9NP	Dwelling	48.8	49.0	48.5	49.0	37.9	38.1	37.6	38.1
56 Elm Grove	CF47 9NP	Dwelling	52.1	52.3	51.8	52.2	40.9	41.0	40.6	41.0
58 Elm Grove	CF47 9NP	Dwelling	49.6	49.8	49.2	49.8	38.6	38.8	38.2	38.8
60 Elm Grove	CF47 9NP	Dwelling	52.7	52.8	52.3	52.7	41.4	41.5	41.0	41.4
62 Elm Grove	CF47 9NP	Dwelling	52.9	53.0	52.4	52.9	41.5	41.6	41.2	41.5
64 Elm Grove	CF47 9NP	Dwelling	52.9	53.0	52.4	52.9	41.6	41.7	41.2	41.6
66 Elm Grove	CF47 9NP	Dwelling	54.3	54.4	53.8	54.2	42.9	43.0	42.4	42.8
68 Elm Grove	CF47 9NP	Dwelling	52.3	52.4	51.8	52.2	41.1	41.1	40.6	40.9
70 Elm Grove	CF47 9NP	Dwelling	53.1	53.2	52.5	52.9	41.8	41.8	41.3	41.6
72 Elm Grove	CF47 9NP	Dwelling	56.8	56.9	56.2	56.5	45.1	45.1	44.6	44.9
33 Oak Road	CF47 9NR	Dwelling	48.2	48.4	47.8	48.5	37.4	37.6	37.0	37.6
35 Oak Road	CF47 9NR	Dwelling	43.5	43.7	43.3	43.9	33.2	33.4	32.9	33.5
36 Oak Road	CF47 9NR	Dwelling	47.2	47.4	46.9	47.5	36.5	36.7	36.2	36.7
37 Oak Road	CF47 9NR	Dwelling	44.0	44.2	43.7	44.3	33.6	33.8	33.3	33.9
38 Oak Road	CF47 9NR	Dwelling	49.6	49.7	49.2	49.8	38.6	38.8	38.3	38.8
39 Oak Road	CF47 9NR	Dwelling	43.7	44.1	43.6	44.3	33.3	33.6	33.2	33.8
40 Oak Road	CF47 9NR	Dwelling	49.8	50.0	49.5	50.1	38.8	39.0	38.6	39.1
41 Oak Road	CF47 9NR	Dwelling	44.8	45.0	44.5	45.2	34.3	34.5	34.0	34.6
42 Oak Road	CF47 9NR	Dwelling	43.3	43.4	43.0	43.7	32.9	33.0	32.7	33.3
43 Oak Road	CF47 9NR	Dwelling	45.2	45.5	44.9	45.6	34.7	34.9	34.4	35.0
44 Oak Road	CF47 9NR	Dwelling	49.2	49.4	49.0	49.5	38.3	38.5	38.0	38.5
45 Oak Road	CF47 9NR	Dwelling	48.6	48.8	48.3	48.9	37.7	37.9	37.4	38.0
46 Oak Road	CF47 9NR	Dwelling	48.8	49.0	48.5	49.1	37.9	38.1	37.7	38.2
47 Oak Road	CF47 9NR	Dwelling	45.8	46.0	45.6	46.3	35.2	35.4	35.0	35.6
48 Oak Road	CF47 9NR	Dwelling	48.9	49.1	48.6	49.2	38.0	38.2	37.7	38.2
49 Oak Road	CF47 9NR	Dwelling	43.8	44.0	43.5	44.2	33.4	33.6	33.1	33.7
50 Oak Road	CF47 9NR	Dwelling	42.7	42.8	42.4	43.1	32.4	32.5	32.2	32.8
51 Oak Road	CF47 9NR	Dwelling	48.2	48.4	47.9	48.5	37.4	37.5	37.1	37.6
52 Oak Road	CF47 9NR	Dwelling	49.0	49.2	48.7	49.3	38.1	38.2	37.8	38.3
53 Oak Road	CF47 9NR	Dwelling	45.6	45.8	45.3	46.0	35.1	35.2	34.8	35.3
54 Oak Road	CF47 9NR	Dwelling	48.9	49.1	48.6	49.2	38.0	38.1	37.7	38.2
55 Oak Road	CF47 9NR	Dwelling	43.8	44.0	43.6	44.3	33.4	33.6	33.2	33.9
56 Oak Road	CF47 9NR	Dwelling	49.2	49.4	49.0	49.5	38.3	38.4	38.0	38.5
57 Oak Road	CF47 9NR	Dwelling	47.0	47.2	46.8	47.4	36.3	36.5	36.1	36.6
58 Oak Road	CF47 9NR	Dwelling	48.4	48.6	48.1	48.7	37.5	37.7	37.3	37.8
59 Oak Road	CF47 9NR	Dwelling	45.0	45.2	44.7	45.4	34.5	34.7	34.2	34.8
60 Oak Road	CF47 9NR	Dwelling	44.1	44.3	44.0	44.7	33.7	33.9	33.5	34.2
61 Oak Road	CF47 9NR	Dwelling	47.4	47.6	47.1	47.8	36.7	36.8	36.4	37.0
62 Oak Road	CF47 9NR	Dwelling	45.4	45.6	45.2	45.9	34.9	35.0	34.7	35.3
63 Oak Road	CF47 9NR	Dwelling	43.3	43.6	43.2	43.9	33.0	33.2	32.9	33.5
64 Oak Road	CF47 9NR	Dwelling	45.2	45.4	45.0	45.7	34.7	34.9	34.5	35.1
65 Oak Road	CF47 9NR	Dwelling	43.2	43.5	43.0	43.7	32.9	33.1	32.7	33.3
67 Oak Road	CF47 9NR	Dwelling	43.8	44.1	43.7	44.4	33.4	33.7	33.3	33.9
69 Oak Road	CF47 9NR	Dwelling	44.0	44.3	43.9	44.6	33.6	33.9	33.4	34.1
71 Oak Road	CF47 9NR	Dwelling	43.8	44.1	43.6	44.4	33.4	33.6	33.3	33.9
73 Oak Road	CF47 9NR	Dwelling	46.4	46.7	46.2	46.9	35.8	36.0	35.6	36.2
75 Oak Road	CF47 9NR	Dwelling	44.1	44.3	43.9	44.6	33.7	33.8	33.5	34.1
77 Oak Road	CF47 9NR	Dwelling	44.3	44.6	44.1	44.8	33.9	34.1	33.7	34.3
79 Oak Road	CF47 9NR	Dwelling	44.0	44.2	43.8	44.5	33.6	33.7	33.4	34.0
81 Oak Road	CF47 9NR	Dwelling	45.1	45.4	44.9	45.6	34.6	34.8	34.4	35.0
83 Oak Road	CF47 9NR	Dwelling	45.3	45.5	45.1	45.8	34.8	34.9	34.6	35.2
85 Oak Road	CF47 9NR	Dwelling	46.4	46.5	46.2	46.8	35.7	35.8	35.5	36.1
87 Oak Road	CF47 9NR	Dwelling	44.9	45.0	44.7	45.4	34.4	34.5	34.2	34.8
1 Oak Road	CF47 9NS	Dwelling	46.6	46.8	46.2	46.7	36.0	36.1	35.6	36.1
2 Oak Road	CF47 9NS	Dwelling	63.9	63.8	63.2	63.5	51.5	51.4	50.8	51.1
3 Oak Road	CF47 9NS	Dwelling	47.6	47.8	47.1	47.8	36.8	37.0	36.4	37.0
4 Oak Road	CF47 9NS	Dwelling	47.9	47.9	47.3	47.8	37.1	37.1	36.5	37.0
5 Oak Road	CF47 9NS	Dwelling	48.2	48.4	47.7	48.3	37.4	37.5	36.9	37.4
6 Oak Road	CF47 9NS	Dwelling	54.7	54.7	54.1	54.5	43.2	43.2	42.7	43.0

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
7 Oak Road	CF47 9NS	Dwelling	51.9	52.0	51.4	52.0	40.7	40.8	40.3	40.7
8 Oak Road	CF47 9NS	Dwelling	56.1	56.1	55.5	55.9	44.5	44.5	44.0	44.3
9 Oak Road	CF47 9NS	Dwelling	51.5	51.6	51.0	51.6	40.4	40.4	39.9	40.4
10 Oak Road	CF47 9NS	Dwelling	49.2	49.2	48.7	49.2	38.3	38.3	37.8	38.3
11 Oak Road	CF47 9NS	Dwelling	48.6	48.8	48.2	48.8	37.7	37.9	37.4	37.9
12 Oak Road	CF47 9NS	Dwelling	53.7	53.8	53.2	53.6	42.3	42.4	41.9	42.2
13 Oak Road	CF47 9NS	Dwelling	50.7	50.8	50.3	50.8	39.6	39.7	39.2	39.7
14 Oak Road	CF47 9NS	Dwelling	52.4	52.5	51.9	52.4	41.1	41.2	40.7	41.1
15 Oak Road	CF47 9NS	Dwelling	46.6	46.8	46.2	46.9	35.9	36.1	35.6	36.2
16 Oak Road	CF47 9NS	Dwelling	51.9	52.0	51.5	51.9	40.7	40.8	40.3	40.7
17 Oak Road	CF47 9NS	Dwelling	50.6	50.8	50.3	50.8	39.6	39.7	39.2	39.7
18 Oak Road	CF47 9NS	Dwelling	51.7	51.8	51.3	51.8	40.5	40.6	40.1	40.6
19 Oak Road	CF47 9NS	Dwelling	49.8	49.9	49.4	50.0	38.8	38.9	38.5	38.9
20 Oak Road	CF47 9NS	Dwelling	51.4	51.6	51.0	51.5	40.3	40.4	39.9	40.3
21 Oak Road	CF47 9NS	Dwelling	49.7	49.9	49.4	49.9	38.7	38.9	38.4	38.9
22 Oak Road	CF47 9NS	Dwelling	47.8	48.0	47.4	48.0	37.0	37.1	36.6	37.2
23 Oak Road	CF47 9NS	Dwelling	45.7	45.9	45.3	46.0	35.1	35.3	34.7	35.3
24 Oak Road	CF47 9NS	Dwelling	51.0	51.2	50.6	51.1	39.9	40.0	39.6	40.0
25 Oak Road	CF47 9NS	Dwelling	50.1	50.3	49.8	50.3	39.1	39.2	38.8	39.2
26 Oak Road	CF47 9NS	Dwelling	48.2	48.4	47.9	48.4	37.4	37.5	37.1	37.5
27 Oak Road	CF47 9NS	Dwelling	50.1	50.3	49.7	50.3	39.1	39.2	38.8	39.2
28 Oak Road	CF47 9NS	Dwelling	50.8	51.0	50.5	51.0	39.7	39.9	39.4	39.9
29 Oak Road	CF47 9NS	Dwelling	49.8	50.0	49.5	50.0	38.8	39.0	38.5	39.0
30 Oak Road	CF47 9NS	Dwelling	48.4	48.5	48.1	48.6	37.6	37.6	37.2	37.7
31 Oak Road	CF47 9NS	Dwelling	45.3	45.6	45.0	45.7	34.7	35.0	34.5	35.1
32 Oak Road	CF47 9NS	Dwelling	50.0	50.1	49.6	50.2	39.0	39.1	38.7	39.1
34 Oak Road	CF47 9NS	Dwelling	44.5	44.7	44.2	44.9	34.0	34.2	33.8	34.4
66 Oak Road	CF47 9NT	Dwelling	44.0	44.4	43.9	44.6	33.6	33.9	33.5	34.1
68 Oak Road	CF47 9NT	Dwelling	42.5	42.8	42.4	43.1	32.3	32.5	32.1	32.8
70 Oak Road	CF47 9NT	Dwelling	45.7	45.9	45.5	46.2	35.1	35.3	34.9	35.5
72 Oak Road	CF47 9NT	Dwelling	45.3	45.4	45.0	45.7	34.7	34.8	34.5	35.1
74 Oak Road	CF47 9NT	Dwelling	45.1	45.3	44.8	45.5	34.6	34.7	34.3	34.9
89 Oak Road	CF47 9NT	Dwelling	44.1	44.4	44.0	44.7	33.7	33.9	33.6	34.2
91 Oak Road	CF47 9NT	Dwelling	43.2	43.5	43.1	43.8	32.9	33.2	32.7	33.4
93 Oak Road	CF47 9NT	Dwelling	43.3	43.7	43.2	43.9	33.0	33.3	32.9	33.5
95 Oak Road	CF47 9NT	Dwelling	44.7	44.8	44.4	45.1	34.2	34.3	34.0	34.6
97 Oak Road	CF47 9NT	Dwelling	44.6	44.7	44.3	45.0	34.1	34.2	33.9	34.5
99 Oak Road	CF47 9NT	Dwelling	44.6	44.8	44.3	45.0	34.1	34.3	33.9	34.4
101 Oak Road	CF47 9NT	Dwelling	42.1	42.3	41.9	42.6	31.8	32.1	31.7	32.3
103 Oak Road	CF47 9NT	Dwelling	43.9	44.2	43.7	44.4	33.5	33.8	33.3	33.9
105 Oak Road	CF47 9NT	Dwelling	44.9	45.0	44.6	45.2	34.4	34.5	34.1	34.7
76 Oak Road	CF47 9NU	Dwelling	47.7	47.9	47.5	48.1	36.9	37.1	36.7	37.3
78 Oak Road	CF47 9NU	Dwelling	45.4	45.6	45.1	45.8	34.8	35.0	34.6	35.2
80 Oak Road	CF47 9NU	Dwelling	45.9	46.1	45.6	46.3	35.3	35.4	35.0	35.6
82 Oak Road	CF47 9NU	Dwelling	43.6	43.8	43.4	44.2	33.3	33.4	33.1	33.7
84 Oak Road	CF47 9NU	Dwelling	44.1	44.5	44.0	44.7	33.7	34.0	33.6	34.2
86 Oak Road	CF47 9NU	Dwelling	45.5	45.7	45.2	45.9	35.0	35.1	34.7	35.3
88 Oak Road	CF47 9NU	Dwelling	45.6	45.7	45.3	46.0	35.0	35.1	34.7	35.4
90 Oak Road	CF47 9NU	Dwelling	43.8	44.0	43.6	44.3	33.4	33.6	33.2	33.8
92 Oak Road	CF47 9NU	Dwelling	45.9	46.0	45.6	46.2	35.3	35.4	35.0	35.6
94 Oak Road	CF47 9NU	Dwelling	45.9	46.0	45.6	46.2	35.3	35.4	35.0	35.6
96 Oak Road	CF47 9NU	Dwelling	46.2	46.3	45.9	46.6	35.6	35.7	35.3	35.9
98 Oak Road	CF47 9NU	Dwelling	44.0	44.3	43.8	44.5	33.6	33.8	33.4	34.0
100 Oak Road	CF47 9NU	Dwelling	48.2	48.3	47.7	48.4	37.4	37.5	36.9	37.5
102 Oak Road	CF47 9NU	Dwelling	45.7	45.8	45.3	46.0	35.1	35.2	34.7	35.3
104 Oak Road	CF47 9NU	Dwelling	46.3	46.4	45.9	46.6	35.7	35.7	35.3	35.9
106 Oak Road	CF47 9NU	Dwelling	43.9	44.1	43.6	44.3	33.5	33.7	33.2	33.8
107 Oak Road	CF47 9NU	Dwelling	44.6	44.9	44.4	45.1	34.1	34.4	34.0	34.5
108 Oak Road	CF47 9NU	Dwelling	48.4	48.5	47.9	48.6	37.6	37.7	37.1	37.7
109 Oak Road	CF47 9NU	Dwelling	45.4	45.5	45.0	45.7	34.8	35.0	34.5	35.1
110 Oak Road	CF47 9NU	Dwelling	46.2	46.3	45.7	46.4	35.5	35.6	35.1	35.7
111 Oak Road	CF47 9NU	Dwelling	45.5	45.6	45.2	45.9	34.9	35.0	34.6	35.3
112 Oak Road	CF47 9NU	Dwelling	46.1	46.3	45.7	46.4	35.5	35.6	35.1	35.7
113 Oak Road	CF47 9NU	Dwelling	43.4	43.7	43.2	43.9	33.1	33.3	32.8	33.5
114 Oak Road	CF47 9NU	Dwelling	46.1	46.2	45.6	46.3	35.5	35.6	35.0	35.6
115 Oak Road	CF47 9NU	Dwelling	45.8	46.0	45.4	46.1	35.2	35.3	34.9	35.5
117 Oak Road	CF47 9NU	Dwelling	45.7	45.9	45.4	46.0	35.2	35.3	34.8	35.4
119 Oak Road	CF47 9NU	Dwelling	45.6	45.7	45.2	45.9	35.0	35.1	34.7	35.3
121 Oak Road	CF47 9NU	Dwelling	44.5	44.7	44.2	44.9	34.0	34.2	33.8	34.4
123 Oak Road	CF47 9NU	Dwelling	45.6	45.8	45.2	45.9	35.1	35.2	34.7	35.3
125 Oak Road	CF47 9NU	Dwelling	44.8	44.9	44.4	45.1	34.3	34.4	33.9	34.5
127 Oak Road	CF47 9NU	Dwelling	43.9	44.0	43.5	44.1	33.5	33.6	33.1	33.7
129 Oak Road	CF47 9NU	Dwelling	44.6	44.9	44.3	45.0	34.2	34.4	33.9	34.5
131 Oak Road	CF47 9NU	Dwelling	44.5	44.7	44.1	44.8	34.0	34.2	33.7	34.3
133 Oak Road	CF47 9NU	Dwelling	45.2	45.5	44.9	45.6	34.7	35.0	34.4	35.0
135 Oak Road	CF47 9NU	Dwelling	44.0	44.2	43.6	44.3	33.6	33.8	33.2	33.8
137 Oak Road	CF47 9NU	Dwelling	45.6	45.9	45.3	46.0	35.1	35.3	34.7	35.3
139 Oak Road	CF47 9NU	Dwelling	46.7	46.9	46.2	46.9	36.0	36.2	35.6	36.2
141 Oak Road	CF47 9NU	Dwelling	45.6	45.8	45.2	45.9	35.0	35.2	34.6	35.3
143 Oak Road	CF47 9NU	Dwelling	46.2	46.5	45.9	46.6	35.6	35.9	35.2	35.9
2 Elm Grove	CF47 9NW	Dwelling	46.6	46.8	46.4	47.1	35.9	36.1	35.7	36.4
4 Elm Grove	CF47 9NW	Dwelling	45.6	45.9	45.4	46.0	35.0	35.3	34.8	35.4
6 Elm Grove	CF47 9NW	Dwelling	45.6	45.9	45.4	46.1	35.0	35.3	34.8	35.4
8 Elm Grove	CF47 9NW	Dwelling	44.6	44.9	44.4	45.1	34.1	34.4	34.0	34.5
10 Elm Grove	CF47 9NW	Dwelling	45.1	45.4	45.0	45.7	34.6	34.9	34.4	35.1
12 Elm Grove	CF47 9NW	Dwelling	46.4	46.7	46.2	46.9	35.8	36.0	35.5	36.2
14 Elm Grove	CF47 9NW	Dwelling	46.0	46.3	45.8	46.5	35.4	35.7	35.2	35.8
16 Elm Grove	CF47 9NW	Dwelling	46.7	47.0	46.4	47.1	36.0	36.2	35.7	36.3
18 Elm Grove	CF47 9NW	Dwelling	48.8	49.0	48.5	49.2	37.9	38.1	37.7	38.2
20 Elm Grove	CF47 9NW	Dwelling	47.8	48.0	47.5	48.2	37.0	37.2	36.8	37.3
22 Elm Grove	CF47 9NW	Dwelling	47.0	47.3	46.8	47.5	36.3	36.5	36.1	36.7
24 Elm Grove	CF47 9NW	Dwelling	47.0	47.3	46.8	47.4	36.3	36.5	36.1	36.6
26 Elm Grove	CF47 9NW	Dwelling	49.2	49.4	49.0	49.5	38.3	38.5	38.1	38.6
28 Elm Grove	CF47 9NW	Dwelling	47.1	47.4	46.9	47.5	36.4	36.6	36.2	36.7
30 Elm Grove	CF47 9NW	Dwelling	44.8	45.1	44.7	45.3	34.3	34.6	34.2	34.8
32 Elm Grove	CF47 9NW	Dwelling	47.4	47.7	47.2	47.8	36.7	36.9	36.5	37.0
34 Elm Grove	CF47 9NW	Dwelling	50.0	50.2	49.8	50.3	39.0	39.2	38.8	39.3
36 Elm Grove	CF47 9NW	Dwelling	50.0	50.2	49.7	50.3	39.0	39.1	38.7	39.2
38 Elm Grove	CF47 9NW	Dwelling	50.6	50.8	50.3	50.9	39.5	39.7	39.3	39.7
2 Cedar Way	CF47 9NY	Dwelling	45.0	45.3	44.8	45.5	34.5	34.7	34.3	34.9
4 Cedar Way	CF47 9NY	Dwelling	44.8	45.1	44.7	45.3	34.3	34.5	34.2	34.8
6 Cedar Way	CF47 9NY	Dwelling	44.8	45.0	44.6	45.3	34.3	34.5	34.1	34.7
8 Cedar Way	CF47 9NY	Dwelling	44.7	44.9	44.5	45.2	34.2	34.4	34.1	34.6
10 Cedar Way	CF47 9NY	Dwelling	44.8	45.0	44.6	45.3	34.3	34.5	34.1	34.7
12 Cedar Way	CF47 9NY	Dwelling	42.7	43.0	42.6	43.2	32.4	32.6	32.3	32.9
14 Cedar Way	CF47 9NY	Dwelling	44.5	44.7	44.2	44.9	34.0	34.2	33.8	34.4
16 Cedar Way	CF47 9NY	Dwelling	44.5	44.6	44.2	44.9	34.0	34.1	33.8	34.3

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
18 Cedar Way	CF47 9NY	Dwelling	44.9	45.0	44.5	45.2	34.4	34.5	34.1	34.6
Gurnos Nursery Cedar Way	CF47 9PA	OSR	47.2	47.4	46.9	47.6	36.5	36.7	36.2	36.8
St Aloysius Rc Primary School Cedar Way	CF47 9PA	OSR	44.3	44.4	44.1	44.8	33.9	34.0	33.6	34.3
The Bungalow The Bungalow Cedar Way	CF47 9PA	Dwelling	43.7	43.9	43.5	44.2	33.3	33.5	33.1	33.7
20 Cedar Way	CF47 9PA	Dwelling	43.9	44.2	43.7	44.4	33.5	33.7	33.3	33.9
22 Cedar Way	CF47 9PA	Dwelling	44.8	44.9	44.5	45.1	34.3	34.4	34.0	34.6
24 Cedar Way	CF47 9PA	Dwelling	46.1	46.0	45.6	46.3	35.5	35.4	35.0	35.6
26 Cedar Way	CF47 9PA	Dwelling	43.2	43.2	42.8	43.5	32.8	32.9	32.5	33.1
28 Cedar Way	CF47 9PA	Dwelling	43.1	43.3	42.9	43.6	32.8	33.0	32.6	33.2
30 Cedar Way	CF47 9PA	Dwelling	46.1	46.0	45.6	46.3	35.5	35.4	35.0	35.6
32 Cedar Way	CF47 9PA	Dwelling	46.1	46.0	45.6	46.3	35.5	35.4	35.0	35.6
34 Cedar Way	CF47 9PA	Dwelling	46.1	46.0	45.6	46.3	35.5	35.4	35.1	35.6
36 Cedar Way	CF47 9PA	Dwelling	44.7	44.7	44.3	45.0	34.2	34.2	33.9	34.5
38 Cedar Way	CF47 9PA	Dwelling	46.1	46.2	45.7	46.4	35.5	35.6	35.1	35.7
40 Cedar Way	CF47 9PA	Dwelling	43.4	43.6	43.2	43.9	33.0	33.2	32.8	33.5
42 Cedar Way	CF47 9PA	Dwelling	46.1	46.0	45.5	46.2	35.5	35.4	35.0	35.5
44 Cedar Way	CF47 9PA	Dwelling	46.3	46.3	45.7	46.4	35.7	35.6	35.2	35.7
46 Cedar Way	CF47 9PA	Dwelling	42.9	43.1	42.5	43.3	32.6	32.7	32.3	32.9
48 Cedar Way	CF47 9PA	Dwelling	46.5	46.7	46.2	46.9	35.9	36.0	35.5	36.2
50 Cedar Way	CF47 9PA	Dwelling	45.8	46.0	45.4	46.1	35.2	35.4	34.8	35.4
52 Cedar Way	CF47 9PA	Dwelling	46.8	47.0	46.4	47.1	36.1	36.2	35.7	36.3
54 Cedar Way	CF47 9PA	Dwelling	46.6	46.7	46.0	46.6	35.9	36.0	35.3	35.9
Goetre Junior & Infant School Building No. 4 Rowan Way	CF47 9PB	OSR	49.1	49.6	49.0	49.8	38.2	38.6	38.1	38.8
Caretakers Bungalow Caretakers Bungalow Rowan Way	CF47 9PB	Dwelling	48.4	48.7	47.8	48.4	37.6	37.8	37.0	37.5
Goetre Junior & Infant School Rowan Way	CF47 9PB	OSR	49.1	49.6	49.0	49.8	38.2	38.6	38.1	38.8
11 Rowan Way	CF47 9PB	Dwelling	46.0	46.4	45.7	46.4	35.4	35.7	35.1	35.7
13 Rowan Way	CF47 9PB	Dwelling	46.4	46.7	46.1	46.8	35.7	36.0	35.4	36.1
15 Rowan Way	CF47 9PB	Dwelling	46.1	46.4	45.8	46.5	35.5	35.7	35.2	35.8
17 Rowan Way	CF47 9PB	Dwelling	46.1	46.4	45.8	46.5	35.5	35.8	35.2	35.8
19 Rowan Way	CF47 9PB	Dwelling	46.6	46.9	46.3	47.0	35.9	36.2	35.6	36.3
2 Rowan Way	CF47 9PD	Dwelling	47.5	47.8	47.1	47.6	36.8	37.0	36.3	36.9
4 Rowan Way	CF47 9PD	Dwelling	47.3	47.6	46.9	47.5	36.6	36.9	36.2	36.7
6 Rowan Way	CF47 9PD	Dwelling	47.4	47.6	46.9	47.5	36.6	36.9	36.2	36.8
8 Rowan Way	CF47 9PD	Dwelling	47.0	47.3	46.6	47.2	36.3	36.6	35.9	36.5
10 Rowan Way	CF47 9PD	Dwelling	50.2	50.4	49.5	50.1	39.2	39.3	38.6	39.0
12 Rowan Way	CF47 9PD	Dwelling	47.9	48.2	47.4	48.0	37.1	37.3	36.6	37.1
14 Rowan Way	CF47 9PD	Dwelling	46.7	47.0	46.2	46.9	36.0	36.3	35.6	36.2
16 Rowan Way	CF47 9PD	Dwelling	46.9	47.2	46.4	47.0	36.2	36.5	35.7	36.3
18 Rowan Way	CF47 9PD	Dwelling	47.2	47.5	46.7	47.4	36.5	36.7	36.0	36.6
20 Rowan Way	CF47 9PD	Dwelling	47.5	47.8	47.0	47.7	36.7	37.0	36.3	36.9
22 Rowan Way	CF47 9PD	Dwelling	47.4	47.7	46.9	47.6	36.7	37.0	36.2	36.8
24 Rowan Way	CF47 9PD	Dwelling	47.3	47.7	46.9	47.5	36.6	36.9	36.1	36.7
26 Rowan Way	CF47 9PD	Dwelling	47.1	47.4	46.6	47.3	36.4	36.7	35.9	36.5
28 Rowan Way	CF47 9PD	Dwelling	47.5	47.9	47.1	47.7	36.8	37.1	36.4	37.0
30 Rowan Way	CF47 9PD	Dwelling	47.5	47.8	47.0	47.7	36.7	37.0	36.3	36.9
32 Rowan Way	CF47 9PD	Dwelling	47.5	47.8	47.0	47.7	36.7	37.0	36.3	36.9
34 Rowan Way	CF47 9PD	Dwelling	47.1	47.5	46.7	47.4	36.4	36.7	36.0	36.6
36 Rowan Way	CF47 9PD	Dwelling	47.5	47.8	47.0	47.7	36.7	37.0	36.3	36.9
1 Rowan Way	CF47 9PE	Dwelling	46.3	46.6	45.9	46.6	35.6	35.9	35.3	35.9
3 Rowan Way	CF47 9PE	Dwelling	46.3	46.7	46.0	46.7	35.7	36.0	35.4	36.0
5 Rowan Way	CF47 9PE	Dwelling	45.5	45.8	45.1	45.8	34.9	35.2	34.6	35.2
7 Rowan Way	CF47 9PE	Dwelling	46.0	46.3	45.6	46.3	35.3	35.6	35.0	35.6
9 Rowan Way	CF47 9PE	Dwelling	45.4	45.7	45.1	45.7	34.9	35.1	34.5	35.1
63 Ash Crescent	CF47 9PF	Dwelling	46.2	46.5	46.0	46.7	35.6	35.9	35.4	36.0
65 Ash Crescent	CF47 9PF	Dwelling	46.0	46.2	45.7	46.4	35.3	35.6	35.1	35.7
67 Ash Crescent	CF47 9PF	Dwelling	46.0	46.2	45.7	46.4	35.4	35.5	35.1	35.7
69 Ash Crescent	CF47 9PF	Dwelling	46.2	46.4	45.9	46.6	35.5	35.7	35.3	35.9
71 Ash Crescent	CF47 9PF	Dwelling	45.3	45.6	45.1	45.8	34.8	35.0	34.6	35.2
73 Ash Crescent	CF47 9PF	Dwelling	45.0	45.4	44.9	45.6	34.5	34.8	34.3	35.0
75 Ash Crescent	CF47 9PF	Dwelling	44.8	45.0	44.5	45.2	34.3	34.5	34.0	34.6
77 Ash Crescent	CF47 9PF	Dwelling	46.1	46.2	45.8	46.5	35.5	35.6	35.2	35.8
79 Ash Crescent	CF47 9PF	Dwelling	46.6	46.8	46.3	47.0	36.0	36.1	35.7	36.3
81 Ash Crescent	CF47 9PF	Dwelling	46.9	47.0	46.6	47.3	36.2	36.3	35.9	36.5
83 Ash Crescent	CF47 9PF	Dwelling	46.2	46.3	45.8	46.5	35.6	35.7	35.2	35.8
85 Ash Crescent	CF47 9PF	Dwelling	45.4	45.7	45.1	45.8	34.9	35.1	34.6	35.2
87 Ash Crescent	CF47 9PF	Dwelling	46.1	46.4	45.8	46.5	35.5	35.8	35.2	35.8
89 Ash Crescent	CF47 9PF	Dwelling	45.6	45.9	45.3	46.0	35.0	35.3	34.8	35.4
91 Ash Crescent	CF47 9PF	Dwelling	47.1	47.2	46.6	47.3	36.3	36.5	36.0	36.5
93 Ash Crescent	CF47 9PF	Dwelling	47.6	47.8	47.2	47.8	36.9	37.0	36.4	37.0
95 Ash Crescent	CF47 9PF	Dwelling	47.4	47.6	46.9	47.5	36.7	36.8	36.2	36.7
97 Ash Crescent	CF47 9PF	Dwelling	49.7	49.8	49.1	49.7	38.7	38.8	38.1	38.7
1 Ash Crescent	CF47 9PG	Dwelling	58.0	58.0	57.3	57.7	46.2	46.2	45.6	45.9
3 Ash Crescent	CF47 9PG	Dwelling	53.6	53.7	53.0	53.4	42.3	42.3	41.7	42.0
5 Ash Crescent	CF47 9PG	Dwelling	55.5	55.5	54.9	55.3	43.9	43.9	43.4	43.7
7 Ash Crescent	CF47 9PG	Dwelling	52.6	52.7	52.1	52.5	41.3	41.4	40.9	41.2
9 Ash Crescent	CF47 9PG	Dwelling	54.1	54.2	53.6	54.0	42.7	42.7	42.2	42.6
11 Ash Crescent	CF47 9PG	Dwelling	48.4	48.4	47.9	48.5	37.6	37.6	37.1	37.6
13 Ash Crescent	CF47 9PG	Dwelling	45.7	46.0	45.5	46.1	35.1	35.3	34.9	35.5
15 Ash Crescent	CF47 9PG	Dwelling	46.4	46.6	46.1	46.7	35.7	36.0	35.4	36.0
17 Ash Crescent	CF47 9PG	Dwelling	50.3	50.5	49.9	50.4	39.2	39.4	38.9	39.4
19 Ash Crescent	CF47 9PG	Dwelling	50.1	50.1	49.7	50.2	39.0	39.1	38.7	39.1
21 Ash Crescent	CF47 9PG	Dwelling	50.1	50.3	49.9	50.4	39.1	39.3	38.9	39.3
23 Ash Crescent	CF47 9PG	Dwelling	47.2	47.5	47.0	47.6	36.5	36.8	36.3	36.8
25 Ash Crescent	CF47 9PG	Dwelling	49.7	49.9	49.4	50.0	38.7	38.9	38.4	39.0
27 Ash Crescent	CF47 9PG	Dwelling	45.4	45.6	45.2	45.9	34.9	35.0	34.7	35.3
29 Ash Crescent	CF47 9PH	Dwelling	50.5	50.7	50.2	50.8	39.4	39.6	39.2	39.7
31 Ash Crescent	CF47 9PH	Dwelling	50.3	50.5	50.0	50.6	39.2	39.4	39.0	39.5
33 Ash Crescent	CF47 9PH	Dwelling	50.2	50.4	50.0	50.5	39.2	39.4	39.0	39.4
35 Ash Crescent	CF47 9PH	Dwelling	44.8	45.1	44.6	45.3	34.3	34.5	34.1	34.7
37 Ash Crescent	CF47 9PH	Dwelling	50.2	50.5	50.0	50.5	39.2	39.4	39.0	39.5
39 Ash Crescent	CF47 9PH	Dwelling	50.1	50.3	49.8	50.4	39.1	39.3	38.8	39.4
41 Ash Crescent	CF47 9PH	Dwelling	44.8	45.1	44.7	45.4	34.3	34.6	34.2	34.8
43 Ash Crescent	CF47 9PH	Dwelling	48.3	48.6	48.1	48.7	37.4	37.7	37.2	37.8
45 Ash Crescent	CF47 9PH	Dwelling	49.2	49.4	48.9	49.5	38.3	38.5	38.0	38.5
47 Ash Crescent	CF47 9PH	Dwelling	44.5	44.8	44.4	45.1	34.0	34.3	33.9	34.5
49 Ash Crescent	CF47 9PH	Dwelling	45.8	46.2	45.6	46.3	35.2	35.5	35.0	35.7
51 Ash Crescent	CF47 9PH	Dwelling	48.3	48.6	48.1	48.8	37.5	37.7	37.3	37.9
53 Ash Crescent	CF47 9PH	Dwelling	44.1	44.5	44.0	44.7	33.7	34.0	33.6	34.2
55 Ash Crescent	CF47 9PH	Dwelling	45.5	45.9	45.4	46.1	35.0	35.3	34.8	35.4
57 Ash Crescent	CF47 9PH	Dwelling	45.8	46.1	45.6	46.3	35.2	35.5	35.0	35.6
59 Ash Crescent	CF47 9PH	Dwelling	45.7	46.0	45.5	46.2	35.1	35.4	35.0	35.6
61 Ash Crescent	CF47 9PH	Dwelling	45.6	45.9	45.4	46.1	35.0	35.3	34.9	35.5
2A Ash Crescent	CF47 9PL	Dwelling	61.6	61.6	60.9	61.2	49.4	49.4	48.8	49.1
2 Ash Crescent	CF47 9PL	Dwelling	64.7	64.7	64.0	64.3	52.2	52.2	51.6	51.8
4 Ash Crescent	CF47 9PL	Dwelling	50.3	50.3	49.7	50.2	39.2	39.3	38.7	39.2
6 Ash Crescent	CF47 9PL	Dwelling	54.1	54.1	53.5	53.9	42.7	42.7	42.2	42.5
8 Ash Crescent	CF47 9PL	Dwelling	49.8	49.8	49.3	49.7	38.8	38.8	38.3	38.7

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
10 Ash Crescent	CF47 9PL	Dwelling	51.3	51.3	50.8	51.2	40.2	40.1	39.7	40.1
12 Ash Crescent	CF47 9PL	Dwelling	48.9	49.0	48.4	49.0	38.0	38.0	37.6	38.1
14 Ash Crescent	CF47 9PL	Dwelling	48.8	48.8	48.3	48.9	37.9	37.9	37.5	38.0
16 Ash Crescent	CF47 9PL	Dwelling	52.3	52.4	51.9	52.3	41.1	41.2	40.7	41.1
18 Ash Crescent	CF47 9PL	Dwelling	51.8	51.9	51.4	51.9	40.6	40.7	40.2	40.7
20 Ash Crescent	CF47 9PL	Dwelling	49.0	49.2	48.7	49.4	38.1	38.3	37.8	38.4
1 Lime Grove	CF47 9PN	Dwelling	48.9	49.0	48.6	49.2	38.0	38.1	37.7	38.2
2 Lime Grove	CF47 9PN	Dwelling	49.5	49.6	49.2	49.9	38.6	38.6	38.3	38.9
3 Lime Grove	CF47 9PN	Dwelling	46.4	46.3	46.0	46.7	35.7	35.6	35.4	36.0
4 Lime Grove	CF47 9PN	Dwelling	51.3	51.6	51.1	51.6	40.2	40.4	39.9	40.4
5 Lime Grove	CF47 9PN	Dwelling	47.1	47.1	46.7	47.4	36.4	36.3	36.0	36.6
6 Lime Grove	CF47 9PN	Dwelling	50.8	51.1	50.6	51.1	39.7	39.9	39.5	40.0
7 Lime Grove	CF47 9PN	Dwelling	47.2	47.1	46.7	47.4	36.4	36.3	36.0	36.6
8 Lime Grove	CF47 9PN	Dwelling	51.2	51.4	50.9	51.4	40.0	40.2	39.8	40.3
9 Lime Grove	CF47 9PN	Dwelling	49.8	49.8	49.3	49.9	38.8	38.8	38.4	38.9
10 Lime Grove	CF47 9PN	Dwelling	51.6	51.9	51.4	51.9	40.5	40.6	40.2	40.7
11 Lime Grove	CF47 9PN	Dwelling	50.0	50.0	49.5	50.1	39.0	39.0	38.6	39.0
12 Lime Grove	CF47 9PN	Dwelling	47.3	47.2	47.0	47.6	36.6	36.5	36.2	36.8
13 Lime Grove	CF47 9PN	Dwelling	53.7	53.7	53.2	53.6	42.3	42.3	41.8	42.2
14 Lime Grove	CF47 9PN	Dwelling	47.5	47.4	47.1	47.8	36.8	36.7	36.4	37.0
15 Lime Grove	CF47 9PN	Dwelling	46.4	46.4	45.9	46.5	35.7	35.8	35.3	35.8
16 Lime Grove	CF47 9PN	Dwelling	48.1	48.3	47.8	48.3	37.3	37.5	37.0	37.4
17 Lime Grove	CF47 9PN	Dwelling	46.1	46.2	45.7	46.2	35.5	35.6	35.1	35.6
18 Lime Grove	CF47 9PN	Dwelling	51.1	51.2	50.7	51.2	40.0	40.1	39.6	40.0
20 Lime Grove	CF47 9PN	Dwelling	48.8	48.7	48.3	48.9	37.9	37.8	37.4	37.9
56 Ash Crescent	CF47 9PP	Dwelling	48.7	49.0	48.5	49.2	37.8	38.1	37.6	38.2
58 Ash Crescent	CF47 9PP	Dwelling	46.8	47.0	46.6	47.3	36.1	36.3	35.9	36.5
60 Ash Crescent	CF47 9PP	Dwelling	46.7	47.0	46.5	47.2	36.0	36.2	35.8	36.4
62 Ash Crescent	CF47 9PP	Dwelling	46.9	47.2	46.7	47.4	36.2	36.4	36.0	36.6
64 Ash Crescent	CF47 9PP	Dwelling	46.9	47.1	46.6	47.2	36.1	36.3	35.9	36.5
66 Ash Crescent	CF47 9PP	Dwelling	44.9	45.1	44.7	45.4	34.4	34.6	34.2	34.8
68 Ash Crescent	CF47 9PP	Dwelling	44.5	44.8	44.3	45.1	34.1	34.3	33.9	34.5
70 Ash Crescent	CF47 9PP	Dwelling	46.7	46.8	46.3	47.0	36.0	36.1	35.6	36.2
72 Ash Crescent	CF47 9PP	Dwelling	47.3	47.5	46.9	47.5	36.6	36.7	36.2	36.8
74 Ash Crescent	CF47 9PP	Dwelling	47.5	47.6	47.1	47.7	36.8	36.8	36.3	36.9
76 Ash Crescent	CF47 9PP	Dwelling	45.0	45.2	44.7	45.4	34.5	34.7	34.2	34.8
78 Ash Crescent	CF47 9PP	Dwelling	46.2	45.9	45.7	46.4	35.6	35.3	35.1	35.7
80 Ash Crescent	CF47 9PP	Dwelling	47.0	46.7	46.4	47.1	36.2	36.0	35.8	36.4
82 Ash Crescent	CF47 9PP	Dwelling	46.4	46.2	45.9	46.5	35.8	35.6	35.3	35.9
84 Ash Crescent	CF47 9PP	Dwelling	46.7	47.0	46.4	47.1	36.0	36.3	35.8	36.4
86 Ash Crescent	CF47 9PP	Dwelling	47.5	47.9	47.3	48.0	36.8	37.1	36.6	37.1
88 Ash Crescent	CF47 9PP	Dwelling	46.9	47.1	46.5	47.1	36.2	36.4	35.9	36.3
90 Ash Crescent	CF47 9PP	Dwelling	49.9	49.8	49.2	49.8	38.9	38.8	38.3	38.8
92 Ash Crescent	CF47 9PP	Dwelling	49.3	49.2	48.7	49.2	38.4	38.3	37.8	38.3
94 Ash Crescent	CF47 9PP	Dwelling	46.9	47.0	46.3	46.8	36.2	36.2	35.7	36.1
100 Ash Crescent	CF47 9PP	Dwelling	59.3	59.3	58.3	58.6	47.4	47.4	46.5	46.7
99 Ash Crescent	CF47 9PR	Dwelling	53.6	53.6	52.9	53.2	42.2	42.3	41.6	41.9
101 Ash Crescent	CF47 9PR	Dwelling	64.8	64.9	63.2	63.4	52.3	52.4	50.9	51.0
117 Gurnos Road	CF47 9PS	Dwelling	48.2	48.4	47.2	47.7	37.4	37.6	36.5	36.9
119 Gurnos Road	CF47 9PS	Dwelling	48.2	48.4	47.2	47.7	37.4	37.5	36.5	36.9
121 Gurnos Road	CF47 9PS	Dwelling	48.2	48.4	47.1	47.6	37.3	37.5	36.4	36.8
123 Gurnos Road	CF47 9PS	Dwelling	48.2	48.4	47.1	47.6	37.4	37.5	36.4	36.8
125 Gurnos Road	CF47 9PS	Dwelling	48.1	48.3	47.0	47.5	37.3	37.4	36.3	36.7
127 Gurnos Road	CF47 9PS	Dwelling	48.9	49.1	47.9	48.4	38.0	38.2	37.1	37.5
129 Gurnos Road	CF47 9PS	Dwelling	48.2	48.4	47.2	47.7	37.4	37.6	36.4	36.9
131 Gurnos Road	CF47 9PS	Dwelling	48.8	49.0	47.8	48.3	37.9	38.1	37.0	37.5
133 Gurnos Road	CF47 9PS	Dwelling	48.6	48.8	47.7	48.2	37.7	37.9	36.9	37.3
135 Gurnos Road	CF47 9PS	Dwelling	49.2	49.5	48.3	48.9	38.3	38.5	37.5	38.0
137 Gurnos Road	CF47 9PS	Dwelling	48.5	48.7	47.6	48.1	37.6	37.8	36.8	37.2
139 Gurnos Road	CF47 9PS	Dwelling	49.2	49.4	48.2	48.8	38.2	38.5	37.4	37.9
141 Gurnos Road	CF47 9PS	Dwelling	48.8	49.1	47.9	48.4	37.9	38.1	37.1	37.6
143 Gurnos Road	CF47 9PS	Dwelling	49.6	49.8	48.7	49.2	38.6	38.8	37.8	38.2
145 Gurnos Road	CF47 9PS	Dwelling	49.3	49.5	48.3	48.8	38.3	38.5	37.4	37.9
147 Gurnos Road	CF47 9PS	Dwelling	52.1	52.3	50.6	51.0	40.9	41.0	39.5	39.8
Ty Gurnos Newydd Gurnos Road	CF47 9PT	Dwelling	48.4	48.1	47.7	48.4	37.6	37.3	36.9	37.6
77 Gurnos Road	CF47 9PU	Dwelling	50.6	50.5	49.9	50.4	39.5	39.5	38.9	39.3
81 Gurnos Road	CF47 9PU	Dwelling	50.5	50.5	49.9	50.3	39.5	39.4	38.9	39.2
83 Gurnos Road	CF47 9PU	Dwelling	48.0	48.0	47.4	47.8	37.2	37.2	36.7	37.0
85 Gurnos Road	CF47 9PU	Dwelling	50.9	50.9	50.3	50.7	39.8	39.8	39.2	39.6
87 Gurnos Road	CF47 9PU	Dwelling	50.8	50.8	50.2	50.6	39.7	39.7	39.2	39.5
89 Gurnos Road	CF47 9PU	Dwelling	52.3	52.2	51.6	52.0	41.0	41.0	40.4	40.8
91 Gurnos Road	CF47 9PU	Dwelling	48.5	48.5	47.9	48.3	37.6	37.6	37.1	37.4
93 Gurnos Road	CF47 9PU	Dwelling	51.1	51.0	50.4	50.8	40.0	39.9	39.4	39.7
95 Gurnos Road	CF47 9PU	Dwelling	48.1	48.1	47.5	47.9	37.3	37.3	36.7	37.0
97 Gurnos Road	CF47 9PU	Dwelling	48.8	48.8	48.2	48.6	37.9	37.9	37.4	37.7
99 Gurnos Road	CF47 9PU	Dwelling	51.8	51.7	51.1	51.5	40.6	40.5	40.0	40.3
101 Gurnos Road	CF47 9PU	Dwelling	49.0	49.0	48.4	48.8	38.1	38.1	37.5	37.9
103 Gurnos Road	CF47 9PU	Dwelling	48.3	48.4	47.7	48.1	37.5	37.5	36.9	37.3
105 Gurnos Road	CF47 9PU	Dwelling	52.3	52.3	51.6	52.0	41.1	41.1	40.4	40.8
107 Gurnos Road	CF47 9PU	Dwelling	48.9	49.0	48.2	48.6	38.0	38.0	37.3	37.7
109 Gurnos Road	CF47 9PU	Dwelling	52.3	52.3	51.5	51.9	41.1	41.1	40.3	40.7
111 Gurnos Road	CF47 9PU	Dwelling	69.1	69.0	68.3	68.6	56.1	56.1	55.4	55.7
113 Gurnos Road	CF47 9PU	Dwelling	68.9	68.9	68.1	68.4	56.0	56.0	55.3	55.5
115 Gurnos Road	CF47 9PU	Dwelling	68.2	68.2	67.3	67.6	55.4	55.3	54.6	54.8
22 Ash Crescent	CF47 9PW	Dwelling	51.4	51.6	51.1	51.6	40.3	40.4	40.0	40.5
24 Ash Crescent	CF47 9PW	Dwelling	51.3	51.5	51.0	51.6	40.2	40.4	39.9	40.4
26 Ash Crescent	CF47 9PW	Dwelling	50.3	50.5	50.0	50.6	39.2	39.4	39.0	39.5
28 Ash Crescent	CF47 9PW	Dwelling	48.6	48.9	48.4	49.0	37.8	38.0	37.5	38.1
30 Ash Crescent	CF47 9PW	Dwelling	49.8	50.0	49.5	50.1	38.8	39.0	38.6	39.1
32 Ash Crescent	CF47 9PW	Dwelling	44.9	45.1	44.7	45.4	34.4	34.6	34.2	34.9
34 Ash Crescent	CF47 9PW	Dwelling	45.7	46.0	45.5	46.1	35.1	35.4	34.9	35.5
36 Ash Crescent	CF47 9PW	Dwelling	47.6	47.9	47.4	48.1	36.9	37.1	36.7	37.2
38 Ash Crescent	CF47 9PW	Dwelling	49.1	49.4	48.8	49.5	38.2	38.4	37.9	38.5
40 Ash Crescent	CF47 9PW	Dwelling	47.3	47.6	47.1	47.8	36.5	36.8	36.4	37.0
42 Ash Crescent	CF47 9PW	Dwelling	44.4	44.7	44.2	44.9	33.9	34.2	33.8	34.4
44 Ash Crescent	CF47 9PW	Dwelling	46.8	47.1	46.6	47.3	36.1	36.4	35.9	36.5
46 Ash Crescent	CF47 9PW	Dwelling	46.3	46.6	46.1	46.8	35.7	35.9	35.5	36.1
48 Ash Crescent	CF47 9PW	Dwelling	44.1	44.5	44.0	44.7	33.7	34.0	33.6	34.2
50 Ash Crescent	CF47 9PW	Dwelling	47.1	47.4	46.9	47.6	36.4	36.6	36.2	36.8
52 Ash Crescent	CF47 9PW	Dwelling	46.7	47.0	46.5	47.2	36.0	36.3	35.9	36.4
54 Ash Crescent	CF47 9PW	Dwelling	45.5	45.8	45.4	46.1	35.0	35.2	34.8	35.4
86 Gurnos Road	CF47 9PY	Dwelling	48.0	47.8	47.4	47.9	37.2	37.0	36.7	37.1
88 Gurnos Road	CF47 9PY	Dwelling	48.0	47.9	47.4	47.9	37.2	37.1	36.7	37.1
90 Gurnos Road	CF47 9PY	Dwelling	48.4	48.3	47.8	48.2	37.6	37.5	37.0	37.4
92 Gurnos Road	CF47 9PY	Dwelling	65.8	65.8	65.1	65.4	53.2	53.2	52.6	52.8
94 Gurnos Road	CF47 9PY	Dwelling	63.2	63.2	62.5	62.8	50.9	50.8	50.2	50.5
96 Gurnos Road	CF47 9PY	Dwelling	61.4	61.4	60.7	61.0	49.3	49.2	48.6	48.9

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
98 Gurnos Road	CF47 9PY	Dwelling	68.7	68.7	67.9	68.2	55.8	55.8	55.1	55.3
72 Gurnos Road	CF47 9RA	Dwelling	52.6	52.5	52.0	52.4	41.3	41.2	40.7	41.1
74 Gurnos Road	CF47 9RA	Dwelling	51.9	51.8	51.2	51.6	40.7	40.6	40.1	40.4
76 Gurnos Road	CF47 9RA	Dwelling	67.2	67.2	66.5	66.8	54.5	54.4	53.8	54.1
78 Gurnos Road	CF47 9RA	Dwelling	47.9	47.8	47.4	47.9	37.1	37.0	36.6	37.1
80 Gurnos Road	CF47 9RA	Dwelling	48.1	48.0	47.5	48.1	37.3	37.2	36.8	37.2
82 Gurnos Road	CF47 9RA	Dwelling	48.1	48.0	47.6	48.1	37.3	37.2	36.8	37.3
84 Gurnos Road	CF47 9RA	Dwelling	51.6	51.6	51.0	51.5	40.5	40.4	39.9	40.3
1 Acacia Avenue	CF47 9RB	Dwelling	52.2	52.2	51.6	52.1	41.0	40.9	40.4	40.8
2 Acacia Avenue	CF47 9RB	Dwelling	52.5	52.5	52.0	52.4	41.2	41.2	40.7	41.1
3 Acacia Avenue	CF47 9RB	Dwelling	55.3	55.3	54.7	55.1	43.8	43.7	43.2	43.5
4 Acacia Avenue	CF47 9RB	Dwelling	53.4	53.4	52.9	53.3	42.1	42.0	41.6	41.9
5 Acacia Avenue	CF47 9RB	Dwelling	49.8	49.7	49.1	49.7	38.8	38.7	38.2	38.7
6 Acacia Avenue	CF47 9RB	Dwelling	52.9	52.9	52.4	52.9	41.6	41.6	41.1	41.6
7 Acacia Avenue	CF47 9RB	Dwelling	48.8	48.6	48.1	48.7	37.9	37.7	37.3	37.8
8 Acacia Avenue	CF47 9RB	Dwelling	51.7	51.7	51.2	51.7	40.5	40.5	40.1	40.5
9 Acacia Avenue	CF47 9RB	Dwelling	48.5	48.4	47.9	48.5	37.7	37.6	37.1	37.6
10 Acacia Avenue	CF47 9RB	Dwelling	50.2	50.4	49.9	50.4	39.2	39.3	38.9	39.3
11 Acacia Avenue	CF47 9RB	Dwelling	48.3	48.2	47.7	48.3	37.5	37.4	36.9	37.4
12 Acacia Avenue	CF47 9RB	Dwelling	51.9	52.1	51.6	52.1	40.7	40.9	40.4	40.9
13 Acacia Avenue	CF47 9RB	Dwelling	49.9	50.0	49.5	50.1	38.9	39.0	38.6	39.0
14 Acacia Avenue	CF47 9RB	Dwelling	51.8	52.0	51.5	52.1	40.6	40.8	40.4	40.8
15 Acacia Avenue	CF47 9RB	Dwelling	51.8	52.1	51.6	52.1	40.6	40.8	40.4	40.9
16 Acacia Avenue	CF47 9RB	Dwelling	51.0	51.3	50.8	51.3	39.9	40.1	39.7	40.2
17 Acacia Avenue	CF47 9RB	Dwelling	52.1	52.3	51.8	52.4	40.8	41.1	40.6	41.1
18 Acacia Avenue	CF47 9RB	Dwelling	51.2	51.4	50.9	51.5	40.0	40.2	39.8	40.3
19 Acacia Avenue	CF47 9RB	Dwelling	51.2	51.4	50.9	51.5	40.0	40.3	39.8	40.3
20 Acacia Avenue	CF47 9RB	Dwelling	48.5	48.8	48.3	48.9	37.6	37.9	37.4	38.0
21 Acacia Avenue	CF47 9RB	Dwelling	51.1	51.3	50.8	51.4	39.9	40.2	39.7	40.2
22 Acacia Avenue	CF47 9RB	Dwelling	46.4	46.7	46.2	46.9	35.8	36.0	35.6	36.2
24 Acacia Avenue	CF47 9RB	Dwelling	50.5	50.8	50.3	50.9	39.5	39.7	39.2	39.8
26 Acacia Avenue	CF47 9RB	Dwelling	47.6	47.9	47.4	48.0	36.8	37.1	36.6	37.2
28 Acacia Avenue	CF47 9RB	Dwelling	47.7	48.0	47.4	48.1	36.9	37.2	36.7	37.3
30 Acacia Avenue	CF47 9RB	Dwelling	46.8	47.0	46.6	47.3	36.1	36.3	35.9	36.6
23 Acacia Avenue	CF47 9RD	Dwelling	47.6	47.9	47.4	48.0	36.9	37.1	36.6	37.2
25 Acacia Avenue	CF47 9RD	Dwelling	47.8	47.9	47.4	48.1	37.0	37.1	36.6	37.2
27 Acacia Avenue	CF47 9RD	Dwelling	50.5	50.6	50.0	50.7	39.4	39.5	39.0	39.6
29 Acacia Avenue	CF47 9RD	Dwelling	47.8	47.9	47.4	48.0	37.0	37.1	36.6	37.2
31 Acacia Avenue	CF47 9RD	Dwelling	49.7	49.8	49.3	49.9	38.7	38.8	38.4	38.8
32 Acacia Avenue	CF47 9RD	Dwelling	49.7	50.1	49.5	50.2	38.7	39.0	38.6	39.1
33 Acacia Avenue	CF47 9RD	Dwelling	47.1	47.3	46.8	47.4	36.4	36.6	36.1	36.6
34 Acacia Avenue	CF47 9RD	Dwelling	47.7	47.9	47.4	48.1	36.9	37.1	36.6	37.2
35 Acacia Avenue	CF47 9RD	Dwelling	47.8	47.9	47.4	48.0	37.0	37.1	36.6	37.2
36 Acacia Avenue	CF47 9RD	Dwelling	47.0	47.2	46.7	47.4	36.3	36.5	36.1	36.7
37 Acacia Avenue	CF47 9RD	Dwelling	47.7	47.8	47.3	47.9	37.0	37.0	36.5	37.1
38 Acacia Avenue	CF47 9RD	Dwelling	46.6	46.8	46.3	47.0	35.9	36.1	35.7	36.3
39 Acacia Avenue	CF47 9RD	Dwelling	49.5	49.6	49.2	49.7	38.6	38.6	38.2	38.7
40 Acacia Avenue	CF47 9RD	Dwelling	45.9	46.2	45.7	46.4	35.3	35.6	35.1	35.7
41 Acacia Avenue	CF47 9RD	Dwelling	47.2	47.3	46.8	47.4	36.5	36.6	36.1	36.6
42 Acacia Avenue	CF47 9RD	Dwelling	47.9	48.1	47.5	48.2	37.1	37.3	36.7	37.3
43 Acacia Avenue	CF47 9RD	Dwelling	46.6	46.7	46.2	46.8	35.9	36.0	35.5	36.1
44 Acacia Avenue	CF47 9RD	Dwelling	49.9	50.1	49.5	50.1	38.9	39.0	38.5	39.0
45 Acacia Avenue	CF47 9RD	Dwelling	46.1	46.3	45.8	46.3	35.5	35.6	35.2	35.7
46 Acacia Avenue	CF47 9RD	Dwelling	45.8	46.0	45.5	46.2	35.2	35.4	35.0	35.5
47 Acacia Avenue	CF47 9RD	Dwelling	45.5	45.6	45.1	45.7	34.9	35.1	34.6	35.1
48 Acacia Avenue	CF47 9RD	Dwelling	47.1	47.5	46.8	47.5	36.4	36.7	36.1	36.7
49 Acacia Avenue	CF47 9RD	Dwelling	49.5	49.5	49.1	49.7	38.6	38.6	38.2	38.7
50 Acacia Avenue	CF47 9RD	Dwelling	49.9	49.9	49.4	50.0	38.9	38.9	38.5	39.0
51 Acacia Avenue	CF47 9RD	Dwelling	49.5	49.6	49.1	49.7	38.6	38.6	38.2	38.7
52 Acacia Avenue	CF47 9RD	Dwelling	47.0	46.9	46.5	47.1	36.3	36.2	35.8	36.4
54 Acacia Avenue	CF47 9RD	Dwelling	50.8	50.7	50.1	50.7	39.7	39.7	39.1	39.6
31 Gurnos Road	CF47 9RE	Dwelling	55.7	55.7	55.0	55.4	44.1	44.1	43.5	43.8
33 Gurnos Road	CF47 9RE	Dwelling	54.5	54.5	53.9	54.2	43.0	43.0	42.5	42.8
35 Gurnos Road	CF47 9RE	Dwelling	51.2	51.2	50.7	51.1	40.1	40.1	39.6	39.9
37 Gurnos Road	CF47 9RE	Dwelling	47.6	47.6	47.1	47.6	36.8	36.8	36.4	36.8
39 Gurnos Road	CF47 9RE	Dwelling	48.1	48.1	47.6	48.1	37.3	37.3	36.8	37.2
41 Gurnos Road	CF47 9RE	Dwelling	47.4	47.4	46.9	47.4	36.7	36.7	36.2	36.6
43 Gurnos Road	CF47 9RE	Dwelling	50.7	50.7	50.2	50.6	39.6	39.6	39.1	39.5
45 Gurnos Road	CF47 9RE	Dwelling	47.4	47.4	46.9	47.3	36.7	36.6	36.2	36.6
47 Gurnos Road	CF47 9RE	Dwelling	47.4	47.4	46.9	47.3	36.7	36.6	36.1	36.6
49 Gurnos Road	CF47 9RE	Dwelling	51.2	51.2	50.7	51.1	40.1	40.1	39.6	39.9
51 Gurnos Road	CF47 9RE	Dwelling	47.5	47.4	46.9	47.4	36.7	36.7	36.2	36.6
53 Gurnos Road	CF47 9RE	Dwelling	50.9	50.9	50.3	50.8	39.8	39.8	39.3	39.7
55 Gurnos Road	CF47 9RE	Dwelling	50.6	50.6	50.1	50.5	39.6	39.5	39.0	39.4
57 Gurnos Road	CF47 9RE	Dwelling	50.9	50.9	50.3	50.8	39.8	39.8	39.3	39.7
59 Gurnos Road	CF47 9RE	Dwelling	47.2	47.2	46.6	47.1	36.5	36.4	36.0	36.3
61 Gurnos Road	CF47 9RE	Dwelling	51.4	51.3	50.8	51.2	40.2	40.2	39.7	40.0
63 Gurnos Road	CF47 9RE	Dwelling	50.7	50.7	50.1	50.5	39.6	39.6	39.1	39.4
65 Gurnos Road	CF47 9RE	Dwelling	66.8	66.8	66.1	66.4	54.1	54.1	53.5	53.7
69 Gurnos Road	CF47 9RE	Dwelling	50.3	50.3	49.7	50.1	39.3	39.3	38.7	39.0
73 Gurnos Road	CF47 9RE	Dwelling	47.2	47.1	46.6	47.0	36.5	36.4	35.9	36.3
24A Gurnos Road	CF47 9RF	Dwelling	48.8	48.8	48.3	48.8	37.9	37.9	37.5	37.9
12 Gurnos Road	CF47 9RF	Dwelling	48.8	48.8	48.2	48.7	37.9	37.9	37.4	37.8
14 Gurnos Road	CF47 9RF	Dwelling	48.8	48.8	48.3	48.7	37.9	37.9	37.4	37.8
16 Gurnos Road	CF47 9RF	Dwelling	49.2	49.2	48.7	49.1	38.3	38.2	37.8	38.2
18 Gurnos Road	CF47 9RF	Dwelling	49.5	49.5	49.0	49.4	38.5	38.5	38.1	38.5
20 Gurnos Road	CF47 9RF	Dwelling	52.1	52.1	51.6	52.0	40.9	40.9	40.4	40.8
22 Gurnos Road	CF47 9RF	Dwelling	49.3	49.3	48.8	49.3	38.4	38.3	37.9	38.3
24 Gurnos Road	CF47 9RF	Dwelling	48.8	48.7	48.3	48.8	37.9	37.9	37.5	37.9
26 Gurnos Road	CF47 9RF	Dwelling	48.3	48.2	47.8	48.3	37.4	37.4	37.0	37.4
28 Gurnos Road	CF47 9RF	Dwelling	48.1	48.0	47.6	48.1	37.3	37.2	36.8	37.2
30 Gurnos Road	CF47 9RF	Dwelling	48.2	48.2	47.7	48.2	37.4	37.3	36.9	37.4
32 Gurnos Road	CF47 9RF	Dwelling	48.2	48.2	47.7	48.2	37.4	37.3	36.9	37.4
34 Gurnos Road	CF47 9RF	Dwelling	48.0	47.9	47.5	48.0	37.2	37.1	36.7	37.1
36 Gurnos Road	CF47 9RF	Dwelling	48.1	48.0	47.6	48.1	37.3	37.2	36.8	37.2
38 Gurnos Road	CF47 9RF	Dwelling	48.3	48.2	47.8	48.3	37.5	37.4	37.0	37.4
40 Gurnos Road	CF47 9RF	Dwelling	48.3	48.3	47.8	48.3	37.5	37.4	37.0	37.5
42 Gurnos Road	CF47 9RF	Dwelling	48.1	48.1	47.6	48.1	37.3	37.2	36.9	37.3
44 Gurnos Road	CF47 9RF	Dwelling	47.7	47.6	47.2	47.7	36.9	36.8	36.4	36.9
46 Gurnos Road	CF47 9RF	Dwelling	48.1	48.0	47.6	48.1	37.3	37.2	36.8	37.3
48 Gurnos Road	CF47 9RF	Dwelling	48.2	48.1	47.7	48.2	37.4	37.3	36.9	37.3
50 Gurnos Road	CF47 9RF	Dwelling	48.0	47.9	47.5	48.0	37.2	37.1	36.7	37.1
52 Gurnos Road	CF47 9RF	Dwelling	47.9	47.8	47.4	47.9	37.1	37.0	36.7	37.1
54 Gurnos Road	CF47 9RF	Dwelling	48.1	48.1	47.6	48.1	37.3	37.2	36.8	37.3
56 Gurnos Road	CF47 9RF	Dwelling	47.8	47.7	47.3	47.8	37.0	36.9	36.5	37.0
58 Gurnos Road	CF47 9RF	Dwelling	47.7	47.6	47.2	47.7	36.9	36.9	36.5	36.9
60 Gurnos Road	CF47 9RF	Dwelling	47.7	47.6	47.2	47.7	36.9	36.8	36.5	36.9

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
62 Gurnos Road	CF47 9RF	Dwelling	47.6	47.5	47.0	47.6	36.8	36.7	36.3	36.8
64 Gurnos Road	CF47 9RF	Dwelling	47.1	47.0	46.6	47.2	36.4	36.3	36.0	36.4
66 Gurnos Road	CF47 9RF	Dwelling	47.4	47.3	46.9	47.5	36.7	36.6	36.2	36.7
68 Gurnos Road	CF47 9RF	Dwelling	46.7	46.7	46.3	46.8	36.0	36.0	35.7	36.1
70 Gurnos Road	CF47 9RF	Dwelling	46.9	46.8	46.4	46.9	36.2	36.1	35.7	36.2
St John'S Ambulance Hall Gwaunfarren Road	CF47 9RG	OSR	49.4	49.5	49.1	49.7	38.5	38.6	38.2	38.7
1 Chase View	CF47 9RG	Dwelling	66.5	66.5	65.8	66.1	53.9	53.8	53.2	53.4
2 Chase View	CF47 9RG	Dwelling	62.7	62.7	62.0	62.3	50.4	50.4	49.8	50.0
3 Chase View	CF47 9RG	Dwelling	62.1	62.1	61.4	61.7	49.9	49.8	49.3	49.5
4 Chase View	CF47 9RG	Dwelling	60.2	60.2	59.5	59.8	48.2	48.1	47.5	47.8
5 Chase View	CF47 9RG	Dwelling	57.4	57.3	56.7	57.0	45.6	45.6	45.0	45.3
6 Chase View	CF47 9RG	Dwelling	56.7	56.7	56.0	56.3	45.0	45.0	44.4	44.7
7 Chase View	CF47 9RG	Dwelling	56.0	56.0	55.3	55.7	44.4	44.4	43.8	44.1
8 Chase View	CF47 9RG	Dwelling	51.9	52.0	51.5	52.0	40.7	40.8	40.4	40.8
10 Chase View	CF47 9RG	Dwelling	51.7	51.8	51.4	51.9	40.5	40.6	40.2	40.7
11 Chase View	CF47 9RG	Dwelling	51.2	51.3	50.9	51.4	40.0	40.1	39.8	40.2
13 Chase View	CF47 9RG	Dwelling	50.5	50.7	50.3	50.7	39.5	39.6	39.2	39.7
15 Chase View	CF47 9RG	Dwelling	51.1	51.2	50.8	51.3	40.0	40.1	39.7	40.2
17 Chase View	CF47 9RG	Dwelling	52.3	52.4	52.0	52.5	41.1	41.2	40.8	41.2
18 Chase View	CF47 9RG	Dwelling	57.4	57.4	56.8	57.2	45.7	45.7	45.1	45.4
19 Chase View	CF47 9RG	Dwelling	58.5	58.5	57.8	58.2	46.6	46.6	46.0	46.3
20 Chase View	CF47 9RG	Dwelling	59.0	59.0	58.3	58.7	47.1	47.1	46.5	46.8
21 Chase View	CF47 9RG	Dwelling	60.5	60.5	59.9	60.1	48.5	48.4	47.9	48.1
22 Chase View	CF47 9RG	Dwelling	63.0	62.9	62.3	62.6	50.7	50.6	50.0	50.3
23 Chase View	CF47 9RG	Dwelling	61.2	61.2	60.5	60.8	49.1	49.1	48.5	48.7
24 Chase View	CF47 9RG	Dwelling	71.4	71.4	70.7	71.0	58.3	58.2	57.6	57.8
Ivy Close 1 Hawthorn Avenue	CF47 9RP	Dwelling	55.2	55.2	54.7	55.1	43.6	43.7	43.2	43.5
Ivy Close 2 Hawthorn Avenue	CF47 9RP	Dwelling	53.1	53.3	52.7	53.1	41.8	41.9	41.4	41.8
Ivy Close 3 Hawthorn Avenue	CF47 9RP	Dwelling	54.8	54.9	54.4	54.8	43.3	43.4	42.9	43.3
Ivy Close 4 Hawthorn Avenue	CF47 9RP	Dwelling	53.1	53.2	52.7	53.2	41.8	41.9	41.4	41.8
Ivy Close 5 Hawthorn Avenue	CF47 9RP	Dwelling	50.8	50.9	50.5	51.0	39.7	39.8	39.4	39.9
52 Hawthorn Avenue	CF47 9RR	Dwelling	49.5	49.6	49.1	49.8	38.6	38.6	38.2	38.8
53 Hawthorn Avenue	CF47 9RR	Dwelling	47.3	47.2	46.9	47.5	36.5	36.5	36.2	36.7
54 Hawthorn Avenue	CF47 9RR	Dwelling	46.3	46.2	46.0	46.6	35.6	35.6	35.4	35.9
55 Hawthorn Avenue	CF47 9RR	Dwelling	47.3	47.3	46.9	47.5	36.6	36.5	36.2	36.8
56 Hawthorn Avenue	CF47 9RR	Dwelling	45.9	45.8	45.5	46.2	35.3	35.2	35.0	35.6
57 Hawthorn Avenue	CF47 9RR	Dwelling	47.3	47.3	46.9	47.5	36.5	36.5	36.2	36.7
58 Hawthorn Avenue	CF47 9RR	Dwelling	48.9	48.9	48.5	49.2	38.0	38.0	37.7	38.2
59 Hawthorn Avenue	CF47 9RR	Dwelling	47.3	47.2	46.9	47.5	36.5	36.5	36.2	36.7
60 Hawthorn Avenue	CF47 9RR	Dwelling	46.3	46.2	46.0	46.7	35.7	35.6	35.4	36.0
61 Hawthorn Avenue	CF47 9RR	Dwelling	47.4	47.4	47.1	47.7	36.7	36.6	36.3	36.9
62 Hawthorn Avenue	CF47 9RR	Dwelling	45.9	45.9	45.6	46.3	35.3	35.3	35.0	35.6
63 Hawthorn Avenue	CF47 9RR	Dwelling	47.0	46.9	46.6	47.2	36.3	36.2	35.9	36.5
64 Hawthorn Avenue	CF47 9RR	Dwelling	46.5	46.5	46.2	46.9	35.8	35.9	35.6	36.2
65 Hawthorn Avenue	CF47 9RR	Dwelling	47.0	47.0	46.7	47.3	36.3	36.3	36.0	36.5
66 Hawthorn Avenue	CF47 9RR	Dwelling	47.1	47.2	46.8	47.5	36.4	36.4	36.1	36.7
67 Hawthorn Avenue	CF47 9RR	Dwelling	46.8	46.8	46.5	47.1	36.1	36.1	35.8	36.3
68 Hawthorn Avenue	CF47 9RR	Dwelling	46.4	46.4	46.1	46.8	35.7	35.8	35.5	36.1
69 Hawthorn Avenue	CF47 9RR	Dwelling	49.3	49.3	48.9	49.5	38.4	38.3	38.0	38.5
71 Hawthorn Avenue	CF47 9RR	Dwelling	46.5	46.4	46.1	46.8	35.9	35.8	35.5	36.1
73 Hawthorn Avenue	CF47 9RR	Dwelling	47.0	46.9	46.6	47.2	36.2	36.2	35.9	36.5
75 Hawthorn Avenue	CF47 9RR	Dwelling	46.3	46.2	45.9	46.5	35.6	35.6	35.3	35.8
1 Walnut Way	CF47 9RS	Dwelling	49.1	49.2	48.7	49.3	38.2	38.3	37.9	38.3
2 Walnut Way	CF47 9RS	Dwelling	48.5	48.6	48.2	48.7	37.7	37.7	37.3	37.8
3 Walnut Way	CF47 9RS	Dwelling	46.2	46.2	45.9	46.6	35.6	35.6	35.3	35.9
4 Walnut Way	CF47 9RS	Dwelling	49.2	49.4	48.9	49.5	38.3	38.4	38.0	38.5
9 Walnut Way	CF47 9RS	Dwelling	46.8	46.9	46.6	47.3	36.1	36.2	36.0	36.5
11 Walnut Way	CF47 9RS	Dwelling	46.7	46.8	46.6	47.2	36.1	36.1	35.9	36.4
13 Walnut Way	CF47 9RS	Dwelling	46.9	47.0	46.7	47.4	36.2	36.3	36.0	36.6
15 Walnut Way	CF47 9RS	Dwelling	49.1	49.2	48.9	49.5	38.2	38.3	37.9	38.5
17 Walnut Way	CF47 9RS	Dwelling	47.4	47.6	47.3	47.9	36.7	36.8	36.5	37.1
19 Walnut Way	CF47 9RS	Dwelling	47.2	47.4	47.1	47.7	36.5	36.6	36.3	36.9
21 Walnut Way	CF47 9RS	Dwelling	48.9	49.1	48.7	49.4	38.0	38.1	37.8	38.4
23 Walnut Way	CF47 9RS	Dwelling	49.3	49.4	49.0	49.7	38.4	38.4	38.1	38.7
25 Walnut Way	CF47 9RS	Dwelling	48.8	48.9	48.6	49.3	37.9	38.0	37.7	38.3
70 Hawthorn Avenue	CF47 9RT	Dwelling	46.0	45.9	45.7	46.3	35.4	35.3	35.1	35.7
72 Hawthorn Avenue	CF47 9RT	Dwelling	45.5	45.3	45.1	45.8	35.0	34.8	34.6	35.2
74 Hawthorn Avenue	CF47 9RT	Dwelling	45.6	45.4	45.2	45.9	35.0	34.9	34.7	35.3
76 Hawthorn Avenue	CF47 9RT	Dwelling	45.9	45.7	45.5	46.2	35.3	35.1	34.9	35.6
77 Hawthorn Avenue	CF47 9RT	Dwelling	46.3	46.2	46.0	46.6	35.7	35.6	35.4	35.9
78 Hawthorn Avenue	CF47 9RT	Dwelling	45.7	45.6	45.4	46.1	35.1	35.0	34.8	35.4
79 Hawthorn Avenue	CF47 9RT	Dwelling	46.3	46.2	46.0	46.6	35.7	35.6	35.4	35.9
81 Hawthorn Avenue	CF47 9RT	Dwelling	46.3	46.2	45.9	46.6	35.6	35.5	35.3	35.9
83 Hawthorn Avenue	CF47 9RT	Dwelling	46.4	46.3	46.0	46.6	35.7	35.6	35.4	35.9
85 Hawthorn Avenue	CF47 9RT	Dwelling	46.1	46.0	45.8	46.4	35.5	35.4	35.2	35.8
87 Hawthorn Avenue	CF47 9RT	Dwelling	46.3	46.2	45.9	46.6	35.7	35.6	35.3	35.9
89 Hawthorn Avenue	CF47 9RT	Dwelling	45.8	45.7	45.4	46.0	35.2	35.1	34.9	35.4
91 Hawthorn Avenue	CF47 9RT	Dwelling	46.7	46.6	46.3	46.9	36.0	35.9	35.6	36.2
1 Sycamore Road	CF47 9RU	Dwelling	66.3	66.3	65.6	65.9	53.7	53.6	53.0	53.3
2 Sycamore Road	CF47 9RU	Dwelling	67.4	67.4	66.7	67.0	54.7	54.6	54.0	54.2
3 Sycamore Road	CF47 9RU	Dwelling	51.8	51.8	51.3	51.7	40.6	40.6	40.1	40.5
4 Sycamore Road	CF47 9RU	Dwelling	47.5	47.3	46.9	47.4	36.7	36.5	36.2	36.7
5 Sycamore Road	CF47 9RU	Dwelling	46.9	46.7	46.5	47.1	36.2	36.0	35.8	36.4
6 Sycamore Road	CF47 9RU	Dwelling	48.6	48.5	48.0	48.5	37.8	37.6	37.2	37.7
7 Sycamore Road	CF47 9RU	Dwelling	46.9	47.0	46.5	47.0	36.2	36.3	35.8	36.3
8 Sycamore Road	CF47 9RU	Dwelling	46.1	46.1	45.8	46.3	35.5	35.5	35.2	35.6
9 Sycamore Road	CF47 9RU	Dwelling	50.1	50.2	49.7	50.3	39.1	39.1	38.7	39.2
10 Sycamore Road	CF47 9RU	Dwelling	48.3	48.1	47.7	48.3	37.4	37.3	36.9	37.4
11 Sycamore Road	CF47 9RU	Dwelling	49.4	49.5	49.1	49.6	38.5	38.5	38.1	38.6
12 Sycamore Road	CF47 9RU	Dwelling	48.2	48.1	47.7	48.3	37.4	37.3	36.9	37.4
13 Sycamore Road	CF47 9RU	Dwelling	49.6	49.7	49.2	49.8	38.6	38.7	38.3	38.8
14 Sycamore Road	CF47 9RU	Dwelling	47.3	47.2	46.8	47.4	36.6	36.4	36.1	36.6
15 Sycamore Road	CF47 9RU	Dwelling	44.9	44.6	44.5	45.2	34.4	34.1	34.0	34.6
16 Sycamore Road	CF47 9RU	Dwelling	50.2	50.1	49.6	50.2	39.2	39.1	38.6	39.1
17 Sycamore Road	CF47 9RU	Dwelling	50.2	50.3	49.8	50.4	39.2	39.2	38.8	39.3
18 Sycamore Road	CF47 9RU	Dwelling	47.8	47.6	47.3	47.9	37.0	36.9	36.5	37.1
19 Sycamore Road	CF47 9RU	Dwelling	50.1	50.2	49.7	50.3	39.1	39.1	38.7	39.3
20 Sycamore Road	CF47 9RU	Dwelling	45.9	45.8	45.5	46.2	35.3	35.2	35.0	35.6
21 Sycamore Road	CF47 9RU	Dwelling	49.5	49.7	49.2	49.8	38.6	38.7	38.3	38.8
22 Sycamore Road	CF47 9RU	Dwelling	50.5	50.6	50.1	50.7	39.4	39.5	39.1	39.6
23 Sycamore Road	CF47 9RU	Dwelling	47.2	47.4	46.9	47.5	36.5	36.6	36.2	36.7
24 Sycamore Road	CF47 9RU	Dwelling	50.3	50.4	50.0	50.6	39.3	39.4	39.0	39.5
25 Sycamore Road	CF47 9RU	Dwelling	49.1	49.3	48.8	49.4	38.2	38.3	37.9	38.4
26 Sycamore Road	CF47 9RU	Dwelling	50.2	50.3	49.9	50.5	39.2	39.3	38.9	39.4
27 Sycamore Road	CF47 9RU	Dwelling	49.7	49.8	49.4	50.0	38.7	38.8	38.5	39.0
28 Sycamore Road	CF47 9RU	Dwelling	47.0	46.7	46.6	47.4	36.3	36.0	35.9	36.6
29 Sycamore Road	CF47 9RU	Dwelling	48.1	48.1	47.9	48.5	37.3	37.3	37.1	37.6

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
30 Sycamore Road	CF47 9RU	Dwelling	50.1	50.2	49.8	50.4	39.1	39.2	38.8	39.3
31 Sycamore Road	CF47 9RU	Dwelling	48.8	48.9	48.5	49.2	37.9	38.0	37.7	38.2
32 Sycamore Road	CF47 9RU	Dwelling	47.4	47.6	47.2	47.8	36.7	36.8	36.4	37.0
33 Sycamore Road	CF47 9RU	Dwelling	45.7	45.3	45.4	46.2	35.1	34.8	34.8	35.6
34 Sycamore Road	CF47 9RU	Dwelling	50.2	50.2	49.9	50.6	39.2	39.2	38.9	39.5
35 Sycamore Road	CF47 9RU	Dwelling	46.7	47.0	46.5	47.2	36.0	36.2	35.9	36.4
36 Sycamore Road	CF47 9RU	Dwelling	49.8	49.9	49.6	50.2	38.8	38.9	38.6	39.2
37 Sycamore Road	CF47 9RU	Dwelling	49.4	49.5	49.1	49.8	38.4	38.5	38.2	38.8
38 Sycamore Road	CF47 9RU	Dwelling	49.3	49.4	49.0	49.7	38.4	38.4	38.1	38.7
39 Sycamore Road	CF47 9RU	Dwelling	46.3	46.0	46.0	46.8	35.7	35.4	35.4	36.1
40 Sycamore Road	CF47 9RU	Dwelling	49.4	49.5	49.2	49.8	38.5	38.6	38.2	38.8
41 Sycamore Road	CF47 9RU	Dwelling	46.9	47.1	46.7	47.4	36.2	36.4	36.1	36.6
42 Sycamore Road	CF47 9RU	Dwelling	49.6	49.7	49.4	50.0	38.6	38.7	38.4	39.0
43 Sycamore Road	CF47 9RU	Dwelling	47.3	47.5	47.1	47.8	36.6	36.8	36.4	37.0
44 Sycamore Road	CF47 9RU	Dwelling	46.4	46.0	46.1	46.9	35.7	35.4	35.4	36.2
45 Sycamore Road	CF47 9RU	Dwelling	49.0	49.1	48.7	49.4	38.1	38.2	37.8	38.4
46 Sycamore Road	CF47 9RU	Dwelling	48.1	48.2	47.9	48.6	37.3	37.4	37.1	37.7
47 Sycamore Road	CF47 9RU	Dwelling	46.2	46.4	46.0	46.7	35.6	35.8	35.4	36.0
48 Sycamore Road	CF47 9RU	Dwelling	48.9	49.0	48.7	49.4	38.0	38.1	37.8	38.4
49 Sycamore Road	CF47 9RU	Dwelling	49.3	49.4	49.0	49.7	38.3	38.4	38.1	38.7
50 Sycamore Road	CF47 9RU	Dwelling	46.6	46.9	46.4	47.1	36.0	36.2	35.8	36.4
51 Sycamore Road	CF47 9RU	Dwelling	49.0	49.1	48.8	49.5	38.1	38.2	37.9	38.5
52 Sycamore Road	CF47 9RU	Dwelling	49.1	49.2	48.8	49.5	38.2	38.3	37.9	38.6
53 Sycamore Road	CF47 9RU	Dwelling	48.7	48.8	48.5	49.1	37.8	37.9	37.6	38.2
54 Sycamore Road	CF47 9RU	Dwelling	46.6	46.8	46.4	47.1	35.9	36.1	35.8	36.3
55 Sycamore Road	CF47 9RU	Dwelling	48.3	48.4	48.1	48.8	37.5	37.5	37.2	37.9
56 Sycamore Road	CF47 9RU	Dwelling	46.7	46.9	46.5	47.2	36.0	36.2	35.8	36.4
57 Sycamore Road	CF47 9RU	Dwelling	45.8	45.8	45.6	46.3	35.2	35.2	35.0	35.6
58 Sycamore Road	CF47 9RU	Dwelling	48.9	49.0	48.7	49.4	38.0	38.1	37.8	38.4
59 Sycamore Road	CF47 9RU	Dwelling	47.7	47.5	47.3	48.1	36.9	36.7	36.6	37.3
61 Sycamore Road	CF47 9RU	Dwelling	47.6	47.4	47.2	48.0	36.8	36.6	36.5	37.2
63 Sycamore Road	CF47 9RU	Dwelling	49.2	49.4	49.0	49.7	38.3	38.4	38.1	38.7
65 Sycamore Road	CF47 9RU	Dwelling	47.6	47.8	47.4	48.1	36.8	37.0	36.6	37.2
1 Hawthorn Avenue	CF47 9RW	Dwelling	68.5	68.5	67.8	68.1	55.7	55.6	55.0	55.2
2 Hawthorn Avenue	CF47 9RW	Dwelling	52.6	52.7	52.3	52.8	41.4	41.4	41.0	41.5
3 Hawthorn Avenue	CF47 9RW	Dwelling	62.7	62.7	62.0	62.3	50.4	50.4	49.8	50.0
4 Hawthorn Avenue	CF47 9RW	Dwelling	50.6	50.7	50.3	50.9	39.5	39.6	39.3	39.8
5 Hawthorn Avenue	CF47 9RW	Dwelling	56.5	56.5	55.9	56.2	44.9	44.8	44.3	44.5
6 Hawthorn Avenue	CF47 9RW	Dwelling	50.2	50.3	50.0	50.5	39.1	39.2	38.9	39.4
7 Hawthorn Avenue	CF47 9RW	Dwelling	48.1	48.2	47.7	48.2	37.3	37.3	36.9	37.4
8 Hawthorn Avenue	CF47 9RW	Dwelling	50.2	50.3	50.0	50.5	39.2	39.3	39.0	39.5
9 Hawthorn Avenue	CF47 9RW	Dwelling	50.5	50.5	50.1	50.6	39.4	39.5	39.1	39.5
10 Hawthorn Avenue	CF47 9RW	Dwelling	49.6	49.8	49.5	50.0	38.6	38.8	38.5	39.0
11 Hawthorn Avenue	CF47 9RW	Dwelling	48.3	48.3	48.0	48.5	37.5	37.5	37.2	37.6
12 Hawthorn Avenue	CF47 9RW	Dwelling	50.1	50.2	49.8	50.4	39.1	39.1	38.8	39.3
13 Hawthorn Avenue	CF47 9RW	Dwelling	47.6	47.6	47.3	47.8	36.9	36.8	36.6	37.0
14 Hawthorn Avenue	CF47 9RW	Dwelling	49.0	49.1	48.7	49.3	38.1	38.1	37.8	38.3
15 Hawthorn Avenue	CF47 9RW	Dwelling	47.5	47.5	47.1	47.6	36.7	36.7	36.4	36.8
16 Hawthorn Avenue	CF47 9RW	Dwelling	49.0	49.1	48.8	49.3	38.1	38.2	37.9	38.4
17 Hawthorn Avenue	CF47 9RW	Dwelling	48.0	48.0	47.6	48.2	37.2	37.2	36.9	37.3
18 Hawthorn Avenue	CF47 9RW	Dwelling	47.5	47.5	47.1	47.7	36.7	36.7	36.4	36.9
19 Hawthorn Avenue	CF47 9RW	Dwelling	47.4	47.4	47.1	47.6	36.7	36.6	36.3	36.8
20 Hawthorn Avenue	CF47 9RW	Dwelling	49.3	49.4	49.0	49.6	38.4	38.4	38.1	38.6
21 Hawthorn Avenue	CF47 9RW	Dwelling	47.4	47.4	47.1	47.6	36.7	36.6	36.3	36.8
22 Hawthorn Avenue	CF47 9RW	Dwelling	49.1	49.3	48.9	49.4	38.2	38.4	38.0	38.4
23 Hawthorn Avenue	CF47 9RW	Dwelling	47.7	47.7	47.4	47.9	36.9	36.9	36.6	37.1
24 Hawthorn Avenue	CF47 9RW	Dwelling	50.8	51.0	50.5	51.0	39.7	39.8	39.4	39.8
25 Hawthorn Avenue	CF47 9RW	Dwelling	47.1	47.1	46.7	47.3	36.4	36.3	36.0	36.5
26 Hawthorn Avenue	CF47 9RW	Dwelling	48.6	48.6	48.3	48.9	37.7	37.7	37.4	38.0
27 Hawthorn Avenue	CF47 9RW	Dwelling	47.1	47.1	46.8	47.3	36.4	36.4	36.1	36.6
28 Hawthorn Avenue	CF47 9RW	Dwelling	45.6	45.6	45.4	46.0	35.1	35.0	34.8	35.4
29 Hawthorn Avenue	CF47 9RW	Dwelling	49.7	49.7	49.2	49.8	38.7	38.7	38.3	38.8
30 Hawthorn Avenue	CF47 9RW	Dwelling	46.1	46.0	45.8	46.5	35.5	35.4	35.2	35.8
31 Hawthorn Avenue	CF47 9RW	Dwelling	50.4	50.4	49.9	50.4	39.4	39.3	38.9	39.3
32 Hawthorn Avenue	CF47 9RW	Dwelling	46.3	46.4	46.0	46.6	35.6	35.7	35.4	35.9
33 Hawthorn Avenue	CF47 9RW	Dwelling	49.5	49.5	49.0	49.6	38.6	38.5	38.1	38.6
34 Hawthorn Avenue	CF47 9RW	Dwelling	49.9	50.0	49.6	50.1	38.9	39.0	38.6	39.0
35 Hawthorn Avenue	CF47 9RW	Dwelling	46.8	46.7	46.3	47.0	36.1	36.0	35.7	36.2
36 Hawthorn Avenue	CF47 9RW	Dwelling	50.0	50.1	49.7	50.2	38.9	39.1	38.7	39.1
37 Hawthorn Avenue	CF47 9RW	Dwelling	46.8	46.8	46.4	47.0	36.1	36.1	35.7	36.3
38 Hawthorn Avenue	CF47 9RW	Dwelling	50.0	50.2	49.8	50.3	39.0	39.2	38.8	39.2
39 Hawthorn Avenue	CF47 9RW	Dwelling	46.8	46.7	46.4	47.0	36.1	36.0	35.7	36.2
40 Hawthorn Avenue	CF47 9RW	Dwelling	47.7	47.9	47.5	48.0	36.9	37.1	36.7	37.2
41 Hawthorn Avenue	CF47 9RW	Dwelling	47.1	47.0	46.7	47.3	36.4	36.3	36.0	36.5
42 Hawthorn Avenue	CF47 9RW	Dwelling	45.7	45.5	45.4	46.1	35.1	35.0	34.8	35.4
43 Hawthorn Avenue	CF47 9RW	Dwelling	47.1	47.0	46.7	47.3	36.4	36.3	36.0	36.5
44 Hawthorn Avenue	CF47 9RW	Dwelling	49.4	49.6	49.1	49.6	38.5	38.6	38.2	38.6
45 Hawthorn Avenue	CF47 9RW	Dwelling	47.1	47.0	46.7	47.3	36.4	36.3	36.0	36.6
46 Hawthorn Avenue	CF47 9RW	Dwelling	49.4	49.5	49.0	49.6	38.4	38.6	38.1	38.6
47 Hawthorn Avenue	CF47 9RW	Dwelling	49.8	49.8	49.3	49.9	38.8	38.8	38.4	38.9
48 Hawthorn Avenue	CF47 9RW	Dwelling	48.8	48.8	48.3	49.0	37.9	37.9	37.5	38.0
49 Hawthorn Avenue	CF47 9RW	Dwelling	47.3	47.3	46.9	47.5	36.6	36.5	36.2	36.8
50 Hawthorn Avenue	CF47 9RW	Dwelling	46.6	46.4	46.2	46.9	35.9	35.8	35.6	36.2
51 Hawthorn Avenue	CF47 9RW	Dwelling	47.5	47.4	47.1	47.7	36.7	36.7	36.4	36.9
1 Beech Grove	CF47 9RY	Dwelling	48.1	48.2	48.0	48.7	37.3	37.4	37.2	37.8
2 Beech Grove	CF47 9RY	Dwelling	48.3	48.3	48.0	48.8	37.5	37.5	37.2	37.9
3 Beech Grove	CF47 9RY	Dwelling	48.0	47.9	47.7	48.5	37.2	37.1	36.9	37.6
4 Beech Grove	CF47 9RY	Dwelling	46.9	46.7	46.5	47.3	36.2	36.0	35.9	36.5
5 Beech Grove	CF47 9RY	Dwelling	47.6	47.6	47.3	48.0	36.8	36.8	36.6	37.2
6 Beech Grove	CF47 9RY	Dwelling	44.5	44.3	44.2	44.9	34.0	33.9	33.8	34.4
7 Beech Grove	CF47 9RY	Dwelling	47.0	47.3	46.8	47.5	36.3	36.5	36.1	36.7
8 Beech Grove	CF47 9RY	Dwelling	46.0	45.6	45.6	46.4	35.3	35.0	35.0	35.7
9 Beech Grove	CF47 9RY	Dwelling	49.0	49.1	48.8	49.5	38.1	38.2	37.9	38.5
10 Beech Grove	CF47 9RY	Dwelling	48.3	48.4	48.1	48.7	37.5	37.5	37.2	37.9
11 Beech Grove	CF47 9RY	Dwelling	48.3	48.3	48.1	48.8	37.4	37.5	37.3	37.9
12 Beech Grove	CF47 9RY	Dwelling	44.6	44.4	44.2	44.9	34.2	33.9	33.7	34.4
13 Beech Grove	CF47 9RY	Dwelling	47.0	47.3	46.8	47.5	36.3	36.5	36.1	36.7
14 Beech Grove	CF47 9RY	Dwelling	44.9	44.6	44.5	45.2	34.4	34.2	34.0	34.6
15 Beech Grove	CF47 9RY	Dwelling	46.5	46.6	46.3	47.0	35.8	35.9	35.6	36.3
16 Beech Grove	CF47 9RY	Dwelling	45.1	44.9	44.9	45.7	34.6	34.4	34.4	35.1
17 Beech Grove	CF47 9RY	Dwelling	48.3	48.4	48.1	48.8	37.5	37.5	37.2	37.9
18 Beech Grove	CF47 9RY	Dwelling	48.2	48.2	47.9	48.6	37.3	37.3	37.1	37.7
19 Beech Grove	CF47 9RY	Dwelling	44.3	44.1	44.0	44.7	33.9	33.7	33.6	34.2
20 Beech Grove	CF47 9RY	Dwelling	45.1	44.9	44.7	45.4	34.6	34.4	34.2	34.8
21 Beech Grove	CF47 9RY	Dwelling	47.5	47.4	47.1	47.8	36.7	36.6	36.4	37.0
22 Beech Grove	CF47 9RY	Dwelling	45.2	45.0	44.8	45.5	34.7	34.5	34.3	34.9
23 Beech Grove	CF47 9RY	Dwelling	46.2	46.2	46.0	46.7	35.5	35.5	35.4	36.0

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
24 Beech Grove	CF47 9RY	Dwelling	46.4	46.0	46.1	46.9	35.7	35.4	35.4	36.2
25 Beech Grove	CF47 9RY	Dwelling	45.1	45.2	44.9	45.6	34.6	34.6	34.4	35.0
26 Beech Grove	CF47 9RY	Dwelling	48.7	48.7	48.4	49.1	37.8	37.8	37.5	38.1
27 Beech Grove	CF47 9RY	Dwelling	47.0	46.7	46.6	47.4	36.3	36.0	36.0	36.7
28 Beech Grove	CF47 9RY	Dwelling	47.1	47.0	46.9	47.7	36.4	36.3	36.2	36.9
29 Beech Grove	CF47 9RY	Dwelling	46.5	46.3	46.3	47.0	35.9	35.7	35.6	36.3
30 Beech Grove	CF47 9RY	Dwelling	46.6	46.6	46.4	47.1	36.0	35.9	35.7	36.4
31 Beech Grove	CF47 9RY	Dwelling	48.6	48.3	48.0	48.8	37.7	37.4	37.2	37.9
32 Beech Grove	CF47 9RY	Dwelling	45.4	45.3	45.0	45.6	34.9	34.8	34.4	35.0
33 Beech Grove	CF47 9RY	Dwelling	48.3	48.0	47.7	48.6	37.5	37.1	37.0	37.7
35 Beech Grove	CF47 9RY	Dwelling	48.7	48.5	48.2	48.9	37.8	37.6	37.4	38.0
37 Beech Grove	CF47 9RY	Dwelling	49.5	49.4	49.1	49.8	38.5	38.5	38.2	38.8
39 Beech Grove	CF47 9RY	Dwelling	49.4	49.3	49.0	49.7	38.4	38.3	38.0	38.7
41 Beech Grove	CF47 9RY	Dwelling	49.2	49.1	48.8	49.5	38.3	38.2	37.9	38.5
43 Beech Grove	CF47 9RY	Dwelling	46.3	46.0	45.9	46.7	35.6	35.4	35.3	36.0
1 Goitre Lane	CF47 9SA	Dwelling	49.3	49.4	49.1	49.8	38.4	38.4	38.1	38.8
2 Goitre Lane	CF47 9SA	Dwelling	46.2	46.4	46.0	46.7	35.6	35.8	35.4	36.0
3 Goitre Lane	CF47 9SA	Dwelling	44.5	44.4	44.3	45.0	34.1	34.0	33.8	34.4
4 Goitre Lane	CF47 9SA	Dwelling	45.5	45.2	45.2	46.0	34.9	34.6	34.7	35.4
5 Goitre Lane	CF47 9SA	Dwelling	46.0	45.7	45.6	46.4	35.4	35.1	35.0	35.8
6 Goitre Lane	CF47 9SA	Dwelling	46.7	46.8	46.4	47.2	36.0	36.1	35.8	36.4
7 Goitre Lane	CF47 9SA	Dwelling	47.0	47.2	46.8	47.5	36.3	36.4	36.1	36.8
8 Goitre Lane	CF47 9SA	Dwelling	49.8	49.7	49.3	50.1	38.8	38.7	38.3	39.0
9 Goitre Lane	CF47 9SA	Dwelling	48.4	48.5	48.2	48.9	37.6	37.6	37.3	38.0
10 Goitre Lane	CF47 9SA	Dwelling	48.2	48.1	47.8	48.6	37.4	37.3	37.0	37.7
11 Goitre Lane	CF47 9SA	Dwelling	45.7	45.9	45.5	46.2	35.1	35.3	34.9	35.5
12 Goitre Lane	CF47 9SA	Dwelling	48.0	48.0	47.7	48.5	37.2	37.2	36.9	37.6
13 Goitre Lane	CF47 9SA	Dwelling	45.6	45.6	45.4	46.2	35.0	35.0	34.9	35.5
14 Goitre Lane	CF47 9SA	Dwelling	48.9	49.0	48.7	49.4	38.0	38.1	37.8	38.4
15 Goitre Lane	CF47 9SA	Dwelling	45.9	45.7	45.7	46.5	35.3	35.1	35.1	35.8
16 Goitre Lane	CF47 9SA	Dwelling	47.4	47.2	47.0	47.8	36.7	36.5	36.3	37.0
17 Goitre Lane	CF47 9SA	Dwelling	45.8	45.8	45.6	46.4	35.2	35.2	35.1	35.7
18 Goitre Lane	CF47 9SA	Dwelling	44.6	44.4	44.3	45.0	34.1	33.9	33.8	34.5
19 Goitre Lane	CF47 9SA	Dwelling	48.8	48.8	48.5	49.3	37.9	37.9	37.7	38.3
20 Goitre Lane	CF47 9SA	Dwelling	47.3	47.0	46.8	47.6	36.5	36.3	36.1	36.8
21 Goitre Lane	CF47 9SA	Dwelling	46.8	46.8	46.6	47.3	36.1	36.1	35.9	36.5
22 Goitre Lane	CF47 9SA	Dwelling	44.8	44.6	44.5	45.3	34.3	34.2	34.1	34.7
23 Goitre Lane	CF47 9SA	Dwelling	44.9	44.7	44.6	45.3	34.4	34.2	34.1	34.7
24 Goitre Lane	CF47 9SA	Dwelling	51.2	51.2	50.9	51.4	40.1	40.0	39.8	40.2
25 Goitre Lane	CF47 9SA	Dwelling	44.8	44.7	44.5	45.2	34.3	34.2	34.0	34.6
26 Goitre Lane	CF47 9SA	Dwelling	51.8	51.8	51.5	51.9	40.6	40.6	40.3	40.7
27 Goitre Lane	CF47 9SA	Dwelling	45.1	45.0	44.8	45.5	34.6	34.4	34.3	34.9
28 Goitre Lane	CF47 9SA	Dwelling	48.0	47.9	47.7	48.4	37.2	37.1	36.9	37.5
29 Goitre Lane	CF47 9SA	Dwelling	45.0	44.9	44.7	45.4	34.5	34.4	34.2	34.8
30 Goitre Lane	CF47 9SA	Dwelling	47.6	47.6	47.3	48.1	36.8	36.8	36.6	37.2
31 Goitre Lane	CF47 9SA	Dwelling	45.0	44.9	44.7	45.4	34.5	34.4	34.2	34.8
32 Goitre Lane	CF47 9SA	Dwelling	52.9	52.9	52.5	52.9	41.6	41.6	41.2	41.6
33 Goitre Lane	CF47 9SA	Dwelling	45.4	45.3	45.1	45.7	34.9	34.7	34.5	35.1
34 Goitre Lane	CF47 9SA	Dwelling	53.1	53.1	52.7	53.1	41.8	41.8	41.4	41.7
35 Goitre Lane	CF47 9SA	Dwelling	45.9	46.0	45.6	46.3	35.3	35.4	35.0	35.7
36 Goitre Lane	CF47 9SA	Dwelling	46.3	45.9	46.0	46.9	35.7	35.3	35.4	36.2
37 Goitre Lane	CF47 9SA	Dwelling	47.3	47.3	47.1	47.8	36.6	36.5	36.4	37.0
38 Goitre Lane	CF47 9SA	Dwelling	45.7	45.5	45.4	46.2	35.1	34.9	34.9	35.6
39 Goitre Lane	CF47 9SA	Dwelling	47.6	47.4	47.3	48.1	36.8	36.6	36.6	37.2
40 Goitre Lane	CF47 9SA	Dwelling	56.2	56.2	55.6	56.0	44.6	44.6	44.0	44.3
41 Goitre Lane	CF47 9SA	Dwelling	49.5	49.3	48.9	49.6	38.5	38.4	38.0	38.6
42 Goitre Lane	CF47 9SA	Dwelling	55.5	55.3	55.0	55.5	43.9	43.8	43.5	43.9
43 Goitre Lane	CF47 9SA	Dwelling	56.2	56.2	55.7	56.0	44.6	44.6	44.1	44.4
Chestnut Way	CF47 9SB	Dwelling	56.4	56.4	55.3	55.7	44.7	44.7	43.7	44.1
St Aloysius Presbytery Church Chestnut Way	CF47 9SB	Dwelling	49.1	49.0	48.4	49.1	38.2	38.0	37.6	38.1
2 Chestnut Way	CF47 9SB	Dwelling	65.4	65.5	64.1	64.4	52.9	52.9	51.6	51.9
4 Chestnut Way	CF47 9SB	Dwelling	56.8	56.8	55.7	56.0	45.1	45.1	44.1	44.4
6 Chestnut Way	CF47 9SB	Dwelling	55.4	55.5	54.4	54.8	43.9	43.9	42.9	43.3
8 Chestnut Way	CF47 9SB	Dwelling	53.4	53.4	52.5	52.9	42.0	42.0	41.2	41.6
10 Chestnut Way	CF47 9SB	Dwelling	52.4	52.4	51.5	52.0	41.1	41.2	40.3	40.8
12 Chestnut Way	CF47 9SB	Dwelling	51.7	51.8	50.9	51.4	40.5	40.6	39.8	40.2
14 Chestnut Way	CF47 9SB	Dwelling	50.0	50.1	49.1	49.6	39.0	39.1	38.2	38.6
16 Chestnut Way	CF47 9SB	Dwelling	48.4	48.5	47.9	48.5	37.5	37.6	37.1	37.6
18 Chestnut Way	CF47 9SB	Dwelling	48.1	48.2	47.6	48.2	37.3	37.4	36.8	37.3
20 Chestnut Way	CF47 9SB	Dwelling	48.3	48.4	47.8	48.4	37.4	37.5	37.0	37.5
22 Chestnut Way	CF47 9SB	Dwelling	47.9	48.0	47.4	48.0	37.1	37.2	36.7	37.2
24 Chestnut Way	CF47 9SB	Dwelling	48.6	48.6	48.1	48.8	37.8	37.7	37.3	37.9
26 Chestnut Way	CF47 9SB	Dwelling	51.1	51.1	50.5	51.1	40.0	40.0	39.4	39.9
28 Chestnut Way	CF47 9SB	Dwelling	47.9	48.0	47.4	48.0	37.1	37.2	36.6	37.1
30 Chestnut Way	CF47 9SB	Dwelling	48.0	48.1	47.5	48.1	37.2	37.3	36.7	37.3
32 Chestnut Way	CF47 9SB	Dwelling	48.6	48.6	48.2	48.8	37.8	37.7	37.3	37.9
34 Chestnut Way	CF47 9SB	Dwelling	47.9	47.8	47.4	48.0	37.1	37.0	36.6	37.2
36 Chestnut Way	CF47 9SB	Dwelling	47.7	47.6	47.1	47.8	36.9	36.8	36.4	37.0
38 Chestnut Way	CF47 9SB	Dwelling	49.0	48.7	48.5	49.2	38.1	37.8	37.6	38.3
1 Yew Close	CF47 9SD	Dwelling	50.4	49.9	49.8	50.6	39.4	38.9	38.8	39.5
2 Yew Close	CF47 9SD	Dwelling	50.2	49.6	49.5	50.4	39.1	38.6	38.6	39.3
3 Yew Close	CF47 9SD	Dwelling	50.6	50.1	50.0	50.8	39.5	39.1	38.9	39.7
4 Yew Close	CF47 9SD	Dwelling	50.1	49.6	49.5	50.3	39.1	38.6	38.5	39.3
5 Yew Close	CF47 9SD	Dwelling	50.6	50.0	49.9	50.7	39.5	39.0	38.9	39.6
6 Yew Close	CF47 9SD	Dwelling	50.0	49.4	49.3	50.1	38.9	38.5	38.3	39.1
7 Yew Close	CF47 9SD	Dwelling	50.7	50.1	49.9	50.7	39.6	39.1	38.9	39.6
8 Yew Close	CF47 9SD	Dwelling	50.0	49.5	49.3	50.2	39.0	38.5	38.4	39.1
9 Yew Close	CF47 9SD	Dwelling	50.5	49.9	49.7	50.5	39.5	38.9	38.7	39.4
10 Yew Close	CF47 9SD	Dwelling	49.8	49.3	49.1	50.0	38.8	38.4	38.2	39.0
11 Yew Close	CF47 9SD	Dwelling	50.7	50.1	49.8	50.7	39.6	39.1	38.8	39.6
12 Yew Close	CF47 9SD	Dwelling	49.7	49.2	49.0	49.9	38.7	38.2	38.1	38.9
13 Yew Close	CF47 9SD	Dwelling	50.2	49.7	49.4	50.2	39.2	38.7	38.4	39.2
14 Yew Close	CF47 9SD	Dwelling	49.5	49.0	48.8	49.7	38.6	38.1	37.9	38.7
15 Yew Close	CF47 9SD	Dwelling	50.6	50.1	49.8	50.6	39.5	39.0	38.8	39.5
16 Yew Close	CF47 9SD	Dwelling	49.6	49.1	48.9	49.7	38.6	38.1	38.0	38.7
17 Yew Close	CF47 9SD	Dwelling	50.3	49.8	49.6	50.4	39.3	38.8	38.6	39.3
18 Yew Close	CF47 9SD	Dwelling	56.1	56.1	54.9	55.4	44.5	44.5	43.4	43.8
19 Yew Close	CF47 9SD	Dwelling	50.1	49.7	49.6	50.3	39.1	38.7	38.6	39.2
20 Yew Close	CF47 9SD	Dwelling	54.1	53.9	53.0	53.5	42.6	42.5	41.7	42.1
21 Yew Close	CF47 9SD	Dwelling	50.6	50.4	50.3	50.8	39.6	39.3	39.2	39.7
22 Yew Close	CF47 9SD	Dwelling	52.6	52.4	51.6	52.2	41.3	41.1	40.4	40.9
23 Yew Close	CF47 9SD	Dwelling	66.0	66.1	66.0	66.3	53.4	53.4	53.4	53.6
24 Yew Close	CF47 9SD	Dwelling	51.7	51.5	50.8	51.4	40.5	40.3	39.7	40.2
25 Yew Close	CF47 9SD	Dwelling	65.4	65.4	65.4	65.7	52.9	52.9	52.9	53.1
26 Yew Close	CF47 9SD	Dwelling	50.9	50.6	50.0	50.7	39.8	39.5	39.0	39.6
27 Yew Close	CF47 9SD	Dwelling	65.2	65.2	65.2	65.5	52.6	52.6	52.6	52.9
28 Yew Close	CF47 9SD	Dwelling	48.4	48.0	48.0	48.9	37.6	37.2	37.2	37.9

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
29 Yew Close	CF47 9SD	Dwelling	64.9	64.9	64.9	65.2	52.4	52.4	52.4	52.6
30 Yew Close	CF47 9SD	Dwelling	47.8	47.2	47.3	48.2	37.0	36.5	36.6	37.4
31 Yew Close	CF47 9SD	Dwelling	63.1	63.1	63.2	63.5	50.8	50.8	50.8	51.1
32 Yew Close	CF47 9SD	Dwelling	48.0	47.4	47.5	48.4	37.2	36.7	36.8	37.6
33 Yew Close	CF47 9SD	Dwelling	55.5	55.2	54.9	55.5	43.9	43.6	43.4	43.9
34 Yew Close	CF47 9SD	Dwelling	47.4	46.9	47.0	47.9	36.7	36.2	36.3	37.1
35 Yew Close	CF47 9SD	Dwelling	52.5	52.1	51.9	52.6	41.2	40.8	40.7	41.3
36 Yew Close	CF47 9SD	Dwelling	47.4	47.0	47.0	47.8	36.7	36.3	36.3	37.0
37 Yew Close	CF47 9SD	Dwelling	51.6	51.1	51.0	51.8	40.4	39.9	39.9	40.6
38 Yew Close	CF47 9SD	Dwelling	46.8	46.4	46.5	47.3	36.1	35.8	35.8	36.5
39 Yew Close	CF47 9SD	Dwelling	51.5	50.9	50.9	51.7	40.3	39.8	39.8	40.5
40 Yew Close	CF47 9SD	Dwelling	45.2	44.9	45.0	45.8	34.6	34.4	34.5	35.2
41 Yew Close	CF47 9SD	Dwelling	51.6	51.1	51.1	51.9	40.4	40.0	40.0	40.7
42 Yew Close	CF47 9SD	Dwelling	45.4	45.2	45.2	45.9	34.8	34.7	34.7	35.3
43 Yew Close	CF47 9SD	Dwelling	51.0	50.4	50.5	51.3	39.9	39.4	39.5	40.2
44 Yew Close	CF47 9SD	Dwelling	49.3	48.7	48.8	49.7	38.3	37.8	37.9	38.7
45 Yew Close	CF47 9SD	Dwelling	51.1	51.0	50.6	51.3	40.0	39.9	39.6	40.2
47 Yew Close	CF47 9SD	Dwelling	51.4	51.2	50.8	51.5	40.2	40.1	39.7	40.3
49 Yew Close	CF47 9SD	Dwelling	51.5	51.4	51.0	51.6	40.4	40.3	39.8	40.4
51 Yew Close	CF47 9SD	Dwelling	50.0	49.9	49.6	50.3	39.0	38.9	38.6	39.2
53 Yew Close	CF47 9SD	Dwelling	49.9	49.7	49.5	50.2	38.9	38.7	38.5	39.1
55 Yew Close	CF47 9SD	Dwelling	47.2	47.1	46.8	47.5	36.5	36.4	36.1	36.7
Flat 4 1 Flat 4 Plane Grove	CF47 9SE	Dwelling	46.3	46.1	46.1	46.8	35.6	35.5	35.5	36.1
Flat 5 1 Flat 5 Plane Grove	CF47 9SE	Dwelling	49.6	49.2	49.2	50.0	38.6	38.3	38.3	38.9
Flat 6 1 Flat 6 Plane Grove	CF47 9SE	Dwelling	59.2	59.1	59.0	59.4	47.3	47.2	47.1	47.5
2 Plane Grove	CF47 9SE	Dwelling	65.1	65.1	65.2	65.5	52.6	52.6	52.7	52.9
3 Plane Grove	CF47 9SE	Dwelling	49.8	49.5	49.6	50.3	38.8	38.5	38.6	39.3
4 Plane Grove	CF47 9SE	Dwelling	55.1	55.0	55.1	55.5	43.6	43.5	43.6	43.9
5 Plane Grove	CF47 9SE	Dwelling	49.3	48.9	48.8	49.6	38.3	38.0	37.9	38.6
6 Plane Grove	CF47 9SE	Dwelling	55.3	55.1	55.1	55.6	43.8	43.6	43.6	44.0
7 Plane Grove	CF47 9SE	Dwelling	50.9	50.5	50.4	51.2	39.8	39.4	39.4	40.1
8 Plane Grove	CF47 9SE	Dwelling	54.1	53.9	53.8	54.4	42.7	42.5	42.4	42.9
9 Plane Grove	CF47 9SE	Dwelling	50.7	50.4	50.2	51.0	39.6	39.3	39.2	39.9
10 Plane Grove	CF47 9SE	Dwelling	48.5	48.3	48.4	49.0	37.6	37.4	37.5	38.0
11 Plane Grove	CF47 9SE	Dwelling	48.6	48.3	48.2	49.0	37.7	37.4	37.4	38.1
12 Plane Grove	CF47 9SE	Dwelling	47.7	47.5	47.6	48.2	36.9	36.8	36.8	37.3
13 Plane Grove	CF47 9SE	Dwelling	50.1	49.4	49.6	50.5	39.1	38.5	38.6	39.4
14 Plane Grove	CF47 9SE	Dwelling	63.5	63.5	63.6	63.9	51.2	51.2	51.2	51.5
15 Plane Grove	CF47 9SE	Dwelling	45.5	45.1	45.5	46.4	34.9	34.6	35.0	35.7
16 Plane Grove	CF47 9SE	Dwelling	64.2	64.2	64.3	64.6	51.8	51.8	51.8	52.1
17 Plane Grove	CF47 9SE	Dwelling	45.7	45.3	45.7	46.5	35.1	34.7	35.1	35.8
18 Plane Grove	CF47 9SE	Dwelling	62.7	62.7	62.8	63.1	50.4	50.4	50.5	50.7
19 Plane Grove	CF47 9SE	Dwelling	46.6	46.4	46.6	47.3	36.0	35.8	35.9	36.5
20 Plane Grove	CF47 9SE	Dwelling	56.7	56.7	56.7	57.1	45.0	45.0	45.0	45.3
22 Plane Grove	CF47 9SE	Dwelling	49.7	49.3	49.3	50.1	38.7	38.3	38.4	39.0
24 Plane Grove	CF47 9SE	Dwelling	53.9	53.8	53.7	54.2	42.5	42.4	42.3	42.8
26 Plane Grove	CF47 9SE	Dwelling	47.8	47.5	47.5	48.2	37.0	36.7	36.7	37.4
28 Plane Grove	CF47 9SE	Dwelling	47.1	46.9	47.1	47.8	36.4	36.2	36.3	37.0
30 Plane Grove	CF47 9SE	Dwelling	46.7	46.4	46.7	47.4	36.0	35.8	36.0	36.6
32 Plane Grove	CF47 9SE	Dwelling	46.8	46.6	46.8	47.5	36.1	35.9	36.1	36.7
34 Plane Grove	CF47 9SE	Dwelling	48.7	48.2	48.3	49.1	37.8	37.4	37.5	38.2
36 Plane Grove	CF47 9SE	Dwelling	51.5	51.2	51.0	51.8	40.4	40.0	39.9	40.6
38 Plane Grove	CF47 9SE	Dwelling	51.5	51.2	51.0	51.8	40.3	40.0	39.9	40.6
40 Plane Grove	CF47 9SE	Dwelling	49.4	49.1	48.9	49.7	38.5	38.1	38.0	38.7
42 Plane Grove	CF47 9SE	Dwelling	49.3	49.0	48.9	49.6	38.4	38.1	38.0	38.6
44 Plane Grove	CF47 9SE	Dwelling	51.5	51.2	51.0	51.8	40.4	40.0	39.9	40.6
46 Plane Grove	CF47 9SE	Dwelling	50.9	50.6	50.5	51.2	39.8	39.5	39.4	40.1
48 Plane Grove	CF47 9SE	Dwelling	51.1	50.8	50.6	51.4	40.0	39.7	39.5	40.2
50 Plane Grove	CF47 9SE	Dwelling	45.5	45.0	45.4	46.2	34.9	34.5	34.9	35.6
52 Plane Grove	CF47 9SE	Dwelling	45.8	45.3	45.6	46.5	35.2	34.7	35.1	35.8
Flat 2 54 Flat 2 Plane Grove	CF47 9SE	Dwelling	48.1	47.6	47.7	48.5	37.3	36.8	36.9	37.7
Flat 4 54 Flat 4 Plane Grove	CF47 9SE	Dwelling	46.7	46.6	46.7	47.4	36.0	35.9	36.0	36.6
Flat 6 54 Flat 6 Plane Grove	CF47 9SE	Dwelling	46.0	45.7	46.0	46.8	35.3	35.1	35.4	36.1
56 Plane Grove	CF47 9SE	Dwelling	46.8	46.7	46.7	47.4	36.1	36.0	36.0	36.6
58 Plane Grove	CF47 9SE	Dwelling	47.0	46.8	46.9	47.6	36.2	36.1	36.1	36.8
60 Plane Grove	CF47 9SE	Dwelling	46.9	46.7	46.8	47.5	36.2	36.0	36.1	36.7
Alder House Alder House Alder Grove	CF47 9SF	Dwelling	48.9	48.3	48.5	49.4	38.0	37.5	37.6	38.4
Gurnos Social Club Alder Grove	CF47 9SF	OSR	49.6	49.1	49.3	50.2	38.6	38.1	38.4	39.1
1 Alder Grove	CF47 9SF	Dwelling	47.0	46.9	46.9	47.7	36.3	36.2	36.2	36.9
Flat 4 2 Flat 4 Alder Grove	CF47 9SF	Dwelling	46.7	46.4	46.8	47.6	36.0	35.7	36.1	36.8
Flat 5 2 Flat 5 Alder Grove	CF47 9SF	Dwelling	49.3	49.1	48.9	49.7	38.3	38.1	38.0	38.7
Flat 6 2 Flat 6 Alder Grove	CF47 9SF	Dwelling	46.7	46.2	46.8	47.7	36.0	35.6	36.1	36.9
3 Alder Grove	CF47 9SF	Dwelling	49.0	48.4	48.6	49.6	38.1	37.6	37.8	38.6
4 Alder Grove	CF47 9SF	Dwelling	47.6	47.2	47.5	48.3	36.8	36.4	36.7	37.4
5 Alder Grove	CF47 9SF	Dwelling	48.7	48.0	48.4	49.3	37.8	37.2	37.5	38.3
6 Alder Grove	CF47 9SF	Dwelling	47.4	46.9	47.3	48.2	36.7	36.2	36.6	37.3
7 Alder Grove	CF47 9SF	Dwelling	49.2	48.5	48.8	49.7	38.3	37.7	37.9	38.7
8 Alder Grove	CF47 9SF	Dwelling	47.4	46.9	47.3	48.2	36.6	36.2	36.6	37.3
9 Alder Grove	CF47 9SF	Dwelling	46.4	46.2	46.6	47.4	35.8	35.5	36.0	36.7
10 Alder Grove	CF47 9SF	Dwelling	47.3	46.8	47.2	48.1	36.5	36.1	36.5	37.2
11 Alder Grove	CF47 9SF	Dwelling	46.6	46.3	46.8	47.6	35.9	35.7	36.1	36.8
12 Alder Grove	CF47 9SF	Dwelling	47.4	46.9	47.4	48.2	36.7	36.2	36.6	37.3
13 Alder Grove	CF47 9SF	Dwelling	46.8	46.2	46.9	47.8	36.1	35.6	36.2	37.0
14 Alder Grove	CF47 9SF	Dwelling	47.6	47.2	47.6	48.4	36.9	36.4	36.8	37.5
15 Alder Grove	CF47 9SF	Dwelling	46.7	46.2	46.8	47.7	36.0	35.5	36.1	36.9
16 Alder Grove	CF47 9SF	Dwelling	48.1	47.6	47.9	48.8	37.3	36.8	37.1	37.9
17 Alder Grove	CF47 9SF	Dwelling	48.0	47.5	47.6	48.4	37.2	36.8	36.8	37.5
18 Alder Grove	CF47 9SF	Dwelling	47.0	46.7	47.3	48.1	36.3	36.0	36.5	37.3
19 Alder Grove	CF47 9SF	Dwelling	48.1	47.6	47.7	48.5	37.2	36.8	36.9	37.6
20 Alder Grove	CF47 9SF	Dwelling	46.6	46.3	46.3	47.1	35.9	35.6	35.6	36.3
21 Alder Grove	CF47 9SF	Dwelling	46.7	46.4	46.8	47.6	36.0	35.7	36.1	36.8
22 Alder Grove	CF47 9SF	Dwelling	49.5	49.1	49.2	50.0	38.6	38.2	38.2	39.0
23 Alder Grove	CF47 9SF	Dwelling	47.0	46.8	47.2	47.9	36.3	36.1	36.5	37.1
24 Alder Grove	CF47 9SF	Dwelling	49.1	48.5	48.9	49.7	38.2	37.6	37.9	38.7
25 Alder Grove	CF47 9SF	Dwelling	46.8	46.5	46.9	47.7	36.1	35.9	36.2	36.9
26 Alder Grove	CF47 9SF	Dwelling	48.1	47.4	48.0	49.0	37.2	36.6	37.2	38.0
27 Alder Grove	CF47 9SF	Dwelling	46.4	46.1	46.4	47.2	35.7	35.5	35.7	36.4
Ground Floor Flat Magnolia Close	CF47 9SG	Dwelling	47.0	46.6	47.1	47.8	36.3	35.9	36.4	37.0
1 Magnolia Close	CF47 9SG	Dwelling	47.9	47.7	48.0	48.6	37.1	36.9	37.1	37.7
2 Magnolia Close	CF47 9SG	Dwelling	47.1	46.7	47.2	47.9	36.4	36.0	36.4	37.1
3 Magnolia Close	CF47 9SG	Dwelling	50.9	50.6	50.9	51.5	39.8	39.6	39.8	40.3
5 Magnolia Close	CF47 9SG	Dwelling	49.3	49.2	49.4	49.9	38.4	38.2	38.4	38.8
6 Magnolia Close	CF47 9SG	Dwelling	51.4	51.0	51.1	51.7	40.2	39.9	40.0	40.5
7 Magnolia Close	CF47 9SG	Dwelling	63.6	63.6	63.7	64.0	51.3	51.2	51.3	51.6
8 Magnolia Close	CF47 9SG	Dwelling	50.4	50.0	50.0	50.7	39.3	39.0	38.9	39.6
9 Magnolia Close	CF47 9SG	Dwelling	59.8	59.7	59.7	60.1	47.8	47.7	47.7	48.1
10 Magnolia Close	CF47 9SG	Dwelling	52.1	51.7	51.6	52.4	40.9	40.5	40.4	41.1

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
11 Magnolia Close	CF47 9SG	Dwelling	58.2	58.1	58.1	58.5	46.4	46.2	46.3	46.6
12 Magnolia Close	CF47 9SG	Dwelling	51.9	51.5	51.4	52.2	40.7	40.3	40.2	40.9
13 Magnolia Close	CF47 9SG	Dwelling	46.7	46.3	46.8	47.6	36.0	35.7	36.1	36.8
14 Magnolia Close	CF47 9SG	Dwelling	51.6	51.2	51.1	51.9	40.5	40.1	40.0	40.7
15 Magnolia Close	CF47 9SG	Dwelling	46.7	46.3	46.9	47.7	36.0	35.6	36.2	36.9
16 Magnolia Close	CF47 9SG	Dwelling	49.3	48.9	48.9	49.7	38.4	38.0	38.0	38.7
17 Magnolia Close	CF47 9SG	Dwelling	46.4	46.0	46.6	47.4	35.7	35.4	35.9	36.7
18 Magnolia Close	CF47 9SG	Dwelling	49.3	48.9	48.9	49.7	38.4	37.9	38.0	38.7
19 Magnolia Close	CF47 9SG	Dwelling	46.7	46.2	46.9	47.7	36.0	35.5	36.2	36.9
20 Magnolia Close	CF47 9SG	Dwelling	48.8	48.4	48.4	49.2	37.9	37.5	37.6	38.3
21 Magnolia Close	CF47 9SG	Dwelling	47.7	47.2	47.7	48.5	36.9	36.4	36.9	37.6
22 Magnolia Close	CF47 9SG	Dwelling	46.8	46.4	47.0	47.8	36.1	35.8	36.3	37.0
23 Magnolia Close	CF47 9SG	Dwelling	48.9	48.6	48.8	49.6	38.0	37.7	37.9	38.6
25 Magnolia Close	CF47 9SG	Dwelling	48.1	47.4	47.7	48.6	37.3	36.7	36.9	37.7
27 Magnolia Close	CF47 9SG	Dwelling	46.5	46.1	46.7	47.5	35.8	35.5	36.0	36.7
1 Fir Tree Close	CF47 9SH	Dwelling	47.2	46.9	47.4	48.2	36.5	36.2	36.7	37.3
2 Fir Tree Close	CF47 9SH	Dwelling	47.1	46.7	47.4	48.2	36.4	36.0	36.6	37.4
3 Fir Tree Close	CF47 9SH	Dwelling	46.9	46.6	47.1	47.9	36.2	35.9	36.4	37.1
4 Fir Tree Close	CF47 9SH	Dwelling	46.7	46.3	47.0	47.9	36.1	35.6	36.3	37.0
5 Fir Tree Close	CF47 9SH	Dwelling	46.9	46.6	47.1	47.8	36.2	35.9	36.3	37.0
6 Fir Tree Close	CF47 9SH	Dwelling	49.4	48.8	49.0	49.9	38.5	37.9	38.1	38.9
7 Fir Tree Close	CF47 9SH	Dwelling	47.0	46.7	47.0	47.8	36.3	36.0	36.3	37.0
8 Fir Tree Close	CF47 9SH	Dwelling	47.4	46.9	47.1	47.9	36.6	36.2	36.3	37.1
9 Fir Tree Close	CF47 9SH	Dwelling	62.6	62.6	62.7	63.0	50.3	50.3	50.4	50.7
10 Fir Tree Close	CF47 9SH	Dwelling	47.1	46.7	46.8	47.6	36.4	36.0	36.1	36.8
11 Fir Tree Close	CF47 9SH	Dwelling	58.2	58.1	58.2	58.6	46.4	46.3	46.4	46.7
12 Fir Tree Close	CF47 9SH	Dwelling	47.4	47.0	47.6	48.4	36.7	36.3	36.9	37.5
13 Fir Tree Close	CF47 9SH	Dwelling	57.0	56.9	57.0	57.4	45.3	45.2	45.3	45.7
14 Fir Tree Close	CF47 9SH	Dwelling	47.2	46.9	47.5	48.2	36.5	36.2	36.7	37.4
15 Fir Tree Close	CF47 9SH	Dwelling	56.1	55.9	56.1	56.5	44.5	44.3	44.5	44.9
16 Fir Tree Close	CF47 9SH	Dwelling	47.1	46.8	47.4	48.1	36.4	36.1	36.6	37.3
17 Fir Tree Close	CF47 9SH	Dwelling	47.0	46.5	47.2	48.1	36.3	35.9	36.5	37.2
18 Fir Tree Close	CF47 9SH	Dwelling	47.3	47.0	47.6	48.3	36.6	36.2	36.8	37.5
19 Fir Tree Close	CF47 9SH	Dwelling	49.8	49.3	49.7	50.5	38.8	38.3	38.7	39.4
21 Fir Tree Close	CF47 9SH	Dwelling	47.8	47.4	47.4	48.2	37.0	36.6	36.6	37.3
23 Fir Tree Close	CF47 9SH	Dwelling	46.8	46.4	47.0	47.8	36.1	35.8	36.3	37.0
1 Holly Way	CF47 9SL	Dwelling	48.5	48.3	48.1	48.8	37.7	37.5	37.2	37.9
2 Holly Way	CF47 9SL	Dwelling	46.8	46.7	46.4	47.1	36.1	36.0	35.7	36.3
3 Holly Way	CF47 9SL	Dwelling	45.7	45.5	45.3	46.1	35.1	34.9	34.8	35.5
4 Holly Way	CF47 9SL	Dwelling	49.3	49.2	48.8	49.5	38.4	38.3	37.9	38.5
5 Holly Way	CF47 9SL	Dwelling	45.9	45.8	45.7	46.4	35.3	35.2	35.1	35.7
6 Holly Way	CF47 9SL	Dwelling	46.7	46.5	46.2	46.9	36.0	35.8	35.5	36.2
7 Holly Way	CF47 9SL	Dwelling	49.9	49.9	49.4	50.0	38.9	38.9	38.4	39.0
8 Holly Way	CF47 9SL	Dwelling	47.9	47.9	47.5	48.1	37.1	37.1	36.7	37.2
9 Holly Way	CF47 9SL	Dwelling	48.0	47.6	47.3	48.1	37.2	36.8	36.6	37.3
10 Holly Way	CF47 9SL	Dwelling	49.5	49.4	49.0	49.7	38.6	38.4	38.1	38.7
11 Holly Way	CF47 9SL	Dwelling	48.5	48.5	47.9	48.5	37.7	37.6	37.1	37.6
12 Holly Way	CF47 9SL	Dwelling	47.1	46.9	46.6	47.3	36.4	36.2	35.9	36.5
13 Holly Way	CF47 9SL	Dwelling	48.2	47.8	47.4	48.2	37.4	37.0	36.7	37.4
14 Holly Way	CF47 9SL	Dwelling	49.6	49.4	49.0	49.7	38.7	38.5	38.1	38.7
15 Holly Way	CF47 9SL	Dwelling	48.6	48.2	47.9	48.7	37.7	37.3	37.1	37.8
16 Holly Way	CF47 9SL	Dwelling	47.2	47.0	46.6	47.3	36.5	36.3	35.9	36.5
17 Holly Way	CF47 9SL	Dwelling	48.7	48.3	48.1	48.9	37.9	37.5	37.2	38.0
18 Holly Way	CF47 9SL	Dwelling	49.8	49.6	49.2	49.9	38.8	38.7	38.3	38.9
20 Holly Way	CF47 9SL	Dwelling	48.3	48.3	47.8	48.4	37.4	37.5	37.0	37.5
22 Holly Way	CF47 9SL	Dwelling	48.2	47.8	47.5	48.3	37.3	37.0	36.7	37.4
24 Holly Way	CF47 9SL	Dwelling	48.2	47.9	47.7	48.5	37.4	37.1	36.9	37.6
26 Holly Way	CF47 9SL	Dwelling	47.9	47.6	47.4	48.2	37.1	36.8	36.7	37.3
28 Holly Way	CF47 9SL	Dwelling	46.3	46.2	45.9	46.6	35.7	35.6	35.3	35.9
30 Holly Way	CF47 9SL	Dwelling	46.5	46.6	46.0	46.6	35.9	36.0	35.4	35.9
32 Holly Way	CF47 9SL	Dwelling	49.9	49.9	49.3	49.9	38.9	38.9	38.4	38.9
34 Holly Way	CF47 9SL	Dwelling	49.7	49.8	49.2	49.8	38.8	38.8	38.3	38.8
36 Holly Way	CF47 9SL	Dwelling	47.9	47.8	47.5	48.1	37.1	37.0	36.7	37.3
38 Holly Way	CF47 9SL	Dwelling	50.5	50.4	50.0	50.6	39.4	39.4	38.9	39.5
40 Holly Way	CF47 9SL	Dwelling	53.2	53.3	52.2	52.6	41.9	41.9	41.0	41.3
42 Holly Way	CF47 9SL	Dwelling	58.3	58.4	57.1	57.5	46.5	46.5	45.4	45.7
1 Laburnum Close	CF47 9SN	Dwelling	49.8	49.9	49.4	50.0	38.8	38.9	38.5	39.0
2 Laburnum Close	CF47 9SN	Dwelling	49.1	49.2	48.7	49.4	38.2	38.2	37.8	38.4
3 Laburnum Close	CF47 9SN	Dwelling	49.6	49.7	49.3	49.9	38.6	38.7	38.3	38.9
4 Laburnum Close	CF47 9SN	Dwelling	45.5	45.3	45.2	46.0	34.9	34.8	34.7	35.3
5 Laburnum Close	CF47 9SN	Dwelling	46.9	47.1	46.6	47.2	36.2	36.3	35.9	36.4
6 Laburnum Close	CF47 9SN	Dwelling	49.7	49.7	49.3	50.0	38.7	38.7	38.4	39.0
7 Laburnum Close	CF47 9SN	Dwelling	47.2	46.9	46.8	47.5	36.5	36.2	36.1	36.8
8 Laburnum Close	CF47 9SN	Dwelling	47.3	47.2	47.1	47.8	36.6	36.5	36.4	37.0
9 Laburnum Close	CF47 9SN	Dwelling	46.9	46.5	46.5	47.3	36.2	35.8	35.8	36.5
10 Laburnum Close	CF47 9SN	Dwelling	46.8	46.7	46.5	47.2	36.1	36.0	35.9	36.5
11 Laburnum Close	CF47 9SN	Dwelling	49.7	49.8	49.4	50.1	38.8	38.8	38.5	39.0
12 Laburnum Close	CF47 9SN	Dwelling	46.6	46.6	46.2	46.8	36.0	35.9	35.6	36.1
13 Laburnum Close	CF47 9SN	Dwelling	49.3	49.4	49.1	49.7	38.4	38.5	38.1	38.7
14 Laburnum Close	CF47 9SN	Dwelling	47.1	47.0	46.9	47.6	36.4	36.3	36.2	36.8
15 Laburnum Close	CF47 9SN	Dwelling	49.7	49.8	49.4	50.1	38.7	38.8	38.5	39.0
16 Laburnum Close	CF47 9SN	Dwelling	45.6	45.7	45.2	45.9	35.0	35.1	34.7	35.3
17 Laburnum Close	CF47 9SN	Dwelling	49.5	49.6	49.2	49.9	38.5	38.6	38.3	38.9
18 Laburnum Close	CF47 9SN	Dwelling	49.1	49.1	48.6	49.3	38.1	38.1	37.8	38.4
19 Laburnum Close	CF47 9SN	Dwelling	49.8	49.8	49.5	50.2	38.8	38.8	38.5	39.1
20 Laburnum Close	CF47 9SN	Dwelling	49.4	49.4	48.9	49.6	38.4	38.4	38.0	38.6
21 Laburnum Close	CF47 9SN	Dwelling	47.5	47.3	47.2	48.0	36.7	36.5	36.5	37.2
23 Laburnum Close	CF47 9SN	Dwelling	49.9	49.9	49.7	50.4	38.9	38.9	38.7	39.3
25 Laburnum Close	CF47 9SN	Dwelling	46.3	46.4	46.1	46.9	35.7	35.7	35.5	36.2
27 Laburnum Close	CF47 9SN	Dwelling	47.0	46.9	46.8	47.6	36.3	36.2	36.1	36.8
29 Laburnum Close	CF47 9SN	Dwelling	47.5	47.4	47.2	47.8	36.7	36.6	36.4	37.0
31 Laburnum Close	CF47 9SN	Dwelling	47.3	47.4	47.1	47.8	36.6	36.6	36.3	37.0
33 Laburnum Close	CF47 9SN	Dwelling	47.2	47.1	46.7	47.3	36.5	36.4	36.0	36.5
35 Laburnum Close	CF47 9SN	Dwelling	49.8	49.7	49.2	49.8	38.8	38.7	38.3	38.8
37 Laburnum Close	CF47 9SN	Dwelling	48.3	48.1	48.1	48.8	37.5	37.3	37.2	37.9
39 Laburnum Close	CF47 9SN	Dwelling	49.4	49.4	49.0	49.8	38.5	38.4	38.1	38.8
41 Laburnum Close	CF47 9SN	Dwelling	49.4	49.0	48.6	49.5	38.5	38.1	37.8	38.5
43 Laburnum Close	CF47 9SN	Dwelling	50.0	49.6	49.2	50.0	39.0	38.6	38.3	39.0
45 Laburnum Close	CF47 9SN	Dwelling	48.2	48.0	47.9	48.6	37.4	37.1	37.0	37.7
47 Laburnum Close	CF47 9SN	Dwelling	51.6	51.3	50.7	51.3	40.4	40.1	39.6	40.2
49 Laburnum Close	CF47 9SN	Dwelling	52.5	52.3	51.6	52.2	41.2	41.1	40.4	40.9
51 Laburnum Close	CF47 9SN	Dwelling	53.1	53.0	52.2	52.7	41.8	41.7	40.9	41.4
53 Laburnum Close	CF47 9SN	Dwelling	55.4	55.4	54.3	54.7	43.8	43.8	42.8	43.2
55 Laburnum Close	CF47 9SN	Dwelling	64.4	64.5	63.1	63.4	52.0	52.0	50.7	51.0
21 Galon Uchaf Road	CF47 9ST	Dwelling	66.7	67.0	66.4	67.1	54.0	54.3	53.7	54.4
23 Galon Uchaf Road	CF47 9ST	Dwelling	63.7	64.1	63.5	64.2	51.4	51.7	51.1	51.7
58 Galon Uchaf Road	CF47 9ST	Dwelling	51.3	51.2	51.0	51.9	40.2	40.1	39.9	40.7

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
60 Galon Uchaf Road	CF47 9ST	Dwelling	52.0	52.0	51.8	52.6	40.8	40.8	40.6	41.3
1 Eleventh Avenue	CF47 9SU	Dwelling	56.8	56.7	56.7	57.5	45.1	45.1	45.0	45.7
2 Eleventh Avenue	CF47 9SU	Dwelling	51.2	51.1	51.0	51.8	40.1	40.0	39.8	40.6
3 Eleventh Avenue	CF47 9SU	Dwelling	52.5	52.3	52.3	53.2	41.2	41.0	41.0	41.8
4 Eleventh Avenue	CF47 9SU	Dwelling	59.1	59.3	59.0	59.7	47.2	47.4	47.1	47.7
5 Eleventh Avenue	CF47 9SU	Dwelling	53.9	53.7	53.8	54.7	42.5	42.3	42.4	43.2
6 Eleventh Avenue	CF47 9SU	Dwelling	54.8	54.6	54.6	55.5	43.3	43.1	43.1	43.9
7 Eleventh Avenue	CF47 9SU	Dwelling	53.3	53.0	53.2	54.2	42.0	41.7	41.9	42.7
8 Eleventh Avenue	CF47 9SU	Dwelling	51.9	51.8	51.9	52.7	40.7	40.6	40.6	41.4
9 Eleventh Avenue	CF47 9SU	Dwelling	53.5	53.2	53.4	54.4	42.1	41.8	42.0	42.9
10 Eleventh Avenue	CF47 9SU	Dwelling	53.9	53.7	53.8	54.7	42.5	42.3	42.4	43.2
11 Eleventh Avenue	CF47 9SU	Dwelling	50.8	50.4	50.8	51.8	39.7	39.4	39.7	40.6
12 Eleventh Avenue	CF47 9SU	Dwelling	50.6	50.4	50.4	51.3	39.5	39.4	39.4	40.1
14 Eleventh Avenue	CF47 9SU	Dwelling	52.3	52.0	52.2	53.1	41.1	40.8	41.0	41.8
16 Eleventh Avenue	CF47 9SU	Dwelling	51.3	51.2	51.1	52.0	40.1	40.1	39.9	40.8
1 Cherry Grove	CF47 9SW	Dwelling	49.9	50.0	49.5	50.1	38.9	39.0	38.6	39.0
2 Cherry Grove	CF47 9SW	Dwelling	49.5	49.7	49.2	49.8	38.6	38.7	38.3	38.8
3 Cherry Grove	CF47 9SW	Dwelling	49.9	50.0	49.5	50.1	38.8	38.9	38.5	39.0
4 Cherry Grove	CF47 9SW	Dwelling	50.0	50.2	49.7	50.3	39.0	39.1	38.7	39.2
5 Cherry Grove	CF47 9SW	Dwelling	49.9	50.0	49.6	50.2	38.9	39.0	38.6	39.1
6 Cherry Grove	CF47 9SW	Dwelling	45.0	45.1	44.8	45.4	34.5	34.5	34.3	34.8
7 Cherry Grove	CF47 9SW	Dwelling	50.0	50.2	49.7	50.3	39.0	39.1	38.7	39.2
8 Cherry Grove	CF47 9SW	Dwelling	49.6	49.7	49.3	49.9	38.6	38.7	38.4	38.9
9 Cherry Grove	CF47 9SW	Dwelling	49.9	50.0	49.6	50.2	38.9	39.0	38.6	39.1
10 Cherry Grove	CF47 9SW	Dwelling	49.4	49.6	49.2	49.8	38.5	38.6	38.2	38.8
11 Cherry Grove	CF47 9SW	Dwelling	44.7	44.4	44.4	45.2	34.2	34.0	34.0	34.6
12 Cherry Grove	CF47 9SW	Dwelling	44.7	44.8	44.6	45.2	34.2	34.3	34.1	34.6
13 Cherry Grove	CF47 9SW	Dwelling	44.3	44.0	44.0	44.8	33.9	33.6	33.6	34.3
14 Cherry Grove	CF47 9SW	Dwelling	49.4	49.6	49.2	49.8	38.5	38.6	38.3	38.8
15 Cherry Grove	CF47 9SW	Dwelling	49.8	50.0	49.5	50.1	38.8	39.0	38.6	39.1
16 Cherry Grove	CF47 9SW	Dwelling	49.4	49.5	49.2	49.8	38.4	38.6	38.2	38.8
17 Cherry Grove	CF47 9SW	Dwelling	49.6	49.8	49.4	50.0	38.7	38.8	38.4	39.0
18 Cherry Grove	CF47 9SW	Dwelling	48.9	49.0	48.7	49.4	38.0	38.0	37.8	38.4
19 Cherry Grove	CF47 9SW	Dwelling	49.0	49.2	48.8	49.4	38.1	38.3	37.9	38.4
20 Cherry Grove	CF47 9SW	Dwelling	48.9	49.0	48.6	49.3	38.0	38.1	37.8	38.3
21 Cherry Grove	CF47 9SW	Dwelling	49.4	49.6	49.2	49.8	38.5	38.6	38.2	38.8
22 Cherry Grove	CF47 9SW	Dwelling	48.6	48.8	48.4	49.0	37.7	37.9	37.5	38.1
23 Cherry Grove	CF47 9SW	Dwelling	49.5	49.7	49.3	49.9	38.5	38.7	38.3	38.9
24 Cherry Grove	CF47 9SW	Dwelling	47.0	47.1	46.9	47.6	36.3	36.4	36.2	36.8
25 Cherry Grove	CF47 9SW	Dwelling	49.5	49.6	49.3	49.9	38.5	38.7	38.3	38.9
26 Cherry Grove	CF47 9SW	Dwelling	47.1	47.2	46.9	47.6	36.4	36.4	36.2	36.8
27 Cherry Grove	CF47 9SW	Dwelling	48.9	49.1	48.7	49.3	38.0	38.2	37.8	38.4
28 Cherry Grove	CF47 9SW	Dwelling	47.2	47.2	46.9	47.6	36.5	36.5	36.2	36.8
29 Cherry Grove	CF47 9SW	Dwelling	49.1	49.2	48.8	49.5	38.1	38.3	37.9	38.5
30 Cherry Grove	CF47 9SW	Dwelling	49.2	49.4	49.1	49.7	38.3	38.5	38.1	38.7
31 Cherry Grove	CF47 9SW	Dwelling	47.7	48.0	47.6	48.2	37.0	37.2	36.8	37.3
32 Cherry Grove	CF47 9SW	Dwelling	49.7	49.9	49.5	50.2	38.7	38.9	38.5	39.1
33 Cherry Grove	CF47 9SW	Dwelling	49.1	49.3	48.9	49.5	38.2	38.3	38.0	38.6
34 Cherry Grove	CF47 9SW	Dwelling	49.5	49.7	49.3	50.0	38.5	38.7	38.4	39.0
35 Cherry Grove	CF47 9SW	Dwelling	46.7	46.9	46.6	47.2	36.0	36.2	35.9	36.4
36 Cherry Grove	CF47 9SW	Dwelling	49.8	50.1	49.7	50.3	38.8	39.0	38.7	39.3
37 Cherry Grove	CF47 9SW	Dwelling	48.9	49.0	48.6	49.3	38.0	38.1	37.8	38.3
38 Cherry Grove	CF47 9SW	Dwelling	49.8	50.0	49.6	50.3	38.8	39.0	38.6	39.2
39 Cherry Grove	CF47 9SW	Dwelling	49.1	49.3	48.9	49.6	38.2	38.4	38.0	38.6
40 Cherry Grove	CF47 9SW	Dwelling	50.2	50.4	50.0	50.7	39.2	39.4	39.0	39.6
41 Cherry Grove	CF47 9SW	Dwelling	46.5	46.6	46.3	47.0	35.8	35.9	35.6	36.2
42 Cherry Grove	CF47 9SW	Dwelling	48.9	49.1	48.7	49.4	38.0	38.1	37.8	38.4
43 Cherry Grove	CF47 9SW	Dwelling	46.8	47.1	46.6	47.3	36.1	36.3	35.9	36.5
44 Cherry Grove	CF47 9SW	Dwelling	44.4	44.4	44.2	44.9	33.9	33.9	33.7	34.3
45 Cherry Grove	CF47 9SW	Dwelling	48.9	49.1	48.7	49.4	38.0	38.2	37.8	38.4
46 Cherry Grove	CF47 9SW	Dwelling	47.0	46.9	46.7	47.4	36.3	36.2	36.0	36.6
47 Cherry Grove	CF47 9SW	Dwelling	47.3	47.6	47.1	47.8	36.6	36.8	36.4	37.0
48 Cherry Grove	CF47 9SW	Dwelling	46.8	46.8	46.5	47.2	36.1	36.1	35.8	36.5
49 Cherry Grove	CF47 9SW	Dwelling	49.3	49.5	49.1	49.8	38.4	38.5	38.2	38.8
50 Cherry Grove	CF47 9SW	Dwelling	47.1	47.0	46.8	47.5	36.4	36.3	36.1	36.7
51 Cherry Grove	CF47 9SW	Dwelling	49.4	49.6	49.2	49.9	38.5	38.6	38.3	38.9
52 Cherry Grove	CF47 9SW	Dwelling	46.9	47.0	46.7	47.4	36.2	36.2	36.0	36.6
53 Cherry Grove	CF47 9SW	Dwelling	49.3	49.5	49.1	49.8	38.4	38.5	38.2	38.8
54 Cherry Grove	CF47 9SW	Dwelling	48.0	48.0	47.8	48.5	37.2	37.2	37.0	37.6
55 Cherry Grove	CF47 9SW	Dwelling	47.0	46.9	46.7	47.4	36.3	36.2	36.0	36.6
56 Cherry Grove	CF47 9SW	Dwelling	46.6	46.8	46.4	47.1	36.0	36.1	35.7	36.4
58 Cherry Grove	CF47 9SW	Dwelling	48.3	48.4	48.0	48.7	37.5	37.5	37.2	37.8
60 Cherry Grove	CF47 9SW	Dwelling	46.9	46.8	46.6	47.3	36.2	36.1	35.9	36.5
1 Alfred Street	CF47 9SX	Dwelling	49.4	50.4	50.0	50.7	38.5	39.3	39.0	39.6
3 Alfred Street	CF47 9SX	Dwelling	47.1	48.3	47.7	48.3	36.3	37.5	36.9	37.5
4 Alfred Street	CF47 9SX	Dwelling	50.7	52.2	51.3	51.9	39.6	40.9	40.1	40.7
5 Alfred Street	CF47 9SX	Dwelling	50.7	52.3	51.4	52.0	39.6	41.0	40.2	40.8
6 Alfred Street	CF47 9SX	Dwelling	46.5	47.6	47.0	47.8	35.9	36.8	36.3	37.0
7 Alfred Street	CF47 9SX	Dwelling	49.9	51.1	50.4	51.1	38.9	40.0	39.3	40.0
8 Alfred Street	CF47 9SX	Dwelling	46.4	47.4	46.9	47.6	35.8	36.7	36.2	36.8
9 Alfred Street	CF47 9SX	Dwelling	48.9	49.9	49.4	50.1	38.0	38.9	38.4	39.1
10 Alfred Street	CF47 9SX	Dwelling	46.3	47.3	46.9	47.6	35.7	36.6	36.2	36.9
11 Alfred Street	CF47 9SX	Dwelling	46.5	47.5	46.8	47.6	35.8	36.7	36.1	36.8
12 Alfred Street	CF47 9SX	Dwelling	48.1	49.2	48.3	49.1	37.3	38.3	37.5	38.1
13 Alfred Street	CF47 9SX	Dwelling	48.1	49.4	48.6	49.3	37.2	38.4	37.7	38.4
14 Alfred Street	CF47 9SX	Dwelling	47.5	49.0	48.0	48.7	36.7	38.1	37.2	37.8
15 Alfred Street	CF47 9SX	Dwelling	44.6	45.5	45.3	46.1	34.1	34.9	34.7	35.4
16 Alfred Street	CF47 9SX	Dwelling	44.6	45.5	45.3	46.1	34.1	34.9	34.7	35.4
17 Alfred Street	CF47 9SX	Dwelling	48.3	49.6	49.2	49.8	37.4	38.6	38.3	38.8
18 Alfred Street	CF47 9SX	Dwelling	51.3	53.5	52.4	52.8	40.1	42.1	41.1	41.5
19 Alfred Street	CF47 9SX	Dwelling	52.4	54.3	53.3	53.8	41.2	42.9	42.0	42.4
20 Alfred Street	CF47 9SX	Dwelling	46.7	47.9	47.3	48.1	36.0	37.1	36.6	37.2
21 Alfred Street	CF47 9SX	Dwelling	46.4	47.4	47.1	47.9	35.7	36.6	36.4	37.1
22 Alfred Street	CF47 9SX	Dwelling	47.7	48.5	48.3	49.1	36.9	37.7	37.5	38.2
25 Galon Uchaf Road	CF47 9SY	Dwelling	66.5	66.9	66.1	66.9	53.8	54.2	53.5	54.2
27 Galon Uchaf Road	CF47 9SY	Dwelling	66.4	66.8	66.0	66.8	53.8	54.1	53.4	54.1
29 Galon Uchaf Road	CF47 9SY	Dwelling	66.5	66.8	66.0	66.8	53.8	54.1	53.4	54.1
31 Galon Uchaf Road	CF47 9SY	Dwelling	66.4	66.7	65.8	66.6	53.7	54.0	53.2	53.9
33 Galon Uchaf Road	CF47 9SY	Dwelling	65.1	64.6	64.6	65.5	52.6	52.2	52.1	52.9
35 Galon Uchaf Road	CF47 9SY	Dwelling	63.6	63.7	63.8	64.6	51.2	51.3	51.4	52.1
37 Galon Uchaf Road	CF47 9SY	Dwelling	66.9	66.6	66.5	67.3	54.2	53.9	53.8	54.6
39 Galon Uchaf Road	CF47 9SY	Dwelling	68.1	67.9	67.6	68.5	55.3	55.1	54.8	55.6
62 Galon Uchaf Road	CF47 9SY	Dwelling	65.5	65.8	65.4	66.1	52.9	53.2	52.8	53.5
64 Galon Uchaf Road	CF47 9SY	Dwelling	64.8	65.2	64.6	65.3	52.3	52.6	52.1	52.7
66 Galon Uchaf Road	CF47 9SY	Dwelling	65.0	65.2	64.8	65.6	52.5	52.7	52.3	53.0
68 Galon Uchaf Road	CF47 9SY	Dwelling	63.1	63.4	63.0	63.7	50.8	51.0	50.6	51.3
70 Galon Uchaf Road	CF47 9SY	Dwelling	62.7	62.9	62.4	63.2	50.4	50.6	50.2	50.9

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
72 Galon Uchaf Road	CF47 9SY	Dwelling	65.1	65.3	64.9	65.7	52.5	52.8	52.4	53.1
74 Galon Uchaf Road	CF47 9SY	Dwelling	62.3	62.6	62.1	62.8	50.1	50.3	49.8	50.5
76 Galon Uchaf Road	CF47 9SY	Dwelling	54.5	54.2	56.5	57.4	43.0	42.8	44.8	45.7
1A Twelfth Avenue	CF47 9TA	Dwelling	57.6	58.0	57.4	58.4	45.8	46.2	45.6	46.5
1B Twelfth Avenue	CF47 9TA	Dwelling	53.8	53.9	53.4	54.3	42.4	42.5	42.0	42.8
3A Twelfth Avenue	CF47 9TA	Dwelling	50.9	51.2	51.1	52.0	39.8	40.1	39.9	40.8
1 Twelfth Avenue	CF47 9TA	Dwelling	56.7	56.8	56.3	57.3	45.0	45.1	44.7	45.6
2 Twelfth Avenue	CF47 9TA	Dwelling	60.6	60.7	60.4	61.2	48.5	48.6	48.3	49.0
3 Twelfth Avenue	CF47 9TA	Dwelling	55.4	55.8	55.9	56.9	43.9	44.2	44.3	45.2
4 Twelfth Avenue	CF47 9TA	Dwelling	58.5	58.7	58.3	59.4	46.6	46.8	46.4	47.4
5 Twelfth Avenue	CF47 9TA	Dwelling	54.6	54.8	54.7	55.6	43.1	43.3	43.2	44.0
6 Twelfth Avenue	CF47 9TA	Dwelling	53.4	53.4	52.9	53.8	42.1	42.0	41.6	42.4
7 Twelfth Avenue	CF47 9TA	Dwelling	48.9	49.0	48.8	49.7	38.0	38.1	37.9	38.7
8 Twelfth Avenue	CF47 9TA	Dwelling	52.9	52.8	52.8	53.7	41.6	41.5	41.5	42.3
9 Twelfth Avenue	CF47 9TA	Dwelling	57.0	57.3	56.6	57.6	45.3	45.5	44.9	45.8
10 Twelfth Avenue	CF47 9TA	Dwelling	53.7	53.8	54.4	55.0	42.3	42.4	43.0	43.5
11 Twelfth Avenue	CF47 9TA	Dwelling	49.0	49.3	49.3	50.2	38.1	38.3	38.3	39.2
12 Twelfth Avenue	CF47 9TA	Dwelling	52.6	52.6	52.5	53.5	41.4	41.3	41.3	42.1
13 Twelfth Avenue	CF47 9TA	Dwelling	51.1	51.2	51.5	52.1	40.0	40.1	40.3	40.8
14 Twelfth Avenue	CF47 9TA	Dwelling	53.3	53.1	53.2	54.2	42.0	41.7	41.9	42.7
15 Twelfth Avenue	CF47 9TA	Dwelling	48.8	48.5	49.0	49.9	37.9	37.7	38.0	38.9
16 Twelfth Avenue	CF47 9TA	Dwelling	50.3	50.0	50.2	51.2	39.3	39.0	39.2	40.0
18 Twelfth Avenue	CF47 9TA	Dwelling	51.4	51.5	51.6	52.4	40.2	40.3	40.5	41.2
20 Twelfth Avenue	CF47 9TA	Dwelling	47.9	48.1	48.0	48.9	37.1	37.2	37.2	38.0
22 Twelfth Avenue	CF47 9TA	Dwelling	51.8	51.9	52.3	53.2	40.6	40.7	41.0	41.9
24 Twelfth Avenue	CF47 9TA	Dwelling	52.1	52.2	52.8	53.7	40.9	41.0	41.5	42.3
17 Twelfth Avenue	CF47 9TB	Dwelling	54.7	54.7	54.3	55.3	43.2	43.2	42.8	43.7
19 Twelfth Avenue	CF47 9TB	Dwelling	51.8	51.9	51.6	52.6	40.6	40.7	40.5	41.3
21 Twelfth Avenue	CF47 9TB	Dwelling	51.3	51.0	51.9	52.7	40.1	39.9	40.7	41.4
23 Twelfth Avenue	CF47 9TB	Dwelling	50.0	49.9	50.2	51.0	39.0	38.9	39.2	39.9
25 Twelfth Avenue	CF47 9TB	Dwelling	48.3	48.1	48.4	49.3	37.5	37.3	37.5	38.4
26 Twelfth Avenue	CF47 9TB	Dwelling	53.9	53.6	54.1	55.1	42.5	42.2	42.7	43.6
27 Twelfth Avenue	CF47 9TB	Dwelling	49.4	49.4	49.5	50.4	38.5	38.5	38.5	39.3
28 Twelfth Avenue	CF47 9TB	Dwelling	52.5	52.4	52.8	53.7	41.2	41.2	41.5	42.3
29 Twelfth Avenue	CF47 9TB	Dwelling	48.1	47.9	48.1	49.1	37.3	37.1	37.3	38.1
30 Twelfth Avenue	CF47 9TB	Dwelling	49.5	49.5	49.8	50.6	38.5	38.6	38.8	39.5
31 Twelfth Avenue	CF47 9TB	Dwelling	49.1	49.1	49.2	50.1	38.2	38.2	38.3	39.1
32 Twelfth Avenue	CF47 9TB	Dwelling	49.2	49.1	50.4	51.0	38.2	38.2	39.3	39.9
33 Twelfth Avenue	CF47 9TB	Dwelling	49.5	49.5	49.4	50.4	38.6	38.5	38.5	39.3
34 Twelfth Avenue	CF47 9TB	Dwelling	50.9	50.9	52.1	52.7	39.8	39.8	40.8	41.4
35 Twelfth Avenue	CF47 9TB	Dwelling	50.1	50.1	50.2	51.1	39.1	39.1	39.1	39.9
36 Twelfth Avenue	CF47 9TB	Dwelling	50.8	50.8	52.0	52.6	39.7	39.7	40.8	41.3
38 Twelfth Avenue	CF47 9TB	Dwelling	50.1	50.1	51.4	52.1	39.1	39.1	40.3	40.8
40 Twelfth Avenue	CF47 9TB	Dwelling	50.1	50.1	51.5	52.1	39.1	39.1	40.3	40.9
42 Twelfth Avenue	CF47 9TB	Dwelling	49.4	49.4	50.3	50.9	38.4	38.5	39.2	39.8
44 Twelfth Avenue	CF47 9TB	Dwelling	49.5	49.5	50.2	50.9	38.5	38.6	39.2	39.8
46 Twelfth Avenue	CF47 9TB	Dwelling	49.8	49.9	50.1	50.9	38.8	38.9	39.1	39.8
48 Twelfth Avenue	CF47 9TB	Dwelling	49.2	49.3	49.5	50.3	38.3	38.4	38.5	39.2
37 Twelfth Avenue	CF47 9TD	Dwelling	49.2	49.1	49.3	50.2	38.3	38.1	38.3	39.2
39 Twelfth Avenue	CF47 9TD	Dwelling	49.9	50.2	50.0	50.8	38.9	39.1	39.0	39.7
41 Twelfth Avenue	CF47 9TD	Dwelling	43.8	43.9	44.0	44.8	33.4	33.5	33.6	34.3
43 Twelfth Avenue	CF47 9TD	Dwelling	49.2	49.5	49.4	50.1	38.3	38.5	38.4	39.1
45 Twelfth Avenue	CF47 9TD	Dwelling	48.4	48.6	48.6	49.4	37.5	37.7	37.7	38.4
47 Twelfth Avenue	CF47 9TD	Dwelling	53.1	53.6	53.1	53.8	41.8	42.2	41.8	42.4
50 Twelfth Avenue	CF47 9TD	Dwelling	48.8	48.8	49.1	49.8	37.9	37.9	38.1	38.8
52 Twelfth Avenue	CF47 9TD	Dwelling	44.5	44.4	44.7	45.6	34.0	33.9	34.3	35.0
54 Twelfth Avenue	CF47 9TD	Dwelling	49.5	49.7	49.8	50.5	38.6	38.7	38.8	39.4
56 Twelfth Avenue	CF47 9TD	Dwelling	48.7	48.9	48.8	49.6	37.8	38.0	37.9	38.6
58 Twelfth Avenue	CF47 9TD	Dwelling	49.3	49.5	49.5	50.2	38.4	38.5	38.5	39.2
60 Twelfth Avenue	CF47 9TD	Dwelling	49.6	49.8	49.7	50.5	38.6	38.8	38.7	39.4
62 Twelfth Avenue	CF47 9TD	Dwelling	45.9	45.9	46.1	46.9	35.3	35.3	35.5	36.2
64 Twelfth Avenue	CF47 9TD	Dwelling	50.9	51.2	51.0	51.8	39.8	40.1	39.9	40.6
66 Twelfth Avenue	CF47 9TD	Dwelling	51.9	52.3	52.0	52.7	40.7	41.0	40.7	41.4
68 Twelfth Avenue	CF47 9TD	Dwelling	46.1	46.3	46.2	46.9	35.4	35.7	35.6	36.2
70 Twelfth Avenue	CF47 9TD	Dwelling	45.3	45.4	45.4	46.1	34.8	34.8	34.8	35.5
72 Twelfth Avenue	CF47 9TD	Dwelling	48.0	47.8	47.9	48.8	37.2	37.0	37.1	37.9
Fairview Bungalow Fairview Bungalow Tenth Avenue	CF47 9TE	Dwelling	66.9	67.5	66.8	67.5	54.2	54.8	54.1	54.7
Galon Uchaf Sunday School Tenth Avenue	CF47 9TE	OSR	67.7	68.4	67.6	68.3	54.9	55.5	54.8	55.5
50 Tenth Avenue	CF47 9TE	Dwelling	61.6	62.3	61.6	62.3	49.5	50.0	49.4	50.0
52 Tenth Avenue	CF47 9TE	Dwelling	65.4	66.1	65.4	66.1	52.9	53.5	52.8	53.4
54 Tenth Avenue	CF47 9TE	Dwelling	66.3	67.0	66.2	66.9	53.7	54.2	53.6	54.2
56 Tenth Avenue	CF47 9TE	Dwelling	65.3	66.0	65.2	65.9	52.8	53.4	52.7	53.3
57 Tenth Avenue	CF47 9TE	Dwelling	65.8	66.5	65.8	66.4	53.2	53.8	53.2	53.8
58 Tenth Avenue	CF47 9TE	Dwelling	66.1	66.8	66.1	66.8	53.5	54.1	53.4	54.1
59 Tenth Avenue	CF47 9TE	Dwelling	46.1	46.6	46.2	46.9	35.5	35.9	35.5	36.2
60 Tenth Avenue	CF47 9TE	Dwelling	65.2	65.9	65.1	65.8	52.7	53.3	52.6	53.2
61 Tenth Avenue	CF47 9TE	Dwelling	46.9	47.3	47.0	47.7	36.2	36.6	36.2	36.9
62 Tenth Avenue	CF47 9TE	Dwelling	66.5	67.2	66.5	67.2	53.9	54.5	53.8	54.4
63 Tenth Avenue	CF47 9TE	Dwelling	47.1	47.6	47.2	47.9	36.4	36.8	36.4	37.1
64 Tenth Avenue	CF47 9TE	Dwelling	65.6	66.3	65.5	66.2	53.0	53.6	52.9	53.6
65 Tenth Avenue	CF47 9TE	Dwelling	46.8	47.2	46.8	47.6	36.1	36.5	36.1	36.8
67 Tenth Avenue	CF47 9TE	Dwelling	49.6	50.0	49.7	50.4	38.7	39.0	38.7	39.3
69 Tenth Avenue	CF47 9TE	Dwelling	49.6	50.0	49.7	50.4	38.6	39.0	38.7	39.3
71 Tenth Avenue	CF47 9TE	Dwelling	49.7	50.1	49.7	50.4	38.8	39.1	38.7	39.4
73 Tenth Avenue	CF47 9TE	Dwelling	65.7	66.4	65.7	66.4	53.1	53.7	53.1	53.7
75 Tenth Avenue	CF47 9TE	Dwelling	49.2	49.5	49.2	49.9	38.3	38.5	38.3	38.9
77 Tenth Avenue	CF47 9TE	Dwelling	45.2	45.6	45.3	46.0	34.7	35.0	34.8	35.4
79 Tenth Avenue	CF47 9TE	Dwelling	45.3	45.7	45.4	46.2	34.8	35.1	34.9	35.5
26 Tenth Avenue	CF47 9TF	Dwelling	49.6	49.5	49.6	50.4	38.6	38.6	38.6	39.3
28 Tenth Avenue	CF47 9TF	Dwelling	49.2	49.2	49.1	50.0	38.2	38.3	38.2	38.9
30 Tenth Avenue	CF47 9TF	Dwelling	50.4	50.4	50.4	51.2	39.3	39.4	39.3	40.0
32 Tenth Avenue	CF47 9TF	Dwelling	50.3	50.4	50.3	51.0	39.2	39.3	39.2	39.9
33 Tenth Avenue	CF47 9TF	Dwelling	46.5	46.5	46.5	47.4	35.8	35.8	35.8	36.6
34 Tenth Avenue	CF47 9TF	Dwelling	48.0	48.0	48.0	48.8	37.2	37.2	37.2	37.9
35 Tenth Avenue	CF47 9TF	Dwelling	48.8	48.8	48.8	49.7	37.9	37.9	37.9	38.7
36 Tenth Avenue	CF47 9TF	Dwelling	51.8	52.1	51.8	52.5	40.6	40.9	40.6	41.2
37 Tenth Avenue	CF47 9TF	Dwelling	49.3	49.3	49.3	50.2	38.4	38.4	38.4	39.2
38 Tenth Avenue	CF47 9TF	Dwelling	48.4	48.4	48.3	49.1	37.5	37.5	37.5	38.2
39 Tenth Avenue	CF47 9TF	Dwelling	48.9	48.9	48.8	49.7	38.0	38.0	37.9	38.7
40 Tenth Avenue	CF47 9TF	Dwelling	53.3	53.7	53.3	53.9	42.0	42.3	41.9	42.5
41 Tenth Avenue	CF47 9TF	Dwelling	46.0	46.0	46.0	46.9	35.4	35.4	35.4	36.2
42 Tenth Avenue	CF47 9TF	Dwelling	49.0	48.9	48.9	49.7	38.1	38.0	38.0	38.7
43 Tenth Avenue	CF47 9TF	Dwelling	50.2	50.3	50.2	51.0	39.1	39.3	39.1	39.8
44 Tenth Avenue	CF47 9TF	Dwelling	55.3	55.8	55.3	55.9	43.8	44.2	43.7	44.3
45 Tenth Avenue	CF47 9TF	Dwelling	47.9	47.9	47.9	48.7	37.1	37.1	37.1	37.8
46 Tenth Avenue	CF47 9TF	Dwelling	46.8	47.0	46.8	47.6	36.1	36.2	36.1	36.8
47 Tenth Avenue	CF47 9TF	Dwelling	51.7	52.1	51.7	52.4	40.5	40.8	40.5	41.1

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
48 Tenth Avenue	CF47 9TF	Dwelling	63.6	64.2	63.6	64.2	51.3	51.8	51.2	51.8
49 Tenth Avenue	CF47 9TF	Dwelling	46.1	46.1	46.1	46.9	35.5	35.5	35.5	36.2
51 Tenth Avenue	CF47 9TF	Dwelling	56.5	56.9	56.4	57.1	44.9	45.2	44.8	45.3
53 Tenth Avenue	CF47 9TF	Dwelling	49.6	49.8	49.6	50.4	38.7	38.8	38.7	39.3
55 Tenth Avenue	CF47 9TF	Dwelling	65.7	66.4	65.7	66.4	53.1	53.7	53.1	53.7
1 Tenth Avenue	CF47 9TG	Dwelling	53.3	53.0	53.2	54.1	41.9	41.6	41.9	42.7
2 Tenth Avenue	CF47 9TG	Dwelling	56.4	56.4	56.2	57.0	44.8	44.7	44.5	45.2
3 Tenth Avenue	CF47 9TG	Dwelling	52.8	52.5	52.8	53.7	41.5	41.2	41.5	42.3
4 Tenth Avenue	CF47 9TG	Dwelling	55.1	55.0	54.9	55.7	43.6	43.5	43.4	44.1
5 Tenth Avenue	CF47 9TG	Dwelling	51.9	51.7	52.0	52.9	40.7	40.5	40.8	41.6
6 Tenth Avenue	CF47 9TG	Dwelling	51.3	51.3	51.2	52.0	40.2	40.2	40.0	40.7
7 Tenth Avenue	CF47 9TG	Dwelling	51.0	50.8	51.0	51.9	39.9	39.7	39.9	40.7
8 Tenth Avenue	CF47 9TG	Dwelling	52.7	52.6	52.5	53.4	41.4	41.3	41.3	42.0
9 Tenth Avenue	CF47 9TG	Dwelling	50.8	50.5	50.7	51.7	39.7	39.5	39.7	40.5
10 Tenth Avenue	CF47 9TG	Dwelling	50.1	49.9	50.0	50.9	39.1	38.9	39.0	39.8
11 Tenth Avenue	CF47 9TG	Dwelling	51.2	50.9	51.1	52.1	40.1	39.8	40.0	40.8
12 Tenth Avenue	CF47 9TG	Dwelling	48.0	47.8	47.9	48.8	37.2	37.0	37.1	37.9
13 Tenth Avenue	CF47 9TG	Dwelling	50.2	49.9	50.2	51.1	39.1	38.9	39.1	39.9
14 Tenth Avenue	CF47 9TG	Dwelling	48.6	48.4	48.6	49.4	37.7	37.6	37.7	38.4
15 Tenth Avenue	CF47 9TG	Dwelling	50.3	50.1	50.3	51.2	39.3	39.0	39.2	40.0
16 Tenth Avenue	CF47 9TG	Dwelling	50.7	50.4	50.5	51.4	39.6	39.4	39.4	40.2
17 Tenth Avenue	CF47 9TG	Dwelling	50.6	50.3	50.6	51.5	39.6	39.3	39.5	40.3
18 Tenth Avenue	CF47 9TG	Dwelling	50.1	49.8	49.9	50.8	39.1	38.8	38.9	39.7
19 Tenth Avenue	CF47 9TG	Dwelling	49.3	49.1	49.3	50.2	38.4	38.1	38.3	39.2
20 Tenth Avenue	CF47 9TG	Dwelling	49.8	49.6	49.7	50.5	38.8	38.6	38.7	39.5
21 Tenth Avenue	CF47 9TG	Dwelling	46.3	46.1	46.2	47.2	35.7	35.4	35.6	36.4
22 Tenth Avenue	CF47 9TG	Dwelling	46.7	46.6	46.7	47.6	36.0	35.9	36.0	36.8
23 Tenth Avenue	CF47 9TG	Dwelling	45.1	45.2	45.1	46.0	34.6	34.7	34.6	35.3
24 Tenth Avenue	CF47 9TG	Dwelling	49.2	49.1	49.1	50.0	38.3	38.2	38.2	39.0
25 Tenth Avenue	CF47 9TG	Dwelling	49.2	49.1	49.1	50.0	38.3	38.1	38.2	38.9
27 Tenth Avenue	CF47 9TG	Dwelling	49.5	49.3	49.3	50.2	38.5	38.3	38.4	39.2
29 Tenth Avenue	CF47 9TG	Dwelling	49.0	48.9	49.0	49.9	38.1	38.0	38.1	38.8
31 Tenth Avenue	CF47 9TG	Dwelling	48.8	48.8	48.8	49.7	37.9	37.9	37.9	38.7
17 Galon Uchaf Road	CF47 9TH	Dwelling	61.4	61.8	61.1	61.9	49.3	49.6	49.0	49.7
19 Galon Uchaf Road	CF47 9TH	Dwelling	66.6	67.0	66.3	67.1	53.9	54.3	53.7	54.3
50 Galon Uchaf Road	CF47 9TH	Dwelling	51.7	51.7	51.5	52.3	40.5	40.5	40.3	41.1
52 Galon Uchaf Road	CF47 9TH	Dwelling	49.7	49.8	49.5	50.3	38.7	38.8	38.5	39.2
54 Galon Uchaf Road	CF47 9TH	Dwelling	62.2	62.6	62.0	62.7	50.0	50.3	49.7	50.4
56 Galon Uchaf Road	CF47 9TH	Dwelling	67.3	67.7	67.0	67.8	54.6	54.9	54.3	55.0
Residents Centre Ninth Avenue	CF47 9TL	OSR	47.0	46.9	47.0	47.8	36.3	36.2	36.3	37.0
1 Ninth Avenue	CF47 9TL	Dwelling	50.5	50.4	50.3	51.1	39.5	39.4	39.2	40.0
2 Ninth Avenue	CF47 9TL	Dwelling	49.1	49.1	48.9	49.8	38.2	38.1	38.0	38.8
3 Ninth Avenue	CF47 9TL	Dwelling	52.3	52.2	52.0	52.9	41.0	40.9	40.8	41.5
4 Ninth Avenue	CF47 9TL	Dwelling	51.2	51.1	51.0	51.9	40.0	40.0	39.9	40.7
5 Ninth Avenue	CF47 9TL	Dwelling	45.3	45.3	45.1	45.9	34.7	34.7	34.5	35.3
6 Ninth Avenue	CF47 9TL	Dwelling	50.8	50.6	50.6	51.5	39.7	39.5	39.5	40.3
7 Ninth Avenue	CF47 9TL	Dwelling	49.5	49.4	49.2	50.1	38.6	38.4	38.3	39.1
8 Ninth Avenue	CF47 9TL	Dwelling	47.5	47.4	47.5	48.3	36.8	36.6	36.7	37.4
9 Ninth Avenue	CF47 9TL	Dwelling	47.8	47.7	47.6	48.5	37.0	36.9	36.8	37.6
10 Ninth Avenue	CF47 9TL	Dwelling	49.6	49.5	49.5	50.4	38.7	38.5	38.6	39.3
11 Ninth Avenue	CF47 9TL	Dwelling	50.2	50.0	50.0	50.8	39.2	39.0	39.0	39.7
12 Ninth Avenue	CF47 9TL	Dwelling	47.0	46.9	46.9	47.8	36.3	36.2	36.2	37.0
13 Ninth Avenue	CF47 9TL	Dwelling	49.9	49.7	49.7	50.6	38.9	38.7	38.7	39.5
14 Ninth Avenue	CF47 9TL	Dwelling	49.7	49.7	49.6	50.4	38.8	38.7	38.6	39.4
15 Ninth Avenue	CF47 9TL	Dwelling	49.7	49.6	49.6	50.5	38.7	38.6	38.6	39.4
16 Ninth Avenue	CF47 9TL	Dwelling	49.8	49.9	49.7	50.5	38.8	38.9	38.8	39.4
17 Ninth Avenue	CF47 9TL	Dwelling	49.3	49.2	49.3	50.2	38.4	38.2	38.3	39.1
18 Ninth Avenue	CF47 9TL	Dwelling	47.4	47.5	47.4	48.1	36.7	36.8	36.6	37.2
19 Ninth Avenue	CF47 9TL	Dwelling	47.3	47.2	47.3	48.2	36.6	36.5	36.6	37.4
20 Ninth Avenue	CF47 9TL	Dwelling	52.0	52.2	51.8	52.5	40.8	41.0	40.6	41.2
21 Ninth Avenue	CF47 9TL	Dwelling	47.4	47.3	47.4	48.3	36.7	36.6	36.6	37.4
22 Ninth Avenue	CF47 9TL	Dwelling	46.1	46.2	46.0	46.8	35.5	35.6	35.4	36.1
23 Ninth Avenue	CF47 9TL	Dwelling	47.3	47.3	47.3	48.2	36.6	36.6	36.6	37.3
24 Ninth Avenue	CF47 9TL	Dwelling	51.1	51.2	50.9	51.7	40.0	40.1	39.8	40.5
25 Ninth Avenue	CF47 9TL	Dwelling	48.7	48.7	48.7	49.5	37.8	37.8	37.8	38.5
27 Ninth Avenue	CF47 9TL	Dwelling	46.5	46.6	46.5	47.3	35.8	35.9	35.8	36.5
29 Ninth Avenue	CF47 9TL	Dwelling	46.2	46.3	46.2	47.0	35.6	35.7	35.5	36.2
31 Ninth Avenue	CF47 9TL	Dwelling	48.8	48.7	48.7	49.5	37.9	37.8	37.8	38.6
33 Ninth Avenue	CF47 9TL	Dwelling	48.2	48.3	48.1	48.9	37.4	37.4	37.3	38.0
35 Ninth Avenue	CF47 9TL	Dwelling	48.6	48.7	48.5	49.3	37.7	37.8	37.7	38.3
37 Ninth Avenue	CF47 9TL	Dwelling	52.0	52.4	51.9	52.6	40.8	41.1	40.7	41.3
39 Ninth Avenue	CF47 9TL	Dwelling	52.4	52.8	52.3	53.0	41.2	41.5	41.1	41.7
26 Ninth Avenue	CF47 9TN	Dwelling	52.3	52.5	52.0	52.8	41.1	41.2	40.8	41.5
28 Ninth Avenue	CF47 9TN	Dwelling	50.5	50.7	50.3	51.0	39.4	39.7	39.3	39.9
30 Ninth Avenue	CF47 9TN	Dwelling	49.1	49.3	49.0	49.7	38.2	38.4	38.1	38.7
32 Ninth Avenue	CF47 9TN	Dwelling	49.7	49.9	49.6	50.3	38.8	38.9	38.6	39.2
34 Ninth Avenue	CF47 9TN	Dwelling	46.0	46.3	46.0	46.7	35.4	35.6	35.4	36.0
36 Ninth Avenue	CF47 9TN	Dwelling	49.6	49.9	49.5	50.2	38.6	38.9	38.5	39.1
38 Ninth Avenue	CF47 9TN	Dwelling	47.3	47.5	47.2	47.9	36.5	36.7	36.4	37.1
40 Ninth Avenue	CF47 9TN	Dwelling	51.0	51.4	50.9	51.6	39.9	40.2	39.8	40.4
41 Ninth Avenue	CF47 9TN	Dwelling	46.5	46.7	46.5	47.2	35.9	36.0	35.8	36.4
42 Ninth Avenue	CF47 9TN	Dwelling	50.4	50.7	50.3	51.0	39.4	39.6	39.3	39.9
43 Ninth Avenue	CF47 9TN	Dwelling	50.0	50.3	49.9	50.6	39.0	39.2	38.9	39.5
44 Ninth Avenue	CF47 9TN	Dwelling	52.8	53.2	52.7	53.3	41.5	41.8	41.4	41.9
45 Ninth Avenue	CF47 9TN	Dwelling	46.9	47.2	46.9	47.6	36.2	36.4	36.2	36.8
47 Ninth Avenue	CF47 9TN	Dwelling	50.5	50.8	50.4	51.1	39.4	39.7	39.4	39.9
49 Ninth Avenue	CF47 9TN	Dwelling	51.8	52.2	51.8	52.4	40.6	41.0	40.6	41.1
51 Ninth Avenue	CF47 9TN	Dwelling	51.5	51.9	51.4	52.1	40.4	40.7	40.3	40.8
53 Ninth Avenue	CF47 9TN	Dwelling	51.0	51.4	51.0	51.6	39.9	40.3	39.8	40.4
55 Ninth Avenue	CF47 9TN	Dwelling	51.8	52.3	51.8	52.4	40.6	41.0	40.6	41.1
57 Ninth Avenue	CF47 9TN	Dwelling	52.9	53.4	52.8	53.5	41.6	42.0	41.5	42.1
59 Ninth Avenue	CF47 9TN	Dwelling	50.8	51.3	50.8	51.4	39.7	40.2	39.7	40.2
61 Ninth Avenue	CF47 9TN	Dwelling	55.2	55.7	55.1	55.7	43.7	44.1	43.6	44.1
63 Ninth Avenue	CF47 9TN	Dwelling	56.3	56.7	56.2	56.8	44.6	45.0	44.6	45.1
65 Ninth Avenue	CF47 9TN	Dwelling	53.9	54.4	53.9	54.5	42.5	43.0	42.5	43.0
67 Ninth Avenue	CF47 9TN	Dwelling	58.0	58.4	57.9	58.5	46.1	46.5	46.1	46.6
69 Ninth Avenue	CF47 9TN	Dwelling	58.5	59.0	58.4	59.0	46.6	47.1	46.5	47.1
71 Ninth Avenue	CF47 9TN	Dwelling	61.2	61.6	61.1	61.7	49.0	49.4	48.9	49.5
73 Ninth Avenue	CF47 9TN	Dwelling	61.5	61.9	61.5	62.0	49.3	49.7	49.3	49.8
75 Ninth Avenue	CF47 9TN	Dwelling	64.3	64.8	64.3	64.9	51.9	52.3	51.8	52.4
1 Galon Uchaf Road	CF47 9TP	Dwelling	66.8	67.1	66.5	67.2	54.1	54.4	53.8	54.5
3 Galon Uchaf Road	CF47 9TP	Dwelling	66.3	66.7	66.0	66.8	53.7	54.0	53.4	54.1
5 Galon Uchaf Road	CF47 9TP	Dwelling	66.9	67.2	66.6	67.3	54.1	54.5	53.9	54.5
7 Galon Uchaf Road	CF47 9TP	Dwelling	66.8	67.2	66.5	67.3	54.1	54.4	53.9	54.5
9 Galon Uchaf Road	CF47 9TP	Dwelling	66.2	66.6	65.9	66.7	53.6	53.9	53.3	54.0
11 Galon Uchaf Road	CF47 9TP	Dwelling	66.5	66.9	66.2	66.9	53.8	54.2	53.6	54.2
13 Galon Uchaf Road	CF47 9TP	Dwelling	64.5	64.9	64.2	65.0	52.0	52.4	51.8	52.4

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
15 Galon Uchaf Road	CF47 9TP	Dwelling	66.3	66.7	66.1	66.8	53.7	54.0	53.4	54.1
30 Galon Uchaf Road	CF47 9TP	Dwelling	51.5	51.8	51.3	52.0	40.4	40.6	40.2	40.8
32 Galon Uchaf Road	CF47 9TP	Dwelling	59.8	60.2	59.6	60.3	47.8	48.1	47.6	48.2
34 Galon Uchaf Road	CF47 9TP	Dwelling	51.0	51.1	50.8	51.6	39.9	40.0	39.7	40.4
36 Galon Uchaf Road	CF47 9TP	Dwelling	50.3	50.4	50.1	50.9	39.3	39.3	39.1	39.8
38 Galon Uchaf Road	CF47 9TP	Dwelling	50.7	50.7	50.5	51.3	39.6	39.6	39.4	40.2
40 Galon Uchaf Road	CF47 9TP	Dwelling	45.6	45.7	45.5	46.3	35.1	35.1	34.9	35.6
42 Galon Uchaf Road	CF47 9TP	Dwelling	50.4	50.4	50.2	51.0	39.3	39.4	39.2	39.9
44 Galon Uchaf Road	CF47 9TP	Dwelling	50.2	50.2	50.0	50.8	39.2	39.2	39.0	39.7
46 Galon Uchaf Road	CF47 9TP	Dwelling	66.2	66.6	65.9	66.7	53.6	53.9	53.3	54.0
48 Galon Uchaf Road	CF47 9TP	Dwelling	53.7	53.9	53.5	54.2	42.4	42.5	42.1	42.8
1 Fifth Avenue	CF47 9TR	Dwelling	60.6	60.9	60.4	61.1	48.6	48.8	48.3	48.9
2 Fifth Avenue	CF47 9TR	Dwelling	66.0	66.3	65.7	66.4	53.4	53.7	53.1	53.7
3 Fifth Avenue	CF47 9TR	Dwelling	56.4	56.6	56.1	56.8	44.7	44.9	44.5	45.1
4 Fifth Avenue	CF47 9TR	Dwelling	62.7	63.1	62.5	63.2	50.4	50.8	50.2	50.8
5 Fifth Avenue	CF47 9TR	Dwelling	53.4	53.5	53.2	53.9	42.1	42.2	41.9	42.5
6 Fifth Avenue	CF47 9TR	Dwelling	56.4	56.6	56.1	56.8	44.7	45.0	44.5	45.1
7 Fifth Avenue	CF47 9TR	Dwelling	47.5	47.0	47.2	48.1	36.7	36.3	36.4	37.2
8 Fifth Avenue	CF47 9TR	Dwelling	48.8	48.4	48.6	49.4	37.9	37.6	37.7	38.4
9 Fifth Avenue	CF47 9TR	Dwelling	50.5	50.7	50.3	51.0	39.4	39.6	39.3	39.9
10 Fifth Avenue	CF47 9TR	Dwelling	48.8	48.6	48.6	49.4	37.9	37.8	37.7	38.4
11 Fifth Avenue	CF47 9TR	Dwelling	47.0	46.5	46.7	47.6	36.3	35.8	36.0	36.8
12 Fifth Avenue	CF47 9TR	Dwelling	47.9	47.8	47.6	48.5	37.1	37.0	36.9	37.6
13 Fifth Avenue	CF47 9TR	Dwelling	48.9	48.7	48.7	49.5	38.0	37.8	37.8	38.5
14 Fifth Avenue	CF47 9TR	Dwelling	50.2	49.6	49.5	50.5	39.2	38.6	38.5	39.4
15 Fifth Avenue	CF47 9TR	Dwelling	50.8	50.8	50.5	51.3	39.7	39.7	39.5	40.1
16 Fifth Avenue	CF47 9TR	Dwelling	51.6	51.6	51.3	52.1	40.4	40.5	40.2	40.9
17 Fifth Avenue	CF47 9TR	Dwelling	49.8	49.8	49.5	50.3	38.8	38.8	38.6	39.2
18 Fifth Avenue	CF47 9TR	Dwelling	51.6	51.5	51.3	52.1	40.4	40.3	40.1	40.9
20 Fifth Avenue	CF47 9TR	Dwelling	49.0	48.5	48.8	49.6	38.1	37.6	37.9	38.7
22 Fifth Avenue	CF47 9TR	Dwelling	48.4	48.3	48.2	49.0	37.6	37.5	37.3	38.1
24 Fifth Avenue	CF47 9TR	Dwelling	50.2	49.7	49.9	50.8	39.2	38.7	38.9	39.7
26 Fifth Avenue	CF47 9TR	Dwelling	48.8	48.6	48.5	49.3	37.9	37.7	37.6	38.3
28 Fifth Avenue	CF47 9TR	Dwelling	49.0	48.7	48.6	49.4	38.1	37.8	37.7	38.4
30 Fifth Avenue	CF47 9TR	Dwelling	50.1	49.7	49.6	50.5	39.1	38.7	38.7	39.5
32 Fifth Avenue	CF47 9TR	Dwelling	49.1	48.9	48.8	49.6	38.2	37.9	37.9	38.6
34 Fifth Avenue	CF47 9TR	Dwelling	49.6	49.5	49.3	50.1	38.6	38.6	38.4	39.0
36 Fifth Avenue	CF47 9TR	Dwelling	48.0	47.4	47.6	48.6	37.2	36.6	36.8	37.7
38 Fifth Avenue	CF47 9TR	Dwelling	49.6	49.1	49.3	50.2	38.6	38.2	38.3	39.1
40 Fifth Avenue	CF47 9TR	Dwelling	47.1	46.7	46.9	47.8	36.4	36.0	36.2	37.0
29 Fourth Avenue	CF47 9TS	Dwelling	48.8	48.6	48.6	49.4	37.9	37.7	37.7	38.4
31 Fourth Avenue	CF47 9TS	Dwelling	48.7	48.4	48.5	49.3	37.8	37.6	37.6	38.3
33 Fourth Avenue	CF47 9TS	Dwelling	49.0	48.8	48.8	49.6	38.1	37.9	37.9	38.6
35 Fourth Avenue	CF47 9TS	Dwelling	46.4	46.1	46.2	47.1	35.7	35.4	35.6	36.4
37 Fourth Avenue	CF47 9TS	Dwelling	46.7	46.6	46.6	47.3	36.0	36.0	35.9	36.5
39 Fourth Avenue	CF47 9TS	Dwelling	51.4	51.0	51.0	51.9	40.3	39.8	39.9	40.7
41 Fourth Avenue	CF47 9TS	Dwelling	50.0	49.5	49.7	50.6	39.0	38.5	38.7	39.5
42 Fourth Avenue	CF47 9TS	Dwelling	45.9	45.8	45.8	46.5	35.3	35.2	35.2	35.8
44 Fourth Avenue	CF47 9TS	Dwelling	48.0	47.7	47.8	48.7	37.2	36.9	37.0	37.8
46 Fourth Avenue	CF47 9TS	Dwelling	49.4	49.2	49.2	50.0	38.5	38.3	38.2	39.0
48 Fourth Avenue	CF47 9TS	Dwelling	46.1	45.8	45.9	46.8	35.5	35.2	35.3	36.1
50 Fourth Avenue	CF47 9TS	Dwelling	49.1	48.7	48.8	49.7	38.2	37.8	37.9	38.7
52 Fourth Avenue	CF47 9TS	Dwelling	47.2	46.9	47.2	48.0	36.5	36.1	36.4	37.2
54 Fourth Avenue	CF47 9TS	Dwelling	46.1	45.8	46.0	46.8	35.4	35.2	35.4	36.1
56 Fourth Avenue	CF47 9TS	Dwelling	48.1	47.8	47.8	48.7	37.3	37.0	37.0	37.8
1 Third Avenue	CF47 9TT	Dwelling	46.8	46.4	46.5	47.4	36.1	35.8	35.8	36.6
2 Third Avenue	CF47 9TT	Dwelling	46.6	46.4	46.4	47.2	35.9	35.8	35.7	36.4
3 Third Avenue	CF47 9TT	Dwelling	49.5	49.6	49.3	50.0	38.6	38.6	38.3	39.0
4 Third Avenue	CF47 9TT	Dwelling	49.4	49.5	49.1	49.9	38.4	38.5	38.2	38.9
5 Third Avenue	CF47 9TT	Dwelling	49.8	49.6	49.5	50.3	38.8	38.6	38.5	39.2
6 Third Avenue	CF47 9TT	Dwelling	45.3	44.8	45.0	45.9	34.8	34.3	34.5	35.3
7 Third Avenue	CF47 9TT	Dwelling	49.9	50.0	49.7	50.4	38.9	38.9	38.7	39.3
8 Third Avenue	CF47 9TT	Dwelling	47.5	47.5	47.3	48.0	36.7	36.7	36.5	37.2
9 Third Avenue	CF47 9TT	Dwelling	49.5	49.5	49.3	50.0	38.5	38.6	38.3	39.0
10 Third Avenue	CF47 9TT	Dwelling	47.8	47.5	47.5	48.4	37.0	36.7	36.8	37.5
11 Third Avenue	CF47 9TT	Dwelling	47.7	47.2	47.4	48.2	36.9	36.5	36.6	37.4
12 Third Avenue	CF47 9TT	Dwelling	47.0	46.7	46.7	47.6	36.3	36.0	36.0	36.8
13 Third Avenue	CF47 9TT	Dwelling	49.5	49.5	49.3	50.0	38.6	38.6	38.3	39.0
15 Third Avenue	CF47 9TT	Dwelling	50.2	50.2	50.0	50.7	39.2	39.2	39.0	39.6
17 Third Avenue	CF47 9TT	Dwelling	49.7	49.6	49.4	50.2	38.7	38.6	38.4	39.1
13 Fourth Avenue	CF47 9TU	Dwelling	49.4	49.5	49.2	49.9	38.5	38.6	38.2	38.9
14 Fourth Avenue	CF47 9TU	Dwelling	46.8	46.9	46.6	47.4	36.1	36.2	36.0	36.6
15 Fourth Avenue	CF47 9TU	Dwelling	49.5	49.5	49.3	50.0	38.5	38.6	38.3	38.9
16 Fourth Avenue	CF47 9TU	Dwelling	49.7	49.9	49.5	50.2	38.7	38.9	38.5	39.1
17 Fourth Avenue	CF47 9TU	Dwelling	46.5	46.4	46.3	47.1	35.9	35.8	35.6	36.3
18 Fourth Avenue	CF47 9TU	Dwelling	45.6	45.2	45.4	46.2	35.0	34.7	34.8	35.6
19 Fourth Avenue	CF47 9TU	Dwelling	46.2	46.0	46.0	46.8	35.5	35.4	35.4	36.1
20 Fourth Avenue	CF47 9TU	Dwelling	45.8	45.8	45.7	46.4	35.2	35.2	35.1	35.7
21 Fourth Avenue	CF47 9TU	Dwelling	46.1	46.0	46.0	46.8	35.5	35.4	35.4	36.1
22 Fourth Avenue	CF47 9TU	Dwelling	49.5	49.6	49.3	50.0	38.5	38.6	38.3	39.0
23 Fourth Avenue	CF47 9TU	Dwelling	46.7	46.5	46.5	47.3	36.0	35.8	35.8	36.5
24 Fourth Avenue	CF47 9TU	Dwelling	50.7	50.9	50.5	51.2	39.6	39.8	39.4	40.0
25 Fourth Avenue	CF47 9TU	Dwelling	47.8	47.6	47.6	48.4	37.0	36.8	36.8	37.5
26 Fourth Avenue	CF47 9TU	Dwelling	48.1	48.2	47.9	48.7	37.3	37.3	37.1	37.8
27 Fourth Avenue	CF47 9TU	Dwelling	49.4	49.4	49.2	49.9	38.5	38.4	38.2	38.9
28 Fourth Avenue	CF47 9TU	Dwelling	51.6	51.7	51.3	52.1	40.4	40.5	40.2	40.8
30 Fourth Avenue	CF47 9TU	Dwelling	48.1	48.2	48.0	48.7	37.3	37.4	37.1	37.8
32 Fourth Avenue	CF47 9TU	Dwelling	51.6	51.6	51.3	52.1	40.4	40.5	40.2	40.8
34 Fourth Avenue	CF47 9TU	Dwelling	48.0	48.0	47.8	48.6	37.2	37.2	37.0	37.7
36 Fourth Avenue	CF47 9TU	Dwelling	50.7	50.8	50.5	51.2	39.7	39.7	39.4	40.1
38 Fourth Avenue	CF47 9TU	Dwelling	50.5	50.5	50.3	51.0	39.5	39.5	39.2	39.9
40 Fourth Avenue	CF47 9TU	Dwelling	50.5	50.6	50.3	51.0	39.5	39.5	39.2	39.9
2 Galon Uchaf Road	CF47 9TW	Dwelling	59.3	59.7	59.1	59.8	47.4	47.7	47.2	47.8
4 Galon Uchaf Road	CF47 9TW	Dwelling	62.6	63.0	62.4	63.1	50.3	50.6	50.1	50.7
6 Galon Uchaf Road	CF47 9TW	Dwelling	61.5	61.9	61.3	62.0	49.4	49.7	49.1	49.8
8 Galon Uchaf Road	CF47 9TW	Dwelling	47.0	47.2	46.9	47.6	36.3	36.5	36.2	36.8
10 Galon Uchaf Road	CF47 9TW	Dwelling	47.7	48.0	47.6	48.3	36.9	37.2	36.8	37.5
12 Galon Uchaf Road	CF47 9TW	Dwelling	47.2	47.5	47.1	47.8	36.5	36.7	36.4	37.0
14 Galon Uchaf Road	CF47 9TW	Dwelling	47.7	48.0	47.6	48.3	36.9	37.2	36.8	37.5
16 Galon Uchaf Road	CF47 9TW	Dwelling	47.6	47.9	47.5	48.2	36.8	37.1	36.7	37.3
18 Galon Uchaf Road	CF47 9TW	Dwelling	50.9	51.2	50.8	51.5	39.8	40.0	39.7	40.3
20 Galon Uchaf Road	CF47 9TW	Dwelling	47.2	47.4	47.1	47.8	36.5	36.7	36.3	37.0
22 Galon Uchaf Road	CF47 9TW	Dwelling	46.8	47.0	46.7	47.4	36.1	36.3	36.0	36.7
24 Galon Uchaf Road	CF47 9TW	Dwelling	46.5	46.7	46.4	47.1	35.9	36.0	35.7	36.4
26 Galon Uchaf Road	CF47 9TW	Dwelling	45.8	46.1	45.7	46.4	35.2	35.5	35.1	35.8
28 Galon Uchaf Road	CF47 9TW	Dwelling	50.1	50.3	49.9	50.6	39.0	39.2	38.9	39.5
1 Edgar Street	CF47 9TX	Dwelling	46.1	47.4	46.9	47.4	35.5	36.6	36.2	36.6

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
2 Edgar Street	CF47 9TX	Dwelling	46.7	47.8	47.6	48.1	36.0	37.0	36.8	37.3
3 Edgar Street	CF47 9TX	Dwelling	51.7	53.9	52.8	53.2	40.5	42.5	41.5	41.8
4 Edgar Street	CF47 9TX	Dwelling	50.8	53.1	52.1	52.4	39.7	41.8	40.9	41.2
5 Edgar Street	CF47 9TX	Dwelling	50.9	53.1	52.2	52.6	39.8	41.8	41.0	41.3
6 Edgar Street	CF47 9TX	Dwelling	52.5	54.3	53.3	53.8	41.2	42.8	41.9	42.4
7 Edgar Street	CF47 9TX	Dwelling	52.3	54.1	53.2	53.7	41.1	42.7	41.8	42.3
8 Edgar Street	CF47 9TX	Dwelling	52.2	53.9	53.0	53.6	41.0	42.5	41.7	42.2
9 Edgar Street	CF47 9TX	Dwelling	51.6	53.0	52.1	52.8	40.4	41.7	40.9	41.5
10 Edgar Street	CF47 9TX	Dwelling	51.7	53.2	52.3	52.9	40.5	41.9	41.0	41.6
11 Edgar Street	CF47 9TX	Dwelling	51.1	52.5	51.4	52.1	40.0	41.2	40.2	40.8
12 Edgar Street	CF47 9TX	Dwelling	48.1	49.1	48.5	49.1	37.3	38.1	37.6	38.2
13 Edgar Street	CF47 9TX	Dwelling	51.9	53.2	52.2	52.8	40.7	41.8	40.9	41.5
14 Edgar Street	CF47 9TX	Dwelling	51.8	53.2	52.2	52.8	40.6	41.9	41.0	41.5
15 Edgar Street	CF47 9TX	Dwelling	49.8	50.6	49.9	50.8	38.8	39.5	38.9	39.7
16 Edgar Street	CF47 9TX	Dwelling	51.2	52.9	51.8	52.3	40.1	41.6	40.6	41.0
17 Edgar Street	CF47 9TX	Dwelling	51.7	53.3	52.4	53.0	40.5	42.0	41.2	41.6
18 Edgar Street	CF47 9TX	Dwelling	48.0	49.1	48.4	49.0	37.2	38.1	37.5	38.1
19 Edgar Street	CF47 9TX	Dwelling	53.4	55.1	54.1	54.6	42.0	43.6	42.7	43.1
5 Fourth Avenue	CF47 9TY	Dwelling	49.2	49.4	49.0	49.7	38.3	38.4	38.1	38.7
6 Fourth Avenue	CF47 9TY	Dwelling	46.8	47.0	46.6	47.3	36.1	36.3	35.9	36.5
7 Fourth Avenue	CF47 9TY	Dwelling	49.2	49.4	49.0	49.7	38.3	38.4	38.1	38.7
8 Fourth Avenue	CF47 9TY	Dwelling	49.1	49.2	48.9	49.6	38.2	38.3	38.0	38.6
9 Fourth Avenue	CF47 9TY	Dwelling	47.0	47.3	46.8	47.5	36.3	36.5	36.1	36.7
10 Fourth Avenue	CF47 9TY	Dwelling	48.3	48.4	48.1	48.8	37.4	37.5	37.2	37.9
11 Fourth Avenue	CF47 9TY	Dwelling	49.1	49.3	48.9	49.6	38.2	38.3	38.0	38.6
12 Fourth Avenue	CF47 9TY	Dwelling	48.0	48.1	47.8	48.5	37.2	37.3	37.0	37.6
17 Second Avenue	CF47 9UA	Dwelling	49.7	49.8	49.4	50.2	38.7	38.8	38.5	39.1
19 Second Avenue	CF47 9UA	Dwelling	49.1	49.1	48.8	49.6	38.2	38.2	37.9	38.6
21 Second Avenue	CF47 9UA	Dwelling	50.4	50.5	50.1	50.9	39.4	39.4	39.1	39.7
28 Second Avenue	CF47 9UA	Dwelling	44.3	44.3	44.1	44.8	33.8	33.8	33.7	34.3
30 Second Avenue	CF47 9UA	Dwelling	46.4	46.5	46.3	47.0	35.8	35.8	35.6	36.3
32 Second Avenue	CF47 9UA	Dwelling	45.5	45.3	45.3	46.1	35.0	34.8	34.7	35.4
34 Second Avenue	CF47 9UA	Dwelling	50.1	50.2	49.9	50.6	39.1	39.2	38.9	39.5
1 Second Avenue	CF47 9UB	Dwelling	47.6	47.5	47.3	48.1	36.8	36.7	36.5	37.2
2 Second Avenue	CF47 9UB	Dwelling	45.9	45.5	45.6	46.4	35.3	34.9	35.0	35.8
3 Second Avenue	CF47 9UB	Dwelling	48.6	48.5	48.3	49.1	37.7	37.6	37.5	38.1
4 Second Avenue	CF47 9UB	Dwelling	49.7	49.3	49.1	49.9	38.7	38.3	38.2	38.9
6 Second Avenue	CF47 9UB	Dwelling	48.6	48.5	48.3	49.0	37.7	37.6	37.4	38.1
7 Second Avenue	CF47 9UB	Dwelling	46.2	45.8	45.9	46.7	35.5	35.2	35.3	36.0
8 Second Avenue	CF47 9UB	Dwelling	47.1	46.8	46.6	47.4	36.4	36.1	35.9	36.6
9 Second Avenue	CF47 9UB	Dwelling	49.3	49.3	49.1	49.8	38.4	38.4	38.2	38.8
10 Second Avenue	CF47 9UB	Dwelling	45.1	45.1	44.8	45.6	34.6	34.6	34.3	35.0
11 Second Avenue	CF47 9UB	Dwelling	45.3	45.0	45.1	45.9	34.8	34.5	34.5	35.3
12 Second Avenue	CF47 9UB	Dwelling	43.7	43.5	43.4	44.2	33.4	33.1	33.0	33.8
13 Second Avenue	CF47 9UB	Dwelling	48.7	48.7	48.4	49.2	37.8	37.8	37.5	38.2
14 Second Avenue	CF47 9UB	Dwelling	45.4	45.4	45.1	45.9	34.9	34.8	34.6	35.3
15 Second Avenue	CF47 9UB	Dwelling	45.6	45.2	45.4	46.2	35.0	34.7	34.8	35.5
16 Second Avenue	CF47 9UB	Dwelling	46.5	46.3	46.2	47.0	35.9	35.6	35.6	36.3
18 Second Avenue	CF47 9UB	Dwelling	48.9	48.9	48.7	49.4	38.0	38.0	37.8	38.4
20 Second Avenue	CF47 9UB	Dwelling	46.1	46.0	45.9	46.6	35.5	35.4	35.3	35.9
22 Second Avenue	CF47 9UB	Dwelling	48.9	48.9	48.6	49.4	38.0	38.0	37.7	38.4
24 Second Avenue	CF47 9UB	Dwelling	46.0	45.9	45.8	46.5	35.4	35.3	35.2	35.9
26 Second Avenue	CF47 9UB	Dwelling	48.1	48.0	47.8	48.6	37.3	37.2	37.0	37.7
1 First Avenue	CF47 9UD	Dwelling	52.8	52.7	52.2	52.7	41.5	41.4	41.0	41.4
2 First Avenue	CF47 9UD	Dwelling	54.6	54.6	54.2	54.6	43.1	43.1	42.7	43.1
3 First Avenue	CF47 9UD	Dwelling	52.5	51.9	51.6	52.4	41.3	40.7	40.4	41.1
4 First Avenue	CF47 9UD	Dwelling	46.9	46.8	46.6	47.4	36.2	36.1	35.9	36.7
5 First Avenue	CF47 9UD	Dwelling	50.9	50.7	50.4	51.1	39.8	39.6	39.4	40.0
6 First Avenue	CF47 9UD	Dwelling	47.4	47.5	47.2	47.9	36.7	36.8	36.4	37.1
7 First Avenue	CF47 9UD	Dwelling	50.9	50.8	50.3	51.0	39.8	39.7	39.3	39.8
8 First Avenue	CF47 9UD	Dwelling	47.7	47.8	47.5	48.2	36.9	37.0	36.7	37.3
9 First Avenue	CF47 9UD	Dwelling	50.0	49.9	49.6	50.3	39.0	38.9	38.6	39.3
10 First Avenue	CF47 9UD	Dwelling	48.4	48.4	48.3	49.0	37.6	37.5	37.4	38.1
11 First Avenue	CF47 9UD	Dwelling	49.3	49.1	48.9	49.6	38.3	38.2	38.0	38.7
12 First Avenue	CF47 9UD	Dwelling	50.2	50.1	49.9	50.7	39.2	39.1	38.9	39.6
13 First Avenue	CF47 9UD	Dwelling	50.6	50.4	50.2	51.0	39.5	39.4	39.2	39.8
14 First Avenue	CF47 9UD	Dwelling	50.4	50.3	50.2	50.9	39.4	39.3	39.1	39.8
15 First Avenue	CF47 9UD	Dwelling	49.8	49.6	49.5	50.3	38.8	38.6	38.5	39.2
16 First Avenue	CF47 9UD	Dwelling	50.4	50.3	50.1	50.9	39.3	39.2	39.1	39.8
17 First Avenue	CF47 9UD	Dwelling	48.3	48.0	48.2	48.9	37.4	37.2	37.3	38.0
18 First Avenue	CF47 9UD	Dwelling	50.7	50.6	50.4	51.2	39.6	39.5	39.3	40.0
19 First Avenue	CF47 9UD	Dwelling	50.5	50.1	50.1	50.9	39.4	39.1	39.1	39.8
20 First Avenue	CF47 9UD	Dwelling	48.0	48.0	47.7	48.5	37.2	37.2	36.9	37.6
21 First Avenue	CF47 9UD	Dwelling	46.9	46.8	46.6	47.4	36.2	36.1	35.9	36.6
22 First Avenue	CF47 9UD	Dwelling	50.5	50.3	50.2	51.0	39.5	39.3	39.2	39.9
23 First Avenue	CF47 9UD	Dwelling	50.4	50.1	50.0	50.9	39.3	39.0	39.0	39.8
24 First Avenue	CF47 9UD	Dwelling	47.6	47.3	47.4	48.2	36.9	36.6	36.6	37.3
25 First Avenue	CF47 9UD	Dwelling	50.3	49.9	49.9	50.8	39.2	38.9	38.9	39.7
26 First Avenue	CF47 9UD	Dwelling	46.4	46.2	46.3	47.0	35.7	35.5	35.6	36.3
27 First Avenue	CF47 9UD	Dwelling	50.2	49.9	49.9	50.7	39.2	38.9	38.9	39.6
28 First Avenue	CF47 9UD	Dwelling	50.1	49.7	49.8	50.6	39.0	38.7	38.8	39.5
29 First Avenue	CF47 9UD	Dwelling	50.6	50.3	50.2	51.1	39.5	39.2	39.2	39.9
31 First Avenue	CF47 9UD	Dwelling	50.4	50.0	50.0	50.9	39.4	39.0	39.0	39.8
33 First Avenue	CF47 9UD	Dwelling	50.7	50.4	50.3	51.2	39.6	39.3	39.3	40.1
35 First Avenue	CF47 9UD	Dwelling	50.9	50.5	50.6	51.4	39.8	39.5	39.5	40.3
37 First Avenue	CF47 9UD	Dwelling	47.8	47.7	47.7	48.4	37.0	36.9	36.9	37.5
1 Sixth Avenue	CF47 9UE	Dwelling	63.9	64.3	63.6	64.3	51.5	51.8	51.2	51.9
2 Sixth Avenue	CF47 9UE	Dwelling	64.4	64.8	64.1	64.9	52.0	52.3	51.7	52.3
3 Sixth Avenue	CF47 9UE	Dwelling	48.6	48.4	48.4	49.2	37.7	37.5	37.6	38.2
4 Sixth Avenue	CF47 9UE	Dwelling	51.1	50.6	50.8	51.7	40.0	39.5	39.7	40.5
5 Sixth Avenue	CF47 9UE	Dwelling	47.6	47.5	47.5	48.2	36.8	36.7	36.7	37.4
6 Sixth Avenue	CF47 9UE	Dwelling	50.0	50.0	49.8	50.6	39.0	39.0	38.8	39.5
7 Sixth Avenue	CF47 9UE	Dwelling	47.7	47.6	47.6	48.3	36.9	36.8	36.8	37.4
8 Sixth Avenue	CF47 9UE	Dwelling	49.7	49.1	49.4	50.3	38.7	38.2	38.5	39.3
9 Sixth Avenue	CF47 9UE	Dwelling	47.6	47.2	47.4	48.3	36.9	36.5	36.6	37.4
10 Sixth Avenue	CF47 9UE	Dwelling	48.9	48.9	48.8	49.5	38.0	38.0	37.9	38.5
11 Sixth Avenue	CF47 9UE	Dwelling	47.5	47.4	47.4	48.1	36.7	36.6	36.6	37.3
12 Sixth Avenue	CF47 9UE	Dwelling	48.9	48.9	48.8	49.5	38.0	38.0	37.9	38.5
13 Sixth Avenue	CF47 9UE	Dwelling	46.3	45.9	46.2	47.0	35.7	35.3	35.5	36.3
14 Sixth Avenue	CF47 9UE	Dwelling	48.1	48.0	48.0	48.7	37.3	37.2	37.1	37.8
O A P Hut O A P Hut 15 Sixth Avenue	CF47 9UE	Dwelling	45.8	45.5	45.7	46.5	35.2	34.9	35.2	35.9
16 Sixth Avenue	CF47 9UE	Dwelling	48.4	48.3	48.2	49.0	37.5	37.4	37.4	38.1
17 Sixth Avenue	CF47 9UE	Dwelling	47.0	46.6	46.8	47.7	36.3	35.9	36.1	36.9
18 Sixth Avenue	CF47 9UE	Dwelling	47.5	47.4	47.4	48.2	36.8	36.6	36.7	37.4
19 Sixth Avenue	CF47 9UE	Dwelling	46.4	46.2	46.3	47.1	35.8	35.5	35.6	36.4
20 Sixth Avenue	CF47 9UE	Dwelling	48.0	47.8	47.8	48.6	37.2	37.0	37.0	37.7
21 Sixth Avenue	CF47 9UE	Dwelling	50.6	50.1	50.3	51.2	39.5	39.1	39.2	40.0

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
22 Sixth Avenue	CF47 9UE	Dwelling	47.6	47.4	47.5	48.3	36.8	36.6	36.7	37.4
23 Sixth Avenue	CF47 9UE	Dwelling	46.3	46.0	46.1	46.9	35.7	35.4	35.5	36.2
24 Sixth Avenue	CF47 9UE	Dwelling	47.4	47.2	47.3	48.1	36.6	36.4	36.5	37.2
25 Sixth Avenue	CF47 9UE	Dwelling	46.1	45.9	45.8	46.6	35.5	35.3	35.2	35.9
26 Sixth Avenue	CF47 9UE	Dwelling	50.7	50.2	50.3	51.2	39.6	39.2	39.2	40.0
27 Sixth Avenue	CF47 9UF	Dwelling	52.3	51.7	51.4	52.4	41.1	40.5	40.3	41.1
28 Sixth Avenue	CF47 9UF	Dwelling	47.8	47.5	47.7	48.5	37.0	36.7	36.9	37.6
29 Sixth Avenue	CF47 9UF	Dwelling	53.5	52.9	53.0	53.9	42.2	41.6	41.6	42.5
30 Sixth Avenue	CF47 9UF	Dwelling	48.3	48.0	48.2	49.0	37.4	37.2	37.4	38.0
31 Sixth Avenue	CF47 9UF	Dwelling	49.3	49.2	49.0	49.6	38.4	38.2	38.1	38.6
32 Sixth Avenue	CF47 9UF	Dwelling	49.4	49.2	49.1	49.7	38.4	38.2	38.2	38.7
30 First Avenue	CF47 9UG	Dwelling	49.3	48.8	48.8	49.8	38.4	37.9	37.9	38.8
32 First Avenue	CF47 9UG	Dwelling	48.8	48.4	48.4	49.3	37.9	37.6	37.6	38.3
34 First Avenue	CF47 9UG	Dwelling	48.4	48.0	48.0	48.9	37.6	37.2	37.2	38.0
36 First Avenue	CF47 9UG	Dwelling	51.4	51.0	50.9	51.8	40.3	39.9	39.8	40.6
38 First Avenue	CF47 9UG	Dwelling	49.0	48.5	48.6	49.5	38.1	37.7	37.7	38.5
39 First Avenue	CF47 9UG	Dwelling	51.2	50.8	50.7	51.5	40.1	39.7	39.6	40.4
41 First Avenue	CF47 9UG	Dwelling	52.5	52.0	52.0	52.9	41.2	40.7	40.8	41.6
43 First Avenue	CF47 9UG	Dwelling	52.4	51.9	51.9	52.8	41.1	40.7	40.7	41.5
45 First Avenue	CF47 9UG	Dwelling	52.5	52.0	52.0	52.9	41.2	40.8	40.8	41.6
47 First Avenue	CF47 9UG	Dwelling	49.2	48.9	48.7	49.6	38.3	38.0	37.8	38.6
49 First Avenue	CF47 9UG	Dwelling	52.9	52.4	52.3	53.2	41.6	41.1	41.0	41.8
51 First Avenue	CF47 9UG	Dwelling	49.8	49.5	49.3	50.2	38.8	38.6	38.3	39.1
First Avenue	CF47 9UH	Dwelling	52.2	51.7	51.6	52.5	41.0	40.5	40.4	41.2
40 First Avenue	CF47 9UH	Dwelling	56.3	55.5	55.4	56.4	44.6	43.9	43.9	44.7
42 First Avenue	CF47 9UH	Dwelling	52.8	52.2	52.2	53.1	41.5	41.0	41.0	41.8
46 First Avenue	CF47 9UH	Dwelling	48.7	48.3	48.2	49.1	37.9	37.5	37.4	38.2
48 First Avenue	CF47 9UH	Dwelling	63.2	62.7	62.1	63.0	50.9	50.4	49.9	50.7
53 First Avenue	CF47 9UH	Dwelling	53.5	53.1	52.9	53.8	42.2	41.7	41.6	42.4
55 First Avenue	CF47 9UH	Dwelling	53.7	53.2	53.1	54.0	42.3	41.9	41.8	42.6
57 First Avenue	CF47 9UH	Dwelling	54.1	53.7	53.4	54.3	42.7	42.3	42.1	42.9
59 First Avenue	CF47 9UH	Dwelling	54.5	54.1	53.8	54.7	43.1	42.6	42.4	43.2
61 First Avenue	CF47 9UH	Dwelling	51.0	50.8	50.2	51.1	39.9	39.7	39.2	40.0
18 Haydn Terrace	CF47 9UJ	Dwelling	51.8	52.9	52.3	53.0	40.6	41.6	41.1	41.6
19 Haydn Terrace	CF47 9UJ	Dwelling	51.7	52.9	52.3	53.0	40.5	41.6	41.1	41.7
20 Haydn Terrace	CF47 9UJ	Dwelling	52.2	53.8	53.3	53.9	41.0	42.4	42.0	42.5
21 Haydn Terrace	CF47 9UJ	Dwelling	53.6	55.5	54.7	55.1	42.2	43.9	43.2	43.5
22 Haydn Terrace	CF47 9UJ	Dwelling	49.0	50.1	49.7	50.4	38.1	39.1	38.7	39.3
23 Haydn Terrace	CF47 9UJ	Dwelling	48.9	49.9	49.3	50.0	38.0	38.9	38.3	39.0
24 Haydn Terrace	CF47 9UJ	Dwelling	46.3	47.5	46.7	47.4	35.7	36.8	36.0	36.6
25 Haydn Terrace	CF47 9UJ	Dwelling	48.5	49.5	48.9	49.5	37.7	38.6	38.0	38.5
26 Haydn Terrace	CF47 9UJ	Dwelling	48.5	49.4	49.0	49.8	37.6	38.4	38.1	38.8
27 Haydn Terrace	CF47 9UJ	Dwelling	48.3	49.5	48.8	49.5	37.5	38.5	37.9	38.5
28 Haydn Terrace	CF47 9UJ	Dwelling	44.9	46.1	45.6	46.4	34.4	35.5	35.0	35.7
29 Haydn Terrace	CF47 9UJ	Dwelling	48.5	49.4	48.8	49.5	37.6	38.5	37.9	38.5
30 Haydn Terrace	CF47 9UJ	Dwelling	49.2	50.1	49.7	50.5	38.3	39.1	38.7	39.4
31 Haydn Terrace	CF47 9UJ	Dwelling	52.2	53.5	52.6	53.3	41.0	42.1	41.3	41.9
32 Haydn Terrace	CF47 9UJ	Dwelling	49.0	49.9	49.6	50.4	38.1	38.9	38.6	39.4
93 Haydn Terrace	CF47 9UJ	Dwelling	51.7	52.9	52.1	52.8	40.5	41.6	40.9	41.5
94 Haydn Terrace	CF47 9UJ	Dwelling	51.5	52.7	51.8	52.5	40.3	41.4	40.6	41.2
95 Haydn Terrace	CF47 9UJ	Dwelling	47.9	48.9	48.4	49.2	37.1	38.0	37.6	38.3
96 Haydn Terrace	CF47 9UJ	Dwelling	52.4	53.8	52.8	53.5	41.2	42.4	41.5	42.1
97 Haydn Terrace	CF47 9UJ	Dwelling	52.5	53.9	52.9	53.6	41.3	42.5	41.6	42.2
98 Haydn Terrace	CF47 9UJ	Dwelling	46.1	47.0	46.6	47.3	35.5	36.3	35.9	36.6
99 Haydn Terrace	CF47 9UJ	Dwelling	52.5	53.9	52.8	53.5	41.3	42.5	41.5	42.1
100 Haydn Terrace	CF47 9UJ	Dwelling	50.0	50.8	50.3	51.1	39.0	39.7	39.2	39.9
1 Seventh Avenue	CF47 9UL	Dwelling	61.2	61.6	61.0	61.7	49.1	49.4	48.8	49.5
2 Seventh Avenue	CF47 9UL	Dwelling	62.6	62.9	62.3	63.1	50.3	50.6	50.1	50.7
3 Seventh Avenue	CF47 9UL	Dwelling	60.5	60.7	60.2	61.0	48.5	48.6	48.2	48.9
4 Seventh Avenue	CF47 9UL	Dwelling	61.1	61.4	60.9	61.6	49.0	49.3	48.7	49.4
5 Seventh Avenue	CF47 9UL	Dwelling	49.0	49.0	48.8	49.6	38.1	38.0	37.9	38.6
6 Seventh Avenue	CF47 9UL	Dwelling	53.0	53.0	52.7	53.5	41.7	41.6	41.4	42.1
7 Seventh Avenue	CF47 9UL	Dwelling	49.8	49.2	49.5	50.4	38.8	38.3	38.5	39.3
8 Seventh Avenue	CF47 9UL	Dwelling	54.7	54.8	54.4	55.2	43.2	43.3	43.0	43.6
9 Seventh Avenue	CF47 9UL	Dwelling	51.5	51.2	51.2	52.0	40.4	40.1	40.0	40.8
10 Seventh Avenue	CF47 9UL	Dwelling	51.5	51.1	51.2	52.1	40.3	39.9	40.0	40.8
11 Seventh Avenue	CF47 9UL	Dwelling	50.3	49.6	50.0	50.9	39.2	38.7	38.9	39.7
12 Seventh Avenue	CF47 9UL	Dwelling	49.7	49.7	49.5	50.3	38.7	38.7	38.5	39.2
13 Seventh Avenue	CF47 9UL	Dwelling	49.1	48.6	48.8	49.7	38.2	37.7	37.9	38.7
14 Seventh Avenue	CF47 9UL	Dwelling	49.2	49.1	49.0	49.8	38.3	38.1	38.0	38.8
15 Seventh Avenue	CF47 9UL	Dwelling	47.7	47.3	47.5	48.3	36.9	36.6	36.7	37.4
16 Seventh Avenue	CF47 9UL	Dwelling	51.5	50.8	51.0	52.0	40.3	39.7	39.9	40.7
17 Seventh Avenue	CF47 9UL	Dwelling	52.4	51.8	52.0	53.0	41.2	40.6	40.8	41.6
18 Seventh Avenue	CF47 9UL	Dwelling	52.4	51.9	52.0	52.9	41.2	40.7	40.8	41.6
19 Seventh Avenue	CF47 9UL	Dwelling	51.1	50.4	50.7	51.6	40.0	39.3	39.6	40.4
20 Seventh Avenue	CF47 9UL	Dwelling	52.8	52.1	52.2	53.1	41.5	40.9	40.9	41.8
21 Seventh Avenue	CF47 9UL	Dwelling	50.3	49.6	49.9	50.8	39.2	38.7	38.8	39.7
22 Seventh Avenue	CF47 9UL	Dwelling	51.8	51.3	51.3	52.2	40.6	40.1	40.2	40.9
23 Seventh Avenue	CF47 9UL	Dwelling	47.6	47.2	47.0	47.9	36.8	36.5	36.3	37.1
Senior Citizens Hall Eighth Avenue	CF47 9UN	OSR	60.4	60.1	59.4	60.3	48.3	48.1	47.5	48.3
1 Eighth Avenue	CF47 9UN	Dwelling	62.5	62.8	62.2	63.0	50.2	50.5	50.0	50.7
2 Eighth Avenue	CF47 9UN	Dwelling	61.7	61.8	61.5	62.3	49.5	49.6	49.3	50.0
3 Eighth Avenue	CF47 9UN	Dwelling	58.4	58.1	58.5	59.3	46.5	46.3	46.6	47.4
4 Eighth Avenue	CF47 9UN	Dwelling	59.8	59.1	59.8	60.7	47.8	47.2	47.8	48.6
5 Eighth Avenue	CF47 9UN	Dwelling	53.7	53.6	53.4	54.3	42.3	42.2	42.1	42.8
6 Eighth Avenue	CF47 9UN	Dwelling	61.2	60.6	61.1	62.0	49.1	48.5	49.0	49.8
7 Eighth Avenue	CF47 9UN	Dwelling	53.2	52.6	52.9	53.8	41.8	41.3	41.6	42.4
8 Eighth Avenue	CF47 9UN	Dwelling	54.7	54.4	54.9	55.7	43.2	42.9	43.4	44.1
9 Eighth Avenue	CF47 9UN	Dwelling	52.7	52.3	52.4	53.3	41.4	41.1	41.1	41.9
10 Eighth Avenue	CF47 9UN	Dwelling	56.2	56.0	56.1	57.0	44.6	44.4	44.5	45.3
11 Eighth Avenue	CF47 9UN	Dwelling	53.2	52.6	52.7	53.6	41.8	41.3	41.4	42.2
12 Eighth Avenue	CF47 9UN	Dwelling	56.0	55.5	55.9	56.8	44.3	43.9	44.3	45.1
13 Eighth Avenue	CF47 9UN	Dwelling	52.8	52.3	52.3	53.2	41.5	41.0	41.0	41.8
14 Eighth Avenue	CF47 9UN	Dwelling	58.3	58.0	58.1	59.0	46.5	46.2	46.2	47.1
15 Eighth Avenue	CF47 9UN	Dwelling	59.0	58.3	58.1	59.1	47.1	46.5	46.3	47.1
16 Eighth Avenue	CF47 9UN	Dwelling	60.5	59.9	59.6	60.5	48.4	47.9	47.6	48.4
17 Eighth Avenue	CF47 9UN	Dwelling	52.4	51.9	51.8	52.7	41.2	40.7	40.6	41.4
18 Eighth Avenue	CF47 9UN	Dwelling	50.4	50.1	49.8	50.6	39.4	39.1	38.8	39.5
19 Eighth Avenue	CF47 9UN	Dwelling	61.3	60.8	60.1	61.0	49.2	48.7	48.0	48.8
33 Haydn Terrace	CF47 9YJ	Dwelling	51.2	52.5	51.9	52.5	40.0	41.3	40.7	41.2
34 Haydn Terrace	CF47 9YJ	Dwelling	45.6	47.4	47.0	47.5	35.1	36.6	36.3	36.7
35 Haydn Terrace	CF47 9YJ	Dwelling	45.1	46.9	46.7	47.1	34.6	36.2	36.0	36.4
36 Haydn Terrace	CF47 9YJ	Dwelling	48.0	49.4	49.0	49.7	37.2	38.4	38.1	38.7
37 Haydn Terrace	CF47 9YJ	Dwelling	45.6	47.2	46.7	47.2	35.0	36.5	36.0	36.4
38 Haydn Terrace	CF47 9YJ	Dwelling	47.5	48.8	48.3	48.9	36.7	37.9	37.4	38.0
39 Haydn Terrace	CF47 9YJ	Dwelling	48.5	49.8	49.3	49.8	37.7	38.8	38.3	38.8
40 Haydn Terrace	CF47 9YJ	Dwelling	47.5	48.8	48.5	49.2	36.8	37.9	37.7	38.3

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
41 Haydn Terrace	CF47 9YJ	Dwelling	47.6	48.9	48.4	49.0	36.8	38.0	37.5	38.1
42 Haydn Terrace	CF47 9YJ	Dwelling	44.6	45.8	45.6	46.3	34.1	35.2	35.0	35.6
43 Haydn Terrace	CF47 9YJ	Dwelling	45.0	46.3	45.8	46.4	34.4	35.6	35.2	35.7
44 Haydn Terrace	CF47 9YJ	Dwelling	44.8	45.7	45.5	46.3	34.3	35.1	34.9	35.7
45 Haydn Terrace	CF47 9YJ	Dwelling	45.9	47.0	46.6	47.3	35.3	36.3	35.9	36.6
46 Haydn Terrace	CF47 9YJ	Dwelling	44.4	45.5	45.5	46.2	34.0	34.9	34.9	35.5
47 Haydn Terrace	CF47 9YJ	Dwelling	47.5	48.7	48.1	48.8	36.7	37.8	37.3	37.9
48 Haydn Terrace	CF47 9YJ	Dwelling	44.3	45.3	45.3	46.0	33.8	34.7	34.7	35.4
49 Haydn Terrace	CF47 9YJ	Dwelling	47.3	48.5	48.0	48.6	36.6	37.6	37.1	37.7
50 Haydn Terrace	CF47 9YJ	Dwelling	48.2	49.2	49.0	49.8	37.4	38.2	38.1	38.8
51 Haydn Terrace	CF47 9YJ	Dwelling	49.8	50.7	50.5	51.2	38.8	39.6	39.4	40.1
52 Haydn Terrace	CF47 9YJ	Dwelling	47.9	48.8	48.7	49.5	37.1	37.9	37.8	38.5
53 Haydn Terrace	CF47 9YJ	Dwelling	46.8	47.8	47.4	48.2	36.1	37.0	36.7	37.3
54 Haydn Terrace	CF47 9YJ	Dwelling	45.2	45.8	45.8	46.7	34.6	35.2	35.2	36.0
55 Haydn Terrace	CF47 9YJ	Dwelling	47.1	48.2	47.7	48.5	36.4	37.3	36.9	37.6
56 Haydn Terrace	CF47 9YJ	Dwelling	48.1	48.9	48.8	49.6	37.3	38.0	37.9	38.6
57 Haydn Terrace	CF47 9YJ	Dwelling	47.0	48.0	47.6	48.3	36.3	37.2	36.8	37.5
58 Haydn Terrace	CF47 9YJ	Dwelling	47.7	48.5	48.2	49.0	36.9	37.7	37.4	38.1
59 Haydn Terrace	CF47 9YJ	Dwelling	47.6	48.7	48.2	49.0	36.9	37.8	37.4	38.0
60 Haydn Terrace	CF47 9YJ	Dwelling	50.0	50.8	50.8	51.7	39.0	39.7	39.7	40.5
61 Haydn Terrace	CF47 9YJ	Dwelling	52.0	52.8	52.4	53.3	40.8	41.5	41.2	41.9
62 Haydn Terrace	CF47 9YJ	Dwelling	51.6	52.4	52.2	53.0	40.4	41.1	41.0	41.7
63 Haydn Terrace	CF47 9YJ	Dwelling	50.4	51.2	51.1	52.0	39.3	40.1	40.0	40.7
64 Haydn Terrace	CF47 9YJ	Dwelling	47.6	48.6	48.1	48.8	36.8	37.7	37.3	37.9
65 Haydn Terrace	CF47 9YJ	Dwelling	48.5	49.1	49.0	49.9	37.6	38.2	38.1	38.9
66 Haydn Terrace	CF47 9YJ	Dwelling	47.3	48.0	47.8	48.6	36.6	37.2	37.0	37.7
67 Haydn Terrace	CF47 9YJ	Dwelling	54.1	54.8	53.4	54.3	42.7	43.3	42.1	42.9
68 Haydn Terrace	CF47 9YJ	Dwelling	49.5	50.2	50.3	51.1	38.5	39.2	39.2	40.0
69 Haydn Terrace	CF47 9YJ	Dwelling	48.7	49.1	48.6	49.5	37.8	38.2	37.7	38.5
70 Haydn Terrace	CF47 9YJ	Dwelling	45.9	46.6	46.2	47.0	35.3	35.9	35.6	36.3
71 Haydn Terrace	CF47 9YJ	Dwelling	49.7	50.4	50.6	51.5	38.7	39.4	39.5	40.3
72 Haydn Terrace	CF47 9YJ	Dwelling	45.6	46.4	46.1	46.8	35.1	35.8	35.4	36.1
73 Haydn Terrace	CF47 9YJ	Dwelling	49.0	49.8	49.8	50.6	38.1	38.8	38.8	39.5
74 Haydn Terrace	CF47 9YJ	Dwelling	47.4	48.3	47.8	48.6	36.7	37.5	37.0	37.7
75 Haydn Terrace	CF47 9YJ	Dwelling	45.2	46.0	45.8	46.6	34.7	35.3	35.2	35.9
76 Haydn Terrace	CF47 9YJ	Dwelling	48.0	48.8	48.4	49.2	37.2	37.9	37.5	38.2
77 Haydn Terrace	CF47 9YJ	Dwelling	49.2	50.0	49.7	50.5	38.3	39.0	38.7	39.4
78 Haydn Terrace	CF47 9YJ	Dwelling	49.1	50.0	49.5	50.2	38.2	39.0	38.5	39.1
79 Haydn Terrace	CF47 9YJ	Dwelling	49.7	50.6	50.4	51.2	38.7	39.5	39.3	40.0
80 Haydn Terrace	CF47 9YJ	Dwelling	48.7	49.8	49.2	49.8	37.8	38.8	38.2	38.8
81 Haydn Terrace	CF47 9YJ	Dwelling	49.0	49.8	49.3	50.1	38.1	38.8	38.4	39.0
82 Haydn Terrace	CF47 9YJ	Dwelling	47.8	48.7	48.3	49.0	37.0	37.9	37.5	38.1
83 Haydn Terrace	CF47 9YJ	Dwelling	49.3	50.2	50.0	50.8	38.3	39.1	39.0	39.7
84 Haydn Terrace	CF47 9YJ	Dwelling	45.1	46.4	45.9	46.5	34.6	35.7	35.3	35.8
85 Haydn Terrace	CF47 9YJ	Dwelling	47.8	48.8	48.3	49.1	37.0	37.9	37.5	38.1
86 Haydn Terrace	CF47 9YJ	Dwelling	46.0	47.3	46.8	47.3	35.4	36.5	36.1	36.5
87 Haydn Terrace	CF47 9YJ	Dwelling	46.4	47.6	47.0	47.7	35.8	36.9	36.3	36.9
88 Haydn Terrace	CF47 9YJ	Dwelling	46.1	47.5	47.0	47.5	35.5	36.7	36.2	36.7
89 Haydn Terrace	CF47 9YJ	Dwelling	48.1	49.3	48.8	49.5	37.3	38.3	37.9	38.5
90 Haydn Terrace	CF47 9YJ	Dwelling	49.0	50.3	49.6	50.2	38.1	39.2	38.7	39.1
91 Haydn Terrace	CF47 9YJ	Dwelling	50.3	51.6	50.9	51.4	39.3	40.4	39.8	40.3
92 Haydn Terrace	CF47 9YJ	Dwelling	50.4	51.8	51.1	51.6	39.4	40.6	39.9	40.4
53 Garden City	CF47 9YT	Dwelling	50.7	51.6	51.0	51.7	39.6	40.5	39.9	40.5
55 Garden City	CF47 9YT	Dwelling	50.9	51.8	51.2	52.0	39.8	40.6	40.1	40.7
57 Garden City	CF47 9YU	Dwelling	51.6	52.6	52.0	52.8	40.4	41.3	40.8	41.5
58 Garden City	CF47 9YU	Dwelling	50.0	50.8	50.4	51.1	39.0	39.7	39.4	40.0
59 Garden City	CF47 9YU	Dwelling	45.2	45.7	45.8	46.7	34.7	35.1	35.2	36.0
60 Garden City	CF47 9YU	Dwelling	50.6	51.6	51.1	51.8	39.5	40.4	39.9	40.6
61 Garden City	CF47 9YU	Dwelling	49.5	50.3	49.9	50.7	38.5	39.2	38.9	39.6
62 Garden City	CF47 9YU	Dwelling	49.6	50.5	50.1	50.8	38.6	39.4	39.1	39.7
63 Garden City	CF47 9YU	Dwelling	45.6	46.1	46.3	47.2	35.0	35.5	35.6	36.4
64 Garden City	CF47 9YU	Dwelling	49.3	50.3	49.8	50.6	38.4	39.2	38.8	39.5
65 Garden City	CF47 9YU	Dwelling	47.2	47.8	47.7	48.5	36.5	37.0	36.9	37.6
66 Garden City	CF47 9YU	Dwelling	50.0	51.5	50.4	51.1	39.0	40.3	39.3	39.9
67 Garden City	CF47 9YU	Dwelling	45.4	45.9	45.8	46.7	34.9	35.3	35.2	36.0
68 Garden City	CF47 9YU	Dwelling	50.1	51.1	50.6	51.4	39.1	39.9	39.5	40.2
69 Garden City	CF47 9YU	Dwelling	46.8	47.3	47.3	48.1	36.1	36.6	36.5	37.3
70 Garden City	CF47 9YU	Dwelling	52.4	53.8	52.9	53.6	41.2	42.4	41.6	42.2
71 Garden City	CF47 9YU	Dwelling	46.6	47.1	47.1	47.9	36.0	36.4	36.4	37.1
72 Garden City	CF47 9YU	Dwelling	51.4	52.8	52.1	52.8	40.3	41.5	40.9	41.5
73 Garden City	CF47 9YU	Dwelling	46.8	47.3	47.3	48.1	36.1	36.5	36.5	37.3
74 Garden City	CF47 9YU	Dwelling	51.9	53.3	52.6	53.3	40.7	41.9	41.3	41.9
75 Garden City	CF47 9YU	Dwelling	47.1	47.5	47.5	48.3	36.3	36.8	36.7	37.5
76 Garden City	CF47 9YU	Dwelling	47.4	48.0	47.6	48.5	36.6	37.2	36.8	37.6
78 Garden City	CF47 9YU	Dwelling	49.0	50.4	49.8	50.5	38.1	39.3	38.8	39.4
80 Garden City	CF47 9YU	Dwelling	46.1	46.7	46.4	47.1	35.5	36.0	35.7	36.3
82 Garden City	CF47 9YU	Dwelling	50.0	51.2	50.8	51.5	39.0	40.1	39.7	40.3
84 Garden City	CF47 9YU	Dwelling	49.2	49.7	49.3	50.2	38.2	38.7	38.4	39.2
86 Garden City	CF47 9YU	Dwelling	48.1	48.8	48.7	49.4	37.3	37.9	37.8	38.4
88 Garden City	CF47 9YU	Dwelling	48.8	49.4	49.2	50.1	37.9	38.4	38.3	39.1
90 Garden City	CF47 9YU	Dwelling	49.1	49.7	49.4	50.3	38.2	38.7	38.4	39.2
92 Garden City	CF47 9YU	Dwelling	48.4	48.9	48.8	49.8	37.5	38.0	37.9	38.8
94 Garden City	CF47 9YU	Dwelling	48.7	49.3	49.1	50.0	37.8	38.3	38.2	39.0
96 Garden City	CF47 9YU	Dwelling	47.9	48.4	48.4	49.3	37.1	37.5	37.5	38.3
98 Garden City	CF47 9YU	Dwelling	48.4	48.9	48.8	49.7	37.5	38.0	37.9	38.7
100 Garden City	CF47 9YU	Dwelling	47.7	48.2	48.3	49.2	36.9	37.4	37.4	38.2
102 Garden City	CF47 9YU	Dwelling	48.1	48.6	48.7	49.6	37.3	37.8	37.8	38.6
104 Garden City	CF47 9YU	Dwelling	46.9	47.4	47.4	48.3	36.2	36.6	36.7	37.4
106 Garden City	CF47 9YU	Dwelling	47.7	48.2	48.4	49.3	36.9	37.4	37.6	38.3
108 Garden City	CF47 9YU	Dwelling	47.2	47.7	47.9	48.8	36.5	36.9	37.1	37.9
19 Marshall Crescent	CF47 9YX	Dwelling	52.0	52.5	51.8	52.7	40.8	41.2	40.6	41.4
21 Marshall Crescent	CF47 9YX	Dwelling	51.2	51.9	51.9	52.7	40.0	40.7	40.7	41.4
23 Marshall Crescent	CF47 9YX	Dwelling	49.4	50.0	49.7	50.5	38.5	39.0	38.7	39.4
25 Marshall Crescent	CF47 9YX	Dwelling	50.9	51.6	51.1	51.9	39.8	40.4	40.0	40.7
27 Marshall Crescent	CF47 9YX	Dwelling	52.0	52.7	52.6	53.5	40.8	41.4	41.3	42.1
29 Marshall Crescent	CF47 9YX	Dwelling	48.6	49.3	48.8	49.6	37.8	38.4	37.9	38.6
31 Marshall Crescent	CF47 9YX	Dwelling	50.1	50.8	50.8	51.6	39.1	39.7	39.7	40.4
33 Marshall Crescent	CF47 9YX	Dwelling	50.9	51.7	51.2	51.9	39.8	40.5	40.1	40.7
38 Marshall Crescent	CF47 9YX	Dwelling	53.0	53.6	52.7	53.7	41.7	42.2	41.4	42.3
40 Marshall Crescent	CF47 9YX	Dwelling	46.0	46.7	46.4	47.2	35.4	36.0	35.7	36.4
42 Marshall Crescent	CF47 9YX	Dwelling	52.0	52.7	52.6	53.5	40.8	41.4	41.3	42.1
44 Marshall Crescent	CF47 9YX	Dwelling	44.9	45.6	45.4	46.2	34.4	35.0	34.8	35.5
46 Marshall Crescent	CF47 9YX	Dwelling	49.5	50.2	50.2	51.1	38.6	39.2	39.2	40.0
48 Marshall Crescent	CF47 9YX	Dwelling	49.9	50.7	50.2	50.9	38.9	39.6	39.1	39.8
21 Penybryn	CF47 9YY	Dwelling	61.7	62.3	61.7	62.3	49.6	50.0	49.5	50.0
22 Penybryn	CF47 9YY	Dwelling	61.2	61.8	61.2	61.8	49.1	49.6	49.0	49.6
23 Penybryn	CF47 9YY	Dwelling	57.1	57.6	57.1	57.7	45.4	45.9	45.3	45.9

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
24 Penybryn	CF47 9YY	Dwelling	45.3	45.6	45.4	46.1	34.8	35.0	34.8	35.4
25 Penybryn	CF47 9YY	Dwelling	52.8	53.3	52.8	53.4	41.5	41.9	41.5	42.0
26 Penybryn	CF47 9YY	Dwelling	43.8	43.9	43.8	44.5	33.4	33.5	33.4	34.0
27 Penybryn	CF47 9YY	Dwelling	44.9	45.1	44.9	45.6	34.4	34.5	34.4	35.0
28 Penybryn	CF47 9YY	Dwelling	48.6	49.0	48.8	49.4	37.8	38.1	37.9	38.4
29 Penybryn	CF47 9YY	Dwelling	45.3	45.7	45.5	46.2	34.8	35.1	34.9	35.5
30 Penybryn	CF47 9YY	Dwelling	44.9	45.3	45.0	45.8	34.4	34.8	34.5	35.2
31 Penybryn	CF47 9YY	Dwelling	48.5	48.9	48.7	49.4	37.7	38.0	37.8	38.4
32 Penybryn	CF47 9YY	Dwelling	48.4	48.7	48.5	49.2	37.5	37.8	37.6	38.2
33 Penybryn	CF47 9YY	Dwelling	48.1	48.3	48.0	48.8	37.3	37.4	37.2	37.9
34 Penybryn	CF47 9YY	Dwelling	48.4	48.6	48.4	49.2	37.6	37.7	37.5	38.2
35 Penybryn	CF47 9YY	Dwelling	45.4	45.8	45.5	46.3	34.9	35.2	34.9	35.6
36 Penybryn	CF47 9YY	Dwelling	50.3	50.8	50.5	51.3	39.2	39.7	39.4	40.1
37 Penybryn	CF47 9YY	Dwelling	48.7	49.4	49.0	49.8	37.9	38.5	38.1	38.8
38 Penybryn	CF47 9YY	Dwelling	50.7	51.4	51.0	51.8	39.6	40.3	39.9	40.6
39 Penybryn	CF47 9YY	Dwelling	49.9	50.6	50.1	50.9	38.9	39.5	39.1	39.8
40 Penybryn	CF47 9YY	Dwelling	50.3	50.9	50.5	51.3	39.3	39.8	39.4	40.1
41 Penybryn	CF47 9YY	Dwelling	46.8	47.2	47.1	47.9	36.1	36.5	36.4	37.1
42 Penybryn	CF47 9YY	Dwelling	47.8	48.2	48.3	49.1	37.0	37.4	37.4	38.2
43 Penybryn	CF47 9YY	Dwelling	47.6	48.0	48.1	49.0	36.9	37.2	37.3	38.1
44 Penybryn	CF47 9YY	Dwelling	47.0	47.4	47.5	48.3	36.3	36.7	36.7	37.5
45 Penybryn	CF47 9YY	Dwelling	47.0	47.4	47.4	48.3	36.3	36.6	36.7	37.4
46 Penybryn	CF47 9YY	Dwelling	46.1	46.4	46.6	47.4	35.5	35.8	35.9	36.7
47 Penybryn	CF47 9YY	Dwelling	48.3	48.7	48.6	49.4	37.4	37.8	37.7	38.4
48 Penybryn	CF47 9YY	Dwelling	50.7	51.7	51.0	51.7	39.6	40.5	39.9	40.5
49 Penybryn	CF47 9YY	Dwelling	45.8	46.3	46.3	47.1	35.2	35.6	35.7	36.4
50 Penybryn	CF47 9YY	Dwelling	45.4	45.8	45.9	46.7	34.9	35.2	35.3	36.0
51 Penybryn	CF47 9YY	Dwelling	45.5	45.9	46.0	46.8	35.0	35.3	35.4	36.1
1 Mountain Rise	CF48 1BB	Dwelling	55.3	57.0	57.5	58.7	43.7	45.3	45.7	46.8
2 Mountain Rise	CF48 1BB	Dwelling	56.9	58.7	59.2	60.5	45.2	46.8	47.3	48.4
3 Mountain Rise	CF48 1BB	Dwelling	57.1	58.9	59.4	60.8	45.3	47.0	47.5	48.7
4 Mountain Rise	CF48 1BB	Dwelling	55.7	57.5	58.0	59.3	44.1	45.7	46.2	47.3
5 Mountain Rise	CF48 1BB	Dwelling	56.1	58.1	58.6	60.1	44.5	46.3	46.8	48.0
6 Mountain Rise	CF48 1BB	Dwelling	42.6	43.9	44.2	45.2	32.4	33.5	33.8	34.7
7 Mountain Rise	CF48 1BB	Dwelling	42.5	43.7	44.1	45.0	32.2	33.3	33.7	34.5
8 Mountain Rise	CF48 1BB	Dwelling	43.3	44.5	44.9	45.8	32.9	34.0	34.4	35.2
9 Mountain Rise	CF48 1BB	Dwelling	42.7	43.9	44.3	45.2	32.4	33.5	33.8	34.7
10 Mountain Rise	CF48 1BB	Dwelling	42.7	43.9	44.3	45.3	32.4	33.5	33.8	34.7
11 Mountain Rise	CF48 1BB	Dwelling	42.6	43.9	44.2	45.2	32.4	33.5	33.8	34.7
12 Mountain Rise	CF48 1BB	Dwelling	41.6	42.7	43.1	44.0	31.5	32.4	32.7	33.6
13 Mountain Rise	CF48 1BB	Dwelling	41.3	42.3	42.7	43.7	31.2	32.1	32.4	33.3
14 Mountain Rise	CF48 1BB	Dwelling	43.7	45.0	45.4	46.3	33.3	34.5	34.8	35.7
15 Mountain Rise	CF48 1BB	Dwelling	47.8	49.1	49.4	50.4	37.0	38.1	38.4	39.3
16 Mountain Rise	CF48 1BB	Dwelling	49.6	51.0	51.4	52.4	38.7	39.9	40.2	41.1
17 Mountain Rise	CF48 1BB	Dwelling	55.8	57.6	58.1	59.3	44.2	45.8	46.2	47.3
18 Mountain Rise	CF48 1BB	Dwelling	56.7	58.5	59.0	60.3	45.0	46.7	47.1	48.2
19 Mountain Rise	CF48 1BB	Dwelling	59.8	61.7	62.2	63.6	47.8	49.5	50.0	51.2
1 Cyfarthfa Rise	CF48 1BE	Dwelling	43.5	44.7	45.1	46.1	33.2	34.2	34.6	35.4
2 Cyfarthfa Rise	CF48 1BE	Dwelling	42.5	43.6	44.0	45.0	32.2	33.3	33.6	34.4
3 Cyfarthfa Rise	CF48 1BE	Dwelling	44.4	45.4	45.4	46.2	34.0	34.9	34.8	35.6
4 Cyfarthfa Rise	CF48 1BE	Dwelling	41.4	42.4	42.8	43.7	31.3	32.2	32.5	33.3
5 Cyfarthfa Rise	CF48 1BE	Dwelling	44.1	45.1	45.1	46.0	33.7	34.6	34.6	35.3
6 Cyfarthfa Rise	CF48 1BE	Dwelling	41.2	42.1	42.4	43.3	31.0	31.9	32.1	33.0
7 Cyfarthfa Rise	CF48 1BE	Dwelling	44.0	44.9	44.8	45.6	33.6	34.4	34.3	35.0
8 Cyfarthfa Rise	CF48 1BE	Dwelling	41.0	41.9	42.0	42.9	30.9	31.7	31.8	32.6
9 Cyfarthfa Rise	CF48 1BE	Dwelling	41.0	41.9	42.0	42.9	30.9	31.7	31.8	32.6
10 Cyfarthfa Rise	CF48 1BE	Dwelling	41.1	42.0	42.2	43.2	30.9	31.8	32.0	32.8
11 Cyfarthfa Rise	CF48 1BE	Dwelling	48.1	49.0	48.9	49.7	37.3	38.1	38.0	38.7
12 Cyfarthfa Rise	CF48 1BE	Dwelling	46.8	47.9	48.2	49.1	36.1	37.1	37.3	38.2
13 Cyfarthfa Rise	CF48 1BE	Dwelling	50.4	51.7	51.9	52.8	39.4	40.5	40.6	41.5
14 Cyfarthfa Rise	CF48 1BE	Dwelling	46.4	47.8	48.2	49.2	35.8	37.0	37.4	38.3
15 Cyfarthfa Rise	CF48 1BE	Dwelling	49.1	50.4	50.6	51.5	38.2	39.3	39.5	40.3
16 Cyfarthfa Rise	CF48 1BE	Dwelling	44.1	45.4	45.8	46.8	33.7	34.8	35.2	36.1
1 Pen Cerrig Rise	CF48 1BF	Dwelling	44.1	45.3	45.5	46.4	33.7	34.8	34.9	35.7
2 Pen Cerrig Rise	CF48 1BF	Dwelling	41.9	43.1	43.5	44.4	31.7	32.8	33.1	34.0
3 Pen Cerrig Rise	CF48 1BF	Dwelling	47.0	48.3	48.6	49.6	36.3	37.5	37.7	38.6
4 Pen Cerrig Rise	CF48 1BF	Dwelling	46.2	47.6	48.0	49.0	35.6	36.8	37.2	38.1
5 Pen Cerrig Rise	CF48 1BF	Dwelling	47.6	48.9	49.3	50.3	36.8	38.0	38.3	39.2
6 Pen Cerrig Rise	CF48 1BF	Dwelling	49.7	51.3	51.7	52.8	38.8	40.1	40.5	41.5
The Wiggin Tree 7 Pen Cerrig Rise	CF48 1BF	Dwelling	55.3	57.0	57.5	58.7	43.8	45.3	45.7	46.8
8 Pen Cerrig Rise	CF48 1BF	Dwelling	58.1	59.8	60.3	61.5	46.2	47.8	48.2	49.3
9 Pen Cerrig Rise	CF48 1BF	Dwelling	58.3	60.1	60.6	61.8	46.5	48.1	48.5	49.6
10 Pen Cerrig Rise	CF48 1BF	Dwelling	59.7	61.9	62.4	64.0	47.8	49.7	50.1	51.6
11 Pen Cerrig Rise	CF48 1BF	Dwelling	60.2	62.1	62.6	64.0	48.2	49.9	50.3	51.6
12 Pen Cerrig Rise	CF48 1BF	Dwelling	50.6	52.1	52.6	53.6	39.5	40.9	41.3	42.2
13 Pen Cerrig Rise	CF48 1BF	Dwelling	49.5	51.0	51.4	52.4	38.6	39.8	40.2	41.1
14 Pen Cerrig Rise	CF48 1BF	Dwelling	50.4	51.8	52.2	53.2	39.3	40.6	41.0	41.9
15 Pen Cerrig Rise	CF48 1BF	Dwelling	47.3	48.6	49.0	50.0	36.6	37.8	38.1	38.9
16 Pen Cerrig Rise	CF48 1BF	Dwelling	45.9	47.2	47.6	48.6	35.3	36.5	36.8	37.7
17 Pen Cerrig Rise	CF48 1BF	Dwelling	45.8	47.2	47.5	48.5	35.2	36.4	36.7	37.6
18 Pen Cerrig Rise	CF48 1BF	Dwelling	42.8	44.0	44.4	45.4	32.5	33.6	33.9	34.8
19 Pen Cerrig Rise	CF48 1BF	Dwelling	43.3	44.5	44.9	45.9	32.9	34.1	34.4	35.3
20 Pen Cerrig Rise	CF48 1BF	Dwelling	44.5	45.5	45.5	46.4	34.0	35.0	34.9	35.7
21 Pen Cerrig Rise	CF48 1BF	Dwelling	40.3	41.4	41.7	42.6	30.3	31.2	31.5	32.4
22 Pen Cerrig Rise	CF48 1BF	Dwelling	45.0	45.8	45.6	46.4	34.5	35.2	35.0	35.8
23 Pen Cerrig Rise	CF48 1BF	Dwelling	44.9	45.7	45.5	46.4	34.4	35.1	34.9	35.7
24 Pen Cerrig Rise	CF48 1BF	Dwelling	41.8	42.5	42.6	43.5	31.6	32.2	32.3	33.2
25 Pen Cerrig Rise	CF48 1BF	Dwelling	40.0	40.9	41.1	42.1	29.9	30.8	31.0	31.9
26 Pen Cerrig Rise	CF48 1BF	Dwelling	42.2	43.2	43.2	44.1	32.0	32.9	32.9	33.7
27 Pen Cerrig Rise	CF48 1BF	Dwelling	40.6	41.6	41.9	42.8	30.5	31.4	31.6	32.5
28 Pen Cerrig Rise	CF48 1BF	Dwelling	42.7	43.7	43.6	44.4	32.4	33.3	33.2	34.0
29 Pen Cerrig Rise	CF48 1BF	Dwelling	40.7	41.5	41.8	42.8	30.6	31.4	31.6	32.5
30 Pen Cerrig Rise	CF48 1BF	Dwelling	40.2	41.1	41.3	42.3	30.2	30.9	31.2	32.0
31 Pen Cerrig Rise	CF48 1BF	Dwelling	41.5	42.1	42.3	43.3	31.3	31.9	32.1	33.0
32 Pen Cerrig Rise	CF48 1BF	Dwelling	40.4	41.2	41.5	42.5	30.4	31.1	31.4	32.2
33 Pen Cerrig Rise	CF48 1BF	Dwelling	40.7	41.6	41.8	42.7	30.6	31.4	31.6	32.4
34 Pen Cerrig Rise	CF48 1BF	Dwelling	40.6	41.5	41.8	42.8	30.6	31.4	31.6	32.5
1 Green Meadow View	CF48 1BG	Dwelling	60.2	62.4	62.9	64.5	48.2	50.1	50.6	52.0
2 Green Meadow View	CF48 1BG	Dwelling	52.8	54.4	54.9	56.0	41.5	42.9	43.3	44.4
3 Green Meadow View	CF48 1BG	Dwelling	49.0	50.3	50.7	51.7	38.1	39.3	39.6	40.5
4 Green Meadow View	CF48 1BG	Dwelling	47.3	48.4	48.7	49.6	36.5	37.6	37.8	38.6
5 Green Meadow View	CF48 1BG	Dwelling	39.0	40.0	40.3	41.3	29.1	30.0	30.3	31.1
6 Green Meadow View	CF48 1BG	Dwelling	38.4	39.3	39.6	40.6	28.6	29.3	29.6	30.5
7 Green Meadow View	CF48 1BG	Dwelling	38.4	39.2	39.6	40.6	28.5	29.3	29.6	30.5
8 Green Meadow View	CF48 1BG	Dwelling	38.0	38.8	39.1	40.1	28.2	28.9	29.2	30.1
9 Green Meadow View	CF48 1BG	Dwelling	38.1	39.0	39.2	40.2	28.3	29.1	29.3	30.1
10 Green Meadow View	CF48 1BG	Dwelling	49.1	50.4	50.8	51.8	38.2	39.4	39.7	40.6

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
11 Green Meadow View	CF48 1BG	Dwelling	49.7	51.0	51.2	52.2	38.7	39.8	40.1	40.9
12 Green Meadow View	CF48 1BG	Dwelling	47.4	48.8	49.2	50.2	36.7	37.9	38.3	39.2
13 Green Meadow View	CF48 1BG	Dwelling	50.4	51.9	52.4	53.5	39.4	40.7	41.1	42.1
14 Green Meadow View	CF48 1BG	Dwelling	60.4	62.4	62.9	64.4	48.3	50.1	50.6	51.9
1 Santes Tudful Grove	CF48 1BL	Dwelling	42.3	43.3	43.5	44.5	32.1	33.0	33.1	34.0
2 Santes Tudful Grove	CF48 1BL	Dwelling	43.9	44.8	44.9	45.8	33.5	34.3	34.4	35.2
3 Santes Tudful Grove	CF48 1BL	Dwelling	40.0	40.9	41.3	42.3	30.0	30.8	31.2	32.1
4 Santes Tudful Grove	CF48 1BL	Dwelling	40.0	41.1	41.3	42.3	30.0	30.9	31.2	32.1
5 Santes Tudful Grove	CF48 1BL	Dwelling	43.1	44.1	44.3	45.3	32.8	33.7	33.9	34.7
6 Santes Tudful Grove	CF48 1BL	Dwelling	41.1	42.3	42.5	43.5	31.0	32.0	32.2	33.1
7 Santes Tudful Grove	CF48 1BL	Dwelling	45.7	47.0	47.4	48.4	35.1	36.3	36.7	37.5
8 Santes Tudful Grove	CF48 1BL	Dwelling	58.5	60.2	60.7	61.9	46.6	48.2	48.6	49.7
9 Santes Tudful Grove	CF48 1BL	Dwelling	56.0	57.8	58.3	59.6	44.4	46.0	46.4	47.6
10 Santes Tudful Grove	CF48 1BL	Dwelling	57.8	59.6	60.1	61.4	46.0	47.6	48.1	49.2
11 Santes Tudful Grove	CF48 1BL	Dwelling	53.8	55.6	56.1	57.4	42.4	44.0	44.5	45.6
12 Santes Tudful Grove	CF48 1BL	Dwelling	59.1	61.2	61.7	63.3	47.2	49.1	49.5	50.9
13 Santes Tudful Grove	CF48 1BL	Dwelling	50.9	52.5	53.0	54.1	39.8	41.3	41.7	42.7
14 Santes Tudful Grove	CF48 1BL	Dwelling	47.3	48.6	48.9	49.9	36.5	37.7	38.0	38.9
1 Mayors Close	CF48 1BQ	Dwelling	40.0	41.0	41.4	42.4	30.0	30.9	31.2	32.1
2 Mayors Close	CF48 1BQ	Dwelling	41.3	42.4	42.8	43.8	31.2	32.1	32.5	33.4
3 Mayors Close	CF48 1BQ	Dwelling	39.9	40.9	41.3	42.3	29.9	30.8	31.2	32.0
4 Mayors Close	CF48 1BQ	Dwelling	41.0	41.9	42.0	42.9	30.9	31.7	31.8	32.6
5 Mayors Close	CF48 1BQ	Dwelling	37.7	38.6	38.8	39.8	27.9	28.7	28.9	29.8
6 Mayors Close	CF48 1BQ	Dwelling	38.2	39.0	39.3	40.3	28.3	29.1	29.4	30.3
7 Mayors Close	CF48 1BQ	Dwelling	42.2	43.4	43.9	44.9	32.0	33.0	33.5	34.4
8 Mayors Close	CF48 1BQ	Dwelling	43.0	44.2	44.7	45.7	32.7	33.8	34.2	35.1
9 Mayors Close	CF48 1BQ	Dwelling	46.1	47.4	47.8	48.8	35.5	36.6	37.0	37.9
10 Mayors Close	CF48 1BQ	Dwelling	45.2	46.5	47.0	48.0	34.7	35.8	36.3	37.2
11 Mayors Close	CF48 1BQ	Dwelling	43.5	44.9	45.3	46.3	33.2	34.4	34.7	35.6
12 Mayors Close	CF48 1BQ	Dwelling	49.9	51.3	51.8	52.8	38.9	40.2	40.6	41.5
13 Mayors Close	CF48 1BQ	Dwelling	51.6	53.0	53.5	54.5	40.4	41.7	42.1	43.0
14 Mayors Close	CF48 1BQ	Dwelling	52.6	54.0	54.5	55.5	41.3	42.6	43.0	43.9
15 Mayors Close	CF48 1BQ	Dwelling	59.7	61.8	62.3	63.8	47.7	49.6	50.0	51.4
16 Mayors Close	CF48 1BQ	Dwelling	57.6	59.5	60.0	61.4	45.8	47.5	48.0	49.2
17 Mayors Close	CF48 1BQ	Dwelling	59.0	60.9	61.4	62.8	47.1	48.8	49.2	50.5
18 Mayors Close	CF48 1BQ	Dwelling	43.1	44.3	44.7	45.7	32.8	33.8	34.2	35.1
1 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	49.2	49.9	50.3	51.3	38.3	38.9	39.2	40.1
10 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	49.4	50.0	50.4	51.4	38.4	39.0	39.3	40.2
10A Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	50.2	50.8	51.2	52.2	39.2	39.7	40.1	41.0
11 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	50.1	50.8	51.1	52.1	39.1	39.7	39.9	40.8
12 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	48.7	49.4	49.8	50.8	37.8	38.4	38.8	39.7
12A Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	49.2	49.5	51.2	52.5	38.3	38.5	40.1	41.2
15 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	45.7	46.0	47.2	48.5	35.1	35.4	36.5	37.6
16 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	52.6	52.7	54.6	55.9	41.3	41.4	43.1	44.3
17 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	51.0	51.1	53.6	54.9	39.9	40.0	42.2	43.4
18 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	51.3	51.5	53.1	54.4	40.1	40.3	41.8	42.9
2 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	49.3	50.0	50.3	51.3	38.4	39.0	39.3	40.2
20 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	56.9	57.3	58.1	59.3	45.2	45.6	46.3	47.3
21 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	53.7	54.2	55.0	56.1	42.3	42.8	43.5	44.5
22 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	56.4	57.0	57.5	58.6	44.8	45.3	45.8	46.7
24 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	50.7	51.3	51.8	52.9	39.6	40.1	40.6	41.6
25 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	52.1	52.8	53.1	54.1	40.9	41.5	41.8	42.6
3 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	45.8	46.3	47.1	48.2	35.2	35.6	36.4	37.4
4 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	45.5	45.9	46.9	48.0	35.0	35.3	36.2	37.2
5 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	46.3	46.7	47.5	48.6	35.7	36.0	36.7	37.7
6 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	47.5	48.0	48.5	49.6	36.7	37.2	37.6	38.6
7 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	51.1	51.5	52.4	53.5	40.0	40.3	41.1	42.1
8 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	49.4	50.1	50.4	51.4	38.5	39.1	39.3	40.2
9 Heol Corn Du Heol Corn Du	CF48 1BW	Dwelling	50.0	50.6	51.1	52.2	39.0	39.5	40.0	40.9
1 Cae Deri	CF48 1BY	Dwelling	37.4	38.3	38.3	39.3	27.7	28.4	28.5	29.3
Seren Y Nos 3 Cae Deri	CF48 1BY	Dwelling	38.7	39.5	39.6	40.6	28.8	29.6	29.6	30.5
5 Cae Deri	CF48 1BY	Dwelling	42.5	43.4	43.5	44.4	32.2	33.0	33.1	34.0
12A Lakeside Gardens	CF48 1EN	Dwelling	56.7	57.2	56.8	57.6	45.0	45.4	45.1	45.9
40A Lakeside Gardens	CF48 1EN	Dwelling	54.5	54.6	54.5	55.3	43.0	43.1	43.0	43.7
40B Lakeside Gardens	CF48 1EN	Dwelling	55.5	56.0	55.7	56.6	43.9	44.3	44.1	44.9
1 Lakeside Gardens	CF48 1EN	Dwelling	56.7	57.1	56.6	57.1	45.0	45.4	44.9	45.4
2 Lakeside Gardens	CF48 1EN	Dwelling	52.0	52.2	51.9	52.5	40.8	41.0	40.7	41.2
3 Lakeside Gardens	CF48 1EN	Dwelling	54.3	54.7	54.5	54.8	42.9	43.2	43.0	43.3
4 Lakeside Gardens	CF48 1EN	Dwelling	57.4	57.9	57.8	58.3	45.6	46.1	46.0	46.4
5 Lakeside Gardens	CF48 1EN	Dwelling	58.2	58.7	58.5	59.0	46.4	46.8	46.6	47.0
6 Lakeside Gardens	CF48 1EN	Dwelling	53.2	53.6	53.2	53.8	41.9	42.2	41.9	42.4
7 Lakeside Gardens	CF48 1EN	Dwelling	57.0	57.5	57.0	57.7	45.3	45.7	45.3	45.9
8 Lakeside Gardens	CF48 1EN	Dwelling	57.5	57.9	57.4	58.1	45.7	46.1	45.6	46.2
9 Lakeside Gardens	CF48 1EN	Dwelling	55.7	56.2	55.8	56.7	44.1	44.6	44.2	45.0
10 Lakeside Gardens	CF48 1EN	Dwelling	56.6	57.1	56.7	57.6	45.0	45.4	45.0	45.8
11 Lakeside Gardens	CF48 1EN	Dwelling	55.7	56.1	55.8	56.7	44.1	44.5	44.2	45.0
12 Lakeside Gardens	CF48 1EN	Dwelling	56.3	56.8	56.4	57.3	44.7	45.1	44.7	45.5
14 Lakeside Gardens	CF48 1EN	Dwelling	56.8	57.3	57.0	57.8	45.1	45.5	45.3	46.0
15 Lakeside Gardens	CF48 1EN	Dwelling	57.2	57.6	57.3	58.1	45.5	45.8	45.6	46.3
16 Lakeside Gardens	CF48 1EN	Dwelling	56.5	57.0	56.0	56.7	44.8	45.3	44.4	45.0
17 Lakeside Gardens	CF48 1EN	Dwelling	51.8	51.5	52.4	53.2	40.6	40.3	41.2	41.9
18 Lakeside Gardens	CF48 1EN	Dwelling	53.5	53.6	54.0	54.9	42.1	42.3	42.6	43.3
19 Lakeside Gardens	CF48 1EN	Dwelling	54.8	55.2	54.9	55.8	43.3	43.6	43.4	44.2
20 Lakeside Gardens	CF48 1EN	Dwelling	54.3	54.9	54.3	55.1	42.9	43.4	42.9	43.6
21 Lakeside Gardens	CF48 1EN	Dwelling	56.4	56.8	56.6	57.4	44.7	45.1	44.9	45.7
22 Lakeside Gardens	CF48 1EN	Dwelling	54.8	55.3	54.8	55.6	43.3	43.8	43.3	44.0
23 Lakeside Gardens	CF48 1EN	Dwelling	54.0	54.4	54.1	54.8	42.6	42.9	42.7	43.3
24 Lakeside Gardens	CF48 1EN	Dwelling	55.4	55.8	55.7	56.4	43.8	44.2	44.1	44.7
25 Lakeside Gardens	CF48 1EN	Dwelling	56.2	56.6	56.4	57.0	44.6	44.9	44.7	45.2
26 Lakeside Gardens	CF48 1EN	Dwelling	54.8	55.1	55.0	55.8	43.3	43.6	43.5	44.2
27 Lakeside Gardens	CF48 1EN	Dwelling	54.3	54.8	54.5	55.1	42.9	43.3	43.0	43.6
28 Lakeside Gardens	CF48 1EN	Dwelling	56.5	57.0	56.7	57.3	44.8	45.3	45.0	45.5
29 Lakeside Gardens	CF48 1EN	Dwelling	58.4	58.8	58.6	59.1	46.6	46.9	46.7	47.2
30 Lakeside Gardens	CF48 1EN	Dwelling	54.3	54.7	54.6	55.2	42.9	43.2	43.1	43.7
31 Lakeside Gardens	CF48 1EN	Dwelling	55.6	56.0	55.9	56.5	44.0	44.4	44.3	44.8
32 Lakeside Gardens	CF48 1EN	Dwelling	56.3	56.6	56.7	57.3	44.7	44.9	45.0	45.5
33 Lakeside Gardens	CF48 1EN	Dwelling	50.4	50.6	50.9	51.6	39.3	39.5	39.8	40.4
34 Lakeside Gardens	CF48 1EN	Dwelling	50.0	49.8	51.0	51.8	38.9	38.8	39.9	40.6
35 Lakeside Gardens	CF48 1EN	Dwelling	52.3	52.1	52.9	53.7	41.0	40.8	41.6	42.3
36 Lakeside Gardens	CF48 1EN	Dwelling	53.4	54.0	53.7	54.5	42.1	42.5	42.3	43.0
37 Lakeside Gardens	CF48 1EN	Dwelling	54.9	55.2	55.2	56.0	43.4	43.7	43.7	44.4
38 Lakeside Gardens	CF48 1EN	Dwelling	56.4	56.8	56.6	57.4	44.8	45.1	44.9	45.6
39 Lakeside Gardens	CF48 1EN	Dwelling	56.0	56.4	56.2	57.1	44.4	44.8	44.6	45.3
42 Lakeside Gardens	CF48 1EN	Dwelling	56.3	56.7	56.4	57.3	44.7	45.0	44.8	45.5
44 Lakeside Gardens	CF48 1EN	Dwelling	57.3	57.6	57.5	58.3	45.5	45.8	45.7	46.4
45 Lakeside Gardens	CF48 1EN	Dwelling	56.4	56.8	56.8	57.6	44.8	45.1	45.1	45.9
47 Lakeside Gardens	CF48 1EN	Dwelling	48.7	48.6	49.9	50.8	37.8	37.7	38.9	39.7

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
48 Lakeside Gardens	CF48 1EN	Dwelling	47.9	47.5	48.8	49.6	37.1	36.8	37.9	38.6
49 Lakeside Gardens	CF48 1EN	Dwelling	47.2	46.9	48.3	49.2	36.5	36.2	37.5	38.3
50 Lakeside Gardens	CF48 1EN	Dwelling	48.4	48.0	49.5	50.4	37.6	37.1	38.5	39.3
51 Lakeside Gardens	CF48 1EN	Dwelling	49.8	49.7	50.7	51.6	38.8	38.8	39.6	40.4
110 Lakeside Gardens	CF48 1EN	Dwelling	60.5	60.8	60.9	61.1	48.4	48.7	48.8	49.0
111 Lakeside Gardens	CF48 1EN	Dwelling	57.6	58.0	57.7	58.1	45.8	46.2	45.9	46.3
1 Heol Nantgau	CF48 1ET	Dwelling	51.2	51.7	51.4	52.2	40.0	40.5	40.2	40.9
2 Heol Nantgau	CF48 1ET	Dwelling	51.2	51.8	51.4	52.3	40.1	40.6	40.3	41.0
3 Heol Nantgau	CF48 1ET	Dwelling	50.1	50.5	50.4	51.1	39.1	39.5	39.3	40.0
4 Heol Nantgau	CF48 1ET	Dwelling	50.6	51.0	50.8	51.6	39.5	39.9	39.7	40.4
5 Heol Nantgau	CF48 1ET	Dwelling	50.7	51.2	50.9	51.7	39.6	40.1	39.8	40.5
6 Heol Nantgau	CF48 1ET	Dwelling	55.7	55.8	56.0	56.4	44.1	44.2	44.3	44.7
Adrian Stephens House Flat 1 Adrian Stephens House Flat 1 Maen Dy	CF48 1EU	Dwelling	54.7	55.2	54.8	55.7	43.2	43.7	43.3	44.1
Adrian Stephens House Flat 4 Adrian Stephens House Flat 4 Maen Dy	CF48 1EU	Dwelling	55.2	55.8	55.4	56.2	43.7	44.2	43.8	44.6
1 Maen Dy	CF48 1EU	Dwelling	55.1	55.1	55.3	55.8	43.5	43.6	43.7	44.2
2 Maen Dy	CF48 1EU	Dwelling	54.9	55.3	55.1	55.7	43.4	43.7	43.6	44.1
3 Maen Dy	CF48 1EU	Dwelling	52.0	52.5	52.4	53.1	40.8	41.2	41.2	41.8
4 Maen Dy	CF48 1EU	Dwelling	50.7	51.3	50.9	51.7	39.6	40.1	39.8	40.5
5 Maen Dy	CF48 1EU	Dwelling	56.3	56.4	56.6	57.1	44.7	44.8	44.9	45.3
6 Maen Dy	CF48 1EU	Dwelling	49.5	50.1	49.7	50.5	38.5	39.1	38.7	39.4
7 Maen Dy	CF48 1EU	Dwelling	51.7	52.3	51.9	52.7	40.5	41.0	40.7	41.4
8 Maen Dy	CF48 1EU	Dwelling	51.8	52.4	52.0	52.8	40.6	41.1	40.8	41.5
9 Maen Dy	CF48 1EU	Dwelling	55.5	55.7	55.7	56.3	44.0	44.1	44.1	44.6
10 Maen Dy	CF48 1EU	Dwelling	52.3	52.8	52.4	53.2	41.0	41.5	41.2	41.9
11 Maen Dy	CF48 1EU	Dwelling	53.9	54.0	54.2	54.7	42.5	42.6	42.7	43.2
12 Maen Dy	CF48 1EU	Dwelling	54.8	55.3	54.9	55.7	43.3	43.7	43.4	44.1
13 Maen Dy	CF48 1EU	Dwelling	53.8	54.0	54.1	54.7	42.4	42.5	42.7	43.2
14 Maen Dy	CF48 1EU	Dwelling	52.4	52.9	52.7	53.5	41.1	41.6	41.4	42.1
15 Maen Dy	CF48 1EU	Dwelling	54.3	54.9	54.4	55.2	42.8	43.4	43.0	43.7
16 Maen Dy	CF48 1EU	Dwelling	52.6	53.1	52.9	53.7	41.3	41.8	41.6	42.3
17 Maen Dy	CF48 1EU	Dwelling	56.9	57.3	57.0	57.7	45.2	45.5	45.3	45.9
18 Maen Dy	CF48 1EU	Dwelling	56.1	56.6	56.2	57.0	44.5	44.9	44.6	45.2
19 Maen Dy	CF48 1EU	Dwelling	51.3	51.4	51.8	52.5	40.1	40.2	40.6	41.3
20 Maen Dy	CF48 1EU	Dwelling	56.0	56.5	56.1	56.9	44.4	44.9	44.4	45.2
95A Lakeside Gardens	CF48 1EW	Dwelling	52.7	52.9	56.1	57.1	41.4	41.6	44.5	45.4
95B Lakeside Gardens	CF48 1EW	Dwelling	56.7	56.7	57.8	58.8	45.0	45.0	46.0	46.9
53 Lakeside Gardens	CF48 1EW	Dwelling	48.3	47.9	49.5	50.3	37.5	37.0	38.5	39.3
54 Lakeside Gardens	CF48 1EW	Dwelling	47.6	47.2	48.9	49.7	36.8	36.5	38.0	38.7
55 Lakeside Gardens	CF48 1EW	Dwelling	47.2	46.8	48.6	49.5	36.4	36.1	37.7	38.5
56 Lakeside Gardens	CF48 1EW	Dwelling	48.0	47.6	49.6	50.5	37.2	36.8	38.6	39.4
57 Lakeside Gardens	CF48 1EW	Dwelling	47.8	47.4	49.3	50.2	37.0	36.6	38.3	39.1
58 Lakeside Gardens	CF48 1EW	Dwelling	48.9	48.6	50.4	51.4	38.0	37.7	39.4	40.2
59 Lakeside Gardens	CF48 1EW	Dwelling	48.8	48.4	50.4	51.3	37.9	37.5	39.3	40.1
60 Lakeside Gardens	CF48 1EW	Dwelling	46.0	45.6	48.9	49.9	35.3	35.1	38.0	38.9
61 Lakeside Gardens	CF48 1EW	Dwelling	46.6	46.2	48.0	48.9	36.0	35.6	37.2	38.0
62 Lakeside Gardens	CF48 1EW	Dwelling	49.6	49.5	50.8	51.8	38.7	38.6	39.7	40.6
63 Lakeside Gardens	CF48 1EW	Dwelling	48.5	47.8	50.0	51.0	37.6	37.0	39.0	39.9
64 Lakeside Gardens	CF48 1EW	Dwelling	47.0	46.6	48.4	49.3	36.2	35.9	37.6	38.4
65 Lakeside Gardens	CF48 1EW	Dwelling	48.3	47.7	49.8	50.7	37.4	36.9	38.8	39.6
66 Lakeside Gardens	CF48 1EW	Dwelling	47.5	47.0	49.2	50.1	36.7	36.3	38.2	39.1
67 Lakeside Gardens	CF48 1EW	Dwelling	47.3	46.7	49.0	49.9	36.5	36.0	38.0	38.9
68 Lakeside Gardens	CF48 1EW	Dwelling	49.0	48.6	50.5	51.4	38.1	37.8	39.4	40.3
69 Lakeside Gardens	CF48 1EW	Dwelling	52.2	52.1	53.3	54.0	41.0	40.9	42.0	42.6
70 Lakeside Gardens	CF48 1EW	Dwelling	49.6	48.9	52.2	53.2	38.6	38.0	41.0	41.8
71 Lakeside Gardens	CF48 1EW	Dwelling	53.7	53.5	55.4	56.4	42.3	42.2	43.8	44.8
72 Lakeside Gardens	CF48 1EW	Dwelling	49.8	49.6	52.8	53.8	38.8	38.6	41.5	42.4
73 Lakeside Gardens	CF48 1EW	Dwelling	48.3	47.8	50.8	51.8	37.5	37.0	39.7	40.6
74 Lakeside Gardens	CF48 1EW	Dwelling	49.4	48.9	51.0	52.0	38.4	38.0	39.9	40.8
75 Lakeside Gardens	CF48 1EW	Dwelling	48.2	47.7	49.8	50.7	37.4	36.9	38.8	39.6
76 Lakeside Gardens	CF48 1EW	Dwelling	50.4	50.0	51.9	52.9	39.4	39.0	40.7	41.6
77 Lakeside Gardens	CF48 1EW	Dwelling	48.7	48.0	50.4	51.3	37.8	37.2	39.3	40.2
78 Lakeside Gardens	CF48 1EW	Dwelling	52.0	51.8	53.3	54.4	40.8	40.6	42.0	42.9
79 Lakeside Gardens	CF48 1EW	Dwelling	53.1	53.3	54.4	55.2	41.7	41.9	42.9	43.7
80 Lakeside Gardens	CF48 1EW	Dwelling	51.1	50.8	53.9	54.8	39.9	39.7	42.5	43.3
81 Lakeside Gardens	CF48 1EW	Dwelling	51.2	50.7	54.3	55.3	40.1	39.6	42.9	43.8
82 Lakeside Gardens	CF48 1EW	Dwelling	50.6	49.8	54.2	55.2	39.5	38.8	42.8	43.7
83 Lakeside Gardens	CF48 1EW	Dwelling	51.6	50.7	54.0	55.0	40.4	39.6	42.6	43.5
84 Lakeside Gardens	CF48 1EW	Dwelling	54.3	53.3	56.3	57.3	42.9	42.0	44.7	45.6
85 Lakeside Gardens	CF48 1EW	Dwelling	53.7	53.3	56.3	57.2	42.3	41.9	44.6	45.5
86 Lakeside Gardens	CF48 1EW	Dwelling	57.2	56.3	58.9	60.0	45.4	44.6	47.0	47.9
87 Lakeside Gardens	CF48 1EW	Dwelling	50.9	50.2	54.2	55.1	39.8	39.2	42.7	43.6
88 Lakeside Gardens	CF48 1EW	Dwelling	49.8	49.5	53.6	54.6	38.8	38.6	42.2	43.1
89 Lakeside Gardens	CF48 1EW	Dwelling	49.6	48.7	52.1	53.1	38.6	37.8	40.9	41.8
90 Lakeside Gardens	CF48 1EW	Dwelling	50.6	50.1	52.0	52.9	39.5	39.1	40.8	41.6
91 Lakeside Gardens	CF48 1EW	Dwelling	52.2	52.0	53.3	54.3	40.9	40.8	41.9	42.8
92 Lakeside Gardens	CF48 1EW	Dwelling	47.6	47.0	49.4	50.3	36.9	36.3	38.4	39.3
93 Lakeside Gardens	CF48 1EW	Dwelling	48.8	48.1	50.4	51.4	37.9	37.3	39.4	40.2
94 Lakeside Gardens	CF48 1EW	Dwelling	52.2	51.3	53.5	54.5	41.0	40.2	42.1	43.0
Ty Gruffydd 95 Lakeside Gardens	CF48 1EW	Dwelling	53.6	52.6	56.5	57.5	42.3	41.3	44.8	45.7
96 Lakeside Gardens	CF48 1EW	Dwelling	52.7	51.9	54.8	55.8	41.4	40.7	43.3	44.2
97 Lakeside Gardens	CF48 1EW	Dwelling	51.2	50.4	53.0	54.0	40.1	39.3	41.7	42.6
98 Lakeside Gardens	CF48 1EW	Dwelling	49.3	49.4	51.1	52.2	38.3	38.4	40.0	40.9
99 Lakeside Gardens	CF48 1EW	Dwelling	47.8	47.5	49.8	50.8	37.0	36.7	38.8	39.7
100 Lakeside Gardens	CF48 1EW	Dwelling	51.3	51.3	52.5	53.5	40.1	40.1	41.2	42.1
101 Lakeside Gardens	CF48 1EW	Dwelling	52.6	52.4	54.2	55.2	41.3	41.1	42.8	43.7
102 Lakeside Gardens	CF48 1EW	Dwelling	50.0	49.3	51.7	52.7	39.0	38.4	40.5	41.4
103 Lakeside Gardens	CF48 1EW	Dwelling	49.1	48.9	51.1	52.0	38.2	38.0	39.9	40.8
104 Lakeside Gardens	CF48 1EW	Dwelling	47.7	47.7	49.7	50.5	36.9	36.9	38.7	39.5
105 Lakeside Gardens	CF48 1EW	Dwelling	47.6	47.5	49.6	50.4	36.8	36.7	38.6	39.4
Lakeside 106 Lakeside Gardens	CF48 1EW	Dwelling	51.6	51.7	53.1	54.0	40.5	40.5	41.8	42.6
107 Lakeside Gardens	CF48 1EW	Dwelling	47.3	47.5	49.3	50.2	36.5	36.7	38.3	39.1
108 Lakeside Gardens	CF48 1EW	Dwelling	47.4	47.4	49.1	50.0	36.7	36.7	38.2	39.0
109 Lakeside Gardens	CF48 1EW	Dwelling	50.5	50.6	51.7	52.5	39.5	39.5	40.5	41.2
11 Heol Nantgau	CF48 1EY	Dwelling	51.3	51.8	51.5	52.2	40.2	40.6	40.4	41.0
12 Heol Nantgau	CF48 1EY	Dwelling	52.0	52.4	52.3	53.0	40.8	41.1	41.0	41.6
13 Heol Nantgau	CF48 1EY	Dwelling	51.9	52.2	52.1	52.8	40.7	41.0	40.9	41.5
14 Heol Nantgau	CF48 1EY	Dwelling	53.5	53.8	53.7	54.4	42.1	42.4	42.3	42.9
15 Heol Nantgau	CF48 1EY	Dwelling	54.5	54.8	54.7	55.3	43.0	43.3	43.2	43.7
16 Heol Nantgau	CF48 1EY	Dwelling	50.0	50.1	50.4	51.1	39.0	39.1	39.3	39.9
17 Heol Nantgau	CF48 1EY	Dwelling	50.6	50.7	51.1	51.7	39.5	39.6	39.9	40.6
18 Heol Nantgau	CF48 1EY	Dwelling	51.8	52.1	52.2	52.9	40.6	40.8	40.9	41.6
19 Heol Nantgau	CF48 1EY	Dwelling	51.9	52.2	52.3	53.0	40.7	41.0	41.0	41.7
20 Heol Nantgau	CF48 1EY	Dwelling	52.2	52.6	52.3	53.0	40.9	41.3	41.0	41.7
21 Heol Nantgau	CF48 1EY	Dwelling	52.6	53.0	52.7	53.5	41.3	41.6	41.5	42.1
22 Heol Nantgau	CF48 1EY	Dwelling	50.5	50.6	50.8	51.5	39.4	39.5	39.7	40.3
23 Heol Nantgau	CF48 1EY	Dwelling	51.3	51.5	51.6	52.3	40.2	40.3	40.4	41.0
24 Heol Nantgau	CF48 1EY	Dwelling	50.8	51.0	51.3	52.0	39.7	39.9	40.2	40.8

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
25 Heol Nantgau	CF48 1EY	Dwelling	49.3	49.5	49.6	50.2	38.4	38.5	38.6	39.1
26 Heol Nantgau	CF48 1EY	Dwelling	50.5	50.7	50.9	51.6	39.4	39.6	39.8	40.4
27 Heol Nantgau	CF48 1EY	Dwelling	52.1	52.5	52.5	53.2	40.9	41.2	41.2	41.9
28 Heol Nantgau	CF48 1EY	Dwelling	50.5	50.6	50.9	51.5	39.4	39.6	39.8	40.3
29 Heol Nantgau	CF48 1EY	Dwelling	51.2	51.5	51.5	52.2	40.0	40.3	40.3	40.9
30 Heol Nantgau	CF48 1EY	Dwelling	51.1	51.4	51.4	52.1	40.0	40.2	40.2	40.8
31 Heol Nantgau	CF48 1EY	Dwelling	50.8	51.1	51.0	51.7	39.7	39.9	39.9	40.5
32 Heol Nantgau	CF48 1EY	Dwelling	50.7	51.0	51.1	51.8	39.6	39.9	40.0	40.6
33 Heol Nantgau	CF48 1EY	Dwelling	51.3	51.6	51.8	52.5	40.2	40.4	40.6	41.2
34 Heol Nantgau	CF48 1EY	Dwelling	51.2	51.6	51.5	52.2	40.1	40.4	40.3	40.9
35 Heol Nantgau	CF48 1EY	Dwelling	51.5	51.9	51.8	52.4	40.3	40.7	40.6	41.2
36 Heol Nantgau	CF48 1EY	Dwelling	51.6	52.0	51.9	52.6	40.4	40.8	40.7	41.3
37 Heol Nantgau	CF48 1EY	Dwelling	51.2	51.6	51.7	52.4	40.1	40.4	40.5	41.1
38 Heol Nantgau	CF48 1EY	Dwelling	51.3	51.7	51.7	52.5	40.2	40.5	40.5	41.2
39 Heol Nantgau	CF48 1EY	Dwelling	51.9	52.3	52.4	53.1	40.7	41.0	41.1	41.8
40 Heol Nantgau	CF48 1EY	Dwelling	52.5	52.8	52.8	53.4	41.3	41.5	41.5	42.0
Winchfawr House Flat 11 Winchfawr House Lansbury Road	CF48 1HA	Dwelling	52.3	53.0	52.7	53.6	41.1	41.7	41.5	42.2
Winchfawr House Flat 12 Winchfawr House Lansbury Road	CF48 1HA	Dwelling	52.5	52.9	52.8	53.6	41.2	41.6	41.5	42.2
1 Lansbury Road	CF48 1HA	Dwelling	57.7	57.7	57.9	58.4	45.9	45.9	46.1	46.5
2 Lansbury Road	CF48 1HA	Dwelling	55.6	55.7	55.9	56.4	44.0	44.1	44.3	44.7
3 Lansbury Road	CF48 1HA	Dwelling	55.4	55.5	55.7	56.2	43.9	43.9	44.1	44.6
4 Lansbury Road	CF48 1HA	Dwelling	50.3	50.9	50.5	51.3	39.3	39.8	39.5	40.1
5 Lansbury Road	CF48 1HA	Dwelling	55.7	55.8	55.9	56.5	44.1	44.2	44.3	44.8
6 Lansbury Road	CF48 1HA	Dwelling	54.4	54.6	54.7	55.3	43.0	43.1	43.2	43.7
7 Lansbury Road	CF48 1HA	Dwelling	54.5	54.6	54.8	55.4	43.1	43.1	43.3	43.8
8 Lansbury Road	CF48 1HA	Dwelling	53.7	54.0	54.1	54.7	42.3	42.6	42.6	43.2
9 Lansbury Road	CF48 1HA	Dwelling	52.6	52.9	52.9	53.6	41.3	41.6	41.6	42.2
10 Lansbury Road	CF48 1HA	Dwelling	53.5	53.8	53.8	54.5	42.1	42.4	42.4	43.0
11 Lansbury Road	CF48 1HA	Dwelling	53.9	54.1	54.2	54.8	42.5	42.7	42.7	43.3
12 Lansbury Road	CF48 1HA	Dwelling	53.0	53.3	53.3	54.0	41.7	41.9	42.0	42.6
13 Lansbury Road	CF48 1HA	Dwelling	50.2	50.6	50.5	51.2	39.2	39.6	39.4	40.0
14 Lansbury Road	CF48 1HA	Dwelling	46.6	47.0	46.9	47.6	35.9	36.3	36.1	36.8
15 Lansbury Road	CF48 1HA	Dwelling	50.3	50.9	50.5	51.4	39.2	39.8	39.5	40.2
16 Lansbury Road	CF48 1HA	Dwelling	53.6	53.9	53.8	54.5	42.2	42.5	42.4	43.0
17 Lansbury Road	CF48 1HA	Dwelling	53.7	54.1	53.9	54.6	42.3	42.7	42.5	43.1
18 Lansbury Road	CF48 1HA	Dwelling	45.7	46.3	46.0	46.8	35.2	35.6	35.4	36.1
19 Lansbury Road	CF48 1HA	Dwelling	50.7	51.4	51.0	51.8	39.6	40.3	39.8	40.6
20 Lansbury Road	CF48 1HA	Dwelling	52.5	53.1	52.7	53.6	41.3	41.7	41.4	42.2
21 Lansbury Road	CF48 1HA	Dwelling	52.3	52.5	52.6	53.3	41.0	41.3	41.3	41.9
23 Lansbury Road	CF48 1HA	Dwelling	52.5	52.7	52.9	53.7	41.3	41.5	41.6	42.3
St Lukes Church Heol Parc-Y-Lan	CF48 1HB	OSR	50.2	50.5	50.7	51.7	39.2	39.4	39.6	40.5
2 Heol Bryn-Y-Gwyddyl	CF48 1HD	Dwelling	54.3	54.5	54.6	55.2	42.9	43.1	43.1	43.6
4 Heol Bryn-Y-Gwyddyl	CF48 1HD	Dwelling	54.4	54.6	54.7	55.2	43.0	43.1	43.2	43.7
6 Heol Bryn-Y-Gwyddyl	CF48 1HD	Dwelling	56.4	56.6	56.6	57.2	44.8	44.9	44.9	45.4
8 Heol Bryn-Y-Gwyddyl	CF48 1HD	Dwelling	56.3	56.6	56.5	57.1	44.7	44.9	44.8	45.3
10 Heol Bryn-Y-Gwyddyl	CF48 1HD	Dwelling	55.8	56.1	56.0	56.6	44.2	44.4	44.4	44.9
12 Heol Bryn-Y-Gwyddyl	CF48 1HD	Dwelling	53.5	54.0	53.7	54.5	42.1	42.6	42.3	43.0
14 Heol Bryn-Y-Gwyddyl	CF48 1HD	Dwelling	50.4	50.9	50.7	51.5	39.3	39.8	39.6	40.3
16 Heol Bryn-Y-Gwyddyl	CF48 1HD	Dwelling	53.1	53.3	53.5	54.1	41.8	41.9	42.1	42.6
18 Heol Bryn-Y-Gwyddyl	CF48 1HD	Dwelling	49.5	50.1	49.8	50.6	38.5	39.0	38.8	39.5
20 Heol Bryn-Y-Gwyddyl	CF48 1HD	Dwelling	52.8	53.0	53.1	53.8	41.5	41.7	41.8	42.4
22 Heol Bryn-Y-Gwyddyl	CF48 1HD	Dwelling	49.6	50.2	49.9	50.7	38.7	39.2	38.9	39.6
24 Heol Bryn-Y-Gwyddyl	CF48 1HD	Dwelling	51.9	52.4	52.2	53.0	40.7	41.1	40.9	41.6
26 Heol Bryn-Y-Gwyddyl	CF48 1HD	Dwelling	51.9	52.3	52.2	53.0	40.7	41.1	40.9	41.7
28 Heol Bryn-Y-Gwyddyl	CF48 1HD	Dwelling	52.0	52.5	52.3	53.2	40.8	41.2	41.0	41.8
1 Heol Scwrfa	CF48 1HE	Dwelling	60.0	60.0	60.2	60.7	48.0	48.0	48.2	48.6
2 Heol Scwrfa	CF48 1HE	Dwelling	52.2	52.5	52.5	53.2	41.0	41.2	41.2	41.8
3 Heol Scwrfa	CF48 1HE	Dwelling	52.8	53.0	53.1	53.7	41.5	41.6	41.8	42.3
4 Heol Scwrfa	CF48 1HE	Dwelling	54.4	54.7	54.6	55.2	43.0	43.2	43.1	43.7
5 Heol Scwrfa	CF48 1HE	Dwelling	54.1	54.2	54.4	55.0	42.7	42.8	43.0	43.4
6 Heol Scwrfa	CF48 1HE	Dwelling	52.2	52.5	52.5	53.2	41.0	41.2	41.2	41.9
7 Heol Scwrfa	CF48 1HE	Dwelling	49.4	49.8	49.7	50.4	38.5	38.8	38.7	39.3
8 Heol Scwrfa	CF48 1HE	Dwelling	53.5	53.8	53.8	54.5	42.2	42.4	42.4	43.0
9 Heol Scwrfa	CF48 1HE	Dwelling	53.2	53.3	53.5	54.1	41.8	42.0	42.1	42.6
10 Heol Scwrfa	CF48 1HE	Dwelling	51.9	52.3	52.3	53.1	40.7	41.1	41.1	41.7
11 Heol Scwrfa	CF48 1HE	Dwelling	53.2	53.7	53.5	54.3	41.9	42.3	42.2	42.8
12 Heol Scwrfa	CF48 1HE	Dwelling	52.8	53.2	53.1	53.8	41.5	41.8	41.8	42.4
13 Heol Scwrfa	CF48 1HE	Dwelling	52.3	52.6	52.6	53.3	41.1	41.3	41.3	41.9
14 Heol Scwrfa	CF48 1HE	Dwelling	51.5	51.8	51.9	52.7	40.3	40.6	40.7	41.4
15 Heol Scwrfa	CF48 1HE	Dwelling	52.2	52.5	52.5	53.2	40.9	41.2	41.2	41.8
16 Heol Scwrfa	CF48 1HE	Dwelling	50.7	51.2	51.0	51.8	39.6	40.1	39.9	40.6
17 Heol Scwrfa	CF48 1HE	Dwelling	52.5	52.7	52.8	53.5	41.3	41.4	41.5	42.1
18 Heol Scwrfa	CF48 1HE	Dwelling	52.5	52.8	52.8	53.5	41.3	41.5	41.5	42.2
19 Heol Scwrfa	CF48 1HE	Dwelling	54.6	54.9	54.8	55.6	43.1	43.4	43.3	44.0
20 Heol Scwrfa	CF48 1HE	Dwelling	53.8	54.3	54.1	54.9	42.4	42.8	42.7	43.4
21 Heol Scwrfa	CF48 1HE	Dwelling	52.1	52.5	52.5	53.2	40.9	41.2	41.2	41.9
22 Heol Scwrfa	CF48 1HE	Dwelling	52.2	52.6	52.4	53.2	41.0	41.3	41.2	41.9
23 Heol Scwrfa	CF48 1HE	Dwelling	51.6	52.0	51.9	52.7	40.4	40.8	40.7	41.4
24 Heol Scwrfa	CF48 1HE	Dwelling	51.4	51.9	51.7	52.5	40.3	40.7	40.5	41.3
25 Heol Scwrfa	CF48 1HE	Dwelling	51.4	51.9	51.7	52.5	40.3	40.7	40.5	41.2
26 Heol Scwrfa	CF48 1HE	Dwelling	52.6	53.1	52.8	53.7	41.4	41.8	41.5	42.3
27 Heol Scwrfa	CF48 1HE	Dwelling	51.5	51.8	51.9	52.6	40.4	40.6	40.7	41.3
28 Heol Scwrfa	CF48 1HE	Dwelling	53.8	54.3	54.0	54.8	42.4	42.8	42.6	43.3
29 Heol Scwrfa	CF48 1HE	Dwelling	51.7	52.2	52.1	52.9	40.5	41.0	40.8	41.6
30 Heol Scwrfa	CF48 1HE	Dwelling	52.9	53.4	53.1	54.0	41.6	42.1	41.8	42.6
31 Heol Scwrfa	CF48 1HE	Dwelling	54.7	55.2	54.9	55.7	43.3	43.6	43.4	44.1
32 Heol Scwrfa	CF48 1HE	Dwelling	52.2	52.7	52.4	53.3	40.9	41.4	41.2	41.9
33 Heol Scwrfa	CF48 1HE	Dwelling	51.8	52.1	52.2	52.9	40.6	40.9	40.9	41.6
34 Heol Scwrfa	CF48 1HE	Dwelling	53.2	53.8	53.5	54.4	41.9	42.4	42.2	42.9
35 Heol Scwrfa	CF48 1HE	Dwelling	51.1	51.4	51.5	52.2	40.0	40.3	40.3	41.0
36 Heol Scwrfa	CF48 1HE	Dwelling	52.7	53.2	53.1	53.8	41.4	41.8	41.7	42.4
37 Heol Scwrfa	CF48 1HE	Dwelling	47.1	47.6	47.6	48.5	36.4	36.8	36.8	37.6
39 Heol Scwrfa	CF48 1HE	Dwelling	47.2	47.6	47.7	48.5	36.5	36.9	36.9	37.6
41 Heol Scwrfa	CF48 1HE	Dwelling	51.0	51.4	51.4	52.2	39.9	40.2	40.2	40.9
43 Heol Scwrfa	CF48 1HE	Dwelling	52.2	52.7	52.7	53.6	41.0	41.4	41.4	42.2
45 Heol Scwrfa	CF48 1HE	Dwelling	51.5	51.9	51.9	52.7	40.3	40.7	40.7	41.4
47 Heol Scwrfa	CF48 1HE	Dwelling	54.7	55.2	55.0	55.9	43.2	43.7	43.5	44.3
1 Heol Rhos Las	CF48 1HF	Dwelling	56.5	56.6	56.7	57.3	44.9	45.0	45.0	45.5
3 Heol Rhos Las	CF48 1HF	Dwelling	56.1	56.2	56.3	56.9	44.4	44.6	44.6	45.1
5 Heol Rhos Las	CF48 1HF	Dwelling	53.3	53.4	53.6	54.2	41.9	42.1	42.2	42.7
7 Heol Rhos Las	CF48 1HF	Dwelling	53.2	53.4	53.5	54.2	41.9	42.1	42.2	42.7
9 Heol Rhos Las	CF48 1HF	Dwelling	52.2	52.4	52.6	53.3	41.0	41.2	41.3	41.9
11 Heol Rhos Las	CF48 1HF	Dwelling	52.9	53.1	53.2	53.9	41.6	41.8	41.9	42.5
13 Heol Rhos Las	CF48 1HF	Dwelling	52.7	53.0	53.0	53.7	41.4	41.7	41.7	42.3
15 Heol Rhos Las	CF48 1HF	Dwelling	50.2	50.7	50.6	51.4	39.1	39.6	39.5	40.2
17 Heol Rhos Las	CF48 1HF	Dwelling	47.5	47.9	48.0	48.7	36.8	37.1	37.1	37.8
19 Heol Rhos Las	CF48 1HF	Dwelling	52.3	52.6	52.6	53.3	41.0	41.3	41.3	42.0

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
21 Heol Rhos Las	CF48 1HF	Dwelling	51.6	51.9	51.9	52.7	40.4	40.7	40.7	41.4
23 Heol Rhos Las	CF48 1HF	Dwelling	49.3	49.9	49.9	50.7	38.4	38.9	38.9	39.6
25 Heol Rhos Las	CF48 1HF	Dwelling	52.3	52.7	52.6	53.4	41.0	41.4	41.3	42.0
27 Heol Rhos Las	CF48 1HF	Dwelling	51.6	52.0	51.9	52.7	40.4	40.8	40.7	41.4
29 Heol Rhos Las	CF48 1HF	Dwelling	52.3	52.8	52.6	53.4	41.1	41.5	41.3	42.0
31 Heol Rhos Las	CF48 1HF	Dwelling	49.6	50.1	50.4	51.2	38.6	39.1	39.3	40.1
33 Heol Rhos Las	CF48 1HF	Dwelling	52.5	52.9	52.9	53.8	41.2	41.6	41.6	42.4
35 Heol Rhos Las	CF48 1HF	Dwelling	52.5	52.9	52.8	53.7	41.2	41.6	41.5	42.3
37 Heol Rhos Las	CF48 1HF	Dwelling	51.4	51.7	51.8	52.6	40.3	40.5	40.6	41.3
39 Heol Rhos Las	CF48 1HF	Dwelling	51.8	52.4	52.2	53.1	40.6	41.1	41.0	41.8
1 Heol Parc Glas	CF48 1HG	Dwelling	55.5	55.6	55.8	56.4	44.0	44.1	44.2	44.7
3 Heol Parc Glas	CF48 1HG	Dwelling	52.6	52.9	53.0	53.6	41.4	41.5	41.7	42.2
5 Heol Parc Glas	CF48 1HG	Dwelling	51.7	51.9	52.0	52.7	40.5	40.7	40.8	41.4
7 Heol Parc Glas	CF48 1HG	Dwelling	55.5	55.7	55.7	56.4	43.9	44.1	44.1	44.7
9 Heol Parc Glas	CF48 1HG	Dwelling	52.3	52.6	52.6	53.3	41.1	41.3	41.3	41.9
11 Heol Parc Glas	CF48 1HG	Dwelling	50.1	50.6	50.6	51.4	39.1	39.5	39.5	40.2
13 Heol Parc Glas	CF48 1HG	Dwelling	51.2	51.7	51.5	52.3	40.1	40.5	40.3	41.0
15 Heol Parc Glas	CF48 1HG	Dwelling	54.1	54.5	54.4	55.1	42.7	43.0	42.9	43.6
17 Heol Parc Glas	CF48 1HG	Dwelling	51.6	52.0	51.9	52.7	40.4	40.8	40.7	41.4
19 Heol Parc Glas	CF48 1HG	Dwelling	51.6	52.0	52.0	52.8	40.4	40.8	40.8	41.5
21 Heol Parc Glas	CF48 1HG	Dwelling	51.7	52.1	52.1	52.8	40.6	40.9	40.8	41.5
23 Heol Parc Glas	CF48 1HG	Dwelling	51.1	51.5	51.6	52.4	39.9	40.3	40.4	41.1
25 Heol Parc Glas	CF48 1HG	Dwelling	51.1	51.5	51.6	52.5	40.0	40.4	40.5	41.2
27 Heol Parc Glas	CF48 1HG	Dwelling	46.8	47.2	47.3	48.1	36.1	36.4	36.6	37.3
29 Heol Parc Glas	CF48 1HG	Dwelling	53.7	54.1	54.0	54.9	42.3	42.7	42.6	43.4
1 Heol Bryn Hebog	CF48 1HH	Dwelling	56.1	56.3	56.4	57.0	44.5	44.6	44.7	45.2
3 Heol Bryn Hebog	CF48 1HH	Dwelling	55.7	55.9	55.9	56.6	44.1	44.3	44.3	44.9
5 Heol Bryn Hebog	CF48 1HH	Dwelling	51.9	52.2	52.2	52.9	40.7	40.9	40.9	41.6
7 Heol Bryn Hebog	CF48 1HH	Dwelling	52.4	52.7	52.7	53.4	41.1	41.4	41.4	42.0
9 Heol Bryn Hebog	CF48 1HH	Dwelling	51.7	52.0	52.1	52.8	40.5	40.8	40.8	41.5
11 Heol Bryn Hebog	CF48 1HH	Dwelling	52.2	52.5	52.6	53.3	40.9	41.2	41.3	41.9
13 Heol Bryn Hebog	CF48 1HH	Dwelling	51.6	51.9	51.9	52.7	40.4	40.7	40.7	41.4
15 Heol Bryn Hebog	CF48 1HH	Dwelling	51.6	51.9	52.0	52.7	40.5	40.7	40.7	41.4
17 Heol Bryn Hebog	CF48 1HH	Dwelling	52.4	52.7	52.8	53.6	41.2	41.4	41.5	42.2
19 Heol Bryn Hebog	CF48 1HH	Dwelling	51.8	52.1	52.2	53.0	40.6	40.8	41.0	41.7
21 Heol Bryn Hebog	CF48 1HH	Dwelling	51.7	52.0	52.1	53.0	40.5	40.8	40.9	41.7
2 Heol Penrhiw	CF48 1HL	Dwelling	67.5	67.4	67.7	68.1	54.7	54.6	54.9	55.2
4 Heol Penrhiw	CF48 1HL	Dwelling	64.7	64.7	65.0	65.4	52.3	52.2	52.5	52.8
6 Heol Penrhiw	CF48 1HL	Dwelling	60.9	60.9	61.2	61.6	48.8	48.8	49.0	49.4
8 Heol Penrhiw	CF48 1HL	Dwelling	62.7	62.7	63.0	63.4	50.4	50.4	50.7	51.0
10 Heol Penrhiw	CF48 1HL	Dwelling	57.2	57.3	57.5	58.0	45.5	45.5	45.7	46.2
12 Heol Penrhiw	CF48 1HL	Dwelling	56.6	56.7	56.9	57.4	45.0	45.0	45.2	45.7
14 Heol Penrhiw	CF48 1HL	Dwelling	57.3	57.4	57.6	58.1	45.6	45.7	45.8	46.3
16 Heol Penrhiw	CF48 1HL	Dwelling	50.0	50.3	50.5	51.3	38.9	39.3	39.4	40.2
18 Heol Penrhiw	CF48 1HL	Dwelling	51.6	51.9	52.3	53.0	40.4	40.7	41.0	41.7
20 Heol Penrhiw	CF48 1HL	Dwelling	53.6	54.0	54.2	55.0	42.2	42.5	42.8	43.4
Awelon Awelon Swansea Road	CF48 1HN	Dwelling	54.0	54.4	54.8	55.9	42.5	42.9	43.3	44.3
Bronynant Bronynant Swansea Road	CF48 1HN	Dwelling	52.3	52.7	54.1	54.6	41.1	41.4	42.7	43.1
Erwyd Dell Erwyd Dell Swansea Road	CF48 1HN	Dwelling	55.4	55.6	56.1	57.3	43.8	44.0	44.5	45.5
Green Acres Green Acres Swansea Road	CF48 1HN	Dwelling	54.3	54.6	55.3	56.4	42.9	43.1	43.8	44.8
Gwynfa Bungalow Gwynfa Bungalow Swansea Road	CF48 1HN	Dwelling	54.2	54.6	55.3	56.2	42.8	43.2	43.7	44.5
Hafan Dawel Hafan Dawel Swansea Road	CF48 1HN	Dwelling	55.8	56.2	56.6	57.7	44.2	44.5	44.9	45.9
Maesgwyn Maesgwyn Swansea Road	CF48 1HN	Dwelling	53.5	53.9	54.5	55.6	42.2	42.5	43.1	44.0
Mile End House Mile End House Swansea Road	CF48 1HN	Dwelling	64.1	64.4	65.7	65.9	51.7	52.0	53.1	53.3
Nantgau Nantgau Swansea Road	CF48 1HN	Dwelling	54.4	54.6	55.5	56.5	42.9	43.1	44.0	44.8
Pencoedcae Pencoedcae Swansea Road	CF48 1HN	Dwelling	67.7	68.0	69.3	69.5	54.9	55.2	56.3	56.5
Ty Arfryn Ty Arfryn Swansea Road	CF48 1HN	Dwelling	64.5	64.8	66.0	66.2	52.0	52.3	53.4	53.6
78 Swansea Road	CF48 1HN	Dwelling	55.1	55.4	56.6	57.2	43.6	43.9	44.9	45.5
Kaos 1A Thornbury Close	CF48 1HP	Dwelling	43.0	43.4	44.1	45.0	32.7	33.0	33.6	34.5
The Bungalow Thornbury Close	CF48 1HP	Dwelling	43.6	44.2	44.9	45.9	33.2	33.8	34.4	35.3
Thornbury Close	CF48 1HP	Dwelling	44.1	44.5	45.1	46.1	33.7	34.1	34.6	35.4
1 Thornbury Close	CF48 1HP	Dwelling	49.7	49.9	50.7	51.6	38.7	38.9	39.6	40.4
2 Thornbury Close	CF48 1HP	Dwelling	48.6	48.7	49.6	50.6	37.7	37.8	38.6	39.5
3 Thornbury Close	CF48 1HP	Dwelling	43.1	43.6	44.2	45.2	32.8	33.2	33.8	34.6
4 Thornbury Close	CF48 1HP	Dwelling	43.1	43.6	44.2	45.1	32.8	33.2	33.8	34.6
5 Thornbury Close	CF48 1HP	Dwelling	42.7	43.2	43.8	44.8	32.4	32.9	33.4	34.3
6 Thornbury Close	CF48 1HP	Dwelling	44.1	44.5	45.1	46.1	33.7	34.1	34.6	35.4
7 Thornbury Close	CF48 1HP	Dwelling	42.9	43.5	44.0	45.0	32.6	33.1	33.6	34.5
8 Thornbury Close	CF48 1HP	Dwelling	43.1	43.7	44.3	45.3	32.8	33.3	33.8	34.7
9 Thornbury Close	CF48 1HP	Dwelling	46.6	47.1	48.4	49.3	35.9	36.4	37.5	38.3
10 Thornbury Close	CF48 1HP	Dwelling	43.4	43.9	44.5	45.5	33.0	33.5	34.0	34.9
11 Thornbury Close	CF48 1HP	Dwelling	43.1	43.6	44.3	45.3	32.8	33.2	33.8	34.7
12 Thornbury Close	CF48 1HP	Dwelling	43.9	44.4	45.2	46.1	33.5	33.9	34.7	35.5
74A Swansea Road	CF48 1HR	Dwelling	48.9	49.3	50.1	50.9	38.0	38.4	39.1	39.8
Brynhyfryd Brynhyfryd Swansea Road	CF48 1HR	Dwelling	50.8	51.1	52.1	53.0	39.7	40.0	40.9	41.6
Cynhesu Hafan Cynhesu Hafen Swansea Road	CF48 1HR	Dwelling	46.4	46.6	47.5	48.5	35.7	36.0	36.7	37.6
Delfan Delfan Swansea Road	CF48 1HR	Dwelling	65.4	65.7	67.0	67.2	52.9	53.1	54.3	54.5
Hafod Wen Hafodwen Swansea Road	CF48 1HR	Dwelling	41.1	41.7	42.2	43.2	31.0	31.5	32.0	32.8
Pen Yr Enfys Pen Yr Enfys Swansea Road	CF48 1HR	Dwelling	49.4	49.5	50.7	51.6	38.4	38.6	39.6	40.4
Plas Helygen Swansea Road	CF48 1HR	Dwelling	49.9	50.2	51.3	52.1	38.9	39.2	40.2	40.9
Shanida Shanida Swansea Road	CF48 1HR	Dwelling	42.3	43.0	43.4	44.4	32.0	32.6	33.1	33.9
Ty Marc Anthony Ty Marc Anthony Old Winch Fawr Road	CF48 1HR	Dwelling	43.4	44.1	44.7	45.7	33.1	33.6	34.2	35.1
Swan Villa 50 Swansea Road	CF48 1HR	Dwelling	55.5	55.9	56.8	57.4	44.0	44.3	45.1	45.6
Brynheulwen 55 Swansea Road	CF48 1HR	Dwelling	44.5	44.9	45.5	46.4	34.1	34.4	34.9	35.7
Pantygerdynen 56 Swansea Road	CF48 1HR	Dwelling	47.8	48.2	48.8	49.7	37.0	37.4	37.9	38.7
Llwyn Y Gwew 63 Swansea Road	CF48 1HR	Dwelling	46.7	47.1	47.7	48.7	36.0	36.3	36.9	37.8
68 Swansea Road	CF48 1HR	Dwelling	52.5	52.7	53.6	54.5	41.2	41.5	42.2	43.0
69 Swansea Road	CF48 1HR	Dwelling	50.5	50.8	51.9	52.8	39.4	39.7	40.7	41.5
71 Swansea Road	CF48 1HR	Dwelling	50.3	50.6	51.5	52.4	39.2	39.5	40.4	41.1
72 Swansea Road	CF48 1HR	Dwelling	50.3	50.5	51.5	52.4	39.2	39.5	40.3	41.1
73 Swansea Road	CF48 1HR	Dwelling	48.6	48.9	49.9	50.8	37.7	38.0	38.8	39.7
74 Swansea Road	CF48 1HR	Dwelling	48.9	49.3	50.1	50.9	38.0	38.4	39.1	39.8
75 Swansea Road	CF48 1HR	Dwelling	44.8	45.2	45.9	46.7	34.3	34.7	35.3	36.0
The Harp Funeral Home Swansea Road	CF48 1HS	Dwelling	67.2	67.5	68.8	69.0	54.4	54.7	55.9	56.0
45 Swansea Road	CF48 1HS	Dwelling	67.9	68.2	69.5	69.7	55.1	55.4	56.5	56.7
46 Swansea Road	CF48 1HS	Dwelling	67.6	67.9	69.2	69.4	54.8	55.1	56.2	56.4
34A Swansea Road	CF48 1HT	Dwelling	68.9	68.8	69.1	69.5	56.0	55.9	56.2	56.5
Cartref Cartref Swansea Road	CF48 1HT	Dwelling	54.8	54.9	55.0	55.5	43.3	43.4	43.5	43.9
Ceinfan Ceinfan Swansea Road	CF48 1HT	Dwelling	53.0	53.2	53.2	53.7	41.7	41.9	41.8	42.3
Gellideg Congregational Chapel Gellideg Chapel Swansea Road	CF48 1HT	OSR	61.5	61.7	61.7	62.2	49.4	49.5	49.5	49.9
32 Swansea Road	CF48 1HT	Dwelling	54.4	54.5	54.6	55.1	43.0	43.0	43.2	43.6
33 Swansea Road	CF48 1HT	Dwelling	62.9	62.8	63.1	63.5	50.6	50.5	50.8	51.1
34 Swansea Road	CF48 1HT	Dwelling	54.3	54.3	54.5	54.9	42.9	42.9	43.1	43.4
36A Swansea Road	CF48 1HU	Dwelling	48.8	48.9	49.2	49.7	37.9	38.0	38.3	38.7
Maes Y Meillion Maes-Y-Meillion Swansea Road	CF48 1HU	Dwelling	52.9	53.0	53.2	53.7	41.6	41.7	41.8	42.3
37 Swansea Road	CF48 1HU	Dwelling	51.1	51.3	51.6	52.1	40.0	40.1	40.4	40.8
38 Swansea Road	CF48 1HU	Dwelling	53.1	53.2	53.5	54.0	41.8	41.9	42.1	42.5

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
Fair View Estate Appin Appin Old Winch Fawr Road	CF48 1HW	Dwelling	52.0	52.3	53.7	54.5	40.8	41.1	42.3	43.0
Fair View Estate Arosfa Arosfa Old Winch Fawr Road	CF48 1HW	Dwelling	49.9	50.3	51.1	51.9	38.9	39.2	39.9	40.7
Fair View Estate Brynhyfryd Old Winch Fawr Road	CF48 1HW	Dwelling	47.5	47.8	48.7	49.6	36.7	37.0	37.8	38.6
Carmel Chapel Cylch Meitrin Swansea Road	CF48 1HW	OSR	48.6	49.0	49.7	50.7	37.7	38.1	38.7	39.6
Fair View Estate Jalna Jalna Old Winch Fawr Road	CF48 1HW	Dwelling	54.4	54.7	55.5	56.3	42.9	43.2	44.0	44.6
Fair View Estate Kenaud Kenaud Old Winch Fawr Road	CF48 1HW	Dwelling	62.3	62.7	63.9	64.2	50.1	50.4	51.5	51.7
Fair View Estate 4 Westwinds Old Winch Fawr Road	CF48 1HW	Dwelling	49.7	50.2	50.9	51.8	38.8	39.1	39.8	40.6
Fair View Estate 6 Old Winch Fawr Road	CF48 1HW	Dwelling	50.2	50.5	51.4	52.3	39.1	39.5	40.3	41.0
Fair View Estate 7 Bromlea Old Winch Fawr Road	CF48 1HW	Dwelling	48.9	49.2	50.1	51.0	38.0	38.2	39.1	39.8
Fair View Estate 8 Feliz Vida Old Winch Fawr Road	CF48 1HW	Dwelling	48.0	48.2	49.4	50.3	37.1	37.4	38.5	39.3
Fair View Estate 9 Galway Old Winch Fawr Road	CF48 1HW	Dwelling	49.0	49.3	50.5	51.5	38.1	38.3	39.5	40.3
Fair View Estate 10 Larkspur Old Winch Fawr Road	CF48 1HW	Dwelling	48.1	48.5	49.5	50.4	37.3	37.6	38.5	39.3
Fair View Estate 11 Mizpah Old Winch Fawr Road	CF48 1HW	Dwelling	44.6	45.0	45.9	46.8	34.1	34.5	35.3	36.1
Fair View Estate 12 Elland House Old Winch Fawr Road	CF48 1HW	Dwelling	49.0	49.3	50.2	51.1	38.1	38.3	39.2	40.0
1 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	59.3	59.7	60.5	60.9	47.4	47.7	48.4	48.8
2 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	60.7	61.0	61.9	62.3	48.6	48.9	49.7	50.0
26 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	50.7	51.0	51.7	52.6	39.6	39.9	40.5	41.3
27 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	50.2	50.7	51.2	52.1	39.2	39.6	40.1	40.8
28 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	49.4	49.8	50.5	51.4	38.4	38.8	39.4	40.2
29 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	49.0	49.4	50.4	51.3	38.1	38.4	39.4	40.2
3 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	48.8	49.2	50.1	50.6	37.9	38.3	39.1	39.5
30 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	46.7	47.2	47.7	48.6	36.0	36.4	36.9	37.7
31 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	48.7	49.1	49.5	50.4	37.8	38.1	38.5	39.3
32 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	48.7	49.1	49.5	50.4	37.8	38.2	38.5	39.3
33 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	47.7	48.2	48.7	49.6	36.9	37.3	37.8	38.6
34 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	47.9	48.4	48.9	49.8	37.1	37.5	38.0	38.8
35 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	48.2	48.7	49.3	50.2	37.4	37.8	38.3	39.1
36 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	48.6	49.0	49.6	50.5	37.7	38.1	38.6	39.4
37 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	46.5	47.0	48.1	48.9	35.8	36.3	37.2	38.0
38 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	49.0	49.4	50.1	51.0	38.0	38.4	39.1	39.8
39 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	49.4	49.8	50.5	51.4	38.4	38.8	39.4	40.2
4 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	49.7	50.1	51.1	51.7	38.7	39.0	40.0	40.5
40 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	51.6	52.0	52.8	53.6	40.4	40.8	41.5	42.2
41 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	51.6	52.0	52.7	53.6	40.4	40.8	41.4	42.2
42 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	51.3	51.7	52.3	53.2	40.1	40.5	41.1	41.9
43 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	48.0	48.3	49.2	50.1	37.2	37.5	38.3	39.0
44 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	50.5	50.9	51.5	52.3	39.4	39.8	40.3	41.1
45 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	53.0	53.2	54.0	54.8	41.7	41.9	42.6	43.3
5 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	56.9	57.3	58.2	58.7	45.2	45.5	46.3	46.8
6 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	54.6	55.0	56.0	56.5	43.1	43.4	44.4	44.9
7 Cyfarthfa Mews Cyfarthfa Mews	CF48 1HZ	Dwelling	50.7	51.1	51.9	52.7	39.6	40.0	40.7	41.4
Cyfarthfa Mews	CF48 1HZ	Dwelling	49.3	49.6	50.6	51.4	38.3	38.6	39.5	40.3
Cyfarthfa Mews	CF48 1HZ	Dwelling	50.2	50.6	51.1	52.0	39.2	39.5	40.0	40.7
Cyfarthfa Mews	CF48 1HZ	Dwelling	50.1	50.5	51.0	51.9	39.1	39.5	39.9	40.7
1A Monmouth Drive	CF48 1JA	Dwelling	58.7	60.4	61.1	62.5	46.8	48.4	48.9	50.2
Hicacos House 3A Monmouth Drive	CF48 1JA	Dwelling	53.7	55.5	55.9	57.3	42.3	43.9	44.3	45.5
1 Monmouth Drive	CF48 1JA	Dwelling	57.9	59.5	60.3	61.5	46.1	47.5	48.2	49.4
2 Monmouth Drive	CF48 1JA	Dwelling	49.9	50.4	51.3	52.4	38.9	39.3	40.2	41.1
3 Monmouth Drive	CF48 1JA	Dwelling	56.6	58.3	58.9	60.2	45.0	46.4	47.0	48.2
4 Monmouth Drive	CF48 1JA	Dwelling	49.1	49.6	50.5	51.5	38.2	38.6	39.4	40.3
5 Monmouth Drive	CF48 1JA	Dwelling	53.8	55.5	56.1	57.4	42.4	43.9	44.4	45.6
6 Monmouth Drive	CF48 1JA	Dwelling	44.6	45.1	45.8	46.9	34.1	34.5	35.2	36.2
7 Monmouth Drive	CF48 1JA	Dwelling	58.2	60.0	60.5	61.8	46.4	47.9	48.4	49.6
8 Monmouth Drive	CF48 1JA	Dwelling	44.6	45.1	45.9	46.9	34.1	34.6	35.3	36.2
9 Monmouth Drive	CF48 1JA	Dwelling	53.5	55.1	55.6	56.8	42.2	43.6	44.0	45.1
10 Monmouth Drive	CF48 1JA	Dwelling	44.4	44.9	45.7	46.7	34.0	34.4	35.1	36.0
11 Monmouth Drive	CF48 1JA	Dwelling	55.5	56.8	57.4	58.4	43.9	45.1	45.6	46.6
12 Monmouth Drive	CF48 1JA	Dwelling	45.0	45.4	46.2	47.3	34.5	34.9	35.6	36.5
13 Monmouth Drive	CF48 1JA	Dwelling	54.8	56.1	56.6	57.6	43.3	44.5	44.9	45.8
14 Monmouth Drive	CF48 1JA	Dwelling	46.3	46.8	47.6	48.6	35.7	36.1	36.8	37.7
15 Monmouth Drive	CF48 1JA	Dwelling	53.9	55.1	55.7	56.7	42.5	43.6	44.1	45.0
16 Monmouth Drive	CF48 1JA	Dwelling	45.9	46.4	47.1	48.1	35.3	35.8	36.4	37.3
17 Monmouth Drive	CF48 1JA	Dwelling	53.2	54.4	54.9	55.9	41.9	43.0	43.4	44.3
18 Monmouth Drive	CF48 1JA	Dwelling	46.2	46.8	47.4	48.5	35.6	36.1	36.7	37.6
19 Monmouth Drive	CF48 1JA	Dwelling	52.0	53.1	53.7	54.6	40.8	41.8	42.3	43.2
20 Monmouth Drive	CF48 1JA	Dwelling	43.0	43.5	44.2	45.3	32.7	33.1	33.8	34.7
21 Monmouth Drive	CF48 1JA	Dwelling	49.1	50.0	50.5	51.5	38.2	39.0	39.5	40.3
22 Monmouth Drive	CF48 1JA	Dwelling	42.8	43.2	44.0	45.1	32.5	32.9	33.6	34.5
23 Monmouth Drive	CF48 1JA	Dwelling	49.7	50.7	51.2	52.2	38.8	39.6	40.1	41.0
24 Monmouth Drive	CF48 1JA	Dwelling	43.0	43.4	44.2	45.3	32.7	33.1	33.8	34.7
25 Monmouth Drive	CF48 1JA	Dwelling	49.3	50.2	50.7	51.7	38.3	39.2	39.6	40.5
26 Monmouth Drive	CF48 1JA	Dwelling	44.8	45.4	46.0	47.1	34.3	34.8	35.4	36.3
27 Monmouth Drive	CF48 1JA	Dwelling	48.5	49.4	49.9	50.9	37.7	38.5	38.9	39.8
29 Monmouth Drive	CF48 1JA	Dwelling	48.3	49.1	49.6	50.6	37.5	38.2	38.6	39.5
31 Monmouth Drive	CF48 1JA	Dwelling	45.5	46.1	46.8	47.8	35.0	35.5	36.1	37.0
33 Monmouth Drive	CF48 1JA	Dwelling	46.0	46.6	47.3	48.3	35.4	35.9	36.5	37.4
35 Monmouth Drive	CF48 1JA	Dwelling	42.9	43.4	44.2	45.2	32.6	33.1	33.7	34.7
37 Monmouth Drive	CF48 1JA	Dwelling	42.8	43.3	44.1	45.1	32.5	33.0	33.6	34.6
39 Monmouth Drive	CF48 1JA	Dwelling	42.9	43.4	44.1	45.2	32.6	33.0	33.7	34.7
28 Monmouth Drive	CF48 1JB	Dwelling	44.8	45.5	46.1	47.1	34.3	34.9	35.5	36.4
30 Monmouth Drive	CF48 1JB	Dwelling	44.9	45.6	46.2	47.3	34.4	35.1	35.6	36.5
32 Monmouth Drive	CF48 1JB	Dwelling	42.4	43.1	43.7	44.8	32.1	32.8	33.3	34.3
34 Monmouth Drive	CF48 1JB	Dwelling	42.6	43.3	44.0	45.0	32.4	33.0	33.6	34.5
36 Monmouth Drive	CF48 1JB	Dwelling	44.8	45.5	46.1	47.1	34.3	35.0	35.5	36.4
38 Monmouth Drive	CF48 1JB	Dwelling	42.4	43.1	43.7	44.8	32.1	32.8	33.4	34.3
40 Monmouth Drive	CF48 1JB	Dwelling	42.4	43.1	43.8	44.9	32.2	32.8	33.4	34.3
41 Monmouth Drive	CF48 1JB	Dwelling	42.6	43.1	43.8	44.9	32.3	32.8	33.4	34.4
42 Monmouth Drive	CF48 1JB	Dwelling	45.0	45.8	46.3	47.4	34.5	35.2	35.7	36.6
43 Monmouth Drive	CF48 1JB	Dwelling	42.8	43.3	44.0	45.1	32.5	33.0	33.6	34.5
44 Monmouth Drive	CF48 1JB	Dwelling	46.8	47.6	48.1	49.1	36.1	36.8	37.3	38.1
45 Monmouth Drive	CF48 1JB	Dwelling	46.4	47.2	47.6	48.6	35.8	36.4	36.8	37.7
46 Monmouth Drive	CF48 1JB	Dwelling	41.3	41.9	42.5	43.6	31.1	31.7	32.3	33.2
47 Monmouth Drive	CF48 1JB	Dwelling	45.2	45.9	46.5	47.5	34.7	35.3	35.8	36.7
48 Monmouth Drive	CF48 1JB	Dwelling	42.7	43.9	44.3	45.3	32.5	33.5	33.8	34.7
49 Monmouth Drive	CF48 1JB	Dwelling	47.2	48.1	48.6	49.5	36.5	37.3	37.7	38.6
50 Monmouth Drive	CF48 1JB	Dwelling	42.3	43.4	43.9	44.9	32.1	33.1	33.5	34.3
51 Monmouth Drive	CF48 1JB	Dwelling	47.0	47.9	48.3	49.3	36.3	37.1	37.4	38.3
52 Monmouth Drive	CF48 1JB	Dwelling	42.0	43.0	43.5	44.5	31.8	32.7	33.1	34.0
53 Monmouth Drive	CF48 1JB	Dwelling	42.6	43.2	43.9	45.0	32.4	32.9	33.5	34.5
55 Monmouth Drive	CF48 1JB	Dwelling	47.8	48.8	49.2	50.2	37.0	37.9	38.3	39.2
57 Monmouth Drive	CF48 1JB	Dwelling	47.7	48.7	49.1	50.1	36.9	37.8	38.2	39.0
59 Monmouth Drive	CF48 1JB	Dwelling	47.8	48.8	49.3	50.2	37.0	37.9	38.3	39.2
61 Monmouth Drive	CF48 1JB	Dwelling	48.5	49.6	50.0	51.0	37.6	38.6	39.0	39.9
63 Monmouth Drive	CF48 1JB	Dwelling	49.0	50.2	50.6	51.6	38.1	39.1	39.5	40.4
65 Monmouth Drive	CF48 1JB	Dwelling	48.5	49.6	50.0	51.0	37.6	38.6	39.0	39.8
67 Monmouth Drive	CF48 1JB	Dwelling	49.5	50.6	51.1	52.1	38.5	39.6	39.9	40.8
69 Monmouth Drive	CF48 1JB	Dwelling	47.6	48.8	49.2	50.2	36.9	37.9	38.3	39.2

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
71 Monmouth Drive	CF48 1JB	Dwelling	48.2	49.4	49.8	50.8	37.4	38.5	38.8	39.7
73 Monmouth Drive	CF48 1JB	Dwelling	43.0	44.1	44.5	45.5	32.7	33.7	34.0	34.9
1 Morlais Close	CF48 1JD	Dwelling	48.5	48.9	50.2	51.2	37.7	38.0	39.2	40.0
2 Morlais Close	CF48 1JD	Dwelling	50.8	51.3	52.9	53.8	39.7	40.2	41.6	42.4
3 Morlais Close	CF48 1JD	Dwelling	46.6	47.0	48.1	49.1	35.9	36.3	37.3	38.2
4 Morlais Close	CF48 1JD	Dwelling	49.7	50.1	51.1	52.1	38.7	39.1	40.0	40.9
5 Morlais Close	CF48 1JD	Dwelling	52.3	52.6	54.2	55.2	41.0	41.4	42.7	43.6
6 Morlais Close	CF48 1JD	Dwelling	52.3	52.6	53.7	54.7	41.0	41.4	42.3	43.2
7 Morlais Close	CF48 1JD	Dwelling	46.8	47.3	48.3	49.3	36.1	36.5	37.5	38.3
8 Morlais Close	CF48 1JD	Dwelling	50.4	51.0	52.4	53.3	39.3	39.8	41.1	42.0
1 Raglan Grove	CF48 1JE	Dwelling	48.7	49.2	50.5	51.5	37.8	38.3	39.4	40.3
2 Raglan Grove	CF48 1JE	Dwelling	46.7	47.1	48.1	49.0	36.0	36.4	37.2	38.1
3 Raglan Grove	CF48 1JE	Dwelling	49.4	49.9	50.8	51.8	38.5	38.9	39.7	40.6
4 Raglan Grove	CF48 1JE	Dwelling	46.9	47.3	48.2	49.2	36.2	36.6	37.4	38.3
5 Raglan Grove	CF48 1JE	Dwelling	49.9	50.3	51.3	52.3	38.9	39.3	40.2	41.1
6 Raglan Grove	CF48 1JE	Dwelling	44.9	45.3	46.3	47.3	34.4	34.8	35.6	36.5
7 Raglan Grove	CF48 1JE	Dwelling	48.5	48.9	49.9	51.0	37.6	37.9	38.9	39.8
8 Raglan Grove	CF48 1JE	Dwelling	45.4	45.7	46.8	47.9	34.8	35.1	36.1	37.1
9 Raglan Grove	CF48 1JE	Dwelling	45.3	45.6	46.7	47.8	34.7	35.1	36.0	37.0
10 Raglan Grove	CF48 1JE	Dwelling	45.6	46.0	47.0	48.0	35.0	35.4	36.3	37.2
11 Raglan Grove	CF48 1JE	Dwelling	44.5	44.8	45.9	46.9	34.0	34.3	35.3	36.2
12 Raglan Grove	CF48 1JE	Dwelling	44.5	44.9	45.9	47.0	34.0	34.4	35.3	36.2
13 Raglan Grove	CF48 1JE	Dwelling	44.8	45.2	46.2	47.3	34.3	34.7	35.6	36.6
14 Raglan Grove	CF48 1JE	Dwelling	48.1	48.5	49.4	50.5	37.3	37.7	38.5	39.4
15 Raglan Grove	CF48 1JE	Dwelling	48.8	49.3	50.0	51.0	37.9	38.3	39.0	39.9
16 Raglan Grove	CF48 1JE	Dwelling	48.6	49.0	49.9	50.9	37.7	38.1	38.9	39.8
17 Raglan Grove	CF48 1JE	Dwelling	48.4	48.8	49.7	50.7	37.5	37.9	38.7	39.6
18 Raglan Grove	CF48 1JE	Dwelling	48.5	48.9	49.7	50.8	37.6	38.0	38.7	39.7
19 Raglan Grove	CF48 1JE	Dwelling	48.3	48.7	49.5	50.6	37.4	37.8	38.6	39.5
1 Pembroke Close	CF48 1JF	Dwelling	49.6	50.0	50.9	51.9	38.6	39.0	39.8	40.7
2 Pembroke Close	CF48 1JF	Dwelling	49.3	49.7	50.7	51.7	38.4	38.7	39.6	40.5
3 Pembroke Close	CF48 1JF	Dwelling	48.1	48.6	49.3	50.3	37.3	37.7	38.4	39.3
4 Pembroke Close	CF48 1JF	Dwelling	46.7	47.2	47.9	49.0	36.0	36.4	37.1	38.1
5 Pembroke Close	CF48 1JF	Dwelling	47.2	47.7	48.4	49.4	36.5	36.9	37.5	38.4
6 Pembroke Close	CF48 1JF	Dwelling	43.9	44.3	45.1	46.2	33.5	33.8	34.6	35.6
7 Pembroke Close	CF48 1JF	Dwelling	44.4	44.8	45.7	46.8	34.0	34.3	35.1	36.1
8 Pembroke Close	CF48 1JF	Dwelling	44.4	44.8	45.7	46.8	33.9	34.3	35.1	36.1
9 Pembroke Close	CF48 1JF	Dwelling	46.8	47.2	48.0	49.1	36.1	36.5	37.2	38.2
10 Pembroke Close	CF48 1JF	Dwelling	43.4	43.8	44.7	45.8	33.0	33.4	34.2	35.2
11 Pembroke Close	CF48 1JF	Dwelling	43.7	44.1	45.0	46.1	33.3	33.7	34.5	35.5
12 Pembroke Close	CF48 1JF	Dwelling	43.7	44.1	44.9	46.0	33.3	33.7	34.4	35.4
13 Pembroke Close	CF48 1JF	Dwelling	48.2	48.6	49.3	50.3	37.4	37.7	38.3	39.2
14 Pembroke Close	CF48 1JF	Dwelling	43.4	43.9	44.6	45.7	33.1	33.4	34.2	35.1
15 Pembroke Close	CF48 1JF	Dwelling	43.1	43.6	44.3	45.3	32.8	33.2	33.8	34.7
16 Pembroke Close	CF48 1JF	Dwelling	43.6	44.0	44.8	45.9	33.2	33.6	34.3	35.3
17 Pembroke Close	CF48 1JF	Dwelling	48.5	48.9	49.6	50.6	37.6	38.0	38.6	39.5
18 Pembroke Close	CF48 1JF	Dwelling	46.2	46.7	47.5	48.5	35.6	36.0	36.7	37.7
14A Chepstow Close	CF48 1JG	Dwelling	42.9	43.3	44.2	45.3	32.6	32.9	33.7	34.7
1 Chepstow Close	CF48 1JG	Dwelling	47.3	47.9	48.4	49.4	36.6	37.0	37.5	38.4
2 Chepstow Close	CF48 1JG	Dwelling	47.5	47.9	48.6	49.6	36.7	37.1	37.7	38.6
3 Chepstow Close	CF48 1JG	Dwelling	45.9	46.4	47.1	48.2	35.3	35.8	36.4	37.3
4 Chepstow Close	CF48 1JG	Dwelling	46.0	46.4	47.1	48.2	35.4	35.8	36.4	37.3
5 Chepstow Close	CF48 1JG	Dwelling	46.6	47.1	47.7	48.8	35.9	36.3	36.9	37.9
6 Chepstow Close	CF48 1JG	Dwelling	42.9	43.4	44.1	45.2	32.6	33.0	33.7	34.6
7 Chepstow Close	CF48 1JG	Dwelling	47.5	47.9	48.6	49.6	36.7	37.1	37.7	38.6
8 Chepstow Close	CF48 1JG	Dwelling	47.5	47.9	48.5	49.6	36.7	37.1	37.7	38.6
9 Chepstow Close	CF48 1JG	Dwelling	43.5	43.9	44.7	45.8	33.1	33.5	34.2	35.2
10 Chepstow Close	CF48 1JG	Dwelling	43.0	43.4	44.3	45.4	32.7	33.0	33.8	34.8
11 Chepstow Close	CF48 1JG	Dwelling	45.7	46.2	46.9	48.0	35.1	35.5	36.2	37.2
12 Chepstow Close	CF48 1JG	Dwelling	42.7	43.1	44.0	45.1	32.4	32.7	33.6	34.5
13 Chepstow Close	CF48 1JG	Dwelling	42.9	43.2	44.1	45.2	32.6	32.9	33.7	34.7
14 Chepstow Close	CF48 1JG	Dwelling	42.5	42.9	43.8	44.9	32.3	32.6	33.4	34.4
15 Chepstow Close	CF48 1JG	Dwelling	42.3	42.7	43.5	44.6	32.1	32.4	33.1	34.1
16 Chepstow Close	CF48 1JG	Dwelling	46.8	47.2	47.8	48.8	36.1	36.5	37.0	37.9
17 Chepstow Close	CF48 1JG	Dwelling	46.7	47.1	47.7	48.7	36.0	36.4	36.9	37.9
18 Chepstow Close	CF48 1JG	Dwelling	46.8	47.3	47.9	48.9	36.1	36.5	37.1	38.0
19 Chepstow Close	CF48 1JG	Dwelling	42.0	42.5	43.2	44.3	31.8	32.2	32.9	33.8
20 Chepstow Close	CF48 1JG	Dwelling	46.7	47.2	47.8	48.8	36.0	36.4	37.0	37.9
21 Chepstow Close	CF48 1JG	Dwelling	46.4	47.0	47.6	48.6	35.8	36.3	36.8	37.7
22 Chepstow Close	CF48 1JG	Dwelling	44.9	45.5	46.1	47.2	34.4	34.9	35.5	36.4
23 Chepstow Close	CF48 1JG	Dwelling	46.8	47.3	47.9	48.9	36.1	36.5	37.1	38.0
24 Chepstow Close	CF48 1JG	Dwelling	46.8	47.3	47.9	48.9	36.1	36.6	37.1	38.0
1 Caerleon Grove	CF48 1JH	Dwelling	44.3	44.9	45.5	46.6	33.9	34.4	35.0	35.9
2 Caerleon Grove	CF48 1JH	Dwelling	44.8	45.4	46.0	47.1	34.3	34.8	35.4	36.3
3 Caerleon Grove	CF48 1JH	Dwelling	44.4	45.0	45.6	46.7	34.0	34.5	35.0	36.0
4 Caerleon Grove	CF48 1JH	Dwelling	42.1	42.7	43.4	44.5	31.9	32.4	33.0	34.0
5 Caerleon Grove	CF48 1JH	Dwelling	44.8	45.4	46.1	47.1	34.3	34.9	35.4	36.4
6 Caerleon Grove	CF48 1JH	Dwelling	41.5	42.1	42.8	43.9	31.4	31.9	32.5	33.5
7 Caerleon Grove	CF48 1JH	Dwelling	41.9	42.5	43.2	44.2	31.7	32.2	32.8	33.8
8 Caerleon Grove	CF48 1JH	Dwelling	44.0	44.6	45.2	46.3	33.6	34.1	34.7	35.6
9 Caerleon Grove	CF48 1JH	Dwelling	41.7	42.3	43.0	44.1	31.6	32.0	32.7	33.6
10 Caerleon Grove	CF48 1JH	Dwelling	41.5	42.1	42.8	43.9	31.3	31.9	32.5	33.5
11 Caerleon Grove	CF48 1JH	Dwelling	43.1	44.0	44.6	45.7	32.8	33.6	34.1	35.1
12 Caerleon Grove	CF48 1JH	Dwelling	43.0	44.2	44.5	45.5	32.7	33.7	34.1	35.0
13 Caerleon Grove	CF48 1JH	Dwelling	42.9	44.1	44.5	45.5	32.6	33.7	34.1	34.9
14 Caerleon Grove	CF48 1JH	Dwelling	43.3	44.3	44.9	45.9	33.0	33.9	34.4	35.3
15 Caerleon Grove	CF48 1JH	Dwelling	43.2	43.8	44.3	45.4	32.9	33.4	33.9	34.8
16 Caerleon Grove	CF48 1JH	Dwelling	41.0	41.5	42.2	43.3	30.9	31.3	32.0	33.0
17 Caerleon Grove	CF48 1JH	Dwelling	46.4	47.2	47.7	48.7	35.8	36.5	36.9	37.8
18 Caerleon Grove	CF48 1JH	Dwelling	41.0	41.5	42.2	43.3	30.9	31.3	31.9	32.9
19 Caerleon Grove	CF48 1JH	Dwelling	41.4	41.9	42.6	43.7	31.3	31.7	32.4	33.3
20 Caerleon Grove	CF48 1JH	Dwelling	41.0	41.5	42.2	43.3	30.9	31.3	32.0	33.0
21 Caerleon Grove	CF48 1JH	Dwelling	41.4	41.9	42.6	43.7	31.3	31.7	32.4	33.3
22 Caerleon Grove	CF48 1JH	Dwelling	44.6	45.1	45.7	46.8	34.1	34.5	35.1	36.1
23 Caerleon Grove	CF48 1JH	Dwelling	41.2	41.7	42.4	43.5	31.1	31.5	32.1	33.1
24 Caerleon Grove	CF48 1JH	Dwelling	42.0	42.4	43.2	44.3	31.8	32.1	32.8	33.8
25 Caerleon Grove	CF48 1JH	Dwelling	44.6	45.1	45.7	46.8	34.2	34.6	35.1	36.1
1 Conway Grove	CF48 1JJ	Dwelling	42.3	42.7	43.5	44.6	32.1	32.4	33.1	34.1
2 Conway Grove	CF48 1JJ	Dwelling	41.3	41.7	42.5	43.6	31.2	31.5	32.2	33.2
3 Conway Grove	CF48 1JJ	Dwelling	41.7	42.1	42.9	44.0	31.5	31.9	32.6	33.6
4 Conway Grove	CF48 1JJ	Dwelling	41.3	41.7	42.5	43.6	31.1	31.5	32.2	33.2
5 Conway Grove	CF48 1JJ	Dwelling	41.6	42.0	42.8	43.9	31.4	31.8	32.5	33.5
6 Conway Grove	CF48 1JJ	Dwelling	41.2	41.7	42.4	43.5	31.1	31.5	32.1	33.1
7 Conway Grove	CF48 1JJ	Dwelling	41.0	41.5	42.2	43.3	30.9	31.3	32.0	32.9
8 Conway Grove	CF48 1JJ	Dwelling	46.3	47.1	47.5	48.5	35.6	36.3	36.7	37.6
9 Conway Grove	CF48 1JJ	Dwelling	42.3	43.3	43.8	44.9	32.1	32.9	33.4	34.3
10 Conway Grove	CF48 1JJ	Dwelling	44.8	45.7	46.1	47.1	34.3	35.1	35.4	36.3

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
11 Conway Grove	CF48 1JJ	Dwelling	42.5	43.5	43.9	44.9	32.3	33.1	33.5	34.4
12 Conway Grove	CF48 1JJ	Dwelling	44.5	45.3	45.8	46.9	34.1	34.7	35.2	36.2
13 Conway Grove	CF48 1JJ	Dwelling	41.9	42.6	43.3	44.4	31.7	32.3	33.0	33.9
14 Conway Grove	CF48 1JJ	Dwelling	45.8	46.5	47.0	48.0	35.2	35.8	36.2	37.1
15 Conway Grove	CF48 1JJ	Dwelling	41.4	41.8	42.6	43.7	31.3	31.6	32.4	33.3
16 Conway Grove	CF48 1JJ	Dwelling	41.7	42.1	42.9	44.0	31.5	31.9	32.6	33.6
17 Conway Grove	CF48 1JJ	Dwelling	41.4	41.8	42.6	43.7	31.2	31.6	32.3	33.3
18 Conway Grove	CF48 1JJ	Dwelling	41.9	42.3	43.1	44.2	31.7	32.0	32.8	33.8
19 Conway Grove	CF48 1JJ	Dwelling	41.8	42.2	43.0	44.1	31.6	31.9	32.7	33.7
20 Conway Grove	CF48 1JJ	Dwelling	41.5	41.9	42.7	43.8	31.4	31.7	32.4	33.4
1 Kidwelly Grove	CF48 1JN	Dwelling	42.5	42.9	43.7	44.9	32.2	32.6	33.3	34.3
2 Kidwelly Grove	CF48 1JN	Dwelling	42.9	43.4	44.0	45.0	32.6	33.1	33.6	34.5
3 Kidwelly Grove	CF48 1JN	Dwelling	41.7	42.1	42.9	44.0	31.5	31.8	32.6	33.6
4 Kidwelly Grove	CF48 1JN	Dwelling	45.6	46.1	46.7	47.8	35.0	35.5	36.1	37.0
5 Kidwelly Grove	CF48 1JN	Dwelling	41.7	42.1	42.9	44.0	31.5	31.9	32.6	33.6
6 Kidwelly Grove	CF48 1JN	Dwelling	42.7	43.2	43.8	44.9	32.4	32.9	33.4	34.4
7 Kidwelly Grove	CF48 1JN	Dwelling	41.9	42.3	43.1	44.2	31.7	32.0	32.8	33.8
8 Kidwelly Grove	CF48 1JN	Dwelling	41.7	42.2	42.8	43.9	31.5	31.9	32.5	33.5
9 Kidwelly Grove	CF48 1JN	Dwelling	41.4	41.8	42.6	43.7	31.3	31.6	32.4	33.3
10 Kidwelly Grove	CF48 1JN	Dwelling	44.5	45.1	45.6	46.6	34.1	34.6	35.0	35.9
11 Kidwelly Grove	CF48 1JN	Dwelling	41.4	41.9	42.6	43.7	31.2	31.7	32.4	33.3
12 Kidwelly Grove	CF48 1JN	Dwelling	46.5	46.9	47.5	48.6	35.9	36.2	36.8	37.7
13 Kidwelly Grove	CF48 1JN	Dwelling	46.4	46.8	47.4	48.4	35.7	36.1	36.6	37.5
14 Kidwelly Grove	CF48 1JN	Dwelling	46.5	47.1	47.6	48.6	35.9	36.3	36.8	37.7
15 Kidwelly Grove	CF48 1JN	Dwelling	41.6	42.2	42.9	43.9	31.5	31.9	32.6	33.5
16 Kidwelly Grove	CF48 1JN	Dwelling	46.4	46.8	47.4	48.5	35.8	36.1	36.7	37.6
17 Kidwelly Grove	CF48 1JN	Dwelling	46.6	47.1	47.7	48.7	36.0	36.3	36.9	37.8
18 Kidwelly Grove	CF48 1JN	Dwelling	41.5	42.0	42.7	43.7	31.3	31.8	32.4	33.3
19 Kidwelly Grove	CF48 1JN	Dwelling	46.4	46.8	47.5	48.5	35.8	36.1	36.7	37.6
20 Kidwelly Grove	CF48 1JN	Dwelling	44.6	45.3	45.7	46.7	34.1	34.7	35.1	36.0
21 Kidwelly Grove	CF48 1JN	Dwelling	46.5	47.1	47.7	48.7	35.9	36.4	36.9	37.8
22 Kidwelly Grove	CF48 1JN	Dwelling	45.2	45.8	46.5	47.5	34.7	35.2	35.8	36.7
23 Kidwelly Grove	CF48 1JN	Dwelling	44.4	45.1	45.5	46.5	34.0	34.6	34.9	35.8
24 Kidwelly Grove	CF48 1JN	Dwelling	44.5	45.2	45.6	46.6	34.1	34.7	35.0	35.9
26 Kidwelly Grove	CF48 1JN	Dwelling	44.9	45.4	46.0	47.1	34.4	34.8	35.4	36.4
27 Kidwelly Grove	CF48 1JN	Dwelling	42.0	42.7	43.4	44.4	31.8	32.5	33.0	33.9
28 Kidwelly Grove	CF48 1JN	Dwelling	46.3	46.9	47.5	48.5	35.6	36.2	36.7	37.6
29 Kidwelly Grove	CF48 1JN	Dwelling	44.8	45.6	46.0	46.9	34.3	35.0	35.3	36.2
30 Kidwelly Grove	CF48 1JN	Dwelling	44.5	45.0	45.6	46.7	34.0	34.5	35.1	36.0
31 Kidwelly Grove	CF48 1JN	Dwelling	46.1	46.6	47.2	48.2	35.5	35.9	36.4	37.3
32 Kidwelly Grove	CF48 1JN	Dwelling	42.5	43.1	43.8	44.9	32.2	32.8	33.4	34.4
33 Kidwelly Grove	CF48 1JN	Dwelling	46.3	46.9	47.4	48.4	35.6	36.2	36.6	37.5
34 Kidwelly Grove	CF48 1JN	Dwelling	44.4	44.9	45.6	46.7	34.0	34.4	35.0	36.0
35 Kidwelly Grove	CF48 1JN	Dwelling	44.0	44.7	45.1	46.1	33.6	34.2	34.6	35.5
36 Kidwelly Grove	CF48 1JN	Dwelling	41.3	41.9	42.6	43.7	31.2	31.7	32.3	33.3
37 Kidwelly Grove	CF48 1JN	Dwelling	45.7	46.3	46.8	47.8	35.1	35.6	36.1	37.0
38 Kidwelly Grove	CF48 1JN	Dwelling	41.9	42.4	43.2	44.3	31.7	32.1	32.8	33.8
39 Kidwelly Grove	CF48 1JN	Dwelling	44.4	44.9	45.6	46.7	34.0	34.4	35.0	36.0
42 Kidwelly Grove	CF48 1JN	Dwelling	41.9	42.3	43.2	44.3	31.7	32.1	32.8	33.8
45 Kidwelly Grove	CF48 1JN	Dwelling	41.0	41.4	42.3	43.4	30.9	31.3	32.0	33.0
46 Kidwelly Grove	CF48 1JN	Dwelling	42.2	42.6	43.5	44.6	32.0	32.3	33.1	34.1
48 Kidwelly Grove	CF48 1JN	Dwelling	40.9	41.3	42.2	43.3	30.8	31.2	31.9	32.9
50 Kidwelly Grove	CF48 1JN	Dwelling	44.4	44.8	45.6	46.7	34.0	34.3	35.0	36.0
12A St Donats Close	CF48 1JP	Dwelling	42.9	43.3	44.2	45.3	32.6	32.9	33.7	34.7
1 St Donats Close	CF48 1JP	Dwelling	43.0	43.5	44.3	45.4	32.7	33.1	33.8	34.8
2 St Donats Close	CF48 1JP	Dwelling	46.4	46.9	47.5	48.6	35.8	36.2	36.7	37.7
3 St Donats Close	CF48 1JP	Dwelling	42.3	42.7	43.6	44.7	32.1	32.4	33.2	34.2
4 St Donats Close	CF48 1JP	Dwelling	47.5	47.9	48.5	49.6	36.7	37.1	37.6	38.6
5 St Donats Close	CF48 1JP	Dwelling	42.7	43.2	43.9	45.0	32.5	32.9	33.5	34.5
6 St Donats Close	CF48 1JP	Dwelling	41.8	42.2	43.0	44.1	31.6	31.9	32.7	33.6
7 St Donats Close	CF48 1JP	Dwelling	45.9	46.4	46.9	48.0	35.3	35.7	36.2	37.1
8 St Donats Close	CF48 1JP	Dwelling	47.3	47.8	48.4	49.4	36.6	37.0	37.5	38.4
9 St Donats Close	CF48 1JP	Dwelling	46.3	46.7	47.6	48.7	35.7	36.0	36.8	37.8
10 St Donats Close	CF48 1JP	Dwelling	43.2	43.6	44.5	45.6	32.9	33.2	34.0	35.0
11 St Donats Close	CF48 1JP	Dwelling	43.0	43.4	44.3	45.4	32.7	33.0	33.8	34.8
12 St Donats Close	CF48 1JP	Dwelling	43.3	43.7	44.5	45.6	33.0	33.3	34.0	35.0
14 St Donats Close	CF48 1JP	Dwelling	46.6	47.0	47.6	48.7	35.9	36.3	36.8	37.8
15 St Donats Close	CF48 1JP	Dwelling	47.1	47.5	48.0	49.1	36.4	36.7	37.2	38.1
16 St Donats Close	CF48 1JP	Dwelling	42.0	42.4	43.3	44.3	31.8	32.2	32.9	33.9
17 St Donats Close	CF48 1JP	Dwelling	43.4	43.8	44.6	45.7	33.1	33.4	34.1	35.1
18 St Donats Close	CF48 1JP	Dwelling	43.8	44.1	44.9	46.1	33.4	33.7	34.4	35.4
19 St Donats Close	CF48 1JP	Dwelling	42.6	43.0	43.8	44.9	32.3	32.7	33.4	34.4
20 St Donats Close	CF48 1JP	Dwelling	46.5	46.9	47.6	48.7	35.8	36.2	36.8	37.8
21 St Donats Close	CF48 1JP	Dwelling	45.0	45.5	46.2	47.3	34.5	34.9	35.5	36.5
12A Carew Grove	CF48 1JR	Dwelling	43.9	44.3	45.2	46.3	33.5	33.8	34.6	35.6
1 Carew Grove	CF48 1JR	Dwelling	44.9	45.3	46.2	47.3	34.4	34.7	35.6	36.6
2 Carew Grove	CF48 1JR	Dwelling	47.5	48.0	48.7	49.8	36.7	37.2	37.8	38.8
3 Carew Grove	CF48 1JR	Dwelling	44.6	45.0	45.9	47.0	34.2	34.5	35.3	36.3
4 Carew Grove	CF48 1JR	Dwelling	48.9	49.3	50.0	51.1	38.0	38.4	39.0	39.9
5 Carew Grove	CF48 1JR	Dwelling	47.5	48.0	48.7	49.7	36.8	37.2	37.8	38.7
6 Carew Grove	CF48 1JR	Dwelling	43.4	43.8	44.7	45.8	33.0	33.4	34.2	35.2
7 Carew Grove	CF48 1JR	Dwelling	49.3	49.7	50.4	51.5	38.4	38.7	39.4	40.3
8 Carew Grove	CF48 1JR	Dwelling	48.4	48.8	49.6	50.6	37.5	37.9	38.6	39.5
9 Carew Grove	CF48 1JR	Dwelling	44.7	45.1	46.1	47.2	34.2	34.6	35.5	36.5
10 Carew Grove	CF48 1JR	Dwelling	46.7	47.1	47.9	48.9	36.0	36.3	37.0	38.0
11 Carew Grove	CF48 1JR	Dwelling	43.7	44.1	45.0	46.1	33.3	33.7	34.5	35.5
12 Carew Grove	CF48 1JR	Dwelling	44.1	44.4	45.4	46.4	33.7	34.0	34.8	35.8
14 Carew Grove	CF48 1JR	Dwelling	44.1	44.5	45.4	46.5	33.7	34.0	34.8	35.8
15 Carew Grove	CF48 1JR	Dwelling	47.6	48.1	48.7	49.8	36.9	37.3	37.8	38.8
16 Carew Grove	CF48 1JR	Dwelling	45.6	46.2	46.6	47.7	35.0	35.5	36.0	36.9
17 Carew Grove	CF48 1JR	Dwelling	43.3	43.7	44.6	45.7	33.0	33.3	34.1	35.1
18 Carew Grove	CF48 1JR	Dwelling	43.3	43.7	44.5	45.5	32.9	33.3	34.0	34.9
19 Carew Grove	CF48 1JR	Dwelling	47.9	48.3	49.0	50.0	37.1	37.5	38.1	39.0
20 Carew Grove	CF48 1JR	Dwelling	43.9	44.3	45.1	46.2	33.5	33.8	34.6	35.5
21 Carew Grove	CF48 1JR	Dwelling	47.0	47.4	48.1	49.2	36.2	36.7	37.3	38.2
22 Carew Grove	CF48 1JR	Dwelling	43.8	44.2	45.1	46.2	33.4	33.8	34.6	35.5
1 Caernarvon Grove	CF48 1JS	Dwelling	48.3	48.7	49.7	50.8	37.5	37.8	38.7	39.7
2 Caernarvon Grove	CF48 1JS	Dwelling	45.4	45.8	46.8	47.8	34.8	35.2	36.1	37.0
3 Caernarvon Grove	CF48 1JS	Dwelling	43.4	43.8	44.6	45.7	33.1	33.4	34.1	35.1
4 Caernarvon Grove	CF48 1JS	Dwelling	48.7	49.1	49.9	50.9	37.8	38.2	38.9	39.8
5 Caernarvon Grove	CF48 1JS	Dwelling	45.7	46.1	47.2	48.2	35.1	35.5	36.4	37.4
6 Caernarvon Grove	CF48 1JS	Dwelling	52.1	52.3	53.2	54.3	40.9	41.1	41.9	42.8
7 Caernarvon Grove	CF48 1JS	Dwelling	46.9	47.3	48.3	49.4	36.2	36.5	37.5	38.4
8 Caernarvon Grove	CF48 1JS	Dwelling	45.5	45.9	47.0	48.1	35.0	35.3	36.3	37.2
9 Caernarvon Grove	CF48 1JS	Dwelling	45.5	45.8	46.9	48.0	34.9	35.2	36.2	37.1
10 Caernarvon Grove	CF48 1JS	Dwelling	48.4	48.8	49.8	50.9	37.6	37.9	38.8	39.8
11 Caernarvon Grove	CF48 1JS	Dwelling	44.8	45.2	46.2	47.3	34.3	34.7	35.6	36.6

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
12 Caernarvon Grove	CF48 1JS	Dwelling	48.5	48.9	50.1	51.2	37.6	38.0	39.1	40.1
13 Caernarvon Grove	CF48 1JS	Dwelling	43.6	44.0	45.0	46.1	33.3	33.6	34.5	35.5
14 Caernarvon Grove	CF48 1JS	Dwelling	44.5	45.0	45.7	46.8	34.0	34.4	35.1	36.1
15 Caernarvon Grove	CF48 1JS	Dwelling	43.7	44.1	45.1	46.2	33.3	33.7	34.6	35.5
16 Caernarvon Grove	CF48 1JS	Dwelling	49.7	50.1	50.8	51.9	38.7	39.0	39.7	40.7
17 Caernarvon Grove	CF48 1JS	Dwelling	46.1	46.5	47.4	48.5	35.5	35.8	36.7	37.7
1 St Fagans Grove	CF48 1JT	Dwelling	50.1	50.5	51.7	52.7	39.1	39.4	40.5	41.4
2 St Fagans Grove	CF48 1JT	Dwelling	50.8	51.2	52.4	53.4	39.7	40.0	41.1	42.0
3 St Fagans Grove	CF48 1JT	Dwelling	46.7	47.1	48.2	49.2	36.0	36.3	37.4	38.3
4 St Fagans Grove	CF48 1JT	Dwelling	51.6	52.0	53.2	54.2	40.4	40.7	41.9	42.7
5 St Fagans Grove	CF48 1JT	Dwelling	52.0	52.3	53.3	54.2	40.8	41.1	42.0	42.8
6 St Fagans Grove	CF48 1JT	Dwelling	49.6	50.0	51.2	52.1	38.6	39.0	40.1	40.8
7 St Fagans Grove	CF48 1JT	Dwelling	50.7	51.1	52.2	53.2	39.7	40.0	41.0	41.9
8 St Fagans Grove	CF48 1JT	Dwelling	47.3	47.7	48.8	49.8	36.6	36.9	37.9	38.8
9 St Fagans Grove	CF48 1JT	Dwelling	50.1	50.5	51.6	52.6	39.1	39.4	40.4	41.3
10 St Fagans Grove	CF48 1JT	Dwelling	50.2	50.6	51.7	52.7	39.1	39.5	40.5	41.4
11 St Fagans Grove	CF48 1JT	Dwelling	48.8	49.2	50.1	51.1	37.9	38.3	39.1	39.9
12 St Fagans Grove	CF48 1JT	Dwelling	47.5	47.9	48.8	49.9	36.8	37.1	37.9	38.9
13 St Fagans Grove	CF48 1JT	Dwelling	52.1	52.4	53.4	54.5	40.9	41.2	42.1	43.0
14 St Fagans Grove	CF48 1JT	Dwelling	49.6	49.9	51.3	52.4	38.6	38.9	40.1	41.1
15 St Fagans Grove	CF48 1JT	Dwelling	46.2	46.6	47.6	48.6	35.6	35.9	36.8	37.7
16 St Fagans Grove	CF48 1JT	Dwelling	46.6	47.0	48.2	49.3	35.9	36.2	37.3	38.3
17 St Fagans Grove	CF48 1JT	Dwelling	46.8	47.2	48.4	49.5	36.1	36.4	37.6	38.5
18 St Fagans Grove	CF48 1JT	Dwelling	45.8	46.2	47.3	48.4	35.2	35.6	36.6	37.5
27A Harlech Drive	CF48 1JU	Dwelling	52.7	53.0	54.8	55.7	41.4	41.7	43.3	44.1
31A Harlech Drive	CF48 1JU	Dwelling	52.9	53.2	54.7	55.7	41.6	41.9	43.2	44.1
35A Harlech Drive	CF48 1JU	Dwelling	51.5	51.8	52.8	54.0	40.4	40.6	41.5	42.5
79A Harlech Drive	CF48 1JU	Dwelling	46.4	46.8	47.6	48.8	35.7	36.1	36.9	37.9
83A Harlech Drive	CF48 1JU	Dwelling	44.4	44.8	45.7	46.9	34.0	34.3	35.1	36.2
87A Harlech Drive	CF48 1JU	Dwelling	43.7	44.1	45.0	46.1	33.3	33.6	34.4	35.5
3 Harlech Drive	CF48 1JU	Dwelling	60.2	61.5	62.3	63.5	48.2	49.3	50.1	51.1
5 Harlech Drive	CF48 1JU	Dwelling	61.1	62.0	62.7	63.6	49.0	49.8	50.4	51.2
9 Harlech Drive	CF48 1JU	Dwelling	51.7	52.3	54.3	55.2	40.5	41.1	42.8	43.7
11 Harlech Drive	CF48 1JU	Dwelling	55.1	55.5	56.8	57.5	43.6	44.0	45.1	45.7
13 Harlech Drive	CF48 1JU	Dwelling	59.8	60.2	61.5	62.1	47.8	48.2	49.3	49.8
15 Harlech Drive	CF48 1JU	Dwelling	53.8	54.3	55.4	56.1	42.4	42.8	43.9	44.4
17 Harlech Drive	CF48 1JU	Dwelling	59.9	60.4	61.7	62.2	47.9	48.3	49.5	49.9
19 Harlech Drive	CF48 1JU	Dwelling	51.7	52.2	53.3	54.1	40.5	40.9	41.9	42.6
21 Harlech Drive	CF48 1JU	Dwelling	60.7	61.1	62.6	63.1	48.6	49.0	50.3	50.7
23 Harlech Drive	CF48 1JU	Dwelling	60.8	61.3	62.6	63.2	48.7	49.1	50.3	50.8
25 Harlech Drive	CF48 1JU	Dwelling	55.1	55.5	56.9	57.6	43.5	43.9	45.2	45.8
27 Harlech Drive	CF48 1JU	Dwelling	50.1	50.5	52.0	52.8	39.1	39.4	40.7	41.5
29 Harlech Drive	CF48 1JU	Dwelling	53.0	53.4	55.0	55.9	41.7	42.0	43.5	44.3
31 Harlech Drive	CF48 1JU	Dwelling	54.0	54.4	56.0	57.0	42.6	42.9	44.4	45.2
33 Harlech Drive	CF48 1JU	Dwelling	51.8	52.1	53.7	54.8	40.6	40.9	42.3	43.3
35 Harlech Drive	CF48 1JU	Dwelling	49.7	50.1	50.9	52.0	38.7	39.0	39.8	40.8
37 Harlech Drive	CF48 1JU	Dwelling	49.8	50.2	51.1	52.2	38.8	39.1	40.0	41.0
39 Harlech Drive	CF48 1JU	Dwelling	50.0	50.4	51.4	52.5	39.0	39.3	40.3	41.3
41 Harlech Drive	CF48 1JU	Dwelling	49.4	49.8	50.5	51.6	38.4	38.8	39.5	40.5
43 Harlech Drive	CF48 1JU	Dwelling	50.2	50.5	51.9	53.0	39.2	39.5	40.7	41.7
45 Harlech Drive	CF48 1JU	Dwelling	49.4	49.8	51.1	52.2	38.4	38.8	40.0	41.0
47 Harlech Drive	CF48 1JU	Dwelling	49.0	49.4	50.3	51.3	38.1	38.5	39.2	40.2
49 Harlech Drive	CF48 1JU	Dwelling	49.2	49.7	50.4	51.5	38.3	38.7	39.4	40.3
51 Harlech Drive	CF48 1JU	Dwelling	49.0	49.4	50.1	51.2	38.1	38.4	39.1	40.1
53 Harlech Drive	CF48 1JU	Dwelling	49.0	49.4	50.1	51.2	38.1	38.4	39.1	40.1
55 Harlech Drive	CF48 1JU	Dwelling	48.9	49.3	50.1	51.2	38.0	38.3	39.0	40.0
57 Harlech Drive	CF48 1JU	Dwelling	46.4	46.8	47.6	48.7	35.8	36.1	36.8	37.8
59 Harlech Drive	CF48 1JU	Dwelling	47.4	47.8	48.5	49.6	36.6	37.0	37.6	38.6
61 Harlech Drive	CF48 1JU	Dwelling	47.9	48.3	49.1	50.2	37.1	37.4	38.2	39.2
63 Harlech Drive	CF48 1JU	Dwelling	45.7	46.1	47.0	48.1	35.1	35.4	36.2	37.3
65 Harlech Drive	CF48 1JU	Dwelling	45.4	45.8	46.7	47.8	34.9	35.2	36.0	37.0
67 Harlech Drive	CF48 1JU	Dwelling	46.9	47.3	48.1	49.3	36.2	36.6	37.3	38.3
69 Harlech Drive	CF48 1JU	Dwelling	45.2	45.6	46.4	47.6	34.6	35.0	35.8	36.8
71 Harlech Drive	CF48 1JU	Dwelling	47.3	47.8	48.3	49.4	36.5	37.0	37.5	38.4
73 Harlech Drive	CF48 1JU	Dwelling	46.7	47.1	48.0	49.1	36.0	36.4	37.2	38.2
75 Harlech Drive	CF48 1JU	Dwelling	44.5	44.9	45.8	47.0	34.0	34.4	35.2	36.2
77 Harlech Drive	CF48 1JU	Dwelling	44.5	44.9	45.8	47.0	34.0	34.4	35.2	36.2
79 Harlech Drive	CF48 1JU	Dwelling	46.4	46.8	47.7	48.8	35.7	36.1	36.9	37.9
81 Harlech Drive	CF48 1JU	Dwelling	45.9	46.3	47.2	48.3	35.3	35.7	36.4	37.4
83 Harlech Drive	CF48 1JU	Dwelling	46.3	46.6	47.5	48.7	35.6	35.9	36.8	37.8
85 Harlech Drive	CF48 1JU	Dwelling	43.9	44.2	45.1	46.3	33.5	33.8	34.6	35.6
87 Harlech Drive	CF48 1JU	Dwelling	44.1	44.4	45.3	46.5	33.7	34.0	34.8	35.8
91A Harlech Drive	CF48 1JW	Dwelling	45.2	45.6	46.4	47.5	34.7	35.0	35.7	36.7
95A Harlech Drive	CF48 1JW	Dwelling	43.1	43.5	44.3	45.4	32.8	33.1	33.8	34.9
99A Harlech Drive	CF48 1JW	Dwelling	43.2	43.5	44.4	45.5	32.9	33.2	33.9	35.0
89 Harlech Drive	CF48 1JW	Dwelling	43.7	44.1	44.9	46.1	33.3	33.6	34.4	35.5
91 Harlech Drive	CF48 1JW	Dwelling	45.0	45.4	46.2	47.3	34.5	34.8	35.5	36.5
93 Harlech Drive	CF48 1JW	Dwelling	45.4	45.8	46.6	47.7	34.8	35.2	35.9	36.9
95 Harlech Drive	CF48 1JW	Dwelling	43.7	44.0	44.8	46.0	33.3	33.6	34.3	35.4
97 Harlech Drive	CF48 1JW	Dwelling	43.2	43.5	44.4	45.6	32.9	33.2	34.0	35.0
99 Harlech Drive	CF48 1JW	Dwelling	43.0	43.3	44.2	45.3	32.7	33.0	33.7	34.8
100 Harlech Drive	CF48 1JW	Dwelling	43.1	43.4	44.2	45.4	32.8	33.0	33.8	34.8
Ty Melin 101 Harlech Drive	CF48 1JW	Dwelling	44.6	45.0	45.9	47.0	34.2	34.5	35.3	36.3
Bryngoleu Uchaf 105 Harlech Drive	CF48 1JW	Dwelling	41.8	42.2	43.1	44.2	31.6	31.9	32.8	33.8
106 Harlech Drive	CF48 1JW	Dwelling	42.9	43.4	44.0	45.1	32.6	33.0	33.6	34.6
107 Harlech Drive	CF48 1JW	Dwelling	43.6	44.0	44.8	45.9	33.2	33.6	34.3	35.2
2 Harlech Drive	CF48 1JX	Dwelling	47.4	47.8	48.9	50.0	36.7	37.0	38.0	39.0
4 Harlech Drive	CF48 1JX	Dwelling	48.7	49.1	50.0	51.1	37.9	38.2	38.9	39.9
6 Harlech Drive	CF48 1JX	Dwelling	45.2	45.6	46.6	47.7	34.7	35.0	35.9	36.9
8 Harlech Drive	CF48 1JX	Dwelling	47.8	48.2	48.9	50.0	37.0	37.3	38.0	39.0
10 Harlech Drive	CF48 1JX	Dwelling	46.8	47.2	48.0	49.1	36.1	36.5	37.2	38.1
12 Harlech Drive	CF48 1JX	Dwelling	44.4	44.7	45.5	46.7	33.9	34.2	35.0	36.0
14 Harlech Drive	CF48 1JX	Dwelling	46.3	46.7	47.5	48.6	35.7	36.0	36.7	37.7
16 Harlech Drive	CF48 1JX	Dwelling	43.9	44.2	45.1	46.2	33.5	33.8	34.5	35.6
18 Harlech Drive	CF48 1JX	Dwelling	43.7	44.1	44.9	46.1	33.3	33.7	34.4	35.4
20 Harlech Drive	CF48 1JX	Dwelling	43.2	43.6	44.4	45.5	32.9	33.2	33.9	35.0
22 Harlech Drive	CF48 1JX	Dwelling	45.0	45.4	46.2	47.3	34.5	34.9	35.5	36.5
24 Harlech Drive	CF48 1JX	Dwelling	42.5	42.9	43.7	44.8	32.2	32.6	33.3	34.3
26 Harlech Drive	CF48 1JX	Dwelling	42.3	42.7	43.5	44.6	32.1	32.4	33.2	34.1
28 Harlech Drive	CF48 1JX	Dwelling	42.9	43.2	44.1	45.2	32.5	32.9	33.6	34.6
6 Criccieth Grove	CF48 1JY	Dwelling	42.1	42.5	43.4	44.5	31.9	32.2	33.0	34.0
7 Criccieth Grove	CF48 1JY	Dwelling	41.7	42.0	42.8	44.0	31.5	31.8	32.5	33.5
9 Criccieth Grove	CF48 1JY	Dwelling	41.5	42.5	42.8	43.8	31.4	32.2	32.5	33.4
Brynawel 10 Criccieth Grove	CF48 1JY	Dwelling	43.3	43.8	44.5	45.6	33.0	33.4	34.0	35.0
12 Criccieth Grove	CF48 1JY	Dwelling	44.0	44.6	45.2	46.3	33.6	34.1	34.7	35.6
13 Criccieth Grove	CF48 1JY	Dwelling	45.6	46.1	46.6	47.7	35.0	35.5	35.9	36.9
14 Criccieth Grove	CF48 1JY	Dwelling	43.6	44.1	44.8	45.9	33.3	33.7	34.3	35.3

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
15 Criccieth Grove	CF48 1JY	Dwelling	40.7	41.1	41.9	43.0	30.6	31.0	31.7	32.7
16 Criccieth Grove	CF48 1JY	Dwelling	41.6	42.0	42.8	43.9	31.4	31.7	32.5	33.5
17 Criccieth Grove	CF48 1JY	Dwelling	41.7	42.0	42.9	44.0	31.5	31.8	32.6	33.6
18 Criccieth Grove	CF48 1JY	Dwelling	41.2	41.6	42.4	43.5	31.1	31.4	32.1	33.1
19 Criccieth Grove	CF48 1JY	Dwelling	41.3	41.7	42.5	43.6	31.2	31.5	32.2	33.2
1 Erw Las	CF48 1LD	Dwelling	56.9	57.7	57.0	57.9	45.2	45.9	45.3	46.1
2 Erw Las	CF48 1LD	Dwelling	53.8	54.7	54.0	54.9	42.4	43.2	42.6	43.3
3 Erw Las	CF48 1LD	Dwelling	53.6	54.4	53.8	54.7	42.3	43.0	42.4	43.2
4 Erw Las	CF48 1LD	Dwelling	53.5	54.3	53.7	54.5	42.1	42.8	42.3	43.1
5 Erw Las	CF48 1LD	Dwelling	55.2	55.9	55.4	56.2	43.7	44.3	43.8	44.5
6 Erw Las	CF48 1LD	Dwelling	55.3	55.9	55.4	56.2	43.7	44.2	43.9	44.5
7 Erw Las	CF48 1LD	Dwelling	52.8	53.4	53.1	53.8	41.5	42.1	41.7	42.4
8 Erw Las	CF48 1LD	Dwelling	53.4	54.3	53.6	54.5	42.1	42.8	42.3	43.0
9 Erw Las	CF48 1LD	Dwelling	54.0	54.8	54.2	55.0	42.6	43.3	42.7	43.5
10 Erw Las	CF48 1LD	Dwelling	54.4	55.2	54.5	55.3	43.0	43.7	43.1	43.8
11 Erw Las	CF48 1LD	Dwelling	53.9	54.6	54.0	54.8	42.5	43.1	42.6	43.3
1 Heol Tai Mawr	CF48 1LE	Dwelling	52.6	53.1	52.8	53.6	41.4	41.8	41.5	42.2
2 Heol Tai Mawr	CF48 1LE	Dwelling	50.4	51.1	50.6	51.5	39.4	40.0	39.5	40.4
3 Heol Tai Mawr	CF48 1LE	Dwelling	52.4	53.0	52.6	53.4	41.2	41.7	41.3	42.0
4 Heol Tai Mawr	CF48 1LE	Dwelling	54.2	54.8	54.4	55.3	42.8	43.3	43.0	43.7
5 Heol Tai Mawr	CF48 1LE	Dwelling	51.7	52.5	51.9	52.8	40.5	41.2	40.7	41.5
6 Heol Tai Mawr	CF48 1LE	Dwelling	50.8	51.5	51.1	52.0	39.7	40.4	39.9	40.8
7 Heol Tai Mawr	CF48 1LE	Dwelling	51.3	51.9	51.6	52.4	40.2	40.7	40.4	41.1
8 Heol Tai Mawr	CF48 1LE	Dwelling	51.5	52.3	51.7	52.6	40.3	41.0	40.5	41.4
9 Heol Tai Mawr	CF48 1LE	Dwelling	52.5	53.1	52.7	53.5	41.2	41.7	41.4	42.1
10 Heol Tai Mawr	CF48 1LE	Dwelling	53.2	54.0	53.4	54.3	41.9	42.5	42.0	42.8
11 Heol Tai Mawr	CF48 1LE	Dwelling	50.8	51.4	51.0	51.9	39.7	40.3	39.9	40.7
12 Heol Tai Mawr	CF48 1LE	Dwelling	53.3	54.0	53.4	54.3	42.0	42.6	42.0	42.8
13 Heol Tai Mawr	CF48 1LE	Dwelling	53.4	54.0	53.6	54.4	42.1	42.6	42.2	42.9
14 Heol Tai Mawr	CF48 1LE	Dwelling	52.9	53.5	53.1	54.0	41.5	42.2	41.8	42.6
15 Heol Tai Mawr	CF48 1LE	Dwelling	52.2	52.8	52.4	53.3	41.0	41.5	41.1	41.9
16 Heol Tai Mawr	CF48 1LE	Dwelling	52.1	52.7	52.4	53.3	40.9	41.4	41.1	41.9
17 Heol Tai Mawr	CF48 1LE	Dwelling	52.9	53.6	53.1	54.0	41.6	42.2	41.7	42.6
18 Heol Tai Mawr	CF48 1LE	Dwelling	52.2	52.9	52.4	53.3	40.9	41.6	41.2	41.9
19 Heol Tai Mawr	CF48 1LE	Dwelling	51.8	52.0	52.2	53.0	40.6	40.8	40.9	41.6
20 Heol Tai Mawr	CF48 1LE	Dwelling	55.5	56.2	55.7	56.6	44.0	44.5	44.1	44.9
Gellideg Changing Unit Heol Parc Maen	CF48 1LF	OSR	61.2	62.2	61.3	62.3	49.1	49.9	49.2	50.0
1 Heol Parc Maen	CF48 1LF	Dwelling	54.6	55.0	54.8	55.5	43.1	43.5	43.3	43.9
2 Heol Parc Maen	CF48 1LF	Dwelling	53.9	54.2	54.2	54.9	42.5	42.8	42.8	43.4
3 Heol Parc Maen	CF48 1LF	Dwelling	54.9	55.3	55.1	55.8	43.4	43.8	43.6	44.2
4 Heol Parc Maen	CF48 1LF	Dwelling	53.0	53.5	53.2	54.0	41.7	42.2	41.8	42.6
5 Heol Parc Maen	CF48 1LF	Dwelling	55.0	55.5	55.2	56.0	43.5	43.9	43.7	44.4
6 Heol Parc Maen	CF48 1LF	Dwelling	54.3	55.1	54.5	55.4	42.9	43.6	43.0	43.8
7 Heol Parc Maen	CF48 1LF	Dwelling	56.7	57.5	56.8	57.7	45.0	45.8	45.1	45.9
8 Heol Parc Maen	CF48 1LF	Dwelling	58.8	59.7	58.9	59.8	46.9	47.7	47.0	47.8
9 Heol Parc Maen	CF48 1LF	Dwelling	58.0	58.8	58.0	58.9	46.2	46.9	46.2	47.0
10 Heol Parc Maen	CF48 1LF	Dwelling	54.2	54.9	54.3	55.2	42.8	43.4	42.9	43.6
11 Heol Parc Maen	CF48 1LF	Dwelling	58.2	59.0	58.2	59.1	46.3	47.0	46.4	47.1
12 Heol Parc Maen	CF48 1LF	Dwelling	59.2	60.0	59.3	60.2	47.3	48.0	47.4	48.1
13 Heol Parc Maen	CF48 1LF	Dwelling	50.8	51.5	51.0	51.9	39.7	40.4	39.9	40.7
14 Heol Parc Maen	CF48 1LF	Dwelling	59.8	60.6	59.9	60.7	47.8	48.5	47.9	48.6
15 Heol Parc Maen	CF48 1LF	Dwelling	48.5	49.1	48.9	49.7	37.6	38.2	38.0	38.7
16 Heol Parc Maen	CF48 1LF	Dwelling	60.0	60.7	60.1	60.9	48.0	48.7	48.1	48.8
17 Heol Parc Maen	CF48 1LF	Dwelling	52.4	52.9	52.7	53.5	41.2	41.6	41.4	42.1
18 Heol Parc Maen	CF48 1LF	Dwelling	60.1	60.8	60.2	61.0	48.1	48.7	48.2	48.9
19 Heol Parc Maen	CF48 1LF	Dwelling	52.8	53.3	53.1	53.9	41.5	41.9	41.8	42.5
21 Heol Parc Maen	CF48 1LF	Dwelling	52.4	52.9	52.7	53.4	41.1	41.6	41.4	42.1
23 Heol Parc Maen	CF48 1LF	Dwelling	52.9	53.4	53.2	54.0	41.6	42.1	41.9	42.6
25 Heol Parc Maen	CF48 1LF	Dwelling	52.3	52.8	52.6	53.4	41.1	41.5	41.3	42.0
27 Heol Parc Maen	CF48 1LF	Dwelling	52.4	52.9	52.7	53.5	41.1	41.6	41.4	42.1
29 Heol Parc Maen	CF48 1LF	Dwelling	49.3	49.8	49.7	50.5	38.4	38.8	38.7	39.4
31 Heol Parc Maen	CF48 1LF	Dwelling	49.8	50.2	50.2	51.0	38.8	39.2	39.1	39.8
33 Heol Parc Maen	CF48 1LF	Dwelling	49.5	50.0	49.9	50.7	38.6	39.0	38.9	39.6
62 Heol Parc Maen	CF48 1LF	Dwelling	60.7	61.5	60.7	61.6	48.6	49.3	48.6	49.4
64 Heol Parc Maen	CF48 1LF	Dwelling	57.3	58.0	57.4	58.3	45.6	46.2	45.6	46.4
66 Heol Parc Maen	CF48 1LF	Dwelling	60.1	61.0	60.2	61.1	48.1	48.9	48.1	48.9
68 Heol Parc Maen	CF48 1LF	Dwelling	59.7	60.6	59.8	60.7	47.7	48.5	47.8	48.6
70 Heol Parc Maen	CF48 1LF	Dwelling	60.1	61.0	60.2	61.1	48.1	48.9	48.1	48.9
72 Heol Parc Maen	CF48 1LF	Dwelling	59.8	60.7	59.9	60.8	47.8	48.6	47.9	48.7
74 Heol Parc Maen	CF48 1LF	Dwelling	59.8	60.7	59.9	60.8	47.8	48.6	47.9	48.7
76 Heol Parc Maen	CF48 1LF	Dwelling	58.7	59.6	58.8	59.7	46.9	47.7	46.9	47.7
78 Heol Parc Maen	CF48 1LF	Dwelling	58.1	58.9	58.2	59.1	46.3	47.0	46.3	47.1
80 Heol Parc Maen	CF48 1LF	Dwelling	59.4	60.3	59.5	60.4	47.5	48.3	47.5	48.3
Coed Y Derwen School Bungalow Gellideg School Bungalow Heol Parc Maen	CF48 1LG	Dwelling	50.9	51.4	51.3	52.1	39.8	40.2	40.1	40.8
Ysgol Gynradd Coed Y Dderwen Heol Parc Maen	CF48 1LG	OSR	50.1	50.8	50.5	51.5	39.0	39.7	39.4	40.3
Taf Fechan House Flat 11 Heol Tai Mawr	CF48 1LH	Dwelling	55.2	55.9	55.3	56.3	43.7	44.3	43.8	44.6
Taf Fechan House Flat 5 Taf Fechan House Flat 5 Heol Tai Mawr	CF48 1LH	Dwelling	56.6	57.3	56.7	57.6	44.9	45.5	45.0	45.8
Taf Fechan House Flat 6 Taf Fechan House Flat 6 Heol Tai Mawr	CF48 1LH	Dwelling	56.3	57.0	56.4	57.3	44.7	45.3	44.8	45.6
Taf Fechan House Flat 8 Heol Tai Mawr	CF48 1LH	Dwelling	56.6	57.3	56.7	57.6	44.9	45.5	45.0	45.8
Tai Mawr Farm 1 Tai Mawr Farm Tai Mawr Way	CF48 1LN	Dwelling	58.9	59.9	59.0	60.1	47.0	47.9	47.1	48.1
Ash Grove Ash Grove Tai Mawr Way	CF48 1LN	Dwelling	56.6	57.7	56.8	57.9	45.0	45.9	45.1	46.1
Beacon View Beacon View Tai Mawr Way	CF48 1LN	Dwelling	66.4	67.5	66.5	67.6	53.8	54.7	53.8	54.8
Blodeufryn Blodeufryn Tai Mawr Way	CF48 1LN	Dwelling	58.9	59.9	59.0	60.1	47.0	47.9	47.1	48.1
Casa Mea Casa Mea Tai Mawr Way	CF48 1LN	Dwelling	69.6	70.7	69.7	70.8	56.6	57.6	56.7	57.7
Dalkeith Dalkeith Tai Mawr Way	CF48 1LN	Dwelling	49.4	50.2	49.8	50.8	38.5	39.2	38.8	39.7
Gilray Gilray Tai Mawr Way	CF48 1LN	Dwelling	71.3	72.5	71.5	72.5	58.2	59.2	58.3	59.2
Morlais View Morlais View Tai Mawr Way	CF48 1LN	Dwelling	55.4	56.4	55.6	56.7	43.9	44.8	44.1	45.0
Proyart Proyart Tai Mawr Way	CF48 1LN	Dwelling	52.3	53.2	52.6	53.6	41.0	41.8	41.3	42.2
Rhoswen Rhoswen Tai Mawr Way	CF48 1LN	Dwelling	62.6	63.6	62.7	63.8	50.3	51.3	50.4	51.4
Tai Mawr Farm Tai Mawr Farm Tai Mawr Way	CF48 1LN	Dwelling	60.7	61.7	60.9	61.9	48.6	49.5	48.8	49.7
Trebanog Trebanog Tai Mawr Way	CF48 1LN	Dwelling	64.2	65.3	64.3	65.4	51.8	52.7	51.9	52.8
White Willows White Willows Tai Mawr Way	CF48 1LN	Dwelling	53.1	54.1	53.4	54.4	41.8	42.7	42.0	42.9
Ysgubor Wen Ysgubor Wen Tai Mawr Way	CF48 1LN	Dwelling	71.2	72.4	71.3	72.4	58.1	59.1	58.2	59.1
Heol Llwyn Drysi	CF48 1LP	Dwelling	62.4	63.4	62.5	63.6	50.2	51.0	50.2	51.2
1 Heol Llwyn Drysi	CF48 1LP	Dwelling	54.1	55.0	54.4	55.4	42.7	43.5	43.0	43.9
2 Heol Llwyn Drysi	CF48 1LP	Dwelling	49.7	50.3	50.6	51.7	38.7	39.3	39.6	40.6
3 Heol Llwyn Drysi	CF48 1LP	Dwelling	49.0	49.8	49.6	50.6	38.1	38.8	38.6	39.5
4 Heol Llwyn Drysi	CF48 1LP	Dwelling	48.3	48.9	49.1	50.2	37.5	38.0	38.1	39.2
5 Heol Llwyn Drysi	CF48 1LP	Dwelling	49.0	49.7	49.6	50.6	38.1	38.7	38.6	39.5
6 Heol Llwyn Drysi	CF48 1LP	Dwelling	54.6	55.6	55.0	56.0	43.1	44.0	43.5	44.4
7 Heol Llwyn Drysi	CF48 1LP	Dwelling	48.8	49.6	49.5	50.5	37.9	38.6	38.6	39.5
9 Heol Llwyn Drysi	CF48 1LP	Dwelling	48.7	49.4	49.6	50.6	37.8	38.4	38.6	39.5
11 Heol Llwyn Drysi	CF48 1LP	Dwelling	62.2	63.2	62.4	63.4	50.0	50.9	50.1	51.0
1 Heol Llwyn Gollen	CF48 1LR	Dwelling	55.8	56.5	56.0	57.0	44.2	44.9	44.4	45.3
2 Heol Llwyn Gollen	CF48 1LR	Dwelling	54.9	55.6	55.1	56.1	43.4	44.0	43.6	44.5
3 Heol Llwyn Gollen	CF48 1LR	Dwelling	50.7	51.3	51.1	52.1	39.6	40.2	40.0	40.8
4 Heol Llwyn Gollen	CF48 1LR	Dwelling	54.9	55.6	55.2	56.1	43.4	44.0	43.6	44.5

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
5 Heol Llwyn Gollen	CF48 1LR	Dwelling	50.8	51.5	51.2	52.2	39.7	40.3	40.1	40.9
6 Heol Llwyn Gollen	CF48 1LR	Dwelling	53.8	54.6	54.1	55.1	42.4	43.1	42.7	43.5
7 Heol Llwyn Gollen	CF48 1LR	Dwelling	50.9	51.6	51.3	52.3	39.8	40.4	40.2	41.0
8 Heol Llwyn Gollen	CF48 1LR	Dwelling	47.8	48.3	48.4	49.2	37.0	37.4	37.5	38.3
9 Heol Llwyn Gollen	CF48 1LR	Dwelling	48.0	48.6	48.6	49.6	37.2	37.7	37.7	38.6
10 Heol Llwyn Gollen	CF48 1LR	Dwelling	48.7	49.2	49.1	50.0	37.8	38.3	38.1	38.9
11 Heol Llwyn Gollen	CF48 1LR	Dwelling	47.6	48.1	48.1	49.0	36.8	37.3	37.2	38.1
12 Heol Llwyn Gollen	CF48 1LR	Dwelling	48.5	49.1	49.0	49.9	37.7	38.1	38.1	38.9
13 Heol Llwyn Gollen	CF48 1LR	Dwelling	48.2	48.7	48.8	49.8	37.4	37.8	37.9	38.8
14 Heol Llwyn Gollen	CF48 1LR	Dwelling	48.7	49.3	49.2	50.1	37.8	38.3	38.2	39.1
15 Heol Llwyn Gollen	CF48 1LR	Dwelling	47.9	48.4	48.5	49.5	37.1	37.6	37.6	38.5
16 Heol Llwyn Gollen	CF48 1LR	Dwelling	47.9	48.4	48.6	49.5	37.1	37.5	37.7	38.5
17 Heol Llwyn Gollen	CF48 1LR	Dwelling	48.6	49.1	49.2	50.2	37.7	38.2	38.3	39.2
18 Heol Llwyn Gollen	CF48 1LR	Dwelling	55.1	55.9	55.3	56.3	43.5	44.3	43.7	44.6
19 Heol Llwyn Gollen	CF48 1LR	Dwelling	49.1	49.7	49.8	50.7	38.2	38.7	38.8	39.6
20 Heol Llwyn Gollen	CF48 1LR	Dwelling	48.6	49.2	49.2	50.1	37.7	38.2	38.2	39.1
21 Heol Llwyn Gollen	CF48 1LR	Dwelling	51.9	52.7	52.5	53.5	40.7	41.4	41.2	42.2
22 Heol Llwyn Gollen	CF48 1LR	Dwelling	49.5	50.1	49.9	50.9	38.5	39.1	38.9	39.8
24 Heol Llwyn Gollen	CF48 1LR	Dwelling	54.8	55.5	55.2	56.2	43.3	43.9	43.7	44.6
2 Heol Llwyn Onnen	CF48 1LS	Dwelling	51.7	52.5	52.1	53.1	40.5	41.2	40.9	41.8
4 Heol Llwyn Onnen	CF48 1LS	Dwelling	51.6	52.3	51.9	52.9	40.4	41.0	40.7	41.6
6 Heol Llwyn Onnen	CF48 1LS	Dwelling	47.2	47.8	48.3	49.4	36.5	37.0	37.4	38.4
8 Heol Llwyn Onnen	CF48 1LS	Dwelling	47.6	48.1	48.6	49.7	36.8	37.3	37.7	38.7
10 Heol Llwyn Onnen	CF48 1LS	Dwelling	47.7	48.2	48.6	49.7	36.9	37.3	37.7	38.7
12 Heol Llwyn Onnen	CF48 1LS	Dwelling	48.2	48.8	49.2	50.3	37.4	37.9	38.3	39.3
14 Heol Llwyn Onnen	CF48 1LS	Dwelling	48.4	49.0	49.4	50.4	37.6	38.0	38.4	39.4
16 Heol Llwyn Onnen	CF48 1LS	Dwelling	47.9	48.4	48.9	50.0	37.1	37.6	38.0	38.9
18 Heol Llwyn Onnen	CF48 1LS	Dwelling	48.4	48.9	49.6	50.7	37.6	38.0	38.6	39.6
20 Heol Llwyn Onnen	CF48 1LS	Dwelling	48.8	49.4	50.1	51.2	37.9	38.4	39.0	40.0
22 Heol Llwyn Onnen	CF48 1LS	Dwelling	54.8	55.7	55.2	56.3	43.3	44.1	43.7	44.6
2 Heol Llwyn Deri	CF48 1LT	Dwelling	47.8	48.3	48.6	49.6	37.0	37.5	37.7	38.6
4 Heol Llwyn Deri	CF48 1LT	Dwelling	47.3	47.8	48.1	49.1	36.5	37.0	37.2	38.1
6 Heol Llwyn Deri	CF48 1LT	Dwelling	47.2	47.7	48.0	49.0	36.4	36.9	37.2	38.0
8 Heol Llwyn Deri	CF48 1LT	Dwelling	47.8	48.3	48.6	49.6	37.0	37.5	37.7	38.6
10 Heol Llwyn Deri	CF48 1LT	Dwelling	47.2	47.7	48.1	49.2	36.5	36.9	37.3	38.2
12 Heol Llwyn Deri	CF48 1LT	Dwelling	47.3	47.8	48.2	49.2	36.5	37.0	37.3	38.3
14 Heol Llwyn Deri	CF48 1LT	Dwelling	47.3	47.8	48.2	49.3	36.5	37.0	37.4	38.3
16 Heol Llwyn Deri	CF48 1LT	Dwelling	47.3	47.8	48.3	49.4	36.5	37.0	37.5	38.4
18 Heol Llwyn Deri	CF48 1LT	Dwelling	47.3	47.8	48.3	49.4	36.5	37.0	37.5	38.4
20 Heol Llwyn Deri	CF48 1LT	Dwelling	47.3	47.8	48.7	49.7	36.6	37.0	37.8	38.7
22 Heol Llwyn Deri	CF48 1LT	Dwelling	59.6	60.5	59.8	60.9	47.6	48.4	47.8	48.8
1 Heol Twyn Du	CF48 1LU	Dwelling	53.2	53.8	53.7	54.7	41.9	42.4	42.3	43.2
2 Heol Twyn Du	CF48 1LU	Dwelling	48.3	48.8	48.9	49.8	37.5	37.9	38.0	38.8
3 Heol Twyn Du	CF48 1LU	Dwelling	52.2	52.8	52.7	53.7	40.9	41.5	41.4	42.3
4 Heol Twyn Du	CF48 1LU	Dwelling	50.9	51.5	51.4	52.3	39.8	40.3	40.2	41.0
5 Heol Twyn Du	CF48 1LU	Dwelling	54.6	55.3	54.9	55.9	43.1	43.7	43.4	44.3
6 Heol Twyn Du	CF48 1LU	Dwelling	49.9	50.4	50.2	51.1	38.9	39.3	39.2	40.0
7 Heol Twyn Du	CF48 1LU	Dwelling	48.3	48.7	48.9	49.7	37.4	37.8	38.0	38.7
8 Heol Twyn Du	CF48 1LU	Dwelling	46.9	47.3	47.5	48.5	36.2	36.6	36.7	37.6
9 Heol Twyn Du	CF48 1LU	Dwelling	49.3	49.8	49.8	50.7	38.3	38.8	38.8	39.6
10 Heol Twyn Du	CF48 1LU	Dwelling	51.4	52.0	51.9	52.9	40.2	40.7	40.7	41.6
11 Heol Twyn Du	CF48 1LU	Dwelling	48.3	48.7	48.8	49.7	37.4	37.8	37.9	38.7
12 Heol Twyn Du	CF48 1LU	Dwelling	50.6	51.2	51.1	52.1	39.5	40.0	40.0	40.8
13 Heol Twyn Du	CF48 1LU	Dwelling	49.7	50.2	50.2	51.1	38.7	39.2	39.2	40.0
14 Heol Twyn Du	CF48 1LU	Dwelling	50.6	51.2	51.1	52.1	39.6	40.1	40.0	40.9
15 Heol Twyn Du	CF48 1LU	Dwelling	47.8	48.3	48.6	49.5	37.0	37.5	37.7	38.5
16 Heol Twyn Du	CF48 1LU	Dwelling	50.3	50.9	50.8	51.7	39.3	39.8	39.7	40.5
17 Heol Twyn Du	CF48 1LU	Dwelling	49.0	49.5	49.6	50.6	38.1	38.6	38.7	39.5
18 Heol Twyn Du	CF48 1LU	Dwelling	51.0	51.6	51.5	52.4	39.9	40.4	40.3	41.2
19 Heol Twyn Du	CF48 1LU	Dwelling	52.2	52.7	52.9	54.0	41.0	41.4	41.6	42.5
20 Heol Twyn Du	CF48 1LU	Dwelling	48.5	49.1	49.1	50.1	37.6	38.1	38.1	39.0
22 Heol Twyn Du	CF48 1LU	Dwelling	50.8	51.4	51.3	52.3	39.7	40.3	40.2	41.1
24 Heol Twyn Du	CF48 1LU	Dwelling	50.8	51.4	51.3	52.3	39.7	40.2	40.2	41.0
26 Heol Twyn Du	CF48 1LU	Dwelling	51.1	51.7	51.7	52.7	40.0	40.6	40.5	41.4
28 Heol Twyn Du	CF48 1LU	Dwelling	50.1	50.7	50.7	51.7	39.1	39.6	39.6	40.5
30 Heol Twyn Du	CF48 1LU	Dwelling	47.4	47.9	48.0	49.0	36.6	37.1	37.1	38.0
32 Heol Twyn Du	CF48 1LU	Dwelling	50.4	51.0	50.8	51.9	39.3	39.9	39.7	40.6
34 Heol Twyn Du	CF48 1LU	Dwelling	50.7	51.5	51.6	52.5	39.6	40.3	40.4	41.3
36 Heol Twyn Du	CF48 1LU	Dwelling	51.2	51.8	51.6	52.7	40.0	40.6	40.5	41.4
38 Heol Twyn Du	CF48 1LU	Dwelling	50.9	51.5	51.3	52.4	39.8	40.3	40.2	41.1
40 Heol Twyn Du	CF48 1LU	Dwelling	50.9	51.5	51.3	52.3	39.8	40.3	40.2	41.1
42 Heol Twyn Du	CF48 1LU	Dwelling	51.9	52.5	52.6	53.7	40.7	41.2	41.3	42.3
44 Heol Twyn Du	CF48 1LU	Dwelling	47.9	48.4	48.7	49.8	37.1	37.5	37.8	38.8
46 Heol Twyn Du	CF48 1LU	Dwelling	48.0	48.5	49.1	50.2	37.2	37.6	38.2	39.1
48 Heol Twyn Du	CF48 1LU	Dwelling	53.0	53.6	54.1	55.0	41.7	42.2	42.6	43.5
1 Heol Llwyn Brain	CF48 1LW	Dwelling	52.0	52.8	52.3	53.3	40.7	41.5	41.1	41.9
2 Heol Llwyn Brain	CF48 1LW	Dwelling	52.6	53.4	53.0	53.9	41.3	42.0	41.6	42.5
3 Heol Llwyn Brain	CF48 1LW	Dwelling	50.9	51.6	51.4	52.4	39.8	40.4	40.2	41.1
4 Heol Llwyn Brain	CF48 1LW	Dwelling	56.7	57.6	56.9	57.9	45.0	45.8	45.2	46.1
5 Heol Llwyn Brain	CF48 1LW	Dwelling	50.5	51.2	51.0	52.0	39.4	40.1	39.9	40.8
6 Heol Llwyn Brain	CF48 1LW	Dwelling	52.3	53.2	52.6	53.7	41.1	41.8	41.4	42.3
7 Heol Llwyn Brain	CF48 1LW	Dwelling	50.9	51.7	51.4	52.4	39.8	40.5	40.3	41.1
8 Heol Llwyn Brain	CF48 1LW	Dwelling	47.6	48.3	47.9	49.0	36.8	37.4	37.1	38.0
9 Heol Llwyn Brain	CF48 1LW	Dwelling	51.9	52.7	52.4	53.4	40.7	41.4	41.1	42.0
10 Heol Llwyn Brain	CF48 1LW	Dwelling	59.5	60.4	59.7	60.7	47.6	48.4	47.7	48.6
11 Heol Llwyn Brain	CF48 1LW	Dwelling	51.4	52.2	51.9	52.9	40.2	41.0	40.7	41.6
12 Heol Llwyn Brain	CF48 1LW	Dwelling	51.9	52.7	52.3	53.4	40.7	41.4	41.1	42.0
13 Heol Llwyn Brain	CF48 1LW	Dwelling	59.9	60.9	60.1	61.1	47.9	48.8	48.1	49.0
15 Heol Llwyn Brain	CF48 1LW	Dwelling	60.1	61.1	60.3	61.3	48.1	49.0	48.2	49.2
17 Heol Llwyn Brain	CF48 1LW	Dwelling	62.6	63.6	62.8	63.8	50.3	51.2	50.5	51.4
2 Heol Bryn Selu	CF48 1LY	Dwelling	56.3	57.2	57.7	58.7	44.7	45.5	45.9	46.8
4 Heol Bryn Selu	CF48 1LY	Dwelling	52.3	52.8	54.0	55.0	41.0	41.5	42.6	43.5
6 Heol Bryn Selu	CF48 1LY	Dwelling	55.5	56.3	56.6	57.5	43.9	44.6	44.9	45.7
8 Heol Bryn Selu	CF48 1LY	Dwelling	57.5	58.2	58.3	59.4	45.7	46.3	46.5	47.4
10 Heol Bryn Selu	CF48 1LY	Dwelling	51.0	51.5	53.9	54.9	39.9	40.3	42.5	43.4
12 Heol Bryn Selu	CF48 1LY	Dwelling	53.0	53.7	55.5	56.4	41.7	42.4	43.9	44.8
14 Heol Bryn Selu	CF48 1LY	Dwelling	52.7	53.0	54.8	55.9	41.4	41.7	43.3	44.3
2 Heol Brychan	CF48 1NA	Dwelling	54.2	54.9	54.9	55.8	42.7	43.3	43.4	44.2
4 Heol Brychan	CF48 1NA	Dwelling	54.8	55.5	55.5	56.4	43.3	44.0	44.0	44.8
6 Heol Brychan	CF48 1NA	Dwelling	55.1	55.7	55.7	56.7	43.5	44.1	44.1	45.0
8 Heol Brychan	CF48 1NA	Dwelling	55.4	56.0	56.0	57.0	43.9	44.4	44.4	45.3
10 Heol Brychan	CF48 1NA	Dwelling	55.5	56.1	56.1	57.1	43.9	44.5	44.5	45.4
12 Heol Brychan	CF48 1NA	Dwelling	55.2	55.8	56.1	57.1	43.7	44.2	44.5	45.4
14 Heol Brychan	CF48 1NA	Dwelling	54.4	55.0	55.4	56.3	42.9	43.5	43.8	44.6
16 Heol Brychan	CF48 1NA	Dwelling	54.0	54.7	55.2	56.1	42.6	43.2	43.7	44.5
18 Heol Brychan	CF48 1NA	Dwelling	57.2	57.9	57.9	58.8	45.5	46.1	46.0	46.9
20 Heol Brychan	CF48 1NA	Dwelling	57.2	57.9	57.9	58.9	45.5	46.1	46.1	46.9

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
22 Heol Brychan	CF48 1NA	Dwelling	57.3	58.0	58.0	58.9	45.5	46.2	46.2	47.0
24 Heol Brychan	CF48 1NA	Dwelling	55.1	55.7	56.1	57.0	43.6	44.1	44.5	45.3
26 Heol Brychan	CF48 1NA	Dwelling	54.5	55.1	55.7	56.6	43.0	43.6	44.1	44.9
28 Heol Brychan	CF48 1NA	Dwelling	55.3	55.9	56.3	57.3	43.7	44.3	44.7	45.5
30 Heol Brychan	CF48 1NA	Dwelling	55.0	55.7	56.3	57.2	43.5	44.1	44.7	45.5
32 Heol Brychan	CF48 1NA	Dwelling	55.2	55.9	56.5	57.4	43.7	44.3	44.8	45.7
34 Heol Brychan	CF48 1NA	Dwelling	55.2	55.9	56.6	57.5	43.6	44.2	44.9	45.7
36 Heol Brychan	CF48 1NA	Dwelling	50.4	51.0	51.5	52.5	39.3	39.9	40.3	41.2
38 Heol Brychan	CF48 1NA	Dwelling	49.8	50.6	50.7	51.6	38.8	39.5	39.6	40.5
40 Heol Brychan	CF48 1NA	Dwelling	52.0	52.5	52.6	53.8	40.8	41.2	41.4	42.4
42 Heol Brychan	CF48 1NA	Dwelling	52.0	52.5	52.7	53.9	40.8	41.2	41.5	42.5
44 Heol Brychan	CF48 1NA	Dwelling	48.6	49.0	49.3	50.5	37.7	38.0	38.4	39.4
46 Heol Brychan	CF48 1NA	Dwelling	52.2	52.7	53.0	54.1	41.0	41.4	41.7	42.7
48 Heol Brychan	CF48 1NA	Dwelling	50.8	51.4	52.9	53.7	39.7	40.3	41.6	42.3
Gellideg Foundation Shop 1 23-25 Heol Tai Mawr	CF48 1ND	OSR	53.4	54.0	53.7	54.6	42.1	42.5	42.3	43.1
Fish Shop Flat Above Heol Tai Mawr	CF48 1ND	Dwelling	54.5	55.1	54.8	55.7	43.0	43.5	43.3	44.1
Gellideg Foundation Shop 2 Heol Tai Mawr	CF48 1ND	OSR	54.9	55.5	55.1	56.0	43.4	43.9	43.6	44.4
22 Heol Tai Mawr	CF48 1ND	Dwelling	51.9	52.4	52.4	53.4	40.7	41.1	41.2	42.0
24 Heol Tai Mawr	CF48 1ND	Dwelling	51.8	52.2	52.3	53.3	40.6	41.0	41.0	41.9
26 Heol Tai Mawr	CF48 1ND	Dwelling	55.2	55.8	55.5	56.5	43.7	44.2	43.9	44.8
28 Heol Tai Mawr	CF48 1ND	Dwelling	53.8	54.2	54.2	55.1	42.4	42.8	42.7	43.6
30 Heol Tai Mawr	CF48 1ND	Dwelling	48.1	48.6	48.8	49.7	37.3	37.7	37.9	38.7
32 Heol Tai Mawr	CF48 1ND	Dwelling	51.8	52.4	52.6	53.5	40.6	41.2	41.3	42.1
34 Heol Tai Mawr	CF48 1ND	Dwelling	48.2	48.7	49.1	50.0	37.3	37.8	38.1	39.0
36 Heol Tai Mawr	CF48 1ND	Dwelling	54.3	54.8	55.2	56.0	42.9	43.3	43.6	44.4
Heol Bryn Man	CF48 1NE	Dwelling	55.0	55.6	56.0	56.9	43.5	44.0	44.3	45.2
1 Heol Bryn Man	CF48 1NE	Dwelling	54.5	55.1	55.4	56.3	43.0	43.6	43.8	44.6
2 Heol Bryn Man	CF48 1NE	Dwelling	55.2	55.8	55.9	56.8	43.7	44.2	44.3	45.1
4 Heol Bryn Man	CF48 1NE	Dwelling	55.1	55.7	55.9	56.8	43.6	44.1	44.3	45.1
5 Heol Bryn Man	CF48 1NE	Dwelling	54.6	55.1	55.6	56.6	43.1	43.6	44.0	44.9
6 Heol Bryn Man	CF48 1NE	Dwelling	55.5	56.0	56.4	57.3	43.9	44.4	44.7	45.5
7 Heol Bryn Man	CF48 1NE	Dwelling	55.5	56.1	56.5	57.4	43.9	44.5	44.8	45.6
8 Heol Bryn Man	CF48 1NE	Dwelling	52.2	52.9	53.5	54.5	41.0	41.6	42.2	43.0
9 Heol Bryn Man	CF48 1NE	Dwelling	55.6	56.2	56.6	57.5	44.1	44.6	44.9	45.7
10 Heol Bryn Man	CF48 1NE	Dwelling	52.4	53.0	54.1	55.0	41.1	41.7	42.6	43.4
11 Heol Bryn Man	CF48 1NE	Dwelling	54.5	55.1	55.6	56.5	43.1	43.6	44.0	44.9
12 Heol Bryn Man	CF48 1NE	Dwelling	51.9	52.6	53.8	54.7	40.7	41.3	42.4	43.2
13 Heol Bryn Man	CF48 1NE	Dwelling	55.0	55.6	56.0	57.0	43.5	44.0	44.4	45.3
14 Heol Bryn Man	CF48 1NE	Dwelling	52.0	52.6	54.1	55.1	40.7	41.3	42.7	43.5
15 Heol Bryn Man	CF48 1NE	Dwelling	54.3	54.9	55.4	56.4	42.9	43.4	43.9	44.7
16 Heol Bryn Man	CF48 1NE	Dwelling	52.1	52.8	53.9	54.8	40.9	41.5	42.5	43.3
17 Heol Bryn Man	CF48 1NE	Dwelling	54.9	55.4	56.0	56.9	43.4	43.9	44.4	45.2
18 Heol Bryn Man	CF48 1NE	Dwelling	52.3	52.9	54.2	55.1	41.0	41.6	42.7	43.6
19 Heol Bryn Man	CF48 1NE	Dwelling	48.4	48.7	49.2	50.2	37.6	37.9	38.3	39.1
20 Heol Bryn Man	CF48 1NE	Dwelling	52.3	52.9	54.3	55.2	41.0	41.6	42.8	43.7
21 Heol Bryn Man	CF48 1NE	Dwelling	48.5	48.8	49.2	50.3	37.7	37.9	38.3	39.2
22 Heol Bryn Man	CF48 1NE	Dwelling	51.8	52.5	54.2	55.1	40.6	41.2	42.7	43.6
23 Heol Bryn Man	CF48 1NE	Dwelling	55.6	56.2	56.1	57.2	44.0	44.6	44.5	45.4
24 Heol Bryn Man	CF48 1NE	Dwelling	52.6	53.3	54.6	55.5	41.3	41.9	43.1	43.9
25 Heol Bryn Man	CF48 1NE	Dwelling	55.6	56.1	56.8	57.8	44.0	44.5	45.1	46.0
26 Heol Bryn Man	CF48 1NE	Dwelling	51.9	52.6	54.0	54.9	40.7	41.3	42.6	43.4
27 Heol Bryn Man	CF48 1NE	Dwelling	53.7	54.3	55.0	56.0	42.3	42.8	43.5	44.3
28 Heol Bryn Man	CF48 1NE	Dwelling	52.7	53.3	54.6	55.6	41.4	42.0	43.1	44.0
29 Heol Bryn Man	CF48 1NE	Dwelling	54.9	55.5	56.4	57.3	43.4	43.9	44.7	45.6
30 Heol Bryn Man	CF48 1NE	Dwelling	52.4	53.1	54.5	55.5	41.2	41.8	43.1	43.9
31 Heol Bryn Man	CF48 1NE	Dwelling	55.0	55.6	56.5	57.4	43.5	44.0	44.8	45.7
32 Heol Bryn Man	CF48 1NE	Dwelling	52.9	53.6	54.8	55.8	41.6	42.2	43.3	44.2
33 Heol Bryn Man	CF48 1NE	Dwelling	54.9	55.5	56.4	57.4	43.4	43.9	44.8	45.6
34 Heol Bryn Man	CF48 1NE	Dwelling	54.0	54.6	55.6	56.6	42.6	43.2	44.0	44.9
35 Heol Bryn Man	CF48 1NE	Dwelling	54.9	55.5	56.4	57.3	43.4	43.9	44.7	45.6
36 Heol Bryn Man	CF48 1NE	Dwelling	55.2	55.8	56.7	57.7	43.7	44.2	45.0	45.9
37 Heol Bryn Man	CF48 1NE	Dwelling	54.7	55.4	56.4	57.4	43.2	43.8	44.8	45.6
38 Heol Bryn Man	CF48 1NE	Dwelling	50.8	51.2	53.0	54.0	39.7	40.0	41.7	42.6
39 Heol Bryn Man	CF48 1NE	Dwelling	53.9	54.5	55.6	56.6	42.5	43.1	44.0	44.9
41 Heol Bryn Man	CF48 1NE	Dwelling	52.9	53.6	54.8	55.7	41.6	42.2	43.3	44.1
43 Heol Bryn Man	CF48 1NE	Dwelling	53.7	54.4	55.3	56.3	42.3	42.9	43.8	44.6
45 Heol Bryn Man	CF48 1NE	Dwelling	54.1	54.6	54.7	55.8	42.7	43.1	43.2	44.2
Ar-Y-Bryn Bungalow Ar-Y-Bryn Bungalow Heol Tai Mawr	CF48 1NF	Dwelling	63.6	63.9	65.1	65.3	51.2	51.5	52.6	52.8
38 Heol Tai Mawr	CF48 1NF	Dwelling	53.2	53.7	53.8	54.7	41.9	42.3	42.4	43.2
40 Heol Tai Mawr	CF48 1NF	Dwelling	52.6	53.1	53.1	54.0	41.3	41.8	41.8	42.6
42 Heol Tai Mawr	CF48 1NF	Dwelling	52.3	52.7	53.0	53.9	41.1	41.4	41.7	42.5
44 Heol Tai Mawr	CF48 1NF	Dwelling	52.2	52.6	52.9	53.8	41.0	41.3	41.6	42.4
46 Heol Tai Mawr	CF48 1NF	Dwelling	55.1	55.6	55.6	56.5	43.6	44.0	44.1	44.8
48 Heol Tai Mawr	CF48 1NF	Dwelling	55.8	56.3	56.3	57.1	44.2	44.6	44.6	45.4
50 Heol Tai Mawr	CF48 1NF	Dwelling	53.4	53.8	54.2	55.1	42.0	42.4	42.8	43.5
52 Heol Tai Mawr	CF48 1NF	Dwelling	52.8	53.2	53.4	54.3	41.5	41.9	42.1	42.8
54 Heol Tai Mawr	CF48 1NF	Dwelling	53.0	53.3	53.7	54.6	41.7	42.0	42.3	43.1
56 Heol Tai Mawr	CF48 1NF	Dwelling	53.3	53.6	54.1	55.0	42.0	42.3	42.7	43.4
58 Heol Tai Mawr	CF48 1NF	Dwelling	53.3	53.7	54.1	55.0	42.0	42.3	42.7	43.4
60 Heol Tai Mawr	CF48 1NF	Dwelling	53.3	53.6	54.1	55.0	42.0	42.2	42.7	43.4
62 Heol Tai Mawr	CF48 1NF	Dwelling	55.1	55.5	55.8	56.4	43.6	43.9	44.2	44.7
64 Heol Tai Mawr	CF48 1NF	Dwelling	51.9	52.3	52.6	53.2	40.7	41.0	41.3	41.8
1 Heol Bryn Padell	CF48 1NG	Dwelling	51.2	51.9	51.9	52.8	40.1	40.7	40.7	41.5
2 Heol Bryn Padell	CF48 1NG	Dwelling	54.2	54.7	54.7	55.6	42.8	43.2	43.2	44.0
3 Heol Bryn Padell	CF48 1NG	Dwelling	50.7	51.0	51.4	52.3	39.6	39.9	40.3	41.1
4 Heol Bryn Padell	CF48 1NG	Dwelling	53.9	54.4	54.5	55.4	42.5	43.0	43.1	43.9
5 Heol Bryn Padell	CF48 1NG	Dwelling	54.9	55.4	55.4	56.4	43.4	43.8	43.9	44.7
6 Heol Bryn Padell	CF48 1NG	Dwelling	54.3	54.8	55.0	55.9	42.9	43.3	43.5	44.3
7 Heol Bryn Padell	CF48 1NG	Dwelling	46.8	47.1	47.9	48.8	36.1	36.4	37.1	37.9
8 Heol Bryn Padell	CF48 1NG	Dwelling	53.3	53.8	54.0	54.9	42.0	42.4	42.6	43.4
9 Heol Bryn Padell	CF48 1NG	Dwelling	53.4	53.9	53.9	54.8	42.1	42.5	42.5	43.3
10 Heol Bryn Padell	CF48 1NG	Dwelling	53.3	53.8	54.0	54.9	42.0	42.4	42.6	43.4
11 Heol Bryn Padell	CF48 1NG	Dwelling	50.7	50.9	51.5	52.4	39.6	39.8	40.3	41.1
12 Heol Bryn Padell	CF48 1NG	Dwelling	50.3	50.9	51.5	52.5	39.3	39.8	40.3	41.2
13 Heol Bryn Padell	CF48 1NG	Dwelling	52.6	53.0	53.2	54.1	41.3	41.7	41.8	42.7
14 Heol Bryn Padell	CF48 1NG	Dwelling	53.5	53.9	54.3	55.4	42.1	42.5	42.9	43.8
15 Heol Bryn Padell	CF48 1NG	Dwelling	51.5	52.1	53.1	54.0	40.3	40.9	41.7	42.6
16 Heol Bryn Padell	CF48 1NG	Dwelling	53.5	53.9	54.3	55.4	42.2	42.5	42.9	43.8
17 Heol Bryn Padell	CF48 1NG	Dwelling	50.7	51.3	52.3	53.2	39.6	40.1	41.0	41.9
18 Heol Bryn Padell	CF48 1NG	Dwelling	53.0	53.4	53.9	54.9	41.7	42.0	42.5	43.4
19 Heol Bryn Padell	CF48 1NG	Dwelling	53.9	54.4	54.7	55.7	42.5	43.0	43.2	44.1
20 Heol Bryn Padell	CF48 1NG	Dwelling	53.5	53.9	54.3	55.4	42.2	42.5	42.9	43.8
21 Heol Bryn Padell	CF48 1NG	Dwelling	53.2	53.7	53.8	54.8	41.8	42.3	42.4	43.3
22 Heol Bryn Padell	CF48 1NG	Dwelling	53.0	53.4	53.8	54.8	41.7	42.1	42.4	43.3
23 Heol Bryn Padell	CF48 1NG	Dwelling	47.2	47.6	48.2	49.1	36.5	36.8	37.3	38.2
24 Heol Bryn Padell	CF48 1NG	Dwelling	53.3	53.7	54.2	55.2	42.0	42.3	42.7	43.6
25 Heol Bryn Padell	CF48 1NG	Dwelling	51.0	51.4	51.7	52.6	39.9	40.2	40.5	41.3

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
26 Heol Bryn Padell	CF48 1NG	Dwelling	53.5	53.9	54.3	55.3	42.2	42.5	42.9	43.8
27 Heol Bryn Padell	CF48 1NG	Dwelling	52.8	53.4	54.1	55.1	41.5	42.0	42.7	43.6
28 Heol Bryn Padell	CF48 1NG	Dwelling	53.7	54.0	54.5	55.5	42.3	42.6	43.0	43.9
29 Heol Bryn Padell	CF48 1NG	Dwelling	55.5	56.1	56.1	57.1	43.9	44.5	44.5	45.4
30 Heol Bryn Padell	CF48 1NG	Dwelling	53.5	53.9	54.4	55.5	42.1	42.5	43.0	43.9
31 Heol Bryn Padell	CF48 1NG	Dwelling	49.8	50.3	51.2	52.1	38.8	39.3	40.1	40.9
32 Heol Bryn Padell	CF48 1NG	Dwelling	53.5	53.8	54.4	55.4	42.1	42.4	42.9	43.8
33 Heol Bryn Padell	CF48 1NG	Dwelling	50.2	50.7	50.8	51.7	39.2	39.6	39.7	40.5
34 Heol Bryn Padell	CF48 1NG	Dwelling	53.1	53.5	54.0	55.1	41.8	42.1	42.6	43.5
35 Heol Bryn Padell	CF48 1NG	Dwelling	45.9	46.5	47.8	48.8	35.3	35.8	37.0	37.9
36 Heol Bryn Padell	CF48 1NG	Dwelling	53.5	53.9	54.4	55.4	42.1	42.4	42.9	43.8
37 Heol Bryn Padell	CF48 1NG	Dwelling	57.2	57.7	57.9	59.0	45.5	45.9	46.0	47.0
38 Heol Bryn Padell	CF48 1NG	Dwelling	53.0	53.3	54.1	55.2	41.7	42.0	42.7	43.7
39 Heol Bryn Padell	CF48 1NG	Dwelling	49.4	49.9	51.6	52.7	38.5	38.9	40.5	41.4
40 Heol Bryn Padell	CF48 1NG	Dwelling	53.2	53.7	54.3	55.5	41.9	42.3	42.9	43.9
41 Heol Bryn Padell	CF48 1NG	Dwelling	56.8	57.3	57.5	58.6	45.1	45.5	45.7	46.7
42 Heol Bryn Padell	CF48 1NG	Dwelling	53.6	54.0	54.6	55.8	42.2	42.6	43.1	44.2
43 Heol Bryn Padell	CF48 1NG	Dwelling	49.0	49.4	51.2	52.4	38.0	38.5	40.1	41.1
44 Heol Bryn Padell	CF48 1NG	Dwelling	53.8	54.3	54.8	56.0	42.4	42.8	43.3	44.4
45 Heol Bryn Padell	CF48 1NG	Dwelling	56.8	57.3	57.5	58.6	45.1	45.5	45.7	46.7
46 Heol Bryn Padell	CF48 1NG	Dwelling	54.3	54.7	55.2	56.4	42.8	43.2	43.7	44.7
47 Heol Bryn Padell	CF48 1NG	Dwelling	47.3	47.8	49.6	50.7	36.6	37.0	38.6	39.6
48 Heol Bryn Padell	CF48 1NG	Dwelling	47.7	48.1	48.8	50.0	36.9	37.2	37.9	39.0
50 Heol Bryn Padell	CF48 1NG	Dwelling	56.0	56.4	56.8	58.0	44.4	44.7	45.1	46.2
1 Bro-Y-Ffrwd	CF48 1NH	Dwelling	53.9	54.2	54.5	55.3	42.5	42.8	43.0	43.8
2 Bro-Y-Ffrwd	CF48 1NH	Dwelling	55.6	55.9	56.0	56.7	44.0	44.2	44.4	45.0
3 Bro-Y-Ffrwd	CF48 1NH	Dwelling	54.1	54.4	54.7	55.6	42.7	43.0	43.2	44.0
4 Bro-Y-Ffrwd	CF48 1NH	Dwelling	54.6	54.9	55.1	55.8	43.2	43.4	43.6	44.2
5 Bro-Y-Ffrwd	CF48 1NH	Dwelling	53.9	54.3	54.5	55.4	42.4	42.8	43.0	43.8
6 Bro-Y-Ffrwd	CF48 1NH	Dwelling	53.8	54.1	54.3	55.0	42.4	42.7	42.9	43.5
7 Bro-Y-Ffrwd	CF48 1NH	Dwelling	51.3	51.8	52.1	53.1	40.2	40.6	40.8	41.7
8 Bro-Y-Ffrwd	CF48 1NH	Dwelling	53.3	53.7	54.2	55.0	41.9	42.3	42.7	43.5
9 Bro-Y-Ffrwd	CF48 1NH	Dwelling	53.0	53.3	53.9	54.8	41.7	42.0	42.5	43.3
10 Bro-Y-Ffrwd	CF48 1NH	Dwelling	53.1	53.4	53.9	54.7	41.8	42.0	42.5	43.2
11 Bro-Y-Ffrwd	CF48 1NH	Dwelling	50.9	51.3	52.1	53.0	39.8	40.2	40.9	41.7
12 Bro-Y-Ffrwd	CF48 1NH	Dwelling	49.9	50.2	51.1	51.9	38.8	39.1	39.9	40.6
14 Bro-Y-Ffrwd	CF48 1NH	Dwelling	50.8	51.2	52.2	53.0	39.7	40.0	41.0	41.7
16 Bro-Y-Ffrwd	CF48 1NH	Dwelling	51.1	51.5	52.5	53.2	40.0	40.3	41.2	41.8
17 Bro-Y-Ffrwd	CF48 1NH	Dwelling	53.2	53.5	54.0	55.0	41.9	42.2	42.6	43.4
18 Bro-Y-Ffrwd	CF48 1NH	Dwelling	64.8	65.1	66.4	66.6	52.3	52.6	53.7	53.9
20 Bro-Y-Ffrwd	CF48 1NH	Dwelling	63.3	63.6	64.9	65.1	51.0	51.3	52.4	52.6
31 Bro-Y-Ffrwd	CF48 1NH	Dwelling	51.5	51.7	52.7	53.4	40.3	40.5	41.4	42.0
33 Bro-Y-Ffrwd	CF48 1NH	Dwelling	51.4	51.6	52.8	53.4	40.2	40.4	41.5	42.0
35 Bro-Y-Ffrwd	CF48 1NH	Dwelling	52.4	52.6	53.8	54.4	41.2	41.4	42.4	42.9
37 Bro-Y-Ffrwd	CF48 1NH	Dwelling	60.7	61.0	62.3	62.5	48.6	48.9	50.0	50.2
39 Bro-Y-Ffrwd	CF48 1NH	Dwelling	59.2	59.5	60.8	61.0	47.3	47.5	48.7	48.8
1 Beacon Heights	CF48 1NL	Dwelling	58.0	58.6	59.5	60.4	46.2	46.7	47.5	48.3
2 Beacon Heights	CF48 1NL	Dwelling	55.3	55.8	57.2	58.2	43.8	44.2	45.4	46.4
3 Beacon Heights	CF48 1NL	Dwelling	51.9	52.4	53.2	54.2	40.7	41.2	41.8	42.8
4 Beacon Heights	CF48 1NL	Dwelling	54.3	54.8	55.7	56.7	42.9	43.3	44.1	45.0
5 Beacon Heights	CF48 1NL	Dwelling	60.1	60.5	62.4	63.3	48.1	48.4	50.2	51.0
6 Beacon Heights	CF48 1NL	Dwelling	61.4	61.8	63.7	64.5	49.3	49.6	51.3	52.0
7 Beacon Heights	CF48 1NL	Dwelling	67.3	67.8	69.2	70.0	54.5	55.0	56.3	57.0
8 Beacon Heights	CF48 1NL	Dwelling	60.3	60.7	62.7	63.6	48.2	48.6	50.4	51.2
9 Beacon Heights	CF48 1NL	Dwelling	59.4	59.8	61.8	62.8	47.5	47.8	49.6	50.5
10 Beacon Heights	CF48 1NL	Dwelling	55.9	56.3	58.7	59.7	44.3	44.7	46.8	47.7
11 Beacon Heights	CF48 1NL	Dwelling	57.7	58.1	60.2	61.3	45.9	46.2	48.2	49.1
12 Beacon Heights	CF48 1NL	Dwelling	56.2	56.6	58.4	59.4	44.6	44.9	46.5	47.5
13 Beacon Heights	CF48 1NL	Dwelling	62.3	62.7	64.3	65.1	50.1	50.4	51.8	52.6
14 Beacon Heights	CF48 1NL	Dwelling	60.2	60.5	62.4	63.3	48.1	48.5	50.2	51.0
15 Beacon Heights	CF48 1NL	Dwelling	57.6	58.0	60.1	61.1	45.8	46.2	48.1	49.0
16 Beacon Heights	CF48 1NL	Dwelling	59.5	59.9	61.7	62.5	47.6	47.9	49.5	50.2
17 Beacon Heights	CF48 1NL	Dwelling	62.1	62.5	64.2	64.9	49.9	50.3	51.7	52.4
18 Beacon Heights	CF48 1NL	Dwelling	57.8	58.2	60.1	60.8	46.0	46.4	48.1	48.7
19 Beacon Heights	CF48 1NL	Dwelling	63.3	63.7	65.2	65.8	51.0	51.3	52.6	53.2
20 Beacon Heights	CF48 1NL	Dwelling	47.4	47.8	49.0	50.1	36.6	37.0	38.1	39.0
21 Beacon Heights	CF48 1NL	Dwelling	52.8	53.3	55.2	56.0	41.5	41.9	43.7	44.3
22 Beacon Heights	CF48 1NL	Dwelling	57.3	57.8	59.5	60.2	45.6	46.0	47.5	48.1
23 Beacon Heights	CF48 1NL	Dwelling	61.2	61.7	63.2	63.8	49.1	49.5	50.9	51.4
24 Beacon Heights	CF48 1NL	Dwelling	60.9	61.3	62.8	63.4	48.8	49.2	50.5	51.0
25 Beacon Heights	CF48 1NL	Dwelling	57.9	58.3	59.9	60.6	46.1	46.4	47.9	48.6
26 Beacon Heights	CF48 1NL	Dwelling	52.7	53.1	54.6	55.5	41.4	41.8	43.2	43.9
27 Beacon Heights	CF48 1NL	Dwelling	52.6	53.0	54.6	55.5	41.3	41.7	43.1	43.9
28 Beacon Heights	CF48 1NL	Dwelling	55.6	55.9	57.7	58.6	44.0	44.3	45.9	46.8
29 Beacon Heights	CF48 1NL	Dwelling	55.1	55.3	56.8	57.8	43.6	43.8	45.1	46.0
30 Beacon Heights	CF48 1NL	Dwelling	54.1	54.4	56.2	57.2	42.7	43.0	44.6	45.5
31 Beacon Heights	CF48 1NL	Dwelling	54.0	54.3	55.7	56.7	42.6	42.8	44.1	45.0
32 Beacon Heights	CF48 1NL	Dwelling	54.3	54.5	55.7	56.7	42.8	43.0	44.1	45.0
33 Beacon Heights	CF48 1NL	Dwelling	55.0	55.3	56.4	57.4	43.5	43.8	44.7	45.6
34 Beacon Heights	CF48 1NL	Dwelling	54.7	54.9	56.0	57.0	43.2	43.4	44.4	45.3
35 Beacon Heights	CF48 1NL	Dwelling	54.1	54.4	55.4	56.4	42.7	43.0	43.8	44.7
36 Beacon Heights	CF48 1NL	Dwelling	53.7	54.1	55.2	56.2	42.3	42.7	43.7	44.5
37 Beacon Heights	CF48 1NL	Dwelling	55.0	55.3	56.5	57.5	43.5	43.7	44.8	45.7
38 Beacon Heights	CF48 1NL	Dwelling	54.4	54.7	55.8	56.9	43.0	43.2	44.2	45.2
39 Beacon Heights	CF48 1NL	Dwelling	50.1	50.6	51.3	52.3	39.1	39.5	40.1	41.0
40 Beacon Heights	CF48 1NL	Dwelling	50.1	50.5	51.4	52.5	39.1	39.5	40.2	41.2
41 Beacon Heights	CF48 1NL	Dwelling	50.2	50.5	51.5	52.6	39.1	39.5	40.3	41.3
42 Beacon Heights	CF48 1NL	Dwelling	50.1	50.5	51.4	52.5	39.1	39.4	40.3	41.2
43 Beacon Heights	CF48 1NL	Dwelling	50.3	50.7	51.6	52.7	39.2	39.6	40.4	41.4
44 Beacon Heights	CF48 1NL	Dwelling	49.7	50.2	50.9	52.0	38.7	39.1	39.8	40.8
Ty Beacon 45 Beacon Heights	CF48 1NL	Dwelling	49.4	49.9	50.6	51.7	38.5	38.9	39.6	40.5
46 Beacon Heights	CF48 1NL	Dwelling	46.8	47.2	48.1	49.2	36.1	36.5	37.3	38.3
47 Beacon Heights	CF48 1NL	Dwelling	49.3	49.7	50.7	51.8	38.3	38.7	39.6	40.6
48 Beacon Heights	CF48 1NL	Dwelling	48.0	48.4	49.3	50.5	37.2	37.6	38.4	39.4
49 Beacon Heights	CF48 1NL	Dwelling	53.9	54.1	55.6	56.6	42.5	42.7	44.0	45.0
50 Beacon Heights	CF48 1NL	Dwelling	52.6	53.0	54.0	55.0	41.3	41.7	42.5	43.5
51 Beacon Heights	CF48 1NL	Dwelling	50.0	50.4	51.2	52.3	39.0	39.3	40.0	41.0
52 Beacon Heights	CF48 1NL	Dwelling	53.3	53.6	54.6	55.6	42.0	42.2	43.1	44.0
53 Beacon Heights	CF48 1NL	Dwelling	52.6	52.8	53.8	54.9	41.3	41.5	42.4	43.4
54 Beacon Heights	CF48 1NL	Dwelling	51.1	51.4	52.9	53.9	40.0	40.3	41.6	42.5
55 Beacon Heights	CF48 1NL	Dwelling	44.9	45.3	46.3	47.4	34.4	34.7	35.6	36.6
56 Beacon Heights	CF48 1NL	Dwelling	45.1	45.5	46.5	47.6	34.6	34.9	35.8	36.8
57 Beacon Heights	CF48 1NL	Dwelling	45.1	45.5	46.5	47.6	34.6	34.9	35.8	36.8
58 Beacon Heights	CF48 1NL	Dwelling	48.7	49.1	50.0	51.1	37.8	38.2	39.0	40.0
59 Beacon Heights	CF48 1NL	Dwelling	44.0	44.4	45.3	46.4	33.6	34.0	34.7	35.7
60 Beacon Heights	CF48 1NL	Dwelling	50.5	51.0	51.7	52.8	39.5	39.9	40.5	41.5
82 Beacon Heights	CF48 1NN	Dwelling	50.5	51.0	51.6	52.7	39.4	39.8	40.4	41.4

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
84 Beacon Heights	CF48 1NN	Dwelling	51.5	52.0	52.6	53.7	40.4	40.8	41.4	42.3
86 Beacon Heights	CF48 1NN	Dwelling	50.6	51.0	51.8	52.9	39.5	39.9	40.6	41.6
88 Beacon Heights	CF48 1NN	Dwelling	51.6	52.2	52.6	53.7	40.4	40.9	41.4	42.3
Ty Lynian 90 Beacon Heights	CF48 1NN	Dwelling	48.9	49.4	50.1	51.1	38.0	38.5	39.0	40.0
92 Beacon Heights	CF48 1NN	Dwelling	50.7	51.4	51.7	52.8	39.7	40.2	40.6	41.5
93 Beacon Heights	CF48 1NN	Dwelling	51.3	51.8	52.5	53.6	40.2	40.6	41.2	42.2
94 Beacon Heights	CF48 1NN	Dwelling	52.1	52.7	53.3	54.4	40.9	41.4	42.0	42.9
95 Beacon Heights	CF48 1NN	Dwelling	51.2	51.7	52.3	53.4	40.0	40.5	41.1	42.0
96 Beacon Heights	CF48 1NN	Dwelling	49.4	49.9	50.6	51.6	38.4	38.9	39.6	40.5
97 Beacon Heights	CF48 1NN	Dwelling	49.8	50.3	51.1	52.1	38.8	39.3	39.9	40.8
98 Beacon Heights	CF48 1NN	Dwelling	58.2	59.1	58.8	59.7	46.4	47.2	46.9	47.7
99 Beacon Heights	CF48 1NN	Dwelling	49.5	50.1	50.8	51.8	38.5	39.1	39.7	40.6
1 Clos Cribyn	CF48 1NS	Dwelling	54.0	54.4	56.2	57.2	42.5	43.0	44.5	45.4
2 Clos Cribyn	CF48 1NS	Dwelling	64.4	64.9	66.6	67.7	52.0	52.4	53.9	54.9
3 Clos Cribyn	CF48 1NS	Dwelling	62.0	62.4	64.4	65.5	49.8	50.1	51.9	52.9
4 Clos Cribyn	CF48 1NS	Dwelling	65.1	65.5	68.1	69.3	52.6	52.9	55.3	56.3
Celtic Grange 5 Clos Cribyn	CF48 1NS	Dwelling	64.8	65.1	67.7	68.9	52.3	52.6	55.0	56.0
7 Clos Cribyn	CF48 1NS	Dwelling	64.4	64.6	67.2	68.4	51.9	52.2	54.4	55.5
8 Clos Cribyn	CF48 1NS	Dwelling	64.3	64.5	67.0	68.2	51.8	52.0	54.3	55.3
10 Clos Cribyn	CF48 1NS	Dwelling	53.8	54.0	55.5	56.7	42.4	42.6	43.9	45.0
11 Clos Cribyn	CF48 1NS	Dwelling	53.6	53.9	55.6	56.8	42.2	42.5	44.0	45.1
Milburn House 12 Clos Cribyn	CF48 1NS	Dwelling	54.2	54.5	55.8	57.0	42.8	43.0	44.2	45.2
13 Clos Cribyn	CF48 1NS	Dwelling	57.7	58.0	59.1	60.4	45.9	46.2	47.2	48.3
Harrison House 14 Clos Cribyn	CF48 1NS	Dwelling	57.5	57.9	59.2	60.4	45.8	46.1	47.3	48.3
15 Clos Cribyn	CF48 1NS	Dwelling	57.3	57.8	58.7	59.8	45.5	46.0	46.8	47.8
16 Clos Cribyn	CF48 1NS	Dwelling	49.6	50.2	50.8	51.9	38.6	39.2	39.7	40.7
Coed Meurig Farm Coed Meurig Farm Swansea Road	CF48 1NU	Dwelling	53.3	53.8	52.6	53.7	42.0	42.4	41.3	42.3
Brig Y Coed Bungalow Brig-Y-Coed Bungalow Swansea Road	CF48 1NY	Dwelling	50.4	50.9	51.5	52.4	39.3	39.8	40.4	41.1
Brynawel Brynawel Swansea Road	CF48 1NY	Dwelling	67.8	68.1	69.4	69.6	55.0	55.3	56.5	56.6
Coed Meyrick Bungalow Coed Meyrick Bungalow Swansea Road	CF48 1NY	Dwelling	53.3	53.5	54.4	55.2	42.0	42.2	42.9	43.7
Darmey Darmey Swansea Road	CF48 1NY	Dwelling	50.2	50.6	51.9	52.6	39.2	39.5	40.7	41.3
Julianne Julianne Swansea Road	CF48 1NY	Dwelling	51.6	52.0	52.7	53.6	40.4	40.8	41.4	42.2
Kingsland Kingsland Swansea Road	CF48 1NY	Dwelling	54.7	55.0	55.5	56.6	43.2	43.5	43.9	44.9
Millennium Court Millennium Court Swansea Road	CF48 1NY	Dwelling	52.6	52.9	53.8	54.8	41.3	41.6	42.4	43.3
Thiseldome Thiseldome Swansea Road	CF48 1NY	Dwelling	54.9	55.2	55.7	56.8	43.4	43.7	44.1	45.1
Bietigheim Bietigheim Coedmeyrick Close	CF48 1NZ	Dwelling	52.7	53.0	54.3	55.3	41.4	41.7	42.9	43.7
Birchgrove Birchgrove Coedmeyrick Close	CF48 1NZ	Dwelling	54.6	54.9	55.7	56.9	43.1	43.4	44.1	45.2
Cadair Mabinogion Cadair Mabinogion Coedmeyrick Close	CF48 1NZ	Dwelling	53.4	53.8	55.0	55.4	42.1	42.4	43.5	43.8
Crosswinds Crosswinds Coedmeyrick Close	CF48 1NZ	Dwelling	54.5	54.8	56.0	57.3	43.0	43.3	44.4	45.5
Four Winds Four Winds Coedmeyrick Close	CF48 1NZ	Dwelling	55.8	56.1	57.0	58.3	44.2	44.5	45.3	46.5
Gorwelion Gorwelion Coedmeyrick Close	CF48 1NZ	Dwelling	55.2	55.5	56.7	57.7	43.7	44.0	45.0	45.9
Heathlands Heathlands Coedmeyrick Close	CF48 1NZ	Dwelling	55.0	55.2	56.5	57.6	43.4	43.7	44.8	45.9
Highcroft Highcroft Coedmeyrick Close	CF48 1NZ	Dwelling	50.5	50.8	52.1	53.0	39.4	39.7	40.9	41.7
Morningside Morningside Coedmeyrick Close	CF48 1NZ	Dwelling	52.6	53.0	53.7	54.5	41.4	41.7	42.3	43.0
Pleasant View House Pleasant View House Coedmeyrick Close	CF48 1NZ	Dwelling	53.2	53.6	54.7	55.6	41.9	42.2	43.2	44.0
Promise Promise Coedmeyrick Close	CF48 1NZ	Dwelling	53.9	54.2	55.0	56.3	42.5	42.7	43.5	44.6
Beacon View Beacon View Swansea Road	CF48 1PA	Dwelling	52.1	52.4	53.9	54.6	40.9	41.2	42.5	43.1
Brookfield Brookfield Swansea Road	CF48 1PA	Dwelling	53.0	53.4	54.7	55.4	41.6	42.0	43.2	43.8
Penmarric Penmarric Swansea Road	CF48 1PA	Dwelling	55.3	56.6	57.1	58.1	43.7	44.9	45.4	46.3
Rosewood Rosewood Swansea Road	CF48 1PA	Dwelling	57.1	57.5	58.7	59.2	45.4	45.7	46.8	47.2
Timberleigh Timberleigh Swansea Road	CF48 1PA	Dwelling	54.7	55.1	56.3	56.7	43.2	43.6	44.7	45.0
Welbeck Welbeck Swansea Road	CF48 1PA	Dwelling	54.9	55.3	57.0	57.8	43.4	43.8	45.3	46.0
Maes Yr Awelon Maes Yr Awelon Swansea Road	CF48 1PB	Dwelling	54.2	54.2	58.2	59.5	42.7	42.8	46.3	47.5
The Haven The Haven Swansea Road	CF48 1PB	Dwelling	54.2	54.5	58.1	59.3	42.8	43.0	46.3	47.3
Tramar Tramar House Swansea Road	CF48 1PB	Dwelling	59.8	60.3	61.6	62.1	47.8	48.2	49.4	49.8
Tyncoedcae Farm Tyn-Y-Coedcae Farm Swansea Road	CF48 1PB	Dwelling	55.0	55.1	56.3	57.6	43.4	43.5	44.7	45.8
Bermardi Bermardi Waunbant	CF48 1PD	Dwelling	49.3	49.7	50.6	51.5	38.3	38.7	39.5	40.3
Fair View Estate Brynfa Brynfa Old Winch Fawr Road	CF48 1PD	Dwelling	45.6	45.9	47.4	48.4	35.0	35.3	36.7	37.5
Conifers Conifers Waunbant	CF48 1PD	Dwelling	43.8	44.4	45.9	46.7	33.4	33.9	35.3	36.0
Cwm Cych Cwm Cych Waunbant	CF48 1PD	Dwelling	44.9	45.3	46.1	47.0	34.4	34.7	35.5	36.3
Fresh Winds Fresh Winds Waunbant	CF48 1PD	Dwelling	54.5	54.8	56.1	56.4	43.0	43.3	44.4	44.8
Highlands Highlands Waunbant	CF48 1PD	Dwelling	48.6	48.9	50.0	50.8	37.7	38.0	38.9	39.7
Ketreda Ketreda Waunbant	CF48 1PD	Dwelling	45.1	45.5	46.4	47.2	34.6	34.9	35.7	36.5
Maes Glas Maes Glas Waunbant	CF48 1PD	Dwelling	45.2	45.7	46.4	47.4	34.7	35.1	35.8	36.6
Maesmelyn Maesmelyn Waunbant	CF48 1PD	Dwelling	46.0	46.4	47.3	48.2	35.4	35.8	36.6	37.3
Springfield Springfield Swansea Road	CF48 1PD	Dwelling	49.8	50.2	51.1	51.8	38.8	39.2	39.9	40.6
Tree Tops Tree Tops Waunbant	CF48 1PD	Dwelling	58.8	59.2	60.4	60.7	46.9	47.2	48.3	48.6
Vipya Vipya Waunbant	CF48 1PD	Dwelling	48.2	48.5	49.7	50.5	37.4	37.7	38.7	39.4
Waun Bant Farm Waunbant Farmhouse Waunbant	CF48 1PD	Dwelling	51.9	52.1	53.4	54.0	40.7	40.8	42.0	42.6
White Gables White Gables Waunbant	CF48 1PD	Dwelling	48.1	48.4	49.4	50.2	37.3	37.5	38.4	39.1
Ynysdawel Ynysdawel Waunbant	CF48 1PD	Dwelling	42.5	43.1	43.7	44.7	32.2	32.7	33.3	34.2
Castle View Stores Twyn Carmel	CF48 1PE	Dwelling	56.7	58.6	59.2	60.6	45.0	46.8	47.3	48.6
5 Twyn Carmel	CF48 1PE	Dwelling	51.6	52.3	53.0	54.0	40.4	41.1	41.7	42.6
7 Twyn Carmel	CF48 1PE	Dwelling	48.8	49.6	50.3	51.2	37.9	38.6	39.2	40.1
8 Twyn Carmel	CF48 1PE	Dwelling	50.8	51.2	52.2	53.1	39.7	40.0	41.0	41.8
9 Twyn Carmel	CF48 1PE	Dwelling	44.0	44.8	45.1	46.1	33.6	34.3	34.6	35.4
10 Twyn Carmel	CF48 1PE	Dwelling	49.1	49.4	50.6	51.5	38.1	38.5	39.5	40.3
11 Twyn Carmel	CF48 1PE	Dwelling	48.4	49.1	49.7	50.7	37.5	38.2	38.7	39.6
12 Twyn Carmel	CF48 1PE	Dwelling	45.0	45.8	46.4	47.4	34.5	35.2	35.8	36.7
21 Twyn Carmel	CF48 1PE	Dwelling	44.6	45.3	46.0	47.0	34.1	34.7	35.4	36.3
25 Twyn Carmel	CF48 1PE	Dwelling	49.3	50.3	50.9	51.9	38.4	39.2	39.8	40.7
26 Twyn Carmel	CF48 1PE	Dwelling	46.8	47.9	48.5	49.5	36.1	37.1	37.6	38.5
27 Twyn Carmel	CF48 1PE	Dwelling	46.0	47.1	47.7	48.7	35.4	36.4	36.9	37.8
28 Twyn Carmel	CF48 1PE	Dwelling	48.4	49.3	49.8	50.7	37.6	38.3	38.8	39.6
29 Twyn Carmel	CF48 1PE	Dwelling	48.3	49.2	49.7	50.7	37.5	38.3	38.7	39.6
30 Twyn Carmel	CF48 1PE	Dwelling	45.1	45.9	46.6	47.6	34.6	35.3	35.9	36.8
31 Twyn Carmel	CF48 1PE	Dwelling	47.8	48.3	49.1	50.1	37.0	37.4	38.2	39.0
32 Twyn Carmel	CF48 1PE	Dwelling	43.7	44.4	45.1	46.1	33.3	34.0	34.5	35.4
33 Twyn Carmel	CF48 1PE	Dwelling	43.7	44.5	45.1	46.1	33.4	34.0	34.6	35.5
34 Twyn Carmel	CF48 1PE	Dwelling	42.0	42.8	43.3	44.2	31.8	32.5	32.9	33.8
35 Twyn Carmel	CF48 1PE	Dwelling	43.4	44.2	44.7	45.7	33.0	33.7	34.2	35.1
36 Twyn Carmel	CF48 1PE	Dwelling	46.0	46.8	47.3	48.3	35.4	36.1	36.5	37.4
37 Twyn Carmel	CF48 1PE	Dwelling	44.8	45.5	46.0	46.9	34.3	34.9	35.3	36.2
38 Twyn Carmel	CF48 1PE	Dwelling	42.7	43.4	43.9	44.9	32.4	33.0	33.5	34.4
39 Twyn Carmel	CF48 1PE	Dwelling	42.3	42.9	43.5	44.5	32.0	32.6	33.2	34.1
51 Twyn Carmel	CF48 1PE	Dwelling	49.4	50.6	51.0	52.0	38.4	39.5	39.9	40.7
52 Twyn Carmel	CF48 1PE	Dwelling	56.8	58.5	59.0	60.2	45.1	46.6	47.1	48.1
53 Twyn Carmel	CF48 1PE	Dwelling	54.8	56.5	57.1	58.3	43.3	44.9	45.3	46.4
54 Twyn Carmel	CF48 1PE	Dwelling	57.5	59.2	59.7	61.0	45.7	47.3	47.7	48.9
55 Twyn Carmel	CF48 1PE	Dwelling	56.7	58.4	58.9	60.1	45.0	46.5	47.0	48.1
56 Twyn Carmel	CF48 1PE	Dwelling	56.8	58.5	59.0	60.3	45.1	46.7	47.1	48.2
57 Twyn Carmel	CF48 1PE	Dwelling	57.1	58.9	59.4	60.7	45.4	47.0	47.4	48.6
58 Twyn Carmel	CF48 1PE	Dwelling	57.1	58.8	59.3	60.6	45.4	46.9	47.4	48.5
59 Twyn Carmel	CF48 1PE	Dwelling	57.4	59.1	59.6	60.9	45.6	47.2	47.6	48.8
60 Twyn Carmel	CF48 1PE	Dwelling	57.5	59.3	59.8	61.1	45.7	47.3	47.8	49.0
61 Twyn Carmel	CF48 1PE	Dwelling	55.0	56.7	57.2	58.5	43.5	45.0	45.5	46.6
62 Twyn Carmel	CF48 1PE	Dwelling	57.6	59.3	59.8	61.1	45.8	47.4	47.8	49.0

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
63 Twyn Carmel	CF48 1PE	Dwelling	57.3	59.1	59.6	60.9	45.6	47.2	47.6	48.8
64 Twyn Carmel	CF48 1PE	Dwelling	57.2	58.9	59.4	60.7	45.5	47.0	47.5	48.6
65 Twyn Carmel	CF48 1PE	Dwelling	54.8	56.5	57.0	58.3	43.3	44.8	45.3	46.4
66 Twyn Carmel	CF48 1PE	Dwelling	57.4	59.2	59.7	61.0	45.7	47.2	47.7	48.8
67 Twyn Carmel	CF48 1PE	Dwelling	57.7	59.4	59.9	61.2	45.9	47.5	47.9	49.1
68 Twyn Carmel	CF48 1PE	Dwelling	57.8	59.5	60.1	61.3	46.0	47.6	48.0	49.2
69 Twyn Carmel	CF48 1PE	Dwelling	57.8	59.5	60.0	61.3	46.0	47.5	48.0	49.2
Casey'S Lodge Caseys Lodge Twyn Carmel	CF48 1PF	Dwelling	52.2	53.5	54.0	55.0	41.0	42.2	42.6	43.5
70 Twyn Carmel	CF48 1PF	Dwelling	55.1	56.7	57.2	58.5	43.6	45.0	45.5	46.6
71 Twyn Carmel	CF48 1PF	Dwelling	54.0	55.8	56.3	57.7	42.6	44.2	44.6	45.9
72 Twyn Carmel	CF48 1PF	Dwelling	58.8	60.9	61.5	63.1	46.9	48.8	49.3	50.8
73 Twyn Carmel	CF48 1PF	Dwelling	58.5	60.6	61.1	62.7	46.6	48.5	49.0	50.4
74 Twyn Carmel	CF48 1PF	Dwelling	58.2	60.3	60.8	62.4	46.3	48.2	48.7	50.1
75 Twyn Carmel	CF48 1PF	Dwelling	52.7	54.8	55.3	57.0	41.4	43.3	43.8	45.2
76 Twyn Carmel	CF48 1PF	Dwelling	52.3	53.6	54.1	55.1	41.1	42.2	42.6	43.5
77 Twyn Carmel	CF48 1PF	Dwelling	48.6	49.8	50.2	51.2	37.7	38.8	39.2	40.0
78 Twyn Carmel	CF48 1PF	Dwelling	47.3	48.3	48.7	49.7	36.5	37.4	37.8	38.7
79 Twyn Carmel	CF48 1PF	Dwelling	58.5	60.7	61.2	62.8	46.7	48.6	49.1	50.5
80 Twyn Carmel	CF48 1PF	Dwelling	58.5	60.6	61.1	62.7	46.6	48.5	49.0	50.4
81 Twyn Carmel	CF48 1PF	Dwelling	52.9	54.2	54.7	55.7	41.6	42.8	43.2	44.1
82 Twyn Carmel	CF48 1PF	Dwelling	52.5	53.8	54.3	55.3	41.3	42.4	42.8	43.7
83 Twyn Carmel	CF48 1PF	Dwelling	52.2	53.5	53.9	54.9	41.0	42.1	42.5	43.4
84 Twyn Carmel	CF48 1PF	Dwelling	52.0	53.2	53.7	54.7	40.8	41.9	42.3	43.2
85 Twyn Carmel	CF48 1PF	Dwelling	51.8	53.0	53.5	54.5	40.6	41.7	42.1	43.0
86 Twyn Carmel	CF48 1PF	Dwelling	47.5	48.6	49.0	50.0	36.8	37.7	38.1	39.0
87 Twyn Carmel	CF48 1PF	Dwelling	51.0	52.2	52.7	53.7	39.9	41.0	41.4	42.3
88 Twyn Carmel	CF48 1PF	Dwelling	48.9	50.1	50.6	51.5	38.0	39.1	39.5	40.4
89 Twyn Carmel	CF48 1PF	Dwelling	50.0	51.1	51.6	52.6	39.0	40.0	40.4	41.3
90 Twyn Carmel	CF48 1PF	Dwelling	50.1	51.2	51.7	52.6	39.1	40.1	40.5	41.4
91 Twyn Carmel	CF48 1PF	Dwelling	49.8	50.9	51.3	52.3	38.8	39.8	40.2	41.0
92 Twyn Carmel	CF48 1PF	Dwelling	49.9	51.1	51.5	52.5	38.9	40.0	40.4	41.2
93 Twyn Carmel	CF48 1PF	Dwelling	50.0	51.1	51.6	52.6	38.9	40.0	40.4	41.3
94 Twyn Carmel	CF48 1PF	Dwelling	57.5	59.4	59.9	61.4	45.7	47.5	47.9	49.2
95 Twyn Carmel	CF48 1PF	Dwelling	56.3	58.2	58.7	60.1	44.7	46.4	46.8	48.1
96 Twyn Carmel	CF48 1PF	Dwelling	57.1	59.1	59.6	61.0	45.4	47.1	47.6	48.9
97 Twyn Carmel	CF48 1PF	Dwelling	55.7	57.7	58.2	59.6	44.2	45.9	46.3	47.6
98 Twyn Carmel	CF48 1PF	Dwelling	56.5	58.6	59.1	60.6	44.9	46.7	47.1	48.5
99 Twyn Carmel	CF48 1PF	Dwelling	58.5	60.6	61.2	62.8	46.6	48.6	49.0	50.5
100 Twyn Carmel	CF48 1PG	Dwelling	58.0	59.8	60.3	61.6	46.2	47.8	48.2	49.4
101 Twyn Carmel	CF48 1PG	Dwelling	53.6	55.2	55.6	56.8	42.3	43.6	44.1	45.1
102 Twyn Carmel	CF48 1PG	Dwelling	51.9	53.3	53.8	54.8	40.7	42.0	42.4	43.3
103 Twyn Carmel	CF48 1PG	Dwelling	50.0	51.3	51.7	52.7	39.0	40.1	40.5	41.4
104 Twyn Carmel	CF48 1PG	Dwelling	49.0	50.3	50.7	51.7	38.1	39.2	39.6	40.5
105 Twyn Carmel	CF48 1PG	Dwelling	45.5	46.7	47.1	48.1	34.9	36.0	36.4	37.3
106 Twyn Carmel	CF48 1PG	Dwelling	47.9	49.0	49.5	50.5	37.1	38.1	38.5	39.4
107 Twyn Carmel	CF48 1PG	Dwelling	44.2	45.4	45.7	46.7	33.8	34.8	35.1	36.0
108 Twyn Carmel	CF48 1PG	Dwelling	46.5	47.5	47.9	48.9	35.9	36.7	37.1	38.0
109 Twyn Carmel	CF48 1PG	Dwelling	43.2	44.2	44.6	45.6	32.9	33.8	34.1	35.0
110 Twyn Carmel	CF48 1PG	Dwelling	46.1	47.0	47.4	48.4	35.5	36.3	36.7	37.5
111 Twyn Carmel	CF48 1PG	Dwelling	43.0	44.0	44.4	45.4	32.7	33.6	33.9	34.8
112 Twyn Carmel	CF48 1PG	Dwelling	45.9	46.8	47.2	48.2	35.3	36.1	36.5	37.3
113 Twyn Carmel	CF48 1PG	Dwelling	45.5	46.0	46.7	47.7	35.0	35.4	36.0	36.9
114 Twyn Carmel	CF48 1PG	Dwelling	45.5	46.3	46.7	47.6	34.9	35.7	36.0	36.9
115 Twyn Carmel	CF48 1PG	Dwelling	47.2	47.7	48.1	49.1	36.5	36.9	37.3	38.2
116 Twyn Carmel	CF48 1PG	Dwelling	45.2	45.9	46.3	47.3	34.6	35.3	35.7	36.5
117 Twyn Carmel	CF48 1PG	Dwelling	45.4	46.1	46.5	47.5	34.8	35.5	35.8	36.7
118 Twyn Carmel	CF48 1PG	Dwelling	41.7	42.4	42.8	43.8	31.5	32.1	32.5	33.4
119 Twyn Carmel	CF48 1PG	Dwelling	45.0	45.7	46.1	47.1	34.5	35.1	35.5	36.3
120 Twyn Carmel	CF48 1PG	Dwelling	41.7	42.4	42.8	43.8	31.5	32.2	32.5	33.4
121 Twyn Carmel	CF48 1PG	Dwelling	44.3	44.8	45.5	46.5	33.9	34.3	34.9	35.8
122 Twyn Carmel	CF48 1PG	Dwelling	46.3	46.9	47.5	48.5	35.7	36.1	36.7	37.6
123 Twyn Carmel	CF48 1PG	Dwelling	46.5	47.0	47.6	48.6	35.9	36.3	36.8	37.7
124 Twyn Carmel	CF48 1PG	Dwelling	44.4	44.9	45.5	46.6	34.0	34.4	35.0	35.9
125 Twyn Carmel	CF48 1PG	Dwelling	46.8	47.3	47.7	48.7	36.1	36.5	36.9	37.8
126 Twyn Carmel	CF48 1PG	Dwelling	46.6	47.0	47.4	48.4	35.9	36.3	36.7	37.5
127 Twyn Carmel	CF48 1PG	Dwelling	42.6	43.2	43.8	44.9	32.4	32.9	33.4	34.3
128 Twyn Carmel	CF48 1PG	Dwelling	42.8	43.4	44.1	45.1	32.5	33.1	33.6	34.6
129 Twyn Carmel	CF48 1PG	Dwelling	43.6	44.2	44.9	46.0	33.2	33.7	34.4	35.3
130 Twyn Carmel	CF48 1PG	Dwelling	43.4	43.9	44.6	45.7	33.0	33.5	34.1	35.1
131 Twyn Carmel	CF48 1PG	Dwelling	47.4	47.9	48.5	49.5	36.6	37.1	37.7	38.5
132 Twyn Carmel	CF48 1PG	Dwelling	47.6	48.1	48.8	49.8	36.8	37.3	37.9	38.8
133 Twyn Carmel	CF48 1PH	Dwelling	43.0	43.6	44.2	45.3	32.7	33.2	33.8	34.7
134 Twyn Carmel	CF48 1PH	Dwelling	45.5	46.0	46.7	47.6	35.0	35.4	36.0	36.8
135 Twyn Carmel	CF48 1PH	Dwelling	43.5	43.9	44.7	45.7	33.1	33.5	34.2	35.1
136 Twyn Carmel	CF48 1PH	Dwelling	42.6	43.1	43.8	44.8	32.4	32.7	33.4	34.3
137 Twyn Carmel	CF48 1PH	Dwelling	46.9	47.3	48.1	49.0	36.2	36.6	37.3	38.1
138 Twyn Carmel	CF48 1PH	Dwelling	47.4	47.9	48.5	49.5	36.7	37.1	37.7	38.5
139 Twyn Carmel	CF48 1PH	Dwelling	46.1	46.7	46.8	47.7	35.5	36.0	36.1	36.9
140 Twyn Carmel	CF48 1PH	Dwelling	47.7	48.1	48.8	49.8	36.9	37.2	37.9	38.8
141 Twyn Carmel	CF48 1PH	Dwelling	48.5	48.9	49.7	50.7	37.7	38.0	38.7	39.6
142 Twyn Carmel	CF48 1PH	Dwelling	48.2	48.6	49.4	50.4	37.4	37.7	38.5	39.3
143 Twyn Carmel	CF48 1PH	Dwelling	44.0	44.5	45.2	46.2	33.6	34.0	34.7	35.6
144 Twyn Carmel	CF48 1PH	Dwelling	48.8	49.2	49.9	50.8	37.9	38.2	38.9	39.7
145 Twyn Carmel	CF48 1PH	Dwelling	49.1	49.4	50.1	51.0	38.2	38.4	39.0	39.9
146 Twyn Carmel	CF48 1PH	Dwelling	43.7	44.1	44.8	45.8	33.3	33.6	34.3	35.2
147 Twyn Carmel	CF48 1PH	Dwelling	47.7	48.1	48.9	49.9	36.9	37.2	38.0	38.9
Proposed New Dwellings Adjacent To Bryngwyn Farm Swansea Road	CF48 1PL	Dwelling	53.4	53.8	55.7	56.7	42.1	42.4	44.1	45.0
1 Pen Y Dyffryn	CF48 1PL	Dwelling	57.6	57.8	59.4	60.7	45.8	46.0	47.5	48.6
2 Pen Y Dyffryn	CF48 1PL	Dwelling	54.1	54.3	56.6	57.8	42.7	42.9	44.9	46.0
3 Pen Y Dyffryn	CF48 1PL	Dwelling	53.8	54.1	55.7	56.6	42.4	42.7	44.1	44.9
4 Pen Y Dyffryn	CF48 1PL	Dwelling	56.5	56.7	58.6	59.8	44.8	45.0	46.7	47.8
5 Pen Y Dyffryn	CF48 1PL	Dwelling	57.6	58.0	59.4	60.3	45.8	46.2	47.5	48.3
6 Pen Y Dyffryn	CF48 1PL	Dwelling	59.5	59.8	61.6	62.6	47.5	47.8	49.4	50.3
7 Pen Y Dyffryn	CF48 1PL	Dwelling	58.3	58.5	60.7	62.0	46.4	46.7	48.6	49.8
8 Pen Y Dyffryn	CF48 1PL	Dwelling	57.3	57.5	59.1	60.4	45.6	45.7	47.2	48.3
9 Pen Y Dyffryn	CF48 1PL	Dwelling	56.8	57.0	59.8	61.1	45.1	45.3	47.8	49.0
10 Pen Y Dyffryn	CF48 1PL	Dwelling	55.9	56.2	59.3	60.6	44.3	44.6	47.3	48.5
11 Pen Y Dyffryn	CF48 1PL	Dwelling	57.4	57.5	61.1	62.4	45.6	45.8	48.9	50.1
12 Pen Y Dyffryn	CF48 1PL	Dwelling	58.5	58.7	61.1	62.4	46.6	46.8	48.9	50.1
13 Pen Y Dyffryn	CF48 1PL	Dwelling	59.5	59.7	62.0	63.3	47.5	47.7	49.8	51.0
14 Pen Y Dyffryn	CF48 1PL	Dwelling	58.4	58.6	60.7	62.0	46.5	46.7	48.6	49.8
15 Pen Y Dyffryn	CF48 1PL	Dwelling	58.5	58.7	60.7	62.0	46.7	46.8	48.6	49.8
16 Pen Y Dyffryn	CF48 1PL	Dwelling	53.8	54.0	56.7	57.9	42.4	42.6	45.0	46.1
17 Pen Y Dyffryn	CF48 1PL	Dwelling	60.2	60.4	62.1	63.4	48.1	48.3	49.8	51.0
18 Pen Y Dyffryn	CF48 1PL	Dwelling	54.3	54.5	57.3	58.6	42.8	43.0	45.5	46.7
19 Pen Y Dyffryn	CF48 1PL	Dwelling	58.7	58.9	60.3	61.6	46.8	47.0	48.2	49.4
20 Pen Y Dyffryn	CF48 1PL	Dwelling	56.4	56.7	58.5	59.8	44.8	45.0	46.7	47.8

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
21 Pen Y Dyffryn	CF48 1PL	Dwelling	57.9	58.1	59.3	60.6	46.1	46.3	47.3	48.5
22 Pen Y Dyffryn	CF48 1PL	Dwelling	51.7	52.0	53.4	54.7	40.6	40.8	42.1	43.2
23 Pen Y Dyffryn	CF48 1PL	Dwelling	51.8	52.0	55.3	56.6	40.6	40.8	43.8	44.9
24 Pen Y Dyffryn	CF48 1PL	Dwelling	50.1	50.4	53.9	55.2	39.1	39.4	42.5	43.6
25 Pen Y Dyffryn	CF48 1PL	Dwelling	55.0	55.3	56.9	58.1	43.5	43.8	45.1	46.3
26 Pen Y Dyffryn	CF48 1PL	Dwelling	56.4	56.6	58.8	60.0	44.7	45.0	46.9	48.0
27 Pen Y Dyffryn	CF48 1PL	Dwelling	52.6	53.0	54.7	56.0	41.4	41.6	43.2	44.4
28 Pen Y Dyffryn	CF48 1PL	Dwelling	56.2	56.5	58.3	59.6	44.6	44.8	46.5	47.6
29 Pen Y Dyffryn	CF48 1PL	Dwelling	57.4	57.5	59.8	61.1	45.6	45.8	47.8	48.9
30 Pen Y Dyffryn	CF48 1PL	Dwelling	57.5	57.7	60.3	61.6	45.7	45.9	48.3	49.4
31 Pen Y Dyffryn	CF48 1PL	Dwelling	59.6	59.8	63.1	64.4	47.6	47.8	50.7	51.9
32 Pen Y Dyffryn	CF48 1PL	Dwelling	57.9	58.2	61.8	63.1	46.1	46.3	49.6	50.8
33 Pen Y Dyffryn	CF48 1PL	Dwelling	60.1	60.4	63.6	65.0	48.1	48.3	51.2	52.5
34 Pen Y Dyffryn	CF48 1PL	Dwelling	55.3	55.5	59.6	61.0	43.7	43.9	47.7	48.9
35 Pen Y Dyffryn	CF48 1PL	Dwelling	58.7	59.0	62.0	63.4	46.8	47.1	49.8	51.0
36 Pen Y Dyffryn	CF48 1PL	Dwelling	52.5	52.7	55.2	56.5	41.2	41.4	43.7	44.8
37 Pen Y Dyffryn	CF48 1PL	Dwelling	51.4	51.7	54.1	55.4	40.2	40.5	42.7	43.8
38 Pen Y Dyffryn	CF48 1PL	Dwelling	50.5	50.8	53.1	54.4	39.5	39.7	41.8	42.9
39 Pen Y Dyffryn	CF48 1PL	Dwelling	50.1	50.4	52.5	53.7	39.1	39.3	41.2	42.3
40 Pen Y Dyffryn	CF48 1PL	Dwelling	57.0	57.3	59.1	60.4	45.3	45.5	47.2	48.4
41 Pen Y Dyffryn	CF48 1PL	Dwelling	57.6	57.8	59.7	61.0	45.8	46.0	47.7	48.9
42 Pen Y Dyffryn	CF48 1PL	Dwelling	56.6	56.8	58.9	60.2	44.9	45.1	47.0	48.1
43 Pen Y Dyffryn	CF48 1PL	Dwelling	48.8	49.1	51.1	52.3	37.9	38.2	40.0	41.0
44 Pen Y Dyffryn	CF48 1PL	Dwelling	51.5	51.8	53.6	54.9	40.3	40.6	42.2	43.3
45 Pen Y Dyffryn	CF48 1PL	Dwelling	51.8	52.1	53.4	54.6	40.6	40.9	42.0	43.1
46 Pen Y Dyffryn	CF48 1PL	Dwelling	51.9	52.2	53.7	54.9	40.7	41.0	42.3	43.4
47 Pen Y Dyffryn	CF48 1PL	Dwelling	50.7	51.0	52.3	53.5	39.6	39.9	41.1	42.1
48 Pen Y Dyffryn	CF48 1PL	Dwelling	51.7	52.0	53.3	54.4	40.5	40.8	41.9	43.0
49 Pen Y Dyffryn	CF48 1PL	Dwelling	50.9	51.3	52.6	53.7	39.8	40.1	41.4	42.3
50 Pen Y Dyffryn	CF48 1PL	Dwelling	50.7	51.0	54.3	55.5	39.6	39.9	42.8	43.9
51 Pen Y Dyffryn	CF48 1PL	Dwelling	50.7	51.0	54.3	55.5	39.6	39.9	42.8	43.9
52 Pen Y Dyffryn	CF48 1PL	Dwelling	59.1	59.5	60.7	61.0	47.2	47.5	48.6	48.9
53 Pen Y Dyffryn	CF48 1PL	Dwelling	59.0	59.4	60.6	60.9	47.1	47.5	48.5	48.8
54 Pen Y Dyffryn	CF48 1PL	Dwelling	51.4	51.8	52.5	53.6	40.3	40.6	41.2	42.2
55 Pen Y Dyffryn	CF48 1PL	Dwelling	52.0	52.3	53.2	54.3	40.8	41.1	41.8	42.9
56 Pen Y Dyffryn	CF48 1PL	Dwelling	57.5	57.9	59.7	60.6	45.7	46.1	47.7	48.5
57 Pen Y Dyffryn	CF48 1PL	Dwelling	53.2	53.7	54.8	55.6	41.8	42.3	43.3	44.0
58 Pen Y Dyffryn	CF48 1PL	Dwelling	54.1	54.6	55.8	56.7	42.7	43.1	44.2	45.0
59 Pen Y Dyffryn	CF48 1PL	Dwelling	54.3	54.7	56.4	57.2	42.9	43.2	44.7	45.5
60 Pen Y Dyffryn	CF48 1PL	Dwelling	54.3	54.7	56.4	57.2	42.9	43.2	44.7	45.5
61 Pen Y Dyffryn	CF48 1PL	Dwelling	57.1	57.4	58.6	59.6	45.3	45.6	46.7	47.6
62 Pen Y Dyffryn	CF48 1PL	Dwelling	54.7	54.9	56.0	57.2	43.2	43.4	44.4	45.5
63 Pen Y Dyffryn	CF48 1PL	Dwelling	57.4	57.6	58.4	59.6	45.6	45.8	46.5	47.6
64 Pen Y Dyffryn	CF48 1PL	Dwelling	56.6	57.0	58.5	59.4	45.0	45.2	46.6	47.5
65 Pen Y Dyffryn	CF48 1PL	Dwelling	53.4	53.8	55.7	56.7	42.1	42.4	44.1	45.0
66 Pen Y Dyffryn	CF48 1PL	Dwelling	53.4	53.7	54.8	56.0	42.1	42.3	43.3	44.4
67 Pen Y Dyffryn	CF48 1PL	Dwelling	53.6	53.9	55.0	56.3	42.2	42.5	43.5	44.6
68 Pen Y Dyffryn	CF48 1PL	Dwelling	53.8	54.1	56.5	57.8	42.4	42.7	44.9	46.0
69 Pen Y Dyffryn	CF48 1PL	Dwelling	57.1	57.3	59.4	60.7	45.4	45.6	47.5	48.6
70 Pen Y Dyffryn	CF48 1PL	Dwelling	53.2	53.4	56.2	57.5	41.9	42.1	44.6	45.7
71 Pen Y Dyffryn	CF48 1PL	Dwelling	58.2	58.4	60.3	61.5	46.4	46.6	48.2	49.4
72 Pen Y Dyffryn	CF48 1PL	Dwelling	56.1	56.3	57.9	59.0	44.5	44.7	46.1	47.1
73 Pen Y Dyffryn	CF48 1PL	Dwelling	60.5	60.9	62.2	62.9	48.4	48.8	50.0	50.6
277 Twyn Carmel	CF48 1PP	Dwelling	57.9	59.7	60.2	61.5	46.0	47.7	48.1	49.3
278 Twyn Carmel	CF48 1PP	Dwelling	57.8	59.7	60.2	61.5	46.0	47.7	48.1	49.3
279 Twyn Carmel	CF48 1PP	Dwelling	57.5	59.4	59.9	61.2	45.8	47.4	47.9	49.1
280 Twyn Carmel	CF48 1PP	Dwelling	47.6	49.4	49.8	51.3	36.8	38.4	38.8	40.1
281 Twyn Carmel	CF48 1PP	Dwelling	55.1	57.0	57.5	58.9	43.6	45.3	45.7	47.0
282 Twyn Carmel	CF48 1PP	Dwelling	57.9	59.7	60.2	61.5	46.1	47.7	48.1	49.3
283 Twyn Carmel	CF48 1PP	Dwelling	57.8	59.6	60.1	61.4	46.0	47.6	48.1	49.2
284 Twyn Carmel	CF48 1PP	Dwelling	56.2	58.0	58.5	59.9	44.6	46.2	46.7	47.9
285 Twyn Carmel	CF48 1PP	Dwelling	57.9	59.7	60.2	61.5	46.1	47.7	48.1	49.3
286 Twyn Carmel	CF48 1PP	Dwelling	57.9	59.7	60.2	61.6	46.1	47.7	48.2	49.4
287 Twyn Carmel	CF48 1PP	Dwelling	52.1	53.8	54.3	55.6	40.8	42.4	42.8	44.0
288 Twyn Carmel	CF48 1PP	Dwelling	51.2	52.5	52.9	53.9	40.1	41.2	41.6	42.5
289 Twyn Carmel	CF48 1PP	Dwelling	50.0	51.1	51.6	52.6	39.0	40.0	40.4	41.3
290 Twyn Carmel	CF48 1PP	Dwelling	48.7	49.7	50.2	51.2	37.8	38.7	39.1	40.0
291 Twyn Carmel	CF48 1PP	Dwelling	48.2	49.2	49.7	50.6	37.4	38.2	38.7	39.6
292 Twyn Carmel	CF48 1PP	Dwelling	44.9	45.7	45.9	46.9	34.4	35.1	35.3	36.2
293 Twyn Carmel	CF48 1PP	Dwelling	42.8	43.6	44.2	45.2	32.5	33.3	33.7	34.6
294 Twyn Carmel	CF48 1PP	Dwelling	45.5	46.3	46.8	47.8	35.0	35.7	36.1	37.0
295 Twyn Carmel	CF48 1PP	Dwelling	45.8	46.7	47.2	48.2	35.2	36.0	36.4	37.3
296 Twyn Carmel	CF48 1PP	Dwelling	44.6	45.5	46.0	47.0	34.1	34.9	35.4	36.3
297 Twyn Carmel	CF48 1PP	Dwelling	41.6	42.4	42.8	43.8	31.4	32.1	32.5	33.4
298 Twyn Carmel	CF48 1PP	Dwelling	44.4	45.1	45.4	46.4	33.9	34.5	34.8	35.7
299 Twyn Carmel	CF48 1PP	Dwelling	44.4	45.1	45.4	46.4	34.0	34.6	34.9	35.7
300 Twyn Carmel	CF48 1PP	Dwelling	41.1	41.8	42.2	43.2	31.0	31.6	31.9	32.8
301 Twyn Carmel	CF48 1PP	Dwelling	45.5	46.4	46.7	47.7	34.9	35.7	36.0	36.9
302 Twyn Carmel	CF48 1PP	Dwelling	44.7	45.4	45.8	46.8	34.2	34.9	35.2	36.1
303 Twyn Carmel	CF48 1PP	Dwelling	44.8	45.6	45.9	46.9	34.3	35.0	35.3	36.2
304 Twyn Carmel	CF48 1PP	Dwelling	44.8	45.5	45.8	46.8	34.3	35.0	35.2	36.1
305 Twyn Carmel	CF48 1PP	Dwelling	45.1	45.7	46.2	47.2	34.6	35.1	35.5	36.4
306 Twyn Carmel	CF48 1PP	Dwelling	42.2	42.8	43.3	44.3	31.9	32.5	32.9	33.8
307 Twyn Carmel	CF48 1PP	Dwelling	44.9	45.7	46.1	47.1	34.4	35.1	35.5	36.3
308 Twyn Carmel	CF48 1PP	Dwelling	45.6	46.4	46.5	47.5	35.0	35.7	35.9	36.7
309 Twyn Carmel	CF48 1PP	Dwelling	41.4	42.2	42.6	43.6	31.3	32.0	32.3	33.2
310 Twyn Carmel	CF48 1PP	Dwelling	45.3	46.0	46.5	47.5	34.8	35.4	35.8	36.7
311 Twyn Carmel	CF48 1PP	Dwelling	42.6	43.3	43.9	44.9	32.3	32.9	33.5	34.4
312 Twyn Carmel	CF48 1PP	Dwelling	42.9	43.6	44.1	45.2	32.6	33.2	33.7	34.6
313 Twyn Carmel	CF48 1PP	Dwelling	45.4	46.1	46.6	47.6	34.9	35.5	35.9	36.8
10B Waunbant Court	CF48 1PR	Dwelling	50.5	50.9	51.9	52.8	39.5	39.8	40.7	41.5
1 Waunbant Court	CF48 1PR	Dwelling	49.3	49.7	51.1	51.7	38.4	38.7	39.9	40.6
2 Waunbant Court	CF48 1PR	Dwelling	51.2	51.5	52.7	53.2	40.1	40.4	41.4	41.8
3 Waunbant Court	CF48 1PR	Dwelling	49.9	50.2	51.3	51.9	38.9	39.2	40.1	40.7
4 Waunbant Court	CF48 1PR	Dwelling	47.2	47.5	48.8	49.6	36.4	36.7	37.9	38.6
5 Waunbant Court	CF48 1PR	Dwelling	45.1	45.4	46.5	47.4	34.5	34.9	35.8	36.6
6 Waunbant Court	CF48 1PR	Dwelling	44.5	44.8	45.9	46.8	34.0	34.3	35.3	36.1
7 Waunbant Court	CF48 1PR	Dwelling	52.5	52.9	54.1	54.9	41.2	41.6	42.7	43.4
8 Waunbant Court	CF48 1PR	Dwelling	44.9	45.5	47.0	47.8	34.4	34.9	36.2	37.0
9 Waunbant Court	CF48 1PR	Dwelling	48.7	49.2	49.9	50.9	37.8	38.3	38.9	39.8
10 Waunbant Court	CF48 1PR	Dwelling	50.5	50.9	51.9	52.8	39.5	39.8	40.7	41.5
1 Beacons Court	CF48 1PT	Dwelling	53.1	54.5	55.1	56.2	41.8	43.0	43.6	44.5
2 Beacons Court	CF48 1PT	Dwelling	55.7	57.0	57.6	58.7	44.1	45.3	45.8	46.8
3 Beacons Court	CF48 1PT	Dwelling	54.2	55.6	56.2	57.3	42.8	44.0	44.6	45.5
4 Beacons Court	CF48 1PT	Dwelling	57.0	58.4	59.0	60.1	45.3	46.5	47.1	48.0
5 Beacons Court	CF48 1PT	Dwelling	55.5	57.0	57.5	58.6	44.0	45.3	45.7	46.7
6 Beacons Court	CF48 1PT	Dwelling	56.6	57.8	58.6	59.5	45.0	46.0	46.7	47.6

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
7 Beacons Court	CF48 1PT	Dwelling	50.3	50.9	51.8	52.6	39.3	39.8	40.6	41.3
8 Beacons Court	CF48 1PT	Dwelling	53.9	54.1	55.3	56.2	42.5	42.7	43.8	44.5
9 Beacons Court	CF48 1PT	Dwelling	47.4	48.0	48.9	49.9	36.7	37.2	38.0	38.9
10 Beacons Court	CF48 1PT	Dwelling	46.0	46.7	47.5	48.5	35.4	36.0	36.7	37.6
11 Beacons Court	CF48 1PT	Dwelling	51.4	52.0	53.0	54.0	40.3	40.8	41.7	42.5
59 Access Road To Brynteg Farm	CF48 1PU	Dwelling	41.3	41.8	42.1	43.1	31.2	31.6	31.9	32.8
256 Twyn Carmel	CF48 1PW	Dwelling	45.6	46.1	46.2	47.2	35.0	35.5	35.6	36.4
257 Twyn Carmel	CF48 1PW	Dwelling	44.2	44.9	45.3	46.3	33.7	34.4	34.7	35.6
258 Twyn Carmel	CF48 1PW	Dwelling	45.9	46.7	47.2	48.2	35.3	36.0	36.5	37.4
259 Twyn Carmel	CF48 1PW	Dwelling	45.8	46.7	47.2	48.2	35.2	36.0	36.4	37.3
260 Twyn Carmel	CF48 1PW	Dwelling	44.2	45.1	45.6	46.6	33.8	34.6	35.0	35.9
261 Twyn Carmel	CF48 1PW	Dwelling	43.6	44.7	45.2	46.2	33.2	34.2	34.7	35.5
262 Twyn Carmel	CF48 1PW	Dwelling	47.0	48.1	48.6	49.6	36.3	37.3	37.7	38.6
263 Twyn Carmel	CF48 1PW	Dwelling	47.3	48.4	48.8	49.8	36.5	37.5	37.9	38.8
264 Twyn Carmel	CF48 1PW	Dwelling	46.9	48.0	48.4	49.4	36.2	37.2	37.5	38.4
265 Twyn Carmel	CF48 1PW	Dwelling	44.5	45.1	45.6	46.6	34.0	34.6	35.0	35.9
266 Twyn Carmel	CF48 1PW	Dwelling	44.7	45.4	45.9	46.9	34.2	34.8	35.3	36.1
267 Twyn Carmel	CF48 1PW	Dwelling	44.6	45.2	45.7	46.7	34.1	34.7	35.1	36.0
268 Twyn Carmel	CF48 1PW	Dwelling	44.8	46.0	46.5	47.5	34.3	35.4	35.8	36.7
269 Twyn Carmel	CF48 1PW	Dwelling	44.7	46.0	46.4	47.4	34.2	35.3	35.7	36.6
270 Twyn Carmel	CF48 1PW	Dwelling	44.7	46.0	46.4	47.4	34.2	35.3	35.7	36.6
271 Twyn Carmel	CF48 1PW	Dwelling	48.6	49.8	50.3	51.3	37.7	38.8	39.2	40.1
272 Twyn Carmel	CF48 1PW	Dwelling	46.3	47.7	48.1	49.1	35.7	36.9	37.3	38.2
273 Twyn Carmel	CF48 1PW	Dwelling	49.1	50.4	50.8	51.8	38.2	39.3	39.7	40.6
274 Twyn Carmel	CF48 1PW	Dwelling	50.1	51.5	51.9	52.9	39.1	40.3	40.7	41.6
275 Twyn Carmel	CF48 1PW	Dwelling	49.6	50.9	51.3	52.3	38.6	39.8	40.2	41.1
276 Twyn Carmel	CF48 1PW	Dwelling	51.8	53.2	53.6	54.6	40.6	41.9	42.2	43.1
Chapel House Chapel House Swansea Road	CF48 1PY	Dwelling	45.6	46.1	46.8	47.8	35.0	35.5	36.1	37.0
20A Winchfawr	CF48 1RD	Dwelling	49.5	50.8	51.1	52.1	38.6	39.7	40.0	40.9
2A Winchfawr	CF48 1RD	Dwelling	52.0	53.4	53.8	54.8	40.8	42.0	42.4	43.3
Ein Plas Bach Ein Plas Bach Winchfawr	CF48 1RD	Dwelling	55.9	57.9	58.4	59.8	44.3	46.1	46.5	47.8
Perthddu Perthddu Winchfawr	CF48 1RD	Dwelling	58.0	60.0	60.5	62.0	46.2	48.0	48.4	49.7
Stable Block Winchfawr	CF48 1RD	Dwelling	52.9	54.3	54.7	55.8	41.6	42.9	43.2	44.2
The Oaks The Oaks Winchfawr	CF48 1RD	Dwelling	52.5	53.9	54.4	55.4	41.2	42.5	42.9	43.8
Ty Bronheulwen Ty Bronheulwen Winchfawr	CF48 1RD	Dwelling	59.2	61.5	62.0	63.7	47.3	49.3	49.8	51.3
Ty Mynydd Mawr Ty Mynydd Mawr Winchfawr	CF48 1RD	Dwelling	46.4	47.8	48.2	49.2	35.7	37.0	37.4	38.3
Winchfawr	CF48 1RD	Dwelling	42.0	42.9	43.6	44.6	31.8	32.6	33.2	34.1
Winchfawr	CF48 1RD	Dwelling	50.2	51.4	51.8	52.8	39.1	40.3	40.6	41.5
Winchfawr Lodge Winchfawr	CF48 1RD	OSR	42.2	43.3	43.9	44.9	31.9	32.9	33.5	34.4
1 Winchfawr	CF48 1RD	Dwelling	44.8	46.1	46.6	47.6	34.3	35.5	35.9	36.8
2 Winchfawr	CF48 1RD	Dwelling	52.0	53.4	53.8	54.8	40.8	42.0	42.4	43.3
12 Winchfawr	CF48 1RD	Dwelling	46.3	47.4	47.9	48.9	35.7	36.7	37.1	38.0
13 Winchfawr	CF48 1RD	Dwelling	51.8	53.2	53.7	54.7	40.6	41.9	42.3	43.2
15 Winchfawr	CF48 1RD	Dwelling	50.6	52.1	52.5	53.5	39.6	40.8	41.2	42.1
16 Winchfawr	CF48 1RD	Dwelling	56.1	58.0	58.4	59.8	44.5	46.1	46.6	47.8
Pen Y Mynydd 17 Winchfawr	CF48 1RD	Dwelling	58.2	60.1	60.6	62.0	46.4	48.1	48.5	49.7
19 Winchfawr	CF48 1RD	Dwelling	56.2	58.1	58.6	60.1	44.6	46.3	46.7	48.0
21 Winchfawr	CF48 1RD	Dwelling	49.5	50.8	51.1	52.1	38.6	39.7	40.0	40.9
22 Winchfawr	CF48 1RD	Dwelling	50.2	51.4	51.8	52.8	39.1	40.3	40.6	41.5
24 Winchfawr	CF48 1RD	Dwelling	50.3	51.6	52.0	53.0	39.3	40.4	40.8	41.7
Ty Beili Glas 29 Winchfawr	CF48 1RD	Dwelling	50.3	51.7	52.1	53.1	39.3	40.5	40.9	41.8
30 Winchfawr	CF48 1RD	Dwelling	59.2	61.4	61.9	63.5	47.3	49.2	49.7	51.1
114A Heolgerrig	CF48 1RN	Dwelling	39.9	40.8	41.4	42.4	29.8	30.7	31.2	32.2
111 Heolgerrig	CF48 1RN	Dwelling	40.4	41.2	41.4	42.4	30.3	31.1	31.2	32.1
114 Heolgerrig	CF48 1RN	Dwelling	46.2	47.3	47.3	48.2	35.6	36.5	36.5	37.4
115 Heolgerrig	CF48 1RN	Dwelling	39.3	40.2	40.8	41.9	29.4	30.2	30.7	31.6
117 Heolgerrig	CF48 1RN	Dwelling	40.1	41.0	41.7	42.7	30.1	30.8	31.5	32.4
7 Salisbury Close	CF48 1SD	Dwelling	44.9	45.4	45.2	46.1	34.4	34.8	34.7	35.4
8 Salisbury Close	CF48 1SD	Dwelling	41.0	41.6	41.7	42.6	30.9	31.4	31.5	32.3
9 Salisbury Close	CF48 1SD	Dwelling	44.5	45.1	44.8	45.7	34.0	34.5	34.3	35.1
10 Salisbury Close	CF48 1SD	Dwelling	40.4	41.0	41.2	42.1	30.4	30.9	31.0	31.8
11 Salisbury Close	CF48 1SD	Dwelling	44.9	45.6	45.3	46.2	34.4	35.1	34.8	35.5
12 Salisbury Close	CF48 1SD	Dwelling	43.7	44.3	44.2	45.1	33.3	33.9	33.8	34.5
13 Salisbury Close	CF48 1SD	Dwelling	40.5	41.2	41.5	42.4	30.4	31.0	31.3	32.2
14 Salisbury Close	CF48 1SD	Dwelling	43.0	43.5	43.5	44.4	32.7	33.1	33.1	33.9
15 Salisbury Close	CF48 1SD	Dwelling	39.5	40.2	40.4	41.3	29.5	30.1	30.3	31.1
16 Salisbury Close	CF48 1SD	Dwelling	45.5	46.1	45.9	46.8	35.0	35.5	35.3	36.1
17 Salisbury Close	CF48 1SD	Dwelling	39.2	40.0	40.0	40.9	29.2	29.9	30.0	30.8
18 Salisbury Close	CF48 1SD	Dwelling	39.3	40.2	40.3	41.3	29.3	30.1	30.3	31.1
19 Salisbury Close	CF48 1SD	Dwelling	38.8	39.6	39.8	40.7	28.9	29.6	29.8	30.6
20 Salisbury Close	CF48 1SD	Dwelling	40.4	41.2	41.5	42.5	30.3	31.1	31.3	32.2
21 Salisbury Close	CF48 1SD	Dwelling	39.6	40.5	40.8	41.7	29.7	30.4	30.7	31.5
22 Salisbury Close	CF48 1SD	Dwelling	39.7	40.5	40.7	41.6	29.7	30.4	30.6	31.4
23 Salisbury Close	CF48 1SD	Dwelling	45.5	46.3	45.9	46.7	35.0	35.6	35.3	36.0
24 Salisbury Close	CF48 1SD	Dwelling	39.0	39.6	39.8	40.7	29.1	29.6	29.8	30.6
25 Salisbury Close	CF48 1SD	Dwelling	42.1	42.5	42.8	43.7	31.9	32.2	32.5	33.4
26 Salisbury Close	CF48 1SD	Dwelling	39.3	40.0	40.2	41.1	29.3	30.0	30.1	31.0
27 Salisbury Close	CF48 1SD	Dwelling	39.6	40.3	40.4	41.4	29.6	30.3	30.4	31.2
28 Salisbury Close	CF48 1SD	Dwelling	39.1	39.6	39.8	40.7	29.2	29.7	29.8	30.7
29 Salisbury Close	CF48 1SD	Dwelling	38.8	39.5	39.6	40.5	28.9	29.5	29.6	30.4
30 Salisbury Close	CF48 1SD	Dwelling	40.1	40.7	41.0	42.0	30.1	30.6	30.9	31.8
31 Salisbury Close	CF48 1SD	Dwelling	40.0	40.6	40.9	41.9	30.0	30.5	30.8	31.7
32 Salisbury Close	CF48 1SD	Dwelling	44.1	44.4	44.7	45.6	33.7	33.9	34.2	35.0
33 Salisbury Close	CF48 1SD	Dwelling	40.5	41.1	41.4	42.4	30.5	31.0	31.3	32.1
34 Salisbury Close	CF48 1SD	Dwelling	44.3	44.5	45.0	46.0	33.9	34.0	34.5	35.3
35 Salisbury Close	CF48 1SD	Dwelling	41.2	41.8	42.2	43.2	31.1	31.6	32.0	32.8
36 Salisbury Close	CF48 1SD	Dwelling	40.6	41.3	41.6	42.5	30.6	31.1	31.4	32.2
37 Salisbury Close	CF48 1SD	Dwelling	40.4	41.1	41.3	42.2	30.4	31.0	31.1	32.0
38 Salisbury Close	CF48 1SD	Dwelling	40.7	41.4	41.5	42.4	30.6	31.2	31.3	32.1
39 Salisbury Close	CF48 1SD	Dwelling	40.7	41.2	41.4	42.3	30.6	31.1	31.3	32.1
40 Salisbury Close	CF48 1SD	Dwelling	40.8	41.3	41.6	42.6	30.7	31.1	31.4	32.3
41 Salisbury Close	CF48 1SD	Dwelling	41.5	42.1	42.4	43.4	31.3	31.8	32.2	33.0
42 Salisbury Close	CF48 1SD	Dwelling	46.0	46.6	46.2	47.0	35.4	36.0	35.6	36.3
43 Salisbury Close	CF48 1SD	Dwelling	42.8	43.4	43.6	44.5	32.5	33.0	33.2	34.1
78 Shirley Drive	CF48 1SF	Dwelling	42.3	42.9	43.1	44.0	32.1	32.6	32.7	33.5
80 Shirley Drive	CF48 1SF	Dwelling	42.6	43.1	43.3	44.2	32.3	32.8	33.0	33.8
82 Shirley Drive	CF48 1SF	Dwelling	42.7	43.2	43.5	44.4	32.4	32.9	33.1	33.9
84 Shirley Drive	CF48 1SF	Dwelling	46.7	46.8	47.3	48.3	36.0	36.1	36.6	37.4
86 Shirley Drive	CF48 1SF	Dwelling	42.2	42.7	42.8	43.7	32.0	32.5	32.5	33.3
88 Shirley Drive	CF48 1SF	Dwelling	47.1	47.3	47.7	48.6	36.4	36.5	36.9	37.8
89 Shirley Drive	CF48 1SF	Dwelling	43.4	44.0	44.1	45.0	33.1	33.6	33.7	34.5
90 Shirley Drive	CF48 1SF	Dwelling	41.9	42.4	42.4	43.3	31.6	32.1	32.2	32.9
92 Shirley Drive	CF48 1SF	Dwelling	43.8	44.2	44.4	45.3	33.4	33.8	33.9	34.7
11 St Davids Close	CF48 1SH	Dwelling	45.5	46.4	46.3	47.2	35.0	35.7	35.7	36.4
12 St Davids Close	CF48 1SH	Dwelling	41.6	42.5	42.6	43.5	31.5	32.2	32.4	33.1
13 St Davids Close	CF48 1SH	Dwelling	39.9	40.8	41.0	41.9	29.9	30.7	30.9	31.7
14 St Davids Close	CF48 1SH	Dwelling	40.1	41.0	41.1	42.0	30.1	30.9	31.0	31.8

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
15 St Davids Close	CF48 1SH	Dwelling	40.5	41.3	41.5	42.5	30.4	31.2	31.4	32.2
16 St Davids Close	CF48 1SH	Dwelling	39.6	40.5	40.7	41.6	29.7	30.4	30.6	31.4
17 St Davids Close	CF48 1SH	Dwelling	41.4	42.0	42.2	43.2	31.2	31.8	32.0	32.8
18 St Davids Close	CF48 1SH	Dwelling	39.3	40.1	40.2	41.2	29.4	30.1	30.2	31.0
19 St Davids Close	CF48 1SH	Dwelling	40.4	41.1	41.3	42.2	30.4	31.0	31.2	32.0
20 St Davids Close	CF48 1SH	Dwelling	44.0	44.6	44.4	45.3	33.6	34.1	34.0	34.7
21 St Davids Close	CF48 1SH	Dwelling	41.1	41.8	41.9	42.8	31.0	31.6	31.7	32.5
22 St Davids Close	CF48 1SH	Dwelling	47.4	48.1	47.8	48.6	36.7	37.2	37.0	37.7
23 St Davids Close	CF48 1SH	Dwelling	41.6	42.3	42.4	43.3	31.4	32.0	32.1	32.9
25 Chester Close	CF48 1SN	Dwelling	45.3	46.4	46.8	47.7	34.7	35.8	36.1	36.9
26 Chester Close	CF48 1SN	Dwelling	41.5	42.4	42.6	43.5	31.3	32.1	32.3	33.2
27 Chester Close	CF48 1SN	Dwelling	41.6	42.5	42.7	43.6	31.5	32.3	32.4	33.3
110 Heolgerrig	CF48 1TD	Dwelling	36.8	37.5	37.8	38.8	27.1	27.8	28.0	28.9
Dan Y Mynydd Dan Y Mynydd Winchfawr	CF48 1TF	Dwelling	54.1	55.8	56.3	57.5	42.7	44.2	44.6	45.7
Heol Teleri Heol Teleri Winch Fawr Road	CF48 1TF	Dwelling	51.0	52.9	53.3	54.7	39.9	41.5	42.0	43.2
Trem Y Derw Trem Y Derw Winchfawr	CF48 1TF	Dwelling	59.9	62.0	62.5	64.0	47.9	49.7	50.2	51.6
4 Winchfawr	CF48 1TF	Dwelling	45.2	46.1	46.6	47.7	34.7	35.5	35.9	36.9
Winch Fawr Park	CF48 1TL	Dwelling	54.4	56.2	56.7	58.1	42.9	44.6	45.0	46.2
Ty Tonwen 1 Winch Fawr Park	CF48 1TL	Dwelling	60.1	62.0	62.5	63.9	48.1	49.8	50.2	51.5
2 Winch Fawr Park	CF48 1TL	Dwelling	54.4	56.2	56.7	58.1	42.9	44.6	45.0	46.2
4 Winch Fawr Park	CF48 1TL	Dwelling	57.9	59.8	60.3	61.7	46.1	47.8	48.2	49.5
5 Winch Fawr Park	CF48 1TL	Dwelling	52.2	53.8	54.2	55.3	41.0	42.4	42.8	43.7
6 Winch Fawr Park	CF48 1TL	Dwelling	52.2	53.5	53.9	54.8	40.9	42.2	42.5	43.3
Saddlebrook 7 Winch Fawr Park	CF48 1TL	Dwelling	47.0	48.2	48.5	49.5	36.3	37.4	37.6	38.5
8 Winch Fawr Park	CF48 1TL	Dwelling	40.4	41.3	41.4	42.3	30.3	31.1	31.2	32.0
9 Winch Fawr Park	CF48 1TL	Dwelling	39.8	40.7	40.9	41.9	29.8	30.7	30.8	31.7
10 Winch Fawr Park	CF48 1TL	Dwelling	43.0	44.2	44.5	45.4	32.7	33.8	34.0	34.9
11 Winch Fawr Park	CF48 1TL	Dwelling	43.5	44.6	44.7	45.7	33.1	34.1	34.2	35.1
13 Winch Fawr Park	CF48 1TL	Dwelling	39.6	40.5	40.7	41.7	29.6	30.4	30.6	31.5
1 Windsor Place	CF48 2AA	Dwelling	51.4	51.6	51.9	53.0	40.3	40.5	40.7	41.7
2 Windsor Place	CF48 2AA	Dwelling	51.7	52.1	52.7	53.7	40.5	40.8	41.4	42.3
3 Windsor Place	CF48 2AA	Dwelling	51.3	51.6	52.1	53.1	40.2	40.4	40.8	41.7
4 Windsor Place	CF48 2AA	Dwelling	51.1	51.4	52.0	53.0	39.9	40.3	40.8	41.7
5 Windsor Place	CF48 2AA	Dwelling	51.1	51.5	52.1	53.1	40.0	40.3	40.9	41.8
6 Windsor Place	CF48 2AA	Dwelling	50.9	51.3	51.9	52.9	39.8	40.1	40.6	41.5
7 Windsor Place	CF48 2AA	Dwelling	51.4	51.7	52.4	53.4	40.2	40.5	41.1	42.0
8 Windsor Place	CF48 2AA	Dwelling	59.8	60.2	59.3	60.4	47.8	48.1	47.3	48.3
New Houses 1 New Houses Pant Road	CF48 2AB	Dwelling	55.7	56.1	55.5	56.6	44.1	44.4	43.9	44.9
New Houses 10 New Houses Pant Road	CF48 2AB	Dwelling	50.9	51.2	51.1	52.2	39.8	40.0	40.0	41.0
New Houses 11 New Houses Pant Road	CF48 2AB	Dwelling	54.8	55.2	54.8	55.9	43.3	43.6	43.3	44.3
New Houses 12 New Houses Pant Road	CF48 2AB	Dwelling	54.5	54.9	54.8	55.9	43.0	43.4	43.3	44.3
New Houses 13 New Houses Pant Road	CF48 2AB	Dwelling	64.6	64.3	62.6	64.1	52.2	51.8	50.3	51.7
New Houses 14 New Houses Pant Road	CF48 2AB	Dwelling	53.1	53.5	53.2	54.3	41.8	42.1	41.8	42.9
New Houses 15 New Houses Pant Road	CF48 2AB	Dwelling	54.1	54.5	54.2	55.4	42.7	43.0	42.8	43.8
New Houses 16 New Houses Pant Road	CF48 2AB	Dwelling	53.6	54.0	53.9	55.0	42.2	42.6	42.5	43.5
New Houses 17 New Houses Pant Road	CF48 2AB	Dwelling	51.9	52.2	52.5	53.5	40.7	40.9	41.2	42.1
New Houses 1A New Houses Pant Road	CF48 2AB	Dwelling	60.3	60.0	58.4	60.0	48.3	48.0	46.6	48.0
New Houses 2 New Houses Pant Road	CF48 2AB	Dwelling	54.6	55.0	54.4	55.6	43.1	43.5	43.0	44.0
New Houses 3 New Houses Pant Road	CF48 2AB	Dwelling	53.4	53.8	53.2	54.3	42.0	42.4	41.9	42.9
New Houses 4 New Houses Pant Road	CF48 2AB	Dwelling	55.7	56.1	55.8	56.9	44.1	44.5	44.2	45.2
New Houses 5 New Houses Pant Road	CF48 2AB	Dwelling	53.8	54.3	53.9	55.0	42.4	42.8	42.4	43.4
New Houses 6 New Houses Pant Road	CF48 2AB	Dwelling	54.2	54.7	54.4	55.5	42.8	43.2	43.0	43.9
New Houses 7 New Houses Pant Road	CF48 2AB	Dwelling	50.9	51.1	51.3	52.3	39.8	40.0	40.1	41.1
New Houses 8 New Houses Pant Road	CF48 2AB	Dwelling	54.3	54.8	54.5	55.6	42.8	43.3	43.0	44.0
New Houses 9 New Houses Pant Road	CF48 2AB	Dwelling	53.4	53.9	53.4	54.5	42.1	42.5	42.0	43.0
Pant Primary School Building No. 2 Heol-Y-Bryniau	CF48 2AD	OSR	54.6	55.2	54.9	55.9	43.1	43.6	43.4	44.3
Pant Primary School Heol-Y-Bryniau	CF48 2AD	OSR	50.1	50.5	51.4	52.4	39.0	39.5	40.3	41.2
1 Queen Street	CF48 2AE	Dwelling	51.6	52.1	52.1	53.1	40.4	40.8	40.9	41.7
2 Queen Street	CF48 2AE	Dwelling	48.7	49.1	49.2	50.2	37.8	38.2	38.3	39.1
3 Queen Street	CF48 2AE	Dwelling	52.5	53.0	53.0	54.0	41.2	41.7	41.7	42.6
4 Queen Street	CF48 2AE	Dwelling	48.8	49.3	49.4	50.3	37.9	38.3	38.4	39.2
5 Queen Street	CF48 2AE	Dwelling	48.3	48.8	49.1	49.9	37.5	37.9	38.1	38.9
6 Queen Street	CF48 2AE	Dwelling	51.5	51.9	52.0	52.9	40.3	40.7	40.8	41.6
7 Queen Street	CF48 2AE	Dwelling	52.9	53.3	53.2	54.2	41.6	42.0	41.9	42.8
8 Queen Street	CF48 2AE	Dwelling	51.4	51.8	51.7	52.7	40.3	40.6	40.5	41.4
9 Queen Street	CF48 2AE	Dwelling	52.9	53.2	53.1	54.1	41.6	41.9	41.8	42.7
10 Queen Street	CF48 2AE	Dwelling	53.3	53.6	53.4	54.4	41.9	42.2	42.1	43.0
11 Queen Street	CF48 2AE	Dwelling	52.7	52.9	52.6	53.7	41.4	41.6	41.4	42.3
12 Queen Street	CF48 2AE	Dwelling	53.7	53.9	53.6	54.6	42.3	42.5	42.2	43.2
13 Queen Street	CF48 2AE	Dwelling	53.8	53.9	53.4	54.5	42.4	42.5	42.0	43.0
14 Queen Street	CF48 2AE	Dwelling	54.7	54.6	53.8	55.0	43.2	43.1	42.4	43.5
15 Queen Street	CF48 2AE	Dwelling	56.8	56.7	55.4	56.8	45.1	45.0	43.9	45.1
16 Queen Street	CF48 2AE	Dwelling	46.9	47.2	47.3	48.1	36.2	36.5	36.5	37.2
17 Queen Street	CF48 2AE	Dwelling	49.1	49.6	49.2	50.2	38.1	38.6	38.3	39.2
18 Queen Street	CF48 2AE	Dwelling	52.3	52.9	52.4	53.5	41.0	41.6	41.2	42.1
19 Queen Street	CF48 2AE	Dwelling	51.0	51.6	51.1	52.1	39.9	40.4	40.0	40.9
20 Queen Street	CF48 2AE	Dwelling	52.0	52.6	52.5	53.5	40.8	41.3	41.2	42.1
21 Queen Street	CF48 2AE	Dwelling	53.2	53.8	53.5	54.5	41.9	42.4	42.1	43.0
22 Queen Street	CF48 2AE	Dwelling	51.2	51.8	51.2	52.3	40.1	40.6	40.1	41.0
23 Queen Street	CF48 2AE	Dwelling	52.9	53.4	53.1	54.2	41.6	42.0	41.8	42.7
24 Queen Street	CF48 2AE	Dwelling	52.2	52.8	52.7	53.7	41.0	41.5	41.4	42.3
25 Queen Street	CF48 2AE	Dwelling	50.6	51.2	50.6	51.7	39.5	40.0	39.5	40.5
26 Queen Street	CF48 2AE	Dwelling	53.5	54.1	53.7	54.7	42.2	42.7	42.3	43.2
27 Queen Street	CF48 2AE	Dwelling	52.2	52.8	52.2	53.2	41.0	41.5	41.0	41.9
28 Queen Street	CF48 2AE	Dwelling	51.7	52.3	51.9	52.9	40.5	41.1	40.7	41.6
29 Queen Street	CF48 2AE	Dwelling	53.9	54.4	53.9	55.0	42.5	42.9	42.5	43.4
30 Queen Street	CF48 2AE	Dwelling	54.0	54.5	54.0	55.1	42.6	43.0	42.6	43.5
31 Queen Street	CF48 2AE	Dwelling	52.4	53.0	52.3	53.4	41.2	41.7	41.1	42.0
32 Queen Street	CF48 2AE	Dwelling	51.2	51.8	51.4	52.4	40.1	40.6	40.3	41.2
33 Queen Street	CF48 2AE	Dwelling	52.3	52.8	52.1	53.2	41.1	41.5	40.9	41.9
34 Queen Street	CF48 2AE	Dwelling	62.9	62.6	60.6	62.3	50.6	50.3	48.5	50.0
1 King Street	CF48 2AF	Dwelling	46.4	46.9	47.2	47.9	35.8	36.2	36.5	37.1
2 King Street	CF48 2AF	Dwelling	52.7	53.3	53.1	54.1	41.5	42.0	41.8	42.6
3 King Street	CF48 2AF	Dwelling	47.1	47.5	47.9	48.6	36.3	36.8	37.1	37.7
4 King Street	CF48 2AF	Dwelling	45.9	46.4	46.6	47.4	35.3	35.7	35.9	36.7
5 King Street	CF48 2AF	Dwelling	46.4	46.8	47.1	47.8	35.7	36.1	36.3	37.0
6 King Street	CF48 2AF	Dwelling	46.6	47.0	47.2	48.0	35.9	36.3	36.5	37.1
7 King Street	CF48 2AF	Dwelling	46.3	46.7	46.9	47.7	35.6	36.0	36.2	36.9
8 King Street	CF48 2AF	Dwelling	52.1	52.7	52.5	53.5	40.9	41.4	41.3	42.1
9 King Street	CF48 2AF	Dwelling	46.1	46.6	46.8	47.4	35.5	35.9	36.1	36.7
10 King Street	CF48 2AF	Dwelling	52.5	53.1	52.9	53.9	41.3	41.8	41.6	42.5
11 King Street	CF48 2AF	Dwelling	46.5	47.0	47.3	47.8	35.8	36.3	36.5	37.0
12 King Street	CF48 2AF	Dwelling	47.0	47.5	47.8	48.4	36.3	36.7	37.0	37.5
13 King Street	CF48 2AF	Dwelling	45.9	46.5	46.6	47.5	35.3	35.8	35.9	36.8
14 King Street	CF48 2AF	Dwelling	46.5	46.9	47.1	47.9	35.9	36.2	36.4	37.1
15 King Street	CF48 2AF	Dwelling	50.7	51.2	51.2	52.2	39.6	40.0	40.1	40.9
16 King Street	CF48 2AF	Dwelling	52.1	52.7	52.7	53.7	40.9	41.4	41.4	42.3

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
17 King Street	CF48 2AF	Dwelling	52.3	52.9	52.8	53.8	41.0	41.5	41.5	42.4
18 King Street	CF48 2AF	Dwelling	52.3	52.9	52.8	53.8	41.1	41.6	41.5	42.4
19 King Street	CF48 2AF	Dwelling	49.5	50.1	50.5	51.4	38.5	39.0	39.4	40.2
20 King Street	CF48 2AF	Dwelling	49.7	50.2	50.6	51.5	38.7	39.2	39.6	40.3
21 King Street	CF48 2AF	Dwelling	50.5	51.1	51.4	52.4	39.4	40.0	40.3	41.1
22 King Street	CF48 2AF	Dwelling	50.3	50.9	51.2	52.1	39.3	39.8	40.0	40.8
23 King Street	CF48 2AF	Dwelling	50.3	50.9	51.2	52.1	39.2	39.7	40.0	40.8
24 King Street	CF48 2AF	Dwelling	51.2	51.7	52.0	52.9	40.0	40.6	40.8	41.6
25 King Street	CF48 2AF	Dwelling	50.8	51.3	51.6	52.6	39.7	40.2	40.4	41.3
26 King Street	CF48 2AF	Dwelling	50.9	51.5	51.7	52.6	39.8	40.3	40.5	41.3
27 King Street	CF48 2AF	Dwelling	50.7	51.4	51.7	52.5	39.7	40.2	40.5	41.3
28 King Street	CF48 2AF	Dwelling	49.7	50.3	50.6	51.5	38.7	39.2	39.5	40.3
29 King Street	CF48 2AF	Dwelling	46.8	47.4	48.0	48.9	36.1	36.6	37.2	38.0
30 King Street	CF48 2AF	Dwelling	47.5	48.1	48.5	49.3	36.8	37.3	37.6	38.4
Maesifor Maesifor Cross King Street	CF48 2AG	Dwelling	49.2	49.7	50.1	51.0	38.3	38.7	39.1	39.8
31 Cross King Street	CF48 2AG	Dwelling	46.5	47.0	47.5	48.3	35.8	36.2	36.7	37.4
32 Cross King Street	CF48 2AG	Dwelling	51.3	52.1	52.6	53.1	40.2	40.9	41.3	41.7
33 Cross King Street	CF48 2AG	Dwelling	47.5	48.2	48.8	49.2	36.7	37.3	37.9	38.3
34 Cross King Street	CF48 2AG	Dwelling	47.6	48.3	49.0	49.4	36.8	37.4	38.1	38.4
Railway Gardens 1 Road To Penywern	CF48 2AH	Dwelling	55.5	55.5	54.6	55.8	44.0	43.9	43.1	44.2
Railway Gardens 2 Road To Penywern	CF48 2AH	Dwelling	48.4	48.7	48.6	49.6	37.6	37.8	37.7	38.7
Railway Gardens 3 Road To Penywern	CF48 2AH	Dwelling	48.3	48.5	48.6	49.6	37.5	37.7	37.7	38.7
Railway Gardens 4 Road To Penywern	CF48 2AH	Dwelling	48.0	48.5	49.9	50.9	37.2	37.6	38.9	39.8
Dowlais Stables 6 Upper Union Street	CF48 2AJ	Dwelling	46.9	47.5	47.7	48.5	36.2	36.7	36.9	37.7
Dowlais Stables 16 Upper Union Street	CF48 2AJ	Dwelling	46.6	47.3	47.0	47.9	35.9	36.5	36.3	37.1
Hafod Cottages 1 Hafod Cottages The Hafod	CF48 2AP	Dwelling	53.0	53.6	54.7	55.7	41.7	42.3	43.2	44.1
Hafod Cottages 2 Hafod Cottages The Hafod	CF48 2AP	Dwelling	51.8	52.3	53.6	54.6	40.6	41.1	42.2	43.1
Hafod Cottages 3 Hafod Cottages The Hafod	CF48 2AP	Dwelling	56.5	57.2	57.5	58.5	44.9	45.5	45.7	46.6
Hafod Cottages 4 Hafod Cottages The Hafod	CF48 2AP	Dwelling	51.9	52.4	53.2	54.2	40.7	41.1	41.9	42.8
Hafod Cottages 5 Hafod Cottages The Hafod	CF48 2AP	Dwelling	51.1	51.6	52.8	53.8	40.0	40.4	41.5	42.4
Hafod Cottages 6 Hafod Cottages The Hafod	CF48 2AP	Dwelling	57.6	58.2	58.1	59.1	45.8	46.3	46.2	47.1
1 Caeracca Villas	CF48 2AS	Dwelling	46.5	47.0	47.6	48.5	35.9	36.3	36.8	37.6
2 Caeracca Villas	CF48 2AS	Dwelling	46.0	46.4	46.9	47.8	35.4	35.8	36.2	37.0
3 Caeracca Villas	CF48 2AS	Dwelling	43.6	44.1	44.8	45.7	33.2	33.7	34.3	35.1
4 Caeracca Villas	CF48 2AS	Dwelling	46.0	46.5	46.9	47.8	35.4	35.8	36.2	37.0
5 Caeracca Villas	CF48 2AS	Dwelling	47.0	47.4	48.0	48.9	36.3	36.7	37.2	38.0
6 Caeracca Villas	CF48 2AS	Dwelling	47.2	47.6	48.2	49.1	36.4	36.8	37.3	38.1
7 Caeracca Villas	CF48 2AS	Dwelling	45.9	46.2	46.6	47.5	35.2	35.6	35.9	36.7
8 Caeracca Villas	CF48 2AS	Dwelling	45.0	45.5	46.2	47.2	34.5	34.9	35.6	36.4
9 Caeracca Villas	CF48 2AS	Dwelling	46.4	46.8	47.1	48.1	35.8	36.1	36.4	37.2
10 Caeracca Villas	CF48 2AS	Dwelling	46.0	46.4	46.7	47.6	35.4	35.7	36.0	36.8
11 Caeracca Villas	CF48 2AS	Dwelling	43.6	44.0	44.6	45.5	33.3	33.6	34.1	34.9
12 Caeracca Villas	CF48 2AS	Dwelling	46.0	46.3	46.6	47.6	35.4	35.7	35.9	36.8
13 Caeracca Villas	CF48 2AS	Dwelling	47.4	47.8	48.3	49.2	36.6	37.0	37.4	38.3
14 Caeracca Villas	CF48 2AS	Dwelling	48.2	48.7	49.2	50.1	37.4	37.8	38.2	39.1
15 Caeracca Villas	CF48 2AS	Dwelling	47.0	47.5	47.8	48.8	36.3	36.7	37.0	37.9
16 Caeracca Villas	CF48 2AS	Dwelling	46.6	46.9	47.2	48.2	35.9	36.2	36.5	37.3
17 Caeracca Villas	CF48 2AS	Dwelling	48.3	48.7	48.9	49.9	37.4	37.8	38.0	38.9
18 Caeracca Villas	CF48 2AS	Dwelling	50.7	51.2	51.5	52.5	39.6	40.0	40.3	41.2
19 Caeracca Villas	CF48 2AS	Dwelling	47.0	47.4	47.7	48.7	36.3	36.7	36.9	37.8
20 Caeracca Villas	CF48 2AS	Dwelling	48.6	49.1	49.5	50.4	37.7	38.1	38.5	39.4
21 Caeracca Villas	CF48 2AS	Dwelling	49.4	49.9	50.4	51.4	38.4	38.9	39.4	40.2
22 Caeracca Villas	CF48 2AS	Dwelling	48.3	48.8	49.2	50.2	37.4	37.9	38.2	39.1
1 Gwladys Street	CF48 2AT	Dwelling	49.1	49.6	50.0	51.0	38.2	38.7	39.0	39.9
3 Gwladys Street	CF48 2AT	Dwelling	48.8	49.4	49.6	50.6	37.9	38.4	38.6	39.5
5 Gwladys Street	CF48 2AT	Dwelling	48.6	49.1	49.4	50.4	37.7	38.2	38.5	39.4
7 Gwladys Street	CF48 2AT	Dwelling	48.4	49.0	49.3	50.3	37.6	38.0	38.3	39.2
9 Gwladys Street	CF48 2AT	Dwelling	48.6	49.2	49.6	50.5	37.8	38.3	38.6	39.5
11 Gwladys Street	CF48 2AT	Dwelling	48.4	49.0	49.3	50.3	37.6	38.1	38.4	39.3
13 Gwladys Street	CF48 2AT	Dwelling	48.4	48.9	49.3	50.3	37.5	38.0	38.4	39.2
15 Gwladys Street	CF48 2AT	Dwelling	48.2	48.7	49.1	50.1	37.3	37.8	38.2	39.1
17 Gwladys Street	CF48 2AT	Dwelling	48.1	48.7	49.1	50.1	37.3	37.8	38.2	39.0
19 Gwladys Street	CF48 2AT	Dwelling	47.9	48.4	48.8	49.8	37.1	37.6	37.9	38.8
21 Gwladys Street	CF48 2AT	Dwelling	49.9	50.5	50.8	51.8	38.9	39.4	39.7	40.6
23 Gwladys Street	CF48 2AT	Dwelling	47.8	48.4	48.8	49.8	37.0	37.5	37.9	38.8
25 Gwladys Street	CF48 2AT	Dwelling	47.1	47.7	48.2	49.2	36.4	36.9	37.3	38.2
27 Gwladys Street	CF48 2AT	Dwelling	47.7	48.3	48.8	49.8	36.9	37.4	37.9	38.8
29 Gwladys Street	CF48 2AT	Dwelling	47.6	48.2	48.7	49.6	36.8	37.3	37.8	38.7
31 Gwladys Street	CF48 2AT	Dwelling	47.0	47.6	48.1	49.1	36.3	36.8	37.3	38.1
33 Gwladys Street	CF48 2AT	Dwelling	47.4	48.0	48.5	49.5	36.7	37.2	37.6	38.5
35 Gwladys Street	CF48 2AT	Dwelling	47.5	48.1	48.6	49.6	36.7	37.2	37.7	38.6
37 Gwladys Street	CF48 2AT	Dwelling	46.9	47.5	48.0	49.0	36.2	36.7	37.2	38.1
39 Gwladys Street	CF48 2AT	Dwelling	47.8	48.4	48.9	49.9	37.0	37.5	38.0	38.9
41 Gwladys Street	CF48 2AT	Dwelling	47.3	47.9	48.5	49.4	36.6	37.1	37.6	38.5
43 Gwladys Street	CF48 2AT	Dwelling	47.7	48.2	48.8	49.7	36.9	37.4	37.9	38.7
45 Gwladys Street	CF48 2AT	Dwelling	48.5	49.0	49.5	50.5	37.6	38.1	38.6	39.4
47 Gwladys Street	CF48 2AT	Dwelling	47.5	48.1	48.6	49.6	36.8	37.3	37.7	38.6
49 Gwladys Street	CF48 2AT	Dwelling	47.3	47.9	48.4	49.4	36.6	37.1	37.6	38.4
51 Gwladys Street	CF48 2AT	Dwelling	47.3	47.9	48.4	49.3	36.6	37.1	37.5	38.4
53 Gwladys Street	CF48 2AT	Dwelling	47.6	48.2	48.6	49.6	36.8	37.4	37.7	38.6
55 Gwladys Street	CF48 2AT	Dwelling	46.9	47.5	48.0	48.9	36.2	36.7	37.1	38.0
57 Gwladys Street	CF48 2AT	Dwelling	48.2	48.8	49.2	50.1	37.4	37.9	38.2	39.1
59 Gwladys Street	CF48 2AT	Dwelling	47.3	47.9	48.3	49.3	36.6	37.1	37.5	38.3
61 Gwladys Street	CF48 2AT	Dwelling	49.2	49.8	50.1	51.1	38.3	38.8	39.1	39.9
63 Gwladys Street	CF48 2AT	Dwelling	46.1	46.6	47.3	48.2	35.5	35.9	36.5	37.3
65 Gwladys Street	CF48 2AT	Dwelling	49.5	50.0	50.4	51.4	38.5	39.0	39.4	40.2
67 Gwladys Street	CF48 2AT	Dwelling	47.0	47.6	48.0	49.0	36.3	36.8	37.2	38.1
69 Gwladys Street	CF48 2AT	Dwelling	47.2	47.8	48.2	49.2	36.5	37.0	37.4	38.2
71 Gwladys Street	CF48 2AT	Dwelling	47.1	47.7	48.2	49.1	36.4	36.9	37.4	38.2
73 Gwladys Street	CF48 2AT	Dwelling	49.0	49.6	50.0	51.0	38.1	38.6	39.0	39.9
75 Gwladys Street	CF48 2AT	Dwelling	46.7	47.3	47.7	48.7	36.0	36.5	36.9	37.8
77 Gwladys Street	CF48 2AT	Dwelling	46.6	47.2	47.6	48.6	36.0	36.5	36.8	37.7
79 Gwladys Street	CF48 2AT	Dwelling	46.9	47.5	47.9	48.9	36.2	36.7	37.1	38.0
81 Gwladys Street	CF48 2AT	Dwelling	46.3	46.9	47.3	48.3	35.7	36.2	36.6	37.4
83 Gwladys Street	CF48 2AT	Dwelling	49.1	49.7	50.0	51.0	38.2	38.7	39.0	39.8
85 Gwladys Street	CF48 2AT	Dwelling	49.0	49.6	49.9	50.9	38.1	38.6	38.9	39.8
87 Gwladys Street	CF48 2AT	Dwelling	46.4	47.0	47.4	48.4	35.8	36.3	36.7	37.5
89 Gwladys Street	CF48 2AT	Dwelling	47.0	47.6	48.0	49.0	36.3	36.8	37.2	38.1
91 Gwladys Street	CF48 2AT	Dwelling	48.9	49.5	49.8	50.8	38.0	38.5	38.8	39.7
93 Gwladys Street	CF48 2AT	Dwelling	48.7	49.3	49.7	50.6	37.8	38.3	38.7	39.5
2 Gwladys Street	CF48 2AU	Dwelling	49.7	50.2	50.7	51.7	38.7	39.2	39.6	40.5
4 Gwladys Street	CF48 2AU	Dwelling	47.1	47.6	48.3	49.2	36.4	36.9	37.4	38.3
6 Gwladys Street	CF48 2AU	Dwelling	46.9	47.3	47.7	48.6	36.2	36.6	36.9	37.8
8 Gwladys Street	CF48 2AU	Dwelling	47.8	48.3	49.0	50.0	37.0	37.5	38.1	38.9
10 Gwladys Street	CF48 2AU	Dwelling	44.2	44.6	45.8	46.8	33.7	34.1	35.2	36.1
12 Gwladys Street	CF48 2AU	Dwelling	46.2	46.7	47.1	48.1	35.6	36.0	36.4	37.2
14 Gwladys Street	CF48 2AU	Dwelling	49.7	50.3	50.6	51.6	38.7	39.2	39.5	40.4

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
16 Gwladys Street	CF48 2AU	Dwelling	51.6	52.1	52.3	53.3	40.4	40.9	41.1	41.9
18 Gwladys Street	CF48 2AU	Dwelling	49.5	50.1	50.5	51.5	38.6	39.0	39.5	40.3
20 Gwladys Street	CF48 2AU	Dwelling	49.8	50.3	50.9	51.9	38.8	39.3	39.8	40.7
22 Gwladys Street	CF48 2AU	Dwelling	48.0	48.5	49.1	50.1	37.1	37.7	38.2	39.1
24 Gwladys Street	CF48 2AU	Dwelling	47.7	48.2	49.1	50.0	36.9	37.4	38.2	39.0
26 Gwladys Street	CF48 2AU	Dwelling	47.8	48.4	49.4	50.3	37.0	37.5	38.4	39.3
28 Gwladys Street	CF48 2AU	Dwelling	47.4	47.9	48.9	49.8	36.6	37.1	38.0	38.8
30 Gwladys Street	CF48 2AU	Dwelling	45.5	46.1	46.8	47.8	35.0	35.5	36.1	37.0
32 Gwladys Street	CF48 2AU	Dwelling	45.7	46.2	46.7	47.6	35.1	35.6	36.0	36.8
34 Gwladys Street	CF48 2AU	Dwelling	43.6	44.0	44.7	45.6	33.2	33.6	34.2	35.0
36 Gwladys Street	CF48 2AU	Dwelling	49.6	50.2	50.9	51.8	38.6	39.1	39.8	40.6
38 Gwladys Street	CF48 2AU	Dwelling	45.2	45.7	46.3	47.2	34.7	35.1	35.6	36.5
40 Gwladys Street	CF48 2AU	Dwelling	47.4	48.0	48.5	49.5	36.6	37.2	37.7	38.5
42 Gwladys Street	CF48 2AU	Dwelling	47.7	48.3	49.0	49.9	36.9	37.5	38.1	38.9
44 Gwladys Street	CF48 2AU	Dwelling	45.5	46.1	46.9	47.8	35.0	35.5	36.2	37.0
46 Gwladys Street	CF48 2AU	Dwelling	46.6	47.1	47.8	48.7	35.9	36.4	37.0	37.8
48 Gwladys Street	CF48 2AU	Dwelling	47.9	48.4	48.8	49.7	37.1	37.6	37.9	38.7
50 Gwladys Street	CF48 2AU	Dwelling	45.7	46.1	46.7	47.6	35.1	35.5	36.0	36.9
52 Gwladys Street	CF48 2AU	Dwelling	49.1	49.7	50.1	51.1	38.2	38.7	39.1	39.9
54 Gwladys Street	CF48 2AU	Dwelling	47.1	47.7	48.3	49.2	36.4	36.9	37.5	38.3
56 Gwladys Street	CF48 2AU	Dwelling	47.1	47.7	48.1	49.0	36.3	36.9	37.3	38.1
58 Gwladys Street	CF48 2AU	Dwelling	44.5	45.1	45.7	46.6	34.1	34.5	35.1	35.9
60 Gwladys Street	CF48 2AU	Dwelling	43.7	44.1	44.7	45.5	33.4	33.7	34.2	35.0
62 Gwladys Street	CF48 2AU	Dwelling	46.9	47.4	48.0	48.9	36.2	36.6	37.2	38.0
64 Gwladys Street	CF48 2AU	Dwelling	46.8	47.4	48.0	49.0	36.1	36.6	37.2	38.0
66 Gwladys Street	CF48 2AU	Dwelling	45.7	46.3	46.9	47.9	35.2	35.6	36.2	37.0
68 Gwladys Street	CF48 2AU	Dwelling	44.7	45.2	46.0	47.0	34.2	34.7	35.4	36.3
70 Gwladys Street	CF48 2AU	Dwelling	45.2	45.7	46.3	47.2	34.6	35.1	35.6	36.5
72 Gwladys Street	CF48 2AU	Dwelling	48.4	49.0	49.5	50.5	37.6	38.0	38.6	39.4
74 Gwladys Street	CF48 2AU	Dwelling	48.6	49.1	49.6	50.6	37.7	38.2	38.6	39.5
76 Gwladys Street	CF48 2AU	Dwelling	44.6	45.1	45.5	46.5	34.1	34.6	35.0	35.8
78 Gwladys Street	CF48 2AU	Dwelling	47.4	47.9	48.4	49.3	36.7	37.1	37.6	38.4
80 Gwladys Street	CF48 2AU	Dwelling	43.6	44.0	44.5	45.4	33.2	33.5	34.1	34.8
82 Gwladys Street	CF48 2AU	Dwelling	47.2	47.8	48.5	49.4	36.5	37.0	37.6	38.5
84 Gwladys Street	CF48 2AU	Dwelling	46.5	47.0	47.7	48.6	35.8	36.3	36.9	37.7
86 Gwladys Street	CF48 2AU	Dwelling	46.8	47.3	48.0	48.9	36.1	36.6	37.2	38.0
88 Gwladys Street	CF48 2AU	Dwelling	44.4	44.8	45.4	46.3	33.9	34.3	34.9	35.7
90 Gwladys Street	CF48 2AU	Dwelling	45.7	46.3	47.1	48.0	35.1	35.6	36.4	37.2
1 Nant Morlais	CF48 2AW	Dwelling	51.9	52.4	53.4	54.4	40.7	41.1	42.1	43.0
2 Nant Morlais	CF48 2AW	Dwelling	45.0	45.5	46.7	47.6	34.5	34.9	36.0	36.8
3 Nant Morlais	CF48 2AW	Dwelling	51.9	52.4	53.6	54.6	40.7	41.2	42.2	43.1
4 Nant Morlais	CF48 2AW	Dwelling	48.3	48.8	49.7	50.7	37.4	37.9	38.7	39.6
5 Nant Morlais	CF48 2AW	Dwelling	43.5	43.9	45.1	46.0	33.1	33.5	34.5	35.4
6 Nant Morlais	CF48 2AW	Dwelling	52.7	53.3	53.5	54.5	41.5	42.0	42.1	43.0
7 Nant Morlais	CF48 2AW	Dwelling	50.2	50.8	51.6	52.6	39.2	39.7	40.4	41.3
8 Nant Morlais	CF48 2AW	Dwelling	49.4	50.0	51.4	52.3	38.5	39.0	40.2	41.1
9 Nant Morlais	CF48 2AW	Dwelling	48.4	49.0	50.6	51.6	37.5	38.0	39.5	40.4
10 Nant Morlais	CF48 2AW	Dwelling	50.5	51.1	52.2	53.1	39.5	40.0	40.9	41.8
Pentwyn 11 Nant Morlais	CF48 2AW	Dwelling	47.4	47.9	48.7	49.7	36.6	37.1	37.8	38.7
Bronheulwen 12 Nant Morlais	CF48 2AW	Dwelling	47.9	48.4	49.2	50.1	37.1	37.6	38.2	39.1
13 Nant Morlais	CF48 2AW	Dwelling	49.7	50.3	51.3	52.2	38.7	39.3	40.1	41.0
14 Nant Morlais	CF48 2AW	Dwelling	49.1	49.7	50.4	51.4	38.2	38.7	39.3	40.2
Dunoon 15 Nant Morlais	CF48 2AW	Dwelling	48.1	48.7	49.8	50.7	37.2	37.8	38.8	39.7
16 Nant Morlais	CF48 2AW	Dwelling	49.4	50.0	50.8	51.8	38.5	39.0	39.7	40.6
17 Nant Morlais	CF48 2AW	Dwelling	50.3	50.9	51.6	52.5	39.3	39.8	40.4	41.3
18 Nant Morlais	CF48 2AW	Dwelling	50.5	51.1	51.7	52.7	39.5	40.0	40.5	41.4
19 Nant Morlais	CF48 2AW	Dwelling	49.8	50.3	51.1	52.1	38.8	39.3	40.0	40.9
Lynger 20 Nant Morlais	CF48 2AW	Dwelling	51.2	51.8	52.2	53.1	40.1	40.6	40.9	41.8
21 Nant Morlais	CF48 2AW	Dwelling	49.3	49.9	50.2	51.2	38.4	38.9	39.2	40.1
Ger Y Nant 23 Nant Morlais	CF48 2AW	Dwelling	46.5	47.1	48.3	49.2	35.9	36.4	37.4	38.3
24 Nant Morlais	CF48 2AW	Dwelling	48.3	48.9	50.7	51.6	37.4	38.0	39.6	40.4
25 Nant Morlais	CF48 2AW	Dwelling	49.8	50.4	52.1	53.0	38.8	39.4	40.9	41.7
26 Nant Morlais	CF48 2AW	Dwelling	43.7	44.2	46.0	47.0	33.3	33.8	35.4	36.2
27 Nant Morlais	CF48 2AW	Dwelling	47.5	48.1	50.3	51.3	36.7	37.3	39.3	40.1
28 Nant Morlais	CF48 2AW	Dwelling	49.2	49.8	52.2	53.1	38.2	38.8	40.9	41.8
29 Nant Morlais	CF48 2AW	Dwelling	47.4	48.0	50.4	51.4	36.6	37.1	39.4	40.2
Changing Rooms Glanmorlais	CF48 2AY	OSR	51.1	51.7	52.2	53.2	40.0	40.5	41.0	41.8
1 Glanmorlais	CF48 2AY	Dwelling	44.0	44.5	45.1	46.0	33.6	34.0	34.6	35.4
2 Glanmorlais	CF48 2AY	Dwelling	47.1	47.6	48.3	49.2	36.4	36.9	37.4	38.2
3 Glanmorlais	CF48 2AY	Dwelling	47.2	47.7	48.5	49.4	36.4	36.9	37.6	38.4
4 Glanmorlais	CF48 2AY	Dwelling	46.5	47.1	47.9	48.8	35.9	36.3	37.1	37.9
5 Glanmorlais	CF48 2AY	Dwelling	47.0	47.5	48.2	49.1	36.3	36.7	37.3	38.2
6 Glanmorlais	CF48 2AY	Dwelling	47.6	48.2	48.7	49.6	36.9	37.3	37.8	38.6
7 Glanmorlais	CF48 2AY	Dwelling	47.5	48.0	48.6	49.5	36.7	37.2	37.7	38.5
8 Glanmorlais	CF48 2AY	Dwelling	47.5	48.0	48.5	49.4	36.8	37.2	37.7	38.5
9 Glanmorlais	CF48 2AY	Dwelling	45.9	46.4	46.8	47.8	35.3	35.7	36.1	37.0
10 Glanmorlais	CF48 2AY	Dwelling	47.0	47.6	48.1	49.0	36.3	36.8	37.2	38.1
11 Glanmorlais	CF48 2AY	Dwelling	44.8	45.3	45.9	46.8	34.3	34.7	35.3	36.1
12 Glanmorlais	CF48 2AY	Dwelling	45.9	46.4	47.0	47.9	35.3	35.7	36.3	37.1
13 Glanmorlais	CF48 2AY	Dwelling	42.5	42.9	43.6	44.5	32.2	32.6	33.2	34.0
14 Glanmorlais	CF48 2AY	Dwelling	47.8	48.3	49.0	49.9	37.0	37.5	38.1	38.9
15 Glanmorlais	CF48 2AY	Dwelling	46.7	47.3	48.1	49.1	36.1	36.5	37.3	38.1
16 Glanmorlais	CF48 2AY	Dwelling	48.1	48.6	49.2	50.1	37.2	37.7	38.3	39.1
17 Glanmorlais	CF48 2AY	Dwelling	48.2	48.7	49.4	50.3	37.4	37.8	38.4	39.2
18 Glanmorlais	CF48 2AY	Dwelling	47.7	48.3	49.2	50.1	36.9	37.4	38.2	39.1
19 Glanmorlais	CF48 2AY	Dwelling	47.6	48.2	49.1	49.9	36.8	37.4	38.1	38.9
20 Glanmorlais	CF48 2AY	Dwelling	47.3	47.8	48.4	49.3	36.5	37.0	37.6	38.4
21 Glanmorlais	CF48 2AY	Dwelling	46.5	47.0	47.3	48.3	35.8	36.2	36.6	37.4
22 Glanmorlais	CF48 2AY	Dwelling	46.8	47.4	48.0	49.0	36.1	36.6	37.2	38.0
23 Glanmorlais	CF48 2AY	Dwelling	47.8	48.4	49.2	50.2	37.0	37.5	38.3	39.1
24 Glanmorlais	CF48 2AY	Dwelling	48.6	49.1	49.7	50.6	37.7	38.2	38.7	39.5
25 Glanmorlais	CF48 2AY	Dwelling	44.2	44.6	45.2	46.1	33.8	34.1	34.6	35.4
26 Glanmorlais	CF48 2AY	Dwelling	49.1	49.7	50.2	51.2	38.2	38.7	39.2	40.0
27 Glanmorlais	CF48 2AY	Dwelling	47.1	47.7	48.5	49.5	36.4	36.9	37.7	38.5
28 Glanmorlais	CF48 2AY	Dwelling	48.4	49.0	49.8	50.7	37.6	38.1	38.8	39.6
29 Glanmorlais	CF48 2AY	Dwelling	47.5	48.0	48.8	49.8	36.8	37.2	37.9	38.8
30 Glanmorlais	CF48 2AY	Dwelling	48.9	49.5	50.2	51.1	38.0	38.5	39.1	40.0
31 Glanmorlais	CF48 2AY	Dwelling	49.5	50.0	50.5	51.4	38.5	39.0	39.4	40.2
32 Glanmorlais	CF48 2AY	Dwelling	45.7	46.2	46.8	47.6	35.1	35.5	36.1	36.9
33 Glanmorlais	CF48 2AY	Dwelling	46.6	47.1	47.9	48.8	35.9	36.4	37.0	37.9
34 Glanmorlais	CF48 2AY	Dwelling	47.1	47.6	48.1	49.0	36.4	36.9	37.2	38.1
35 Glanmorlais	CF48 2AY	Dwelling	48.9	49.4	49.8	50.8	38.0	38.4	38.8	39.7
36 Glanmorlais	CF48 2AY	Dwelling	45.7	46.2	46.9	47.7	35.1	35.6	36.2	36.9
37 Glanmorlais	CF48 2AY	Dwelling	49.3	49.9	50.6	51.5	38.4	38.9	39.5	40.4
38 Glanmorlais	CF48 2AY	Dwelling	47.4	48.0	48.8	49.7	36.7	37.1	37.9	38.7
39 Glanmorlais	CF48 2AY	Dwelling	49.8	50.4	51.0	51.9	38.8	39.3	39.9	40.7
40 Glanmorlais	CF48 2AY	Dwelling	46.4	46.9	47.5	48.3	35.8	36.2	36.7	37.5

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
41 Glanmorlais	CF48 2AY	Dwelling	43.8	44.2	44.7	45.6	33.4	33.8	34.2	35.0
42 Glanmorlais	CF48 2AY	Dwelling	46.4	46.9	47.6	48.6	35.7	36.2	36.9	37.7
43 Glanmorlais	CF48 2AY	Dwelling	48.6	49.1	49.5	50.4	37.7	38.2	38.5	39.4
44 Glanmorlais	CF48 2AY	Dwelling	48.8	49.4	49.7	50.7	37.9	38.4	38.7	39.6
45 Glanmorlais	CF48 2AY	Dwelling	50.1	50.7	51.2	52.1	39.1	39.6	40.1	40.9
46 Glanmorlais	CF48 2AY	Dwelling	50.7	51.3	51.7	52.7	39.6	40.1	40.5	41.4
47 Glanmorlais	CF48 2AY	Dwelling	47.0	47.5	48.1	49.1	36.3	36.8	37.3	38.1
48 Glanmorlais	CF48 2AY	Dwelling	48.5	49.1	49.8	50.8	37.6	38.2	38.8	39.7
49 Glanmorlais	CF48 2AY	Dwelling	44.4	44.8	45.4	46.3	34.0	34.3	34.8	35.6
50 Glanmorlais	CF48 2AY	Dwelling	46.4	47.0	47.8	48.6	35.8	36.2	37.0	37.8
51 Glanmorlais	CF48 2AY	Dwelling	44.4	44.8	45.3	46.2	34.0	34.3	34.8	35.6
52 Glanmorlais	CF48 2AY	Dwelling	51.0	51.6	51.9	52.9	39.9	40.4	40.7	41.6
53 Glanmorlais	CF48 2AY	Dwelling	50.8	51.4	51.7	52.7	39.7	40.2	40.6	41.4
54 Glanmorlais	CF48 2AY	Dwelling	51.0	51.6	51.9	52.8	39.9	40.4	40.7	41.5
55 Glanmorlais	CF48 2AY	Dwelling	50.3	50.9	51.5	52.4	39.2	39.8	40.3	41.2
56 Glanmorlais	CF48 2AY	Dwelling	49.8	50.4	50.8	51.8	38.8	39.4	39.7	40.6
57 Glanmorlais	CF48 2AY	Dwelling	48.8	49.3	50.0	50.9	37.9	38.4	39.0	39.8
1 Tair Twynau	CF48 2BA	Dwelling	43.6	44.1	44.8	45.7	33.2	33.6	34.3	35.1
2 Tair Twynau	CF48 2BA	Dwelling	47.4	47.9	48.5	49.4	36.7	37.1	37.6	38.4
3 Tair Twynau	CF48 2BA	Dwelling	47.4	48.0	48.5	49.5	36.7	37.1	37.7	38.5
4 Tair Twynau	CF48 2BA	Dwelling	47.0	47.6	48.2	49.2	36.3	36.8	37.4	38.2
5 Tair Twynau	CF48 2BA	Dwelling	48.5	49.0	49.5	50.5	37.6	38.1	38.6	39.4
6 Tair Twynau	CF48 2BA	Dwelling	46.3	46.8	47.2	48.1	35.6	36.1	36.5	37.3
7 Tair Twynau	CF48 2BA	Dwelling	47.6	48.1	48.7	49.7	36.8	37.3	37.8	38.7
8 Tair Twynau	CF48 2BA	Dwelling	45.2	45.7	46.3	47.2	34.7	35.1	35.7	36.5
9 Tair Twynau	CF48 2BA	Dwelling	46.3	46.8	47.3	48.3	35.6	36.1	36.6	37.4
10 Tair Twynau	CF48 2BA	Dwelling	46.4	46.9	47.4	48.3	35.7	36.2	36.6	37.5
11 Tair Twynau	CF48 2BA	Dwelling	43.1	43.6	44.4	45.3	32.8	33.3	34.0	34.8
12 Tair Twynau	CF48 2BA	Dwelling	45.2	45.7	46.3	47.2	34.7	35.1	35.7	36.4
13 Tair Twynau	CF48 2BA	Dwelling	48.0	48.6	49.0	49.9	37.2	37.7	38.1	38.9
14 Tair Twynau	CF48 2BA	Dwelling	46.8	47.2	47.7	48.6	36.1	36.5	36.9	37.7
15 Tair Twynau	CF48 2BA	Dwelling	45.3	45.8	46.5	47.4	34.8	35.2	35.8	36.6
16 Tair Twynau	CF48 2BA	Dwelling	46.6	47.1	47.9	48.8	35.9	36.4	37.1	37.9
17 Tair Twynau	CF48 2BA	Dwelling	44.6	45.0	45.6	46.5	34.1	34.5	35.0	35.8
18 Tair Twynau	CF48 2BA	Dwelling	46.5	47.1	47.8	48.7	35.9	36.4	37.0	37.8
19 Tair Twynau	CF48 2BA	Dwelling	44.2	44.6	45.4	46.3	33.8	34.2	34.8	35.6
20 Tair Twynau	CF48 2BA	Dwelling	47.3	47.9	48.3	49.3	36.6	37.1	37.5	38.3
21 Tair Twynau	CF48 2BA	Dwelling	47.2	47.6	48.3	49.2	36.4	36.9	37.5	38.3
22 Tair Twynau	CF48 2BA	Dwelling	46.4	46.9	47.5	48.4	35.7	36.2	36.7	37.5
23 Tair Twynau	CF48 2BA	Dwelling	44.6	45.0	46.0	46.9	34.1	34.5	35.4	36.2
24 Tair Twynau	CF48 2BA	Dwelling	46.1	46.6	47.1	48.1	35.5	36.0	36.4	37.2
25 Tair Twynau	CF48 2BA	Dwelling	47.1	47.6	48.3	49.2	36.4	36.8	37.4	38.3
26 Tair Twynau	CF48 2BA	Dwelling	45.1	45.6	46.2	47.1	34.6	35.0	35.6	36.4
27 Tair Twynau	CF48 2BA	Dwelling	46.0	46.6	47.4	48.3	35.4	35.9	36.6	37.5
28 Tair Twynau	CF48 2BA	Dwelling	46.1	46.6	47.4	48.4	35.4	35.9	36.7	37.5
29 Tair Twynau	CF48 2BA	Dwelling	45.5	46.0	46.6	47.5	34.9	35.4	35.9	36.7
30 Tair Twynau	CF48 2BA	Dwelling	45.3	45.8	46.6	47.5	34.7	35.2	35.9	36.7
31 Tair Twynau	CF48 2BA	Dwelling	46.5	47.1	47.9	48.8	35.9	36.3	37.0	37.9
32 Tair Twynau	CF48 2BA	Dwelling	45.6	46.2	47.0	47.9	35.1	35.5	36.2	37.1
33 Tair Twynau	CF48 2BA	Dwelling	43.6	44.0	44.7	45.6	33.2	33.6	34.2	35.0
34 Tair Twynau	CF48 2BA	Dwelling	45.3	45.9	46.8	47.7	34.8	35.3	36.1	36.9
1 Edward Street	CF48 2BB	Dwelling	45.0	45.4	45.7	46.5	34.5	34.8	35.1	35.8
3 Edward Street	CF48 2BB	Dwelling	48.0	48.5	48.6	49.6	37.2	37.6	37.7	38.6
5 Edward Street	CF48 2BB	Dwelling	47.8	48.4	48.5	49.5	37.0	37.5	37.7	38.6
7 Edward Street	CF48 2BB	Dwelling	48.0	48.5	48.7	49.7	37.2	37.6	37.8	38.7
9 Edward Street	CF48 2BB	Dwelling	50.8	51.4	51.5	52.5	39.7	40.2	40.3	41.2
11 Edward Street	CF48 2BB	Dwelling	47.6	48.2	48.4	49.4	36.9	37.3	37.6	38.4
13 Edward Street	CF48 2BB	Dwelling	47.7	48.2	48.5	49.5	36.9	37.4	37.6	38.5
15 Edward Street	CF48 2BB	Dwelling	47.5	48.0	48.4	49.4	36.7	37.2	37.5	38.4
17 Edward Street	CF48 2BB	Dwelling	47.6	48.1	48.5	49.5	36.8	37.3	37.6	38.5
19 Edward Street	CF48 2BB	Dwelling	47.8	48.4	48.8	49.7	37.0	37.5	37.9	38.7
21 Edward Street	CF48 2BB	Dwelling	47.8	48.4	48.8	49.8	37.0	37.5	37.9	38.8
23 Edward Street	CF48 2BB	Dwelling	50.6	51.2	51.5	52.5	39.6	40.0	40.4	41.2
25 Edward Street	CF48 2BB	Dwelling	47.6	48.2	48.6	49.6	36.8	37.3	37.7	38.6
27 Edward Street	CF48 2BB	Dwelling	45.8	46.3	47.0	47.9	35.2	35.6	36.3	37.1
29 Edward Street	CF48 2BB	Dwelling	47.8	48.3	48.7	49.7	37.0	37.5	37.8	38.7
31 Edward Street	CF48 2BB	Dwelling	48.0	48.6	48.9	49.9	37.2	37.7	38.0	38.9
33 Edward Street	CF48 2BB	Dwelling	47.2	47.8	48.2	49.1	36.5	37.0	37.3	38.2
35 Edward Street	CF48 2BB	Dwelling	47.3	47.9	48.2	49.2	36.6	37.1	37.4	38.3
37 Edward Street	CF48 2BB	Dwelling	47.4	48.0	48.3	49.3	36.7	37.2	37.5	38.4
39 Edward Street	CF48 2BB	Dwelling	47.2	47.8	48.1	49.1	36.5	37.0	37.3	38.2
41 Edward Street	CF48 2BB	Dwelling	47.0	47.6	47.9	48.9	36.3	36.8	37.1	38.0
43 Edward Street	CF48 2BB	Dwelling	48.2	48.8	49.1	50.1	37.4	37.9	38.2	39.1
45 Edward Street	CF48 2BB	Dwelling	47.8	48.3	48.8	49.7	37.0	37.5	37.9	38.7
47 Edward Street	CF48 2BB	Dwelling	49.1	49.6	50.0	51.0	38.2	38.7	39.0	39.8
49 Edward Street	CF48 2BB	Dwelling	48.2	48.8	49.2	50.1	37.4	37.9	38.2	39.1
51 Edward Street	CF48 2BB	Dwelling	48.6	49.1	49.5	50.5	37.7	38.2	38.6	39.4
53 Edward Street	CF48 2BB	Dwelling	46.1	46.7	47.1	48.1	35.5	36.0	36.4	37.3
55 Edward Street	CF48 2BB	Dwelling	48.3	48.9	49.3	50.2	37.5	38.0	38.3	39.2
57 Edward Street	CF48 2BB	Dwelling	48.0	48.6	49.0	50.0	37.2	37.7	38.1	39.0
59 Edward Street	CF48 2BB	Dwelling	48.1	48.7	49.2	50.1	37.3	37.8	38.2	39.1
61 Edward Street	CF48 2BB	Dwelling	47.6	48.2	48.6	49.6	36.9	37.3	37.8	38.6
63 Edward Street	CF48 2BB	Dwelling	45.6	46.2	46.6	47.6	35.1	35.5	35.9	36.8
65 Edward Street	CF48 2BB	Dwelling	47.3	47.8	48.3	49.3	36.6	37.0	37.5	38.3
67 Edward Street	CF48 2BB	Dwelling	47.8	48.4	48.8	49.8	37.0	37.5	37.9	38.8
69 Edward Street	CF48 2BB	Dwelling	48.3	48.8	49.3	50.2	37.5	37.9	38.3	39.2
71 Edward Street	CF48 2BB	Dwelling	45.7	46.3	46.7	47.7	35.1	35.6	36.0	36.9
73 Edward Street	CF48 2BB	Dwelling	47.0	47.5	48.1	49.0	36.3	36.8	37.2	38.1
75 Edward Street	CF48 2BB	Dwelling	47.5	48.1	48.5	49.5	36.8	37.2	37.7	38.5
77 Edward Street	CF48 2BB	Dwelling	47.2	47.8	48.2	49.2	36.5	37.0	37.4	38.2
79 Edward Street	CF48 2BB	Dwelling	45.1	45.6	46.1	47.1	34.6	35.1	35.5	36.3
81 Edward Street	CF48 2BB	Dwelling	47.2	47.8	48.2	49.2	36.5	37.0	37.4	38.2
83 Edward Street	CF48 2BB	Dwelling	45.1	45.6	46.1	47.1	34.6	35.1	35.5	36.3
2 Edward Street	CF48 2BD	Dwelling	49.0	49.4	49.9	50.8	38.1	38.5	38.9	39.7
4 Edward Street	CF48 2BD	Dwelling	45.4	45.9	46.3	47.3	34.8	35.3	35.6	36.5
6 Edward Street	CF48 2BD	Dwelling	50.1	50.6	50.9	51.9	39.1	39.5	39.8	40.7
8 Edward Street	CF48 2BD	Dwelling	50.3	50.8	51.3	52.2	39.2	39.7	40.1	41.0
10 Edward Street	CF48 2BD	Dwelling	47.8	48.3	49.0	49.9	37.0	37.4	38.0	38.9
12 Edward Street	CF48 2BD	Dwelling	46.2	46.7	47.0	48.0	35.5	36.0	36.3	37.2
14 Edward Street	CF48 2BD	Dwelling	50.5	51.0	51.3	52.3	39.4	39.9	40.2	41.1
16 Edward Street	CF48 2BD	Dwelling	45.7	46.1	46.5	47.4	35.1	35.5	35.8	36.6
18 Edward Street	CF48 2BD	Dwelling	48.7	49.2	49.6	50.6	37.8	38.3	38.6	39.5
20 Edward Street	CF48 2BD	Dwelling	48.1	48.6	49.1	50.1	37.3	37.8	38.2	39.0
22 Edward Street	CF48 2BD	Dwelling	48.5	49.0	49.4	50.4	37.7	38.1	38.5	39.3
24 Edward Street	CF48 2BD	Dwelling	47.9	48.4	48.9	49.8	37.1	37.5	38.0	38.8
26 Edward Street	CF48 2BD	Dwelling	45.0	45.5	46.1	47.0	34.5	34.9	35.5	36.3
28 Edward Street	CF48 2BD	Dwelling	45.6	46.1	46.6	47.6	35.1	35.4	36.0	36.8

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
30 Edward Street	CF48 2BD	Dwelling	44.0	44.4	44.9	45.8	33.6	33.9	34.4	35.2
32 Edward Street	CF48 2BD	Dwelling	47.8	48.3	48.7	49.6	37.0	37.5	37.8	38.6
34 Edward Street	CF48 2BD	Dwelling	41.0	41.3	42.1	42.9	30.9	31.2	31.8	32.6
36 Edward Street	CF48 2BD	Dwelling	49.4	49.9	50.4	51.4	38.4	38.9	39.4	40.2
38 Edward Street	CF48 2BD	Dwelling	47.2	47.7	48.3	49.3	36.4	36.9	37.5	38.3
40 Edward Street	CF48 2BD	Dwelling	43.7	44.1	44.6	45.5	33.3	33.7	34.2	34.9
42 Edward Street	CF48 2BD	Dwelling	45.0	45.5	45.9	46.8	34.5	34.9	35.3	36.1
44 Edward Street	CF48 2BD	Dwelling	43.8	44.2	44.8	45.7	33.4	33.8	34.3	35.1
46 Edward Street	CF48 2BD	Dwelling	45.7	46.2	46.9	47.8	35.1	35.6	36.1	37.0
48 Edward Street	CF48 2BD	Dwelling	47.2	47.8	48.6	49.5	36.5	37.0	37.7	38.5
50 Edward Street	CF48 2BD	Dwelling	46.9	47.4	48.1	49.0	36.2	36.7	37.2	38.1
52 Edward Street	CF48 2BD	Dwelling	47.1	47.6	48.4	49.3	36.3	36.8	37.5	38.4
54 Edward Street	CF48 2BD	Dwelling	46.8	47.4	48.0	49.0	36.1	36.7	37.2	38.1
56 Edward Street	CF48 2BD	Dwelling	43.4	43.7	44.3	45.2	33.0	33.3	33.9	34.6
58 Edward Street	CF48 2BD	Dwelling	48.8	49.3	49.9	50.8	37.9	38.4	38.9	39.7
60 Edward Street	CF48 2BD	Dwelling	43.3	43.7	44.3	45.2	32.9	33.3	33.9	34.6
62 Edward Street	CF48 2BD	Dwelling	46.8	47.3	47.9	48.8	36.1	36.6	37.1	37.9
64 Edward Street	CF48 2BD	Dwelling	48.0	48.5	48.9	49.9	37.2	37.7	38.0	38.9
66 Edward Street	CF48 2BD	Dwelling	47.6	48.1	48.7	49.6	36.8	37.3	37.8	38.6
68 Edward Street	CF48 2BD	Dwelling	47.6	48.2	48.8	49.7	36.9	37.3	37.9	38.7
70 Edward Street	CF48 2BD	Dwelling	45.3	45.9	46.5	47.4	34.8	35.2	35.8	36.6
72 Edward Street	CF48 2BD	Dwelling	45.6	46.1	46.8	47.8	35.0	35.5	36.1	37.0
74 Edward Street	CF48 2BD	Dwelling	45.6	46.1	46.8	47.7	35.0	35.5	36.1	36.9
76 Edward Street	CF48 2BD	Dwelling	45.1	45.6	46.2	47.2	34.6	35.0	35.6	36.4
78 Edward Street	CF48 2BD	Dwelling	39.7	40.0	40.7	41.6	29.7	30.0	30.6	31.4
80 Edward Street	CF48 2BD	Dwelling	47.7	48.3	48.6	49.6	37.0	37.4	37.8	38.6
82 Edward Street	CF48 2BD	Dwelling	47.7	48.2	48.7	49.6	36.9	37.4	37.8	38.6
84 Edward Street	CF48 2BD	Dwelling	47.7	48.2	48.7	49.7	36.9	37.4	37.8	38.7
86 Edward Street	CF48 2BD	Dwelling	42.6	43.0	43.6	44.4	32.3	32.6	33.2	34.0
88 Edward Street	CF48 2BD	Dwelling	47.2	47.7	48.3	49.2	36.5	36.9	37.5	38.3
1 Amelia Close	CF48 2BF	Dwelling	40.6	41.0	41.6	42.4	30.6	30.9	31.4	32.1
2 Amelia Close	CF48 2BF	Dwelling	48.1	48.7	49.0	49.9	37.3	37.8	38.1	38.9
3 Amelia Close	CF48 2BF	Dwelling	47.8	48.3	48.8	49.7	37.0	37.5	37.9	38.7
4 Amelia Close	CF48 2BF	Dwelling	46.1	46.6	47.2	48.1	35.5	35.9	36.5	37.2
5 Amelia Close	CF48 2BF	Dwelling	47.0	47.5	48.3	49.2	36.3	36.8	37.5	38.3
6 Amelia Close	CF48 2BF	Dwelling	46.6	47.2	47.7	48.6	36.0	36.4	36.9	37.7
7 Amelia Close	CF48 2BF	Dwelling	47.5	48.1	48.7	49.5	36.8	37.2	37.8	38.6
8 Amelia Close	CF48 2BF	Dwelling	48.3	48.8	49.2	50.1	37.4	37.9	38.2	39.0
9 Amelia Close	CF48 2BF	Dwelling	47.1	47.6	48.2	49.0	36.4	36.8	37.4	38.1
10 Amelia Close	CF48 2BF	Dwelling	44.6	45.0	45.4	46.3	34.1	34.5	34.9	35.6
1 Trevor Close	CF48 2BG	Dwelling	48.4	48.9	49.4	50.3	37.5	38.0	38.4	39.2
2 Trevor Close	CF48 2BG	Dwelling	46.1	46.6	47.1	48.0	35.4	35.9	36.4	37.2
3 Trevor Close	CF48 2BG	Dwelling	48.1	48.7	49.0	50.0	37.3	37.8	38.1	39.0
4 Trevor Close	CF48 2BG	Dwelling	48.4	49.0	49.3	50.3	37.6	38.1	38.4	39.2
5 Trevor Close	CF48 2BG	Dwelling	46.1	46.6	47.1	48.0	35.4	35.9	36.4	37.2
6 Trevor Close	CF48 2BG	Dwelling	45.8	46.3	46.8	47.7	35.2	35.7	36.1	36.9
7 Trevor Close	CF48 2BG	Dwelling	43.5	43.9	44.4	45.2	33.1	33.5	33.9	34.7
8 Trevor Close	CF48 2BG	Dwelling	48.4	49.0	49.1	50.1	37.6	38.0	38.2	39.0
9 Trevor Close	CF48 2BG	Dwelling	43.5	43.9	44.4	45.3	33.2	33.5	34.0	34.7
Tydfil Villas 1 Tydfil Villas The Rise	CF48 2BH	Dwelling	46.2	46.7	47.0	47.8	35.6	36.0	36.3	37.0
Tydfil Villas 2 Tydfil Villas Tydfil House The Rise	CF48 2BH	Dwelling	45.1	45.6	45.9	46.6	34.6	35.0	35.3	35.9
Tydfil Villas 3 Tydfil Villas The Rise	CF48 2BH	Dwelling	46.2	46.7	46.9	47.7	35.6	36.0	36.2	36.9
Tydfil Villas 4 Tydfil Villas The Rise	CF48 2BH	Dwelling	44.7	45.2	46.0	46.9	34.2	34.7	35.4	36.2
Tydfil Villas 5 Tydfil Villas Bryn Morlais The Rise	CF48 2BH	Dwelling	45.9	46.4	46.8	47.7	35.3	35.8	36.1	36.9
Bethania Villas 1 Bethania Villas The Rise	CF48 2BJ	Dwelling	45.7	46.2	46.8	47.6	35.1	35.5	36.1	36.8
Bethania Villas 2 Bethania Villas The Rise	CF48 2BJ	Dwelling	50.8	51.5	51.9	52.6	39.7	40.3	40.7	41.3
Scout Hall The Rise	CF48 2BJ	OSR	46.0	46.6	47.1	48.0	35.4	35.9	36.4	37.1
Redwood Redwood The Rise	CF48 2BN	Dwelling	42.7	43.2	44.3	45.0	32.4	32.8	33.9	34.5
Scrambles Scrambles The Rise	CF48 2BN	Dwelling	46.0	46.6	47.2	47.6	35.4	35.9	36.5	36.8
1 The Rise	CF48 2BN	Dwelling	46.0	46.4	47.4	48.3	35.3	35.8	36.6	37.4
2 The Rise	CF48 2BN	Dwelling	42.8	43.3	44.1	44.9	32.5	32.9	33.7	34.4
3 The Rise	CF48 2BN	Dwelling	46.4	46.9	47.5	48.3	35.7	36.2	36.7	37.4
4 The Rise	CF48 2BN	Dwelling	44.0	44.5	45.2	46.1	33.6	34.0	34.7	35.4
5 The Rise	CF48 2BN	Dwelling	48.1	48.6	49.3	50.2	37.2	37.7	38.4	39.1
6 The Rise	CF48 2BN	Dwelling	40.9	41.4	43.9	44.2	30.8	31.3	33.5	33.7
1 Pant Close	CF48 2BS	Dwelling	50.4	51.3	52.2	51.9	39.4	40.2	40.9	40.7
2 Pant Close	CF48 2BS	Dwelling	50.1	50.9	51.8	51.7	39.1	39.8	40.6	40.6
3 Pant Close	CF48 2BS	Dwelling	48.8	49.4	49.5	50.4	37.9	38.4	38.5	39.3
4 Pant Close	CF48 2BS	Dwelling	50.1	50.7	50.6	51.5	39.0	39.6	39.6	40.4
5 Pant Close	CF48 2BS	Dwelling	52.1	52.7	52.7	53.6	40.9	41.4	41.4	42.2
6 Pant Close	CF48 2BS	Dwelling	48.4	49.1	49.7	50.1	37.5	38.1	38.7	39.0
7 Pant Close	CF48 2BS	Dwelling	49.6	50.3	51.1	51.4	38.6	39.3	40.0	40.3
8 Pant Close	CF48 2BS	Dwelling	49.9	50.6	51.4	51.7	38.9	39.5	40.2	40.5
9 Pant Close	CF48 2BS	Dwelling	49.3	50.1	50.8	51.1	38.4	39.0	39.7	40.0
10 Pant Close	CF48 2BS	Dwelling	48.9	49.7	50.4	50.7	38.0	38.7	39.3	39.7
11 Pant Close	CF48 2BS	Dwelling	48.3	49.0	49.7	50.2	37.5	38.1	38.7	39.2
12 Pant Close	CF48 2BS	Dwelling	46.9	47.5	48.2	48.8	36.2	36.7	37.3	37.9
13 Pant Close	CF48 2BS	Dwelling	48.2	48.8	49.5	50.2	37.4	37.9	38.5	39.1
14 Pant Close	CF48 2BS	Dwelling	47.3	47.9	48.6	49.3	36.6	37.1	37.8	38.3
15 Pant Close	CF48 2BS	Dwelling	47.6	48.3	49.0	49.5	36.8	37.4	38.1	38.5
16 Pant Close	CF48 2BS	Dwelling	48.1	48.8	49.6	50.0	37.3	37.9	38.6	39.0
Pantyscallog Pantyscallog Inn Pant Road	CF48 2BT	Dwelling	65.5	66.7	67.7	67.3	52.9	54.0	54.9	54.6
Pantyscallog Terrace 1 Pant Road	CF48 2BT	Dwelling	64.4	65.7	66.7	66.3	51.9	53.1	54.0	53.6
Pantyscallog Terrace 2 Pant Road	CF48 2BT	Dwelling	63.4	64.7	65.7	65.2	51.1	52.2	53.1	52.7
Pantyscallog Terrace 3 Pant Road	CF48 2BT	Dwelling	63.5	64.7	65.7	65.3	51.2	52.3	53.1	52.7
Pantyscallog Terrace 4 Pant Road	CF48 2BT	Dwelling	64.4	65.5	66.4	66.0	52.0	53.0	53.7	53.4
Pantyscallog Terrace 5 Pant Road	CF48 2BT	Dwelling	62.4	63.4	64.2	63.9	50.2	51.1	51.7	51.5
Pantyscallog Terrace 6 Pant Road	CF48 2BT	Dwelling	62.4	63.3	63.8	63.6	50.2	50.9	51.4	51.2
Pantyscallog Terrace 7 Pant Road	CF48 2BT	Dwelling	53.8	54.0	53.7	54.7	42.4	42.6	42.3	43.2
Pantyscallog Terrace 8 Pant Road	CF48 2BT	Dwelling	55.8	55.8	55.1	56.2	44.2	44.2	43.6	44.6
Pant Villas 1 Pant Villas Pant Road	CF48 2BU	Dwelling	64.5	65.8	66.9	66.4	52.1	53.2	54.1	53.7
Pant Villas 2 Pant Villas Pant Road	CF48 2BU	Dwelling	65.5	66.8	67.8	67.3	52.9	54.1	55.0	54.6
Pant Villas 3 Pant Villas Pant Road	CF48 2BU	Dwelling	63.6	64.9	66.0	65.5	51.2	52.4	53.4	52.9
Pant Villas 4 Pant Villas Pant Road	CF48 2BU	Dwelling	65.7	67.0	68.1	67.6	53.2	54.3	55.2	54.8
1 Brecon Rise	CF48 2BW	Dwelling	45.2	45.7	46.5	47.4	34.7	35.1	35.8	36.6
2 Brecon Rise	CF48 2BW	Dwelling	43.4	43.9	44.9	45.7	33.0	33.5	34.4	35.1
4 Brecon Rise	CF48 2BW	Dwelling	43.1	43.5	44.4	45.3	32.8	33.1	33.9	34.7
5 Brecon Rise	CF48 2BW	Dwelling	47.1	47.6	48.4	49.3	36.4	36.8	37.5	38.3
6 Brecon Rise	CF48 2BW	Dwelling	44.6	45.1	46.2	47.1	34.1	34.6	35.6	36.4
7 Brecon Rise	CF48 2BW	Dwelling	44.6	45.1	46.2	47.0	34.1	34.6	35.5	36.3
8 Brecon Rise	CF48 2BW	Dwelling	47.1	47.5	48.1	49.0	36.4	36.8	37.3	38.1
9 Brecon Rise	CF48 2BW	Dwelling	45.9	46.4	47.4	48.2	35.3	35.8	36.6	37.4
10 Brecon Rise	CF48 2BW	Dwelling	49.0	49.5	50.0	50.9	38.1	38.5	39.0	39.8
11 Brecon Rise	CF48 2BW	Dwelling	41.8	42.1	43.2	44.0	31.6	31.9	32.9	33.6
12 Brecon Rise	CF48 2BW	Dwelling	48.1	48.7	49.2	50.1	37.3	37.8	38.3	39.1
13 Brecon Rise	CF48 2BW	Dwelling	44.9	45.4	46.2	47.0	34.4	34.9	35.5	36.3
14 Brecon Rise	CF48 2BW	Dwelling	46.2	46.7	47.5	48.3	35.6	36.0	36.7	37.4

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
Tregaron 15 Brecon Rise	CF48 2BW	Dwelling	44.7	45.3	45.9	46.7	34.2	34.7	35.3	36.0
Coel Mawr 16 Brecon Rise	CF48 2BW	Dwelling	43.6	44.0	44.9	45.8	33.3	33.6	34.4	35.2
17 Brecon Rise	CF48 2BW	Dwelling	46.0	46.5	47.4	48.3	35.4	35.8	36.6	37.4
18 Brecon Rise	CF48 2BW	Dwelling	42.6	43.1	44.0	44.9	32.3	32.7	33.6	34.4
19 Brecon Rise	CF48 2BW	Dwelling	42.0	42.4	43.3	44.2	31.8	32.1	33.0	33.7
20 Brecon Rise	CF48 2BW	Dwelling	41.6	42.0	42.9	43.8	31.4	31.8	32.6	33.4
21 Brecon Rise	CF48 2BW	Dwelling	41.5	41.9	42.9	43.7	31.4	31.7	32.6	33.3
22 Brecon Rise	CF48 2BW	Dwelling	41.3	41.6	42.6	43.4	31.1	31.5	32.3	33.0
23 Brecon Rise	CF48 2BW	Dwelling	45.3	45.8	46.6	47.5	34.8	35.2	36.0	36.7
24 Brecon Rise	CF48 2BW	Dwelling	46.2	46.8	47.4	48.3	35.6	36.1	36.7	37.4
25 Brecon Rise	CF48 2BW	Dwelling	47.0	47.5	48.1	49.0	36.2	36.7	37.3	38.0
26 Brecon Rise	CF48 2BW	Dwelling	46.7	47.3	48.1	48.9	36.0	36.5	37.3	38.0
27 Brecon Rise	CF48 2BW	Dwelling	46.0	46.5	47.6	48.5	35.4	35.9	36.8	37.6
28 Brecon Rise	CF48 2BW	Dwelling	47.0	47.5	48.5	49.3	36.3	36.8	37.6	38.4
29 Brecon Rise	CF48 2BW	Dwelling	43.4	43.9	44.8	45.7	33.1	33.5	34.3	35.1
30 Brecon Rise	CF48 2BW	Dwelling	42.2	42.6	43.9	44.7	31.9	32.3	33.5	34.2
31 Brecon Rise	CF48 2BW	Dwelling	42.5	42.9	44.1	44.9	32.2	32.6	33.6	34.4
32 Brecon Rise	CF48 2BW	Dwelling	40.7	41.1	42.2	43.0	30.7	31.0	31.9	32.6
33 Brecon Rise	CF48 2BW	Dwelling	41.2	41.6	42.6	43.5	31.0	31.4	32.4	33.1
34 Brecon Rise	CF48 2BW	Dwelling	41.2	41.6	42.8	43.6	31.1	31.4	32.5	33.2
35 Brecon Rise	CF48 2BW	Dwelling	41.1	41.5	42.7	43.5	31.0	31.3	32.4	33.1
36 Brecon Rise	CF48 2BW	Dwelling	45.3	45.8	46.6	47.4	34.8	35.2	35.9	36.7
37 Brecon Rise	CF48 2BW	Dwelling	45.3	45.8	46.8	47.7	34.8	35.2	36.1	36.9
38 Brecon Rise	CF48 2BW	Dwelling	47.2	47.7	48.6	49.5	36.5	36.9	37.8	38.5
39 Brecon Rise	CF48 2BW	Dwelling	44.7	45.2	46.1	47.0	34.2	34.7	35.5	36.3
40 Brecon Rise	CF48 2BW	Dwelling	44.5	45.0	45.8	46.7	34.1	34.5	35.2	36.0
41 Brecon Rise	CF48 2BW	Dwelling	44.6	45.1	46.0	46.8	34.1	34.6	35.3	36.1
42 Brecon Rise	CF48 2BW	Dwelling	40.9	41.3	42.2	43.1	30.8	31.2	32.0	32.7
43 Brecon Rise	CF48 2BW	Dwelling	42.9	43.4	44.4	45.3	32.6	33.1	33.9	34.7
44 Brecon Rise	CF48 2BW	Dwelling	43.5	44.0	45.1	46.0	33.1	33.6	34.6	35.4
Cartref 45 Brecon Rise	CF48 2BW	Dwelling	44.0	44.6	45.5	46.4	33.6	34.1	35.0	35.8
Pantyscallog 14-15 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	65.9	67.2	68.2	67.8	53.3	54.4	55.4	55.0
Pantyscallog 16 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	65.2	66.5	67.6	67.1	52.7	53.9	54.8	54.4
Pantyscallog 17 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	65.3	66.6	67.7	67.2	52.8	53.9	54.9	54.5
Pantyscallog 18 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	65.5	66.8	67.9	67.4	52.9	54.1	55.0	54.6
Pantyscallog 19 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	65.3	66.6	67.7	67.2	52.8	53.9	54.9	54.5
Pantyscallog 20 Pantyscallog Houses Clos-Bach Cottage Pant Road	CF48 2BY	Dwelling	65.4	66.7	67.7	67.2	52.8	54.0	54.9	54.5
Pantyscallog 21 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	65.8	67.1	68.1	67.6	53.2	54.3	55.3	54.9
Pantyscallog 23 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	65.4	66.8	67.9	67.4	52.8	54.1	55.1	54.6
Pantyscallog 24 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	65.3	66.7	67.8	67.4	52.8	54.0	55.0	54.6
Pantyscallog 25 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	65.7	67.1	68.2	67.7	53.1	54.3	55.3	54.9
Pantyscallog 26 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	65.8	67.2	68.3	67.8	53.2	54.4	55.4	55.0
Pantyscallog 27 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	65.9	67.4	68.5	68.0	53.3	54.6	55.6	55.2
Pantyscallog 28 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	66.1	67.5	68.6	68.1	53.4	54.7	55.7	55.3
Pantyscallog 29 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	59.2	60.7	61.8	61.3	47.3	48.6	49.6	49.1
Pantyscallog 30 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	66.0	67.4	68.5	68.1	53.4	54.7	55.7	55.2
Pantyscallog 31 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	66.1	67.5	68.6	68.1	53.5	54.8	55.8	55.3
Pantyscallog 6 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	65.3	66.5	67.5	67.1	52.7	53.9	54.8	54.4
Pantyscallog 7 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	64.5	65.8	66.8	66.3	52.1	53.2	54.1	53.7
Pantyscallog 8 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	64.5	65.7	66.7	66.2	52.0	53.1	54.0	53.6
Pantyscallog 9 Pantyscallog Houses Pant Road	CF48 2BY	Dwelling	65.6	66.8	67.8	67.4	53.0	54.1	55.0	54.6
Berkeley House Berkeley House Pant Road	CF48 2BY	Dwelling	65.5	66.7	67.7	67.3	53.0	54.0	54.9	54.6
Caersalem Chapel The Rise	CF48 2BY	OSR	45.0	45.5	46.5	47.3	34.5	34.9	35.8	36.6
Christ Church Pant Road	CF48 2BY	OSR	46.0	46.6	47.6	48.2	35.3	35.9	36.8	37.3
Pantyscallog Flat Above Old Co-Op Building Pant Road	CF48 2BY	Dwelling	65.9	67.4	68.5	68.0	53.3	54.6	55.6	55.2
Pantyscallog Pant House Pant House Pant Road	CF48 2BY	Dwelling	65.5	66.9	68.0	67.5	52.9	54.2	55.1	54.7
Pantyscallog Pant Road	CF48 2BY	Dwelling	65.9	67.2	68.3	67.9	53.2	54.5	55.5	55.1
Pantyscallog Pant Road	CF48 2BY	Dwelling	65.2	66.6	67.7	67.3	52.7	54.0	55.0	54.5
Penwern Penwern Pant Road	CF48 2BY	Dwelling	66.7	67.9	69.0	68.5	54.0	55.1	56.0	55.6
Seven Winds Seven Winds Pant Road	CF48 2BY	Dwelling	62.2	63.3	64.2	63.8	50.0	50.9	51.7	51.4
Tawelfryn Tawelfryn Pant Road	CF48 2BY	Dwelling	64.9	66.1	67.0	66.6	52.4	53.5	54.3	54.0
Francis Terrace 1 Francis Place 1 Francis Place Pant Road	CF48 2DA	Dwelling	60.3	61.4	62.4	62.0	48.3	49.3	50.1	49.8
Francis Terrace 2 Francis Place 2 Francis Place Pant Road	CF48 2DA	Dwelling	58.3	59.4	60.4	60.0	46.5	47.5	48.3	48.0
Francis Terrace Flat 4 Pantysgallog House Flat 4 First Floor Front Flat Pantysgallog House Pant Road	CF48 2DA	Dwelling	63.8	65.1	66.2	65.7	51.4	52.6	53.5	53.1
Francis Terrace 12 Pant Road	CF48 2DA	Dwelling	65.4	66.8	67.9	67.4	52.8	54.1	55.1	54.6
Francis Terrace 13 Pant Road	CF48 2DA	Dwelling	65.2	66.6	67.7	67.3	52.7	54.0	54.9	54.5
Francis Terrace 14 Pant Road	CF48 2DA	Dwelling	65.1	66.5	67.6	67.1	52.6	53.8	54.8	54.4
Francis Terrace 15 Pant Road	CF48 2DA	Dwelling	64.9	66.3	67.4	67.0	52.4	53.7	54.7	54.2
Francis Terrace 16 Pant Road	CF48 2DA	Dwelling	65.0	66.5	67.6	67.1	52.5	53.8	54.8	54.4
Francis Terrace 17 Pant Road	CF48 2DA	Dwelling	65.1	66.5	67.6	67.1	52.6	53.8	54.8	54.4
Francis Terrace 18 Quarrymans Arms Pant Road	CF48 2DA	Dwelling	65.8	67.2	68.4	67.9	53.2	54.5	55.5	55.1
Francis Terrace 20 Pant Road	CF48 2DA	Dwelling	65.7	67.1	68.3	67.8	53.1	54.4	55.4	55.0
Francis Terrace 21 Pant Road	CF48 2DA	Dwelling	66.1	67.5	68.6	68.1	53.4	54.7	55.7	55.3
Francis Terrace 22 Pant Road	CF48 2DA	Dwelling	65.7	67.2	68.3	67.8	53.1	54.4	55.4	55.0
Pant Cottages 2 Pant Cottages Pant Road	CF48 2DB	Dwelling	65.1	66.4	67.5	67.0	52.6	53.8	54.7	54.3
Pant Cottages 2A Pant Cottages Pant Road	CF48 2DB	Dwelling	65.8	67.1	68.1	67.6	53.2	54.3	55.3	54.9
Pant Cottages 3 Pant Cottages Pant Road	CF48 2DB	Dwelling	64.9	66.2	67.3	66.8	52.4	53.6	54.5	54.1
Pant Cottages 4 Pant Cottages Pant Road	CF48 2DB	Dwelling	65.4	66.7	67.8	67.3	52.9	54.0	55.0	54.5
Pant Cottages 5 Pant Cottages Pant Road	CF48 2DB	Dwelling	65.2	66.5	67.6	67.1	52.7	53.9	54.8	54.4
Pant Cottages 6 Pant Cottages Pant Road	CF48 2DB	Dwelling	65.6	66.9	67.9	67.5	53.0	54.2	55.1	54.7
Pant Cottages 7 Pant Cottages Pant Road	CF48 2DB	Dwelling	65.7	67.0	68.1	67.6	53.2	54.3	55.2	54.8
Pant Cottages Pant Road	CF48 2DB	Dwelling	65.8	67.1	68.1	67.6	53.2	54.3	55.3	54.9
Pant-Cad-Ivor Cottages 3 Pant Cad-Ivor Cottages U/C Road To Pontsticill	CF48 2DD	Dwelling	64.7	65.9	66.9	66.5	52.2	53.3	54.2	53.8
Pant-Cad-Ivor Cottages 5 Pant Cad-Ivor Cottages U/C Road To Pontsticill	CF48 2DD	Dwelling	40.6	41.2	42.1	42.5	30.5	31.1	31.9	32.2
Pant-Cad-Ivor Cottages 6 Pant Cad-Ivor Cottages U/C Road To Pontsticill	CF48 2DD	Dwelling	43.2	43.8	44.5	45.0	32.9	33.4	34.0	34.4
Pant-Cad-Ivor Inn U/C Road To Pontsticill	CF48 2DD	Dwelling	54.0	55.0	55.8	55.6	42.6	43.4	44.2	44.0
1 Heol-Y-Castell	CF48 2DF	Dwelling	64.5	65.7	66.7	66.3	52.0	53.1	54.0	53.6
2 Heol-Y-Castell	CF48 2DF	Dwelling	47.8	48.5	49.7	50.1	37.0	37.6	38.7	39.0
3 Heol-Y-Castell	CF48 2DF	Dwelling	60.3	61.4	62.3	61.9	48.3	49.2	50.0	49.7
4 Heol-Y-Castell	CF48 2DF	Dwelling	49.0	49.6	50.3	51.0	38.1	38.6	39.3	39.9
5 Heol-Y-Castell	CF48 2DF	Dwelling	51.8	52.8	53.7	53.3	40.6	41.5	42.3	41.9
6 Heol-Y-Castell	CF48 2DF	Dwelling	50.6	51.2	51.7	52.3	39.5	40.1	40.5	41.0
7 Heol-Y-Castell	CF48 2DF	Dwelling	54.6	55.5	56.3	56.0	43.1	44.0	44.6	44.4
8 Heol-Y-Castell	CF48 2DF	Dwelling	49.5	50.2	51.0	51.6	38.5	39.1	39.9	40.4
9 Heol-Y-Castell	CF48 2DF	Dwelling	51.1	51.9	52.5	52.9	40.0	40.7	41.2	41.6
10 Heol-Y-Castell	CF48 2DF	Dwelling	46.1	46.7	48.3	49.1	35.5	36.0	37.4	38.2
11 Heol-Y-Castell	CF48 2DF	Dwelling	49.3	50.0	50.7	51.2	38.4	39.0	39.6	40.0
12 Heol-Y-Castell	CF48 2DF	Dwelling	50.3	50.9	51.3	52.2	39.3	39.8	40.1	40.9
13 Heol-Y-Castell	CF48 2DF	Dwelling	49.3	50.1	51.2	51.4	38.4	39.1	40.1	40.2
14 Heol-Y-Castell	CF48 2DF	Dwelling	50.3	50.9	51.3	52.2	39.3	39.8	40.1	40.9
15 Heol-Y-Castell	CF48 2DF	Dwelling	49.6	50.5	51.2	51.1	38.7	39.4	40.1	40.0
17 Heol-Y-Castell	CF48 2DF	Dwelling	50.1	50.8	51.0	51.8	39.1	39.7	39.9	40.6
19 Heol-Y-Castell	CF48 2DF	Dwelling	49.5	50.1	50.7	51.5	38.5	39.1	39.6	40.3
21 Heol-Y-Castell	CF48 2DF	Dwelling	50.8	51.6	52.5	52.8	39.7	40.4	41.2	41.5
23 Heol-Y-Castell	CF48 2DF	Dwelling	49.7	50.4	51.3	51.9	38.7	39.3	40.2	40.7
25 Heol-Y-Castell	CF48 2DF	Dwelling	48.2	48.9	49.6	50.1	37.3	38.0	38.6	39.1
27 Heol-Y-Castell	CF48 2DF	Dwelling	49.9	50.5	51.1	51.9	38.9	39.5	40.0	40.7

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
1 Rhodfa'R	CF48 2DG	Dwelling	49.4	50.0	50.7	51.3	38.4	39.0	39.6	40.1
2 Rhodfa'R	CF48 2DG	Dwelling	49.2	49.9	50.7	51.2	38.2	38.8	39.6	40.0
3 Rhodfa'R	CF48 2DG	Dwelling	47.4	48.1	49.0	49.4	36.6	37.2	38.0	38.4
4 Rhodfa'R	CF48 2DG	Dwelling	47.0	47.6	48.6	49.1	36.2	36.8	37.7	38.1
5 Rhodfa'R	CF48 2DG	Dwelling	47.9	48.6	49.6	50.0	37.1	37.8	38.6	39.0
6 Rhodfa'R	CF48 2DG	Dwelling	48.3	49.0	50.1	50.4	37.5	38.1	39.0	39.3
7 Rhodfa'R	CF48 2DG	Dwelling	47.4	48.2	49.2	49.4	36.7	37.3	38.2	38.4
8 Rhodfa'R	CF48 2DG	Dwelling	50.3	51.1	51.9	52.2	39.3	40.0	40.7	40.9
9 Rhodfa'R	CF48 2DG	Dwelling	46.8	47.5	48.5	48.9	36.1	36.7	37.6	38.0
10 Rhodfa'R	CF48 2DG	Dwelling	47.4	48.2	49.1	49.5	36.7	37.3	38.2	38.5
11 Rhodfa'R	CF48 2DG	Dwelling	47.6	48.5	49.5	49.5	36.9	37.6	38.5	38.5
12 Rhodfa'R	CF48 2DG	Dwelling	48.9	49.6	49.8	50.7	38.0	38.6	38.8	39.6
13 Rhodfa'R	CF48 2DG	Dwelling	59.3	60.3	61.2	60.8	47.4	48.3	49.0	48.7
14 Rhodfa'R	CF48 2DG	Dwelling	49.2	50.0	50.8	51.1	38.3	39.0	39.7	39.9
15 Rhodfa'R	CF48 2DG	Dwelling	48.3	49.2	50.1	50.2	37.5	38.2	39.1	39.1
16 Rhodfa'R	CF48 2DG	Dwelling	48.5	49.4	50.3	50.3	37.7	38.4	39.3	39.2
17 Rhodfa'R	CF48 2DG	Dwelling	49.0	49.8	50.7	50.8	38.0	38.8	39.6	39.7
18 Rhodfa'R	CF48 2DG	Dwelling	48.0	48.9	49.7	49.4	37.2	38.0	38.7	38.5
19 Rhodfa'R	CF48 2DG	Dwelling	49.5	50.4	51.3	51.3	38.6	39.3	40.1	40.2
20 Rhodfa'R	CF48 2DG	Dwelling	49.6	50.4	51.4	51.5	38.6	39.4	40.3	40.3
21 Rhodfa'R	CF48 2DG	Dwelling	48.9	49.7	50.7	50.8	38.0	38.7	39.6	39.7
22 Rhodfa'R	CF48 2DG	Dwelling	47.1	48.0	48.8	48.5	36.3	37.1	37.9	37.7
23 Rhodfa'R	CF48 2DG	Dwelling	47.8	48.7	49.5	49.4	37.0	37.8	38.5	38.5
24 Rhodfa'R	CF48 2DG	Dwelling	50.1	50.8	51.1	51.9	39.1	39.7	40.0	40.7
25 Rhodfa'R	CF48 2DG	Dwelling	49.4	50.2	51.1	51.3	38.5	39.2	40.0	40.1
26 Rhodfa'R	CF48 2DG	Dwelling	50.4	51.2	51.9	52.2	39.4	40.1	40.7	41.0
27 Rhodfa'R	CF48 2DG	Dwelling	47.9	48.6	49.2	49.7	37.1	37.7	38.3	38.7
28 Rhodfa'R	CF48 2DG	Dwelling	48.7	49.4	50.2	50.5	37.8	38.5	39.1	39.5
29 Rhodfa'R	CF48 2DG	Dwelling	47.5	48.1	48.5	49.3	36.8	37.3	37.6	38.4
30 Rhodfa'R	CF48 2DG	Dwelling	48.6	49.3	50.3	50.6	37.7	38.4	39.2	39.6
31 Rhodfa'R	CF48 2DG	Dwelling	48.8	49.5	50.3	50.7	37.9	38.5	39.2	39.6
32 Rhodfa'R	CF48 2DG	Dwelling	49.0	49.7	50.5	51.0	38.1	38.7	39.5	39.9
33 Rhodfa'R	CF48 2DG	Dwelling	48.3	49.0	49.7	50.1	37.5	38.1	38.7	39.1
34 Rhodfa'R	CF48 2DG	Dwelling	48.5	49.2	50.0	50.5	37.7	38.3	39.0	39.4
1 Heol-Y-Bryniau	CF48 2DH	Dwelling	52.1	52.7	52.7	53.7	40.9	41.4	41.4	42.3
2 Heol-Y-Bryniau	CF48 2DH	Dwelling	48.6	49.2	50.0	50.7	37.7	38.3	39.0	39.6
3 Heol-Y-Bryniau	CF48 2DH	Dwelling	52.1	52.7	52.7	53.6	40.9	41.4	41.4	42.2
4 Heol-Y-Bryniau	CF48 2DH	Dwelling	47.7	48.3	48.8	49.8	36.9	37.4	37.9	38.8
5 Heol-Y-Bryniau	CF48 2DH	Dwelling	47.4	48.0	49.0	49.7	36.7	37.2	38.1	38.7
6 Heol-Y-Bryniau	CF48 2DH	Dwelling	47.1	47.7	48.4	49.1	36.4	36.9	37.6	38.1
7 Heol-Y-Bryniau	CF48 2DH	Dwelling	46.2	46.8	47.7	48.3	35.6	36.1	36.9	37.4
8 Heol-Y-Bryniau	CF48 2DH	Dwelling	51.2	51.8	51.9	52.8	40.1	40.6	40.7	41.5
9 Heol-Y-Bryniau	CF48 2DH	Dwelling	48.0	48.6	49.2	49.7	37.2	37.8	38.2	38.7
11 Heol-Y-Bryniau	CF48 2DH	Dwelling	50.8	51.4	51.6	52.5	39.7	40.2	40.4	41.2
13 Heol-Y-Bryniau	CF48 2DH	Dwelling	50.9	51.5	51.8	52.7	39.8	40.4	40.6	41.4
15 Heol-Y-Bryniau	CF48 2DH	Dwelling	51.6	52.2	52.2	53.2	40.5	41.0	41.0	41.9
17 Heol-Y-Bryniau	CF48 2DH	Dwelling	50.2	50.7	51.0	51.9	39.2	39.6	39.9	40.7
19 Heol-Y-Bryniau	CF48 2DH	Dwelling	50.4	51.0	51.1	52.0	39.4	39.9	39.9	40.8
10 Heol-Y-Bryniau	CF48 2DL	Dwelling	46.5	47.1	48.2	48.8	35.8	36.4	37.3	37.9
12 Heol-Y-Bryniau	CF48 2DL	Dwelling	50.6	51.2	51.5	52.4	39.6	40.1	40.3	41.1
14 Heol-Y-Bryniau	CF48 2DL	Dwelling	48.8	49.4	50.1	50.6	37.9	38.5	39.1	39.5
16 Heol-Y-Bryniau	CF48 2DL	Dwelling	50.8	51.4	51.7	52.6	39.7	40.3	40.5	41.3
18 Heol-Y-Bryniau	CF48 2DL	Dwelling	50.9	51.5	51.8	52.7	39.8	40.3	40.6	41.4
20 Heol-Y-Bryniau	CF48 2DL	Dwelling	48.4	49.1	49.9	50.4	37.6	38.1	38.9	39.3
21 Heol-Y-Bryniau	CF48 2DL	Dwelling	45.7	46.3	47.2	47.9	35.1	35.7	36.5	37.1
22 Heol-Y-Bryniau	CF48 2DL	Dwelling	49.2	49.9	50.7	51.2	38.3	38.9	39.6	40.1
23 Heol-Y-Bryniau	CF48 2DL	Dwelling	51.8	52.4	52.3	53.3	40.6	41.2	41.1	41.9
24 Heol-Y-Bryniau	CF48 2DL	Dwelling	50.9	51.5	51.8	52.7	39.7	40.3	40.6	41.4
25 Heol-Y-Bryniau	CF48 2DL	Dwelling	50.9	51.5	51.5	52.4	39.8	40.3	40.3	41.2
26 Heol-Y-Bryniau	CF48 2DL	Dwelling	50.7	51.3	51.7	52.5	39.6	40.2	40.5	41.2
27 Heol-Y-Bryniau	CF48 2DL	Dwelling	46.2	46.8	47.1	47.7	35.6	36.1	36.4	36.9
28 Heol-Y-Bryniau	CF48 2DL	Dwelling	51.6	52.5	53.3	53.1	40.5	41.3	42.0	41.8
29 Heol-Y-Bryniau	CF48 2DL	Dwelling	51.1	51.7	51.8	52.8	40.0	40.5	40.6	41.5
30 Heol-Y-Bryniau	CF48 2DL	Dwelling	56.0	57.0	57.9	57.6	44.4	45.3	46.1	45.8
31 Heol-Y-Bryniau	CF48 2DL	Dwelling	51.2	51.8	51.9	52.9	40.1	40.6	40.7	41.6
32 Heol-Y-Bryniau	CF48 2DL	Dwelling	62.2	63.3	64.3	63.9	50.0	51.0	51.9	51.5
33 Heol-Y-Bryniau	CF48 2DL	Dwelling	49.2	49.8	50.6	51.3	38.2	38.8	39.5	40.1
35 Heol-Y-Bryniau	CF48 2DL	Dwelling	50.0	50.6	50.7	51.7	39.0	39.5	39.7	40.5
37 Heol-Y-Bryniau	CF48 2DL	Dwelling	47.9	48.5	49.1	49.7	37.1	37.6	38.2	38.7
39 Heol-Y-Bryniau	CF48 2DL	Dwelling	52.1	52.7	52.8	53.7	40.9	41.4	41.5	42.3
41 Heol-Y-Bryniau	CF48 2DL	Dwelling	51.5	52.1	52.2	53.2	40.3	40.9	41.0	41.8
43 Heol-Y-Bryniau	CF48 2DL	Dwelling	48.2	48.8	49.5	50.0	37.4	37.9	38.6	39.0
45 Heol-Y-Bryniau	CF48 2DL	Dwelling	47.9	48.5	49.3	49.7	37.1	37.7	38.3	38.7
47 Heol-Y-Bryniau	CF48 2DL	Dwelling	47.4	48.0	48.7	49.0	36.6	37.2	37.8	38.1
49 Heol-Y-Bryniau	CF48 2DL	Dwelling	48.1	48.8	49.4	49.8	37.3	37.9	38.5	38.8
51 Heol-Y-Bryniau	CF48 2DL	Dwelling	47.9	48.5	49.2	49.5	37.1	37.7	38.2	38.6
53 Heol-Y-Bryniau	CF48 2DL	Dwelling	50.8	51.5	52.0	52.7	39.7	40.3	40.8	41.4
55 Heol-Y-Bryniau	CF48 2DL	Dwelling	57.5	58.5	59.4	59.1	45.7	46.6	47.4	47.2
57 Heol-Y-Bryniau	CF48 2DL	Dwelling	56.2	57.3	58.3	57.9	44.6	45.5	46.4	46.1
1 Heol Bonymaen	CF48 2DN	Dwelling	61.3	62.5	63.6	63.1	49.1	50.2	51.2	50.8
2 Heol Bonymaen	CF48 2DN	Dwelling	62.8	64.0	65.1	64.7	50.5	51.6	52.6	52.2
3 Heol Bonymaen	CF48 2DN	Dwelling	58.6	59.7	60.8	60.4	46.8	47.8	48.7	48.4
4 Heol Bonymaen	CF48 2DN	Dwelling	57.5	58.6	59.6	59.2	45.7	46.7	47.6	47.2
5 Heol Bonymaen	CF48 2DN	Dwelling	51.7	52.4	53.1	53.7	40.5	41.1	41.8	42.3
6 Heol Bonymaen	CF48 2DN	Dwelling	48.2	49.1	49.9	49.7	37.3	38.1	38.9	38.7
7 Heol Bonymaen	CF48 2DN	Dwelling	50.9	51.6	52.5	53.0	39.8	40.4	41.3	41.7
8 Heol Bonymaen	CF48 2DN	Dwelling	47.8	48.6	49.7	50.0	37.0	37.7	38.7	39.0
9 Heol Bonymaen	CF48 2DN	Dwelling	50.6	51.2	51.9	52.7	39.5	40.1	40.7	41.4
10 Heol Bonymaen	CF48 2DN	Dwelling	49.4	50.1	51.3	51.8	38.5	39.1	40.1	40.6
11 Heol Bonymaen	CF48 2DN	Dwelling	49.3	49.9	50.8	51.5	38.3	38.9	39.7	40.3
12 Heol Bonymaen	CF48 2DN	Dwelling	49.5	50.1	51.1	51.7	38.5	39.1	39.9	40.5
13 Heol Bonymaen	CF48 2DN	Dwelling	50.7	51.3	52.0	52.8	39.6	40.2	40.8	41.5
14 Heol Bonymaen	CF48 2DN	Dwelling	47.8	48.5	49.3	49.9	37.0	37.6	38.4	38.9
15 Heol Bonymaen	CF48 2DN	Dwelling	49.0	49.6	50.5	51.3	38.1	38.6	39.5	40.2
16 Heol Bonymaen	CF48 2DN	Dwelling	52.5	53.2	54.0	54.7	41.3	41.9	42.6	43.2
17 Heol Bonymaen	CF48 2DN	Dwelling	50.8	51.4	51.9	52.8	39.7	40.2	40.7	41.5
18 Heol Bonymaen	CF48 2DN	Dwelling	46.7	47.4	48.6	48.9	36.0	36.6	37.7	38.0
19 Heol Bonymaen	CF48 2DN	Dwelling	43.4	44.0	45.7	46.3	33.1	33.6	35.1	35.7
20 Heol Bonymaen	CF48 2DN	Dwelling	49.2	49.8	50.7	51.5	38.3	38.8	39.6	40.3
21 Heol Bonymaen	CF48 2DN	Dwelling	47.5	48.1	48.9	49.5	36.8	37.3	38.0	38.6
22 Heol Bonymaen	CF48 2DN	Dwelling	49.7	50.3	51.4	52.2	38.7	39.2	40.2	41.0
23 Heol Bonymaen	CF48 2DN	Dwelling	47.7	48.3	49.2	49.9	36.9	37.4	38.2	38.9
24 Heol Bonymaen	CF48 2DN	Dwelling	49.7	50.3	51.4	52.2	38.7	39.3	40.3	41.0
25 Heol Bonymaen	CF48 2DN	Dwelling	51.9	52.5	52.8	53.8	40.7	41.2	41.5	42.4
26 Heol Bonymaen	CF48 2DN	Dwelling	47.4	48.0	48.6	49.3	36.6	37.1	37.8	38.4
27 Heol Bonymaen	CF48 2DN	Dwelling	47.4	48.0	49.4	50.2	36.6	37.1	38.4	39.1
28 Heol Bonymaen	CF48 2DN	Dwelling	51.0	51.6	52.3	53.2	39.9	40.4	41.0	41.9

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
30 Heol Bonymaen	CF48 2DN	Dwelling	50.5	51.1	51.8	52.7	39.4	40.0	40.6	41.4
32 Heol Bonymaen	CF48 2DN	Dwelling	46.8	47.4	48.9	49.7	36.1	36.6	38.0	38.7
1 Tai-Yr-Efail	CF48 2DP	Dwelling	47.0	47.7	49.8	50.5	36.3	36.9	38.8	39.5
2 Tai-Yr-Efail	CF48 2DP	Dwelling	47.5	48.2	49.9	50.7	36.8	37.3	38.9	39.6
3 Tai-Yr-Efail	CF48 2DP	Dwelling	47.3	48.0	49.6	50.4	36.6	37.2	38.6	39.3
4 Tai-Yr-Efail	CF48 2DP	Dwelling	47.6	48.2	50.3	51.0	36.8	37.4	39.2	39.9
5 Tai-Yr-Efail	CF48 2DP	Dwelling	63.1	64.4	65.7	65.3	50.8	51.9	53.1	52.8
6 Tai-Yr-Efail	CF48 2DP	Dwelling	51.7	52.6	53.9	54.4	40.5	41.3	42.5	43.0
7 Tai-Yr-Efail	CF48 2DP	Dwelling	59.3	60.9	63.9	63.7	47.3	48.8	51.5	51.3
1 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	58.2	60.2	63.7	63.3	46.4	48.2	51.3	51.0
2 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	52.4	54.3	57.3	57.0	41.2	42.9	45.5	45.3
3 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	51.3	53.0	55.8	55.6	40.1	41.7	44.2	44.0
4 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	45.8	47.2	50.1	50.1	35.2	36.5	39.1	39.0
5 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	44.7	45.8	47.6	47.7	34.2	35.2	36.8	36.9
6 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	47.7	48.9	51.6	51.6	36.9	38.0	40.5	40.4
7 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	47.7	48.3	50.1	50.9	36.9	37.5	39.1	39.8
8 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	49.0	49.9	50.7	51.1	38.1	38.9	39.6	40.0
9 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	48.0	48.6	50.2	51.1	37.2	37.7	39.2	39.9
10 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	48.9	49.5	50.7	51.5	38.0	38.5	39.6	40.4
11 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	49.8	50.4	51.8	52.6	38.8	39.4	40.6	41.3
12 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	44.0	45.0	46.6	46.8	33.6	34.5	36.0	36.1
13 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	54.9	56.9	60.0	59.7	43.4	45.2	47.9	47.7
14 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	57.2	59.2	62.1	61.8	45.5	47.2	49.8	49.6
15 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	56.7	58.6	61.5	61.2	45.0	46.8	49.3	49.1
16 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	54.2	56.2	59.2	58.9	42.8	44.6	47.3	47.0
17 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	55.7	57.7	60.6	60.3	44.1	45.9	48.5	48.3
18 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	57.4	59.4	62.3	62.1	45.6	47.4	50.1	49.8
19 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	56.9	58.8	61.7	61.5	45.2	46.9	49.5	49.3
20 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	56.6	58.6	61.6	61.3	44.9	46.7	49.4	49.1
21 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	57.5	59.5	62.5	62.2	45.7	47.6	50.3	50.0
22 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	57.2	59.2	62.1	61.8	45.5	47.2	49.8	49.6
23 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	56.6	58.6	61.6	61.3	44.9	46.7	49.4	49.2
24 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	52.1	52.9	53.7	54.4	40.9	41.6	42.3	43.0
25 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	52.2	52.9	53.8	54.6	41.0	41.6	42.4	43.1
26 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	52.0	52.8	53.5	54.3	40.8	41.5	42.2	42.9
27 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	51.8	52.5	53.4	54.3	40.6	41.2	42.1	42.8
28 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	48.7	49.3	50.0	50.8	37.8	38.4	39.0	39.7
29 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	46.6	47.2	48.7	49.5	35.9	36.4	37.8	38.5
30 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	46.5	47.1	48.5	49.3	35.9	36.4	37.6	38.4
31 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	49.8	50.4	51.7	52.5	38.8	39.4	40.5	41.3
32 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	50.3	50.9	51.9	52.7	39.3	39.8	40.7	41.4
33 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	48.9	49.5	50.7	51.5	38.0	38.5	39.6	40.3
34 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	49.8	50.4	51.1	52.0	38.8	39.4	40.0	40.8
35 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	44.6	45.5	46.7	47.0	34.1	35.0	36.0	36.3
36 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	44.8	45.9	47.2	47.5	34.3	35.3	36.5	36.7
37 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	45.0	46.1	47.5	47.7	34.5	35.5	36.7	36.9
38 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	54.7	56.6	59.6	59.3	43.2	44.9	47.6	47.3
39 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	57.4	59.4	62.3	62.0	45.6	47.4	50.0	49.8
40 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	56.4	58.2	60.9	60.7	44.7	46.4	48.8	48.6
41 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	56.4	58.3	61.1	60.8	44.7	46.5	48.9	48.7
42 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	57.2	59.2	62.0	61.7	45.5	47.2	49.8	49.5
43 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	56.0	58.0	60.8	60.5	44.4	46.1	48.7	48.5
44 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	57.9	59.8	62.6	62.3	46.1	47.8	50.3	50.1
45 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	55.8	57.8	60.8	60.5	44.2	46.0	48.7	48.4
46 Heol Rhyd-Y-Bedd	CF48 2DR	Dwelling	56.5	58.3	61.1	60.9	44.9	46.5	49.0	48.8
47 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	53.1	55.1	58.3	58.0	41.8	43.6	46.4	46.1
48 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	56.4	58.3	61.5	61.2	44.8	46.5	49.3	49.0
49 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	56.1	57.6	60.0	59.8	44.5	45.8	48.0	47.8
50 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	56.1	57.7	60.3	60.1	44.5	45.9	48.3	48.1
51 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	58.1	59.3	61.7	61.6	46.2	47.4	49.5	49.4
52 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	57.2	58.2	59.8	59.8	45.5	46.3	47.8	47.8
53 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	56.7	57.6	59.3	59.3	45.0	45.8	47.4	47.3
54 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	55.2	55.4	54.7	55.3	43.7	43.8	43.2	43.7
55 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	53.6	53.9	53.4	54.0	42.2	42.5	42.0	42.6
56 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	48.9	49.3	49.0	49.6	38.0	38.3	38.1	38.6
57 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	51.8	52.2	51.8	52.5	40.6	40.9	40.6	41.2
58 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	53.9	54.2	53.8	54.9	42.5	42.7	42.4	43.4
59 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	53.6	53.9	53.9	54.9	42.2	42.5	42.5	43.4
60 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	53.1	53.5	53.2	54.3	41.8	42.1	41.9	42.8
61 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	46.3	46.9	47.7	48.5	35.6	36.1	36.9	37.7
62 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	47.9	48.4	49.7	50.5	37.0	37.5	38.7	39.5
63 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	50.2	50.7	51.7	52.6	39.1	39.6	40.5	41.3
64 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	52.2	52.8	53.4	54.4	40.9	41.5	42.1	42.9
65 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	48.9	49.4	50.4	51.4	38.0	38.4	39.4	40.3
66 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	51.9	52.5	52.8	53.8	40.7	41.2	41.5	42.4
67 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	52.4	52.9	53.3	54.3	41.1	41.6	41.9	42.8
68 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	52.2	52.8	53.0	54.0	41.0	41.5	41.7	42.6
69 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	51.8	52.4	53.0	54.0	40.6	41.1	41.7	42.6
70 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	53.6	53.8	53.5	54.6	42.2	42.4	42.1	43.2
71 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	50.0	50.4	50.1	51.1	39.0	39.4	39.1	40.0
72 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	46.7	47.1	47.4	48.4	36.0	36.3	36.6	37.5
73 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	50.1	50.5	50.0	51.0	39.0	39.4	39.0	39.9
74 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	49.3	49.7	50.9	51.9	38.3	38.7	39.8	40.7
75 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	51.5	52.1	52.8	53.8	40.4	40.9	41.5	42.4
76 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	50.5	51.0	51.8	52.8	39.4	39.9	40.6	41.5
77 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	51.1	51.6	52.3	53.3	40.0	40.5	41.0	41.9
78 Heol Rhyd-Y-Bedd	CF48 2DS	Dwelling	50.7	51.2	51.8	52.8	39.6	40.0	40.6	41.5
1 St Lukes Close	CF48 2DT	Dwelling	51.1	52.0	53.5	54.1	40.0	40.8	42.1	42.7
2 St Lukes Close	CF48 2DT	Dwelling	53.4	54.2	54.9	55.6	42.1	42.8	43.4	44.0
3 St Lukes Close	CF48 2DT	Dwelling	43.4	44.1	45.0	45.5	33.0	33.7	34.5	34.9
4 St Lukes Close	CF48 2DT	Dwelling	51.8	52.5	53.2	54.0	40.6	41.2	41.8	42.6
5 St Lukes Close	CF48 2DT	Dwelling	51.1	51.7	52.9	53.8	40.0	40.5	41.6	42.4
6 St Lukes Close	CF48 2DT	Dwelling	52.0	52.7	53.5	54.4	40.8	41.4	42.1	42.9
7 St Lukes Close	CF48 2DT	Dwelling	49.7	50.3	51.2	52.1	38.7	39.3	40.0	40.8
8 St Lukes Close	CF48 2DT	Dwelling	51.7	52.4	52.7	53.6	40.5	41.1	41.4	42.2
9 St Lukes Close	CF48 2DT	Dwelling	43.3	43.9	44.6	45.2	32.9	33.5	34.1	34.6
10 St Lukes Close	CF48 2DT	Dwelling	48.6	49.1	50.6	51.5	37.7	38.2	39.5	40.3
11 St Lukes Close	CF48 2DT	Dwelling	48.9	49.5	50.6	51.5	38.0	38.5	39.5	40.4
12 St Lukes Close	CF48 2DT	Dwelling	51.2	51.8	52.2	53.1	40.1	40.6	40.9	41.7
13 St Lukes Close	CF48 2DT	Dwelling	50.4	51.0	51.7	52.6	39.3	39.8	40.5	41.3
14 St Lukes Close	CF48 2DT	Dwelling	50.8	51.4	52.0	52.9	39.7	40.2	40.8	41.6
15 St Lukes Close	CF48 2DT	Dwelling	48.5	49.1	50.1	51.0	37.6	38.1	39.1	39.9
16 St Lukes Close	CF48 2DT	Dwelling	49.6	50.2	51.0	51.9	38.6	39.2	39.8	40.7
17 St Lukes Close	CF48 2DT	Dwelling	48.0	48.5	49.3	50.1	37.2	37.7	38.3	39.1
18 St Lukes Close	CF48 2DT	Dwelling	46.1	46.7	48.1	48.9	35.5	36.0	37.2	38.0
19 St Lukes Close	CF48 2DT	Dwelling	46.2	46.7	47.8	48.7	35.5	36.0	37.0	37.8
20 St Lukes Close	CF48 2DT	Dwelling	48.7	49.3	50.1	51.0	37.8	38.3	39.1	39.8

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
21 St Lukes Close	CF48 2DT	Dwelling	47.6	48.2	48.6	49.4	36.8	37.3	37.7	38.4
22 St Lukes Close	CF48 2DT	Dwelling	46.2	46.7	47.0	47.8	35.5	36.0	36.3	37.0
23 St Lukes Close	CF48 2DT	Dwelling	48.8	49.4	50.1	51.0	37.9	38.4	39.1	39.9
24 St Lukes Close	CF48 2DT	Dwelling	49.3	49.9	50.2	51.2	38.4	38.9	39.2	40.0
25 St Lukes Close	CF48 2DT	Dwelling	48.9	49.5	50.7	51.6	38.0	38.6	39.6	40.4
26 St Lukes Close	CF48 2DT	Dwelling	47.3	47.8	49.4	50.3	36.5	37.0	38.5	39.3
27 St Lukes Close	CF48 2DT	Dwelling	45.3	45.8	47.6	48.4	34.8	35.2	36.8	37.6
28 St Lukes Close	CF48 2DT	Dwelling	46.4	47.0	48.7	49.5	35.8	36.2	37.8	38.5
29 St Lukes Close	CF48 2DT	Dwelling	49.9	50.5	51.4	52.4	38.9	39.4	40.3	41.1
30 St Lukes Close	CF48 2DT	Dwelling	46.3	46.9	48.6	49.5	35.7	36.1	37.7	38.5
31 St Lukes Close	CF48 2DT	Dwelling	46.3	46.9	48.9	49.7	35.7	36.2	38.0	38.7
32 St Lukes Close	CF48 2DT	Dwelling	47.4	48.0	49.6	50.5	36.7	37.2	38.6	39.4
33 St Lukes Close	CF48 2DT	Dwelling	49.1	49.6	51.0	51.9	38.2	38.7	39.9	40.7
34 St Lukes Close	CF48 2DT	Dwelling	50.0	50.6	52.0	52.9	39.0	39.5	40.8	41.6
35 St Lukes Close	CF48 2DT	Dwelling	52.2	52.7	53.4	54.4	40.9	41.4	42.1	42.9
36 St Lukes Close	CF48 2DT	Dwelling	52.2	52.8	53.5	54.5	41.0	41.5	42.2	43.0
37 St Lukes Close	CF48 2DT	Dwelling	51.2	51.8	52.3	53.2	40.0	40.6	41.1	41.9
38 St Lukes Close	CF48 2DT	Dwelling	50.9	51.5	52.5	53.4	39.8	40.4	41.2	42.0
39 St Lukes Close	CF48 2DT	Dwelling	51.0	51.6	53.0	53.9	39.9	40.4	41.7	42.5
40 St Lukes Close	CF48 2DT	Dwelling	50.5	51.1	52.7	53.5	39.4	39.9	41.4	42.1
1 Heulwen Close	CF48 2DU	Dwelling	45.5	46.0	45.9	46.8	34.9	35.4	35.3	36.1
2 Heulwen Close	CF48 2DU	Dwelling	50.1	50.5	50.1	51.2	39.0	39.5	39.1	40.0
3 Heulwen Close	CF48 2DU	Dwelling	49.3	49.8	49.7	50.7	38.4	38.8	38.7	39.6
4 Heulwen Close	CF48 2DU	Dwelling	49.3	49.8	49.5	50.5	38.4	38.8	38.5	39.4
5 Heulwen Close	CF48 2DU	Dwelling	49.1	49.7	49.6	50.6	38.2	38.7	38.6	39.5
6 Heulwen Close	CF48 2DU	Dwelling	49.2	49.7	49.5	50.5	38.3	38.7	38.5	39.4
7 Heulwen Close	CF48 2DU	Dwelling	44.5	45.0	45.3	46.1	34.1	34.5	34.7	35.5
8 Heulwen Close	CF48 2DU	Dwelling	49.3	49.8	49.6	50.6	38.4	38.8	38.6	39.5
9 Heulwen Close	CF48 2DU	Dwelling	48.7	49.2	49.3	50.2	37.8	38.3	38.3	39.1
10 Heulwen Close	CF48 2DU	Dwelling	48.5	48.9	50.6	51.5	37.6	38.0	39.5	40.4
11 Heulwen Close	CF48 2DU	Dwelling	48.2	48.7	49.9	50.8	37.4	37.8	38.9	39.7
12 Heulwen Close	CF48 2DU	Dwelling	46.8	47.3	48.6	49.5	36.1	36.5	37.7	38.5
13 Heulwen Close	CF48 2DU	Dwelling	47.7	48.2	49.5	50.4	36.9	37.3	38.5	39.4
14 Heulwen Close	CF48 2DU	Dwelling	48.4	48.9	50.3	51.2	37.5	37.9	39.3	40.1
15 Heulwen Close	CF48 2DU	Dwelling	47.9	48.4	49.9	50.9	37.1	37.5	38.9	39.8
16 Heulwen Close	CF48 2DU	Dwelling	47.6	48.1	49.6	50.5	36.8	37.3	38.6	39.4
17 Heulwen Close	CF48 2DU	Dwelling	47.5	48.0	49.4	50.3	36.7	37.1	38.5	39.3
18 Heulwen Close	CF48 2DU	Dwelling	47.3	47.8	49.2	50.1	36.6	37.0	38.3	39.1
19 Heulwen Close	CF48 2DU	Dwelling	47.4	47.9	49.3	50.2	36.7	37.1	38.4	39.2
20 Heulwen Close	CF48 2DU	Dwelling	46.6	47.1	48.7	49.5	35.9	36.4	37.8	38.6
21 Heulwen Close	CF48 2DU	Dwelling	46.7	47.2	48.8	49.7	36.0	36.5	37.9	38.7
Bryniau Cottages 10 Bryniau Cottages Bryniau Road	CF48 2DW	Dwelling	64.3	65.6	66.6	66.2	51.9	53.0	53.9	53.5
Bryniau Cottages 11 Bryniau Cottages Bryniau Road	CF48 2DW	Dwelling	49.8	50.4	50.9	51.7	38.8	39.3	39.8	40.5
Bryniau Cottages 12 Bryniau Cottages Bryniau Road	CF48 2DW	Dwelling	59.7	60.9	62.0	61.6	47.7	48.8	49.8	49.4
Bryniau Cottages 13 Bryniau Cottages Bryniau Road	CF48 2DW	Dwelling	46.5	47.1	48.2	48.8	35.8	36.4	37.4	37.9
Bryniau Cottages 9 Bryniau Cottages Bryniau Road	CF48 2DW	Dwelling	64.7	65.9	67.0	66.5	52.2	53.3	54.2	53.8
Bryniau Cottages Bryniau Road	CF48 2DW	Dwelling	64.7	65.9	67.0	66.5	52.2	53.3	54.2	53.8
Bryniau Cottages Bryniau House Bryniau Road	CF48 2DW	Dwelling	61.0	62.2	63.3	62.8	48.9	50.0	50.9	50.5
Bryn-Onen Brynonen House Bryniau Road	CF48 2DW	Dwelling	58.9	60.0	60.9	60.5	46.9	48.0	48.8	48.5
Ty-Lewis Ty Lewis Bryniau Road	CF48 2DW	Dwelling	59.9	61.0	62.0	61.6	47.9	48.9	49.7	49.4
1 Primrose Close	CF48 2DY	Dwelling	49.8	50.4	51.2	52.2	38.8	39.3	40.1	40.9
2 Primrose Close	CF48 2DY	Dwelling	50.8	51.3	51.8	52.7	39.7	40.2	40.6	41.4
3 Primrose Close	CF48 2DY	Dwelling	51.1	51.7	52.0	53.0	40.0	40.5	40.8	41.7
4 Primrose Close	CF48 2DY	Dwelling	51.2	51.8	52.1	53.1	40.1	40.6	40.9	41.8
5 Primrose Close	CF48 2DY	Dwelling	51.5	52.0	52.3	53.3	40.3	40.8	41.1	42.0
6 Primrose Close	CF48 2DY	Dwelling	51.6	52.2	52.4	53.4	40.4	40.9	41.2	42.1
7 Primrose Close	CF48 2DY	Dwelling	51.6	52.2	52.4	53.4	40.4	40.9	41.1	42.0
8 Primrose Close	CF48 2DY	Dwelling	46.4	46.9	48.4	49.2	35.7	36.2	37.5	38.3
9 Primrose Close	CF48 2DY	Dwelling	49.9	50.5	50.7	51.6	38.9	39.4	39.6	40.4
10 Primrose Close	CF48 2DY	Dwelling	51.1	51.6	51.9	52.9	39.9	40.5	40.7	41.6
11 Primrose Close	CF48 2DY	Dwelling	52.2	52.8	53.0	54.0	40.9	41.5	41.7	42.6
12 Primrose Close	CF48 2DY	Dwelling	46.3	46.8	47.3	48.1	35.7	36.1	36.6	37.3
13 Primrose Close	CF48 2DY	Dwelling	51.7	52.3	52.3	53.2	40.5	41.1	41.0	41.9
14 Primrose Close	CF48 2DY	Dwelling	47.2	47.7	48.7	49.6	36.4	36.9	37.8	38.6
15 Primrose Close	CF48 2DY	Dwelling	49.5	50.1	50.7	51.6	38.5	39.0	39.6	40.5
16 Primrose Close	CF48 2DY	Dwelling	48.2	48.8	49.6	50.5	37.4	37.9	38.6	39.4
17 Primrose Close	CF48 2DY	Dwelling	47.7	48.3	48.7	49.4	37.0	37.5	37.8	38.5
18 Primrose Close	CF48 2DY	Dwelling	51.2	51.7	52.0	52.9	40.0	40.5	40.7	41.6
19 Primrose Close	CF48 2DY	Dwelling	44.6	45.1	46.0	46.7	34.1	34.6	35.4	36.0
20 Primrose Close	CF48 2DY	Dwelling	44.1	44.6	46.1	46.8	33.7	34.1	35.5	36.1
21 Primrose Close	CF48 2DY	Dwelling	45.3	45.9	47.3	48.0	34.8	35.3	36.5	37.2
22 Primrose Close	CF48 2DY	Dwelling	50.2	50.8	51.2	52.1	39.2	39.7	40.1	40.9
1 The Hafod	CF48 2EB	Dwelling	56.8	57.4	57.1	58.1	45.1	45.7	45.4	46.3
2 The Hafod	CF48 2EB	Dwelling	51.3	51.8	53.1	54.1	40.1	40.6	41.8	42.7
3 The Hafod	CF48 2EB	Dwelling	52.1	52.7	54.5	55.4	40.9	41.4	43.0	43.9
4 The Hafod	CF48 2EB	Dwelling	51.8	52.4	54.0	54.9	40.6	41.1	42.5	43.4
5 The Hafod	CF48 2EB	Dwelling	50.6	51.2	52.5	53.5	39.5	40.0	41.3	42.1
6 The Hafod	CF48 2EB	Dwelling	53.3	53.9	55.5	56.5	42.0	42.5	44.0	44.8
7 The Hafod	CF48 2EB	Dwelling	50.3	50.9	52.2	53.2	39.3	39.8	41.0	41.8
8 The Hafod	CF48 2EB	Dwelling	48.5	49.0	50.6	51.5	37.7	38.1	39.5	40.4
9 The Hafod	CF48 2EB	Dwelling	52.1	52.7	54.1	55.0	40.9	41.4	42.6	43.5
10 The Hafod	CF48 2EB	Dwelling	49.2	49.7	51.2	52.2	38.3	38.7	40.0	40.9
11 The Hafod	CF48 2EB	Dwelling	51.9	52.5	53.9	54.9	40.7	41.2	42.5	43.4
12 The Hafod	CF48 2EB	Dwelling	48.1	48.6	49.8	50.8	37.3	37.7	38.8	39.7
13 The Hafod	CF48 2EB	Dwelling	53.2	53.7	54.7	55.7	41.9	42.3	43.2	44.1
14 The Hafod	CF48 2EB	Dwelling	50.9	51.5	52.6	53.6	39.8	40.3	41.3	42.2
15 The Hafod	CF48 2EB	Dwelling	51.6	52.0	53.2	54.2	40.4	40.8	41.8	42.8
16 The Hafod	CF48 2EB	Dwelling	50.2	50.6	51.2	52.3	39.2	39.5	40.1	41.0
17 The Hafod	CF48 2EB	Dwelling	51.3	51.8	52.8	53.8	40.2	40.6	41.5	42.4
18 The Hafod	CF48 2EB	Dwelling	49.7	50.2	51.6	52.6	38.7	39.2	40.4	41.3
19 The Hafod	CF48 2EB	Dwelling	49.1	49.6	51.0	52.0	38.2	38.6	39.9	40.8
20 The Hafod	CF48 2EB	Dwelling	47.7	48.1	49.6	50.6	36.9	37.3	38.6	39.5
21 The Hafod	CF48 2EB	Dwelling	49.2	49.6	51.0	51.9	38.2	38.6	39.8	40.7
22 The Hafod	CF48 2EB	Dwelling	50.0	50.5	51.8	52.8	39.0	39.4	40.6	41.5
23 The Hafod	CF48 2EB	Dwelling	50.2	50.8	52.1	53.1	39.2	39.7	40.9	41.8
24 The Hafod	CF48 2EB	Dwelling	49.1	49.6	51.0	52.0	38.2	38.6	39.9	40.8
25 The Hafod	CF48 2EB	Dwelling	49.6	49.8	50.1	51.2	38.6	38.8	39.1	40.1
26 The Hafod	CF48 2EB	Dwelling	54.9	55.1	55.4	56.4	43.4	43.6	43.8	44.8
27 The Hafod	CF48 2EB	Dwelling	49.2	49.8	51.0	52.0	38.3	38.8	39.9	40.8
28 The Hafod	CF48 2EB	Dwelling	49.8	50.3	51.4	52.4	38.8	39.3	40.3	41.2
29 The Hafod	CF48 2EB	Dwelling	49.3	49.9	51.4	52.4	38.4	38.9	40.3	41.1
30 The Hafod	CF48 2EB	Dwelling	54.0	54.5	55.4	56.4	42.6	43.0	43.8	44.7
31 The Hafod	CF48 2EB	Dwelling	46.6	47.1	49.3	50.3	35.9	36.4	38.4	39.2
32 The Hafod	CF48 2EB	Dwelling	47.2	47.7	49.4	50.4	36.5	37.0	38.4	39.3
33 The Hafod	CF48 2EB	Dwelling	50.6	51.1	52.3	53.3	39.5	40.0	41.1	42.0
34 The Hafod	CF48 2EB	Dwelling	56.8	57.5	57.7	58.7	45.1	45.7	45.9	46.8
35 The Hafod	CF48 2EB	Dwelling	49.8	50.1	50.9	51.9	38.8	39.1	39.7	40.6

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
36 The Hafod	CF48 2EB	Dwelling	50.5	51.1	52.3	53.3	39.4	40.0	41.1	42.0
37 The Hafod	CF48 2EB	Dwelling	50.3	50.9	52.6	53.5	39.3	39.8	41.3	42.2
38 The Hafod	CF48 2EB	Dwelling	52.8	53.4	54.8	55.8	41.5	42.1	43.3	44.2
39 The Hafod	CF48 2EB	Dwelling	50.5	51.1	52.6	53.6	39.5	40.0	41.4	42.2
40 The Hafod	CF48 2EB	Dwelling	52.8	53.4	54.7	55.6	41.5	42.1	43.2	44.0
41 The Hafod	CF48 2EB	Dwelling	48.7	49.2	51.3	52.2	37.8	38.3	40.1	41.0
42 The Hafod	CF48 2EB	Dwelling	52.2	52.8	54.3	55.2	40.9	41.5	42.8	43.7
43 The Hafod	CF48 2EB	Dwelling	52.8	53.5	55.1	56.0	41.5	42.1	43.5	44.4
44 The Hafod	CF48 2EB	Dwelling	52.6	53.2	54.8	55.7	41.3	41.9	43.3	44.2
45 The Hafod	CF48 2EB	Dwelling	52.8	53.4	55.1	56.1	41.5	42.1	43.6	44.5
46 The Hafod	CF48 2EB	Dwelling	52.6	53.3	54.9	55.8	41.3	41.9	43.3	44.2
47 The Hafod	CF48 2EB	Dwelling	52.9	53.5	55.4	56.3	41.6	42.1	43.8	44.7
48 The Hafod	CF48 2EB	Dwelling	52.1	52.7	54.7	55.6	40.9	41.4	43.2	44.0
49 The Hafod	CF48 2EB	Dwelling	52.1	52.7	54.7	55.7	40.9	41.4	43.2	44.1
50 The Hafod	CF48 2EB	Dwelling	52.6	53.2	54.6	55.6	41.3	41.8	43.2	44.0
51 The Hafod	CF48 2EB	Dwelling	54.6	55.1	56.3	57.3	43.1	43.6	44.6	45.5
52 The Hafod	CF48 2ED	Dwelling	50.9	51.4	52.6	53.5	39.8	40.3	41.3	42.2
53 The Hafod	CF48 2ED	Dwelling	53.8	54.4	55.9	56.9	42.4	43.0	44.3	45.2
54 The Hafod	CF48 2ED	Dwelling	50.7	51.2	52.4	53.4	39.6	40.1	41.1	42.0
55 The Hafod	CF48 2ED	Dwelling	53.1	53.8	55.5	56.4	41.8	42.4	43.9	44.8
56 The Hafod	CF48 2ED	Dwelling	50.4	50.9	52.0	53.0	39.3	39.8	40.8	41.7
57 The Hafod	CF48 2ED	Dwelling	54.5	55.2	56.5	57.4	43.0	43.6	44.8	45.7
58 The Hafod	CF48 2ED	Dwelling	50.1	50.6	51.9	52.9	39.1	39.6	40.7	41.6
59 The Hafod	CF48 2ED	Dwelling	50.0	50.6	51.9	52.8	39.0	39.5	40.7	41.5
60 The Hafod	CF48 2ED	Dwelling	52.6	53.2	54.8	55.8	41.3	41.9	43.3	44.2
61 The Hafod	CF48 2ED	Dwelling	47.5	48.0	48.4	49.4	36.8	37.1	37.5	38.4
62 The Hafod	CF48 2ED	Dwelling	48.9	49.4	50.5	51.4	38.0	38.4	39.4	40.3
63 The Hafod	CF48 2ED	Dwelling	49.7	50.2	51.2	52.1	38.7	39.2	40.0	40.9
64 The Hafod	CF48 2ED	Dwelling	49.1	49.6	50.7	51.6	38.2	38.6	39.6	40.5
65 The Hafod	CF48 2ED	Dwelling	50.6	51.2	53.5	54.5	39.5	40.1	42.1	43.0
66 The Hafod	CF48 2ED	Dwelling	51.9	52.5	54.4	55.4	40.7	41.2	43.0	43.8
67 The Hafod	CF48 2ED	Dwelling	52.3	52.9	55.1	56.1	41.0	41.6	43.6	44.4
68 The Hafod	CF48 2ED	Dwelling	53.2	53.8	55.7	56.7	41.8	42.4	44.1	45.0
69 The Hafod	CF48 2ED	Dwelling	53.2	53.9	55.7	56.7	41.9	42.5	44.1	45.0
70 The Hafod	CF48 2ED	Dwelling	52.2	52.8	54.9	55.8	41.0	41.5	43.4	44.2
71 The Hafod	CF48 2ED	Dwelling	51.6	52.2	53.7	54.7	40.4	41.0	42.3	43.2
72 The Hafod	CF48 2ED	Dwelling	52.6	53.3	55.1	56.1	41.3	41.9	43.6	44.4
73 The Hafod	CF48 2ED	Dwelling	53.6	54.2	56.1	57.1	42.2	42.8	44.5	45.4
74 The Hafod	CF48 2ED	Dwelling	53.1	53.8	55.4	56.4	41.8	42.4	43.9	44.7
75 The Hafod	CF48 2ED	Dwelling	56.1	56.7	58.7	59.7	44.5	45.0	46.8	47.7
76 The Hafod	CF48 2ED	Dwelling	55.3	55.9	57.7	58.7	43.7	44.3	46.0	46.8
77 The Hafod	CF48 2ED	Dwelling	55.9	56.6	58.5	59.5	44.3	44.9	46.6	47.5
78 The Hafod	CF48 2ED	Dwelling	55.9	56.6	58.4	59.4	44.3	44.9	46.5	47.4
79 The Hafod	CF48 2ED	Dwelling	48.5	49.1	51.4	52.3	37.6	38.2	40.2	41.1
80 The Hafod	CF48 2ED	Dwelling	56.4	57.0	59.0	59.9	44.7	45.3	47.1	47.9
81 The Hafod	CF48 2ED	Dwelling	57.9	58.6	60.2	61.2	46.1	46.7	48.2	49.1
82 The Hafod	CF48 2ED	Dwelling	56.9	57.5	59.1	60.1	45.2	45.8	47.2	48.1
83 The Hafod	CF48 2ED	Dwelling	53.3	53.9	55.5	56.5	42.0	42.5	44.0	44.8
84 The Hafod	CF48 2ED	Dwelling	53.5	54.1	55.6	56.6	42.1	42.6	44.0	44.9
85 The Hafod	CF48 2ED	Dwelling	48.8	49.4	51.2	52.1	37.9	38.4	40.0	40.9
86 The Hafod	CF48 2ED	Dwelling	53.2	53.8	55.4	56.4	41.8	42.4	43.9	44.7
87 The Hafod	CF48 2ED	Dwelling	48.7	49.3	51.1	52.1	37.8	38.3	40.0	40.8
88 The Hafod	CF48 2ED	Dwelling	48.7	49.3	51.1	52.1	37.8	38.4	40.0	40.9
89 The Hafod	CF48 2ED	Dwelling	55.6	56.2	57.0	58.0	44.0	44.6	45.3	46.2
90 The Hafod	CF48 2ED	Dwelling	53.2	53.9	55.4	56.3	41.9	42.5	43.8	44.7
91 The Hafod	CF48 2ED	Dwelling	55.0	55.7	57.1	58.1	43.5	44.1	45.4	46.2
92 The Hafod	CF48 2ED	Dwelling	54.4	55.0	56.5	57.5	42.9	43.5	44.8	45.7
93 The Hafod	CF48 2ED	Dwelling	54.3	54.9	55.9	56.9	42.9	43.4	44.3	45.2
94 The Hafod	CF48 2ED	Dwelling	52.2	52.9	54.5	55.4	41.0	41.6	43.0	43.9
95 The Hafod	CF48 2ED	Dwelling	52.0	52.6	54.4	55.4	40.8	41.4	42.9	43.8
96 The Hafod	CF48 2ED	Dwelling	51.4	52.0	53.7	54.7	40.2	40.8	42.3	43.2
97 The Hafod	CF48 2ED	Dwelling	55.5	56.1	57.3	58.2	43.9	44.5	45.5	46.4
98 The Hafod	CF48 2ED	Dwelling	55.2	55.9	57.4	58.3	43.7	44.3	45.6	46.5
99 The Hafod	CF48 2ED	Dwelling	54.2	54.6	55.7	56.7	42.8	43.1	44.1	45.0
100 The Hafod	CF48 2ED	Dwelling	54.7	55.3	57.4	58.4	43.2	43.8	45.7	46.6
101 The Hafod	CF48 2ED	Dwelling	54.8	55.5	57.1	58.1	43.3	43.9	45.4	46.3
102 The Hafod	CF48 2ED	Dwelling	54.5	55.2	57.6	58.6	43.0	43.6	45.8	46.7
103 The Hafod	CF48 2ED	Dwelling	54.9	55.2	56.2	57.2	43.4	43.7	44.5	45.5
104 The Hafod	CF48 2ED	Dwelling	54.3	54.9	57.6	58.5	42.8	43.4	45.8	46.7
105 The Hafod	CF48 2ED	Dwelling	54.3	54.7	55.9	57.0	42.8	43.2	44.3	45.2
106 The Hafod	CF48 2ED	Dwelling	54.0	54.6	57.5	58.4	42.6	43.2	45.7	46.6
107 The Hafod	CF48 2ED	Dwelling	58.7	59.4	59.5	60.5	46.8	47.4	47.6	48.4
108 The Hafod	CF48 2ED	Dwelling	55.2	55.9	57.8	58.8	43.7	44.3	46.0	46.9
109 The Hafod	CF48 2ED	Dwelling	60.4	60.7	59.6	60.8	48.3	48.6	47.6	48.7
46 Brecon Rise	CF48 2EE	Dwelling	44.6	45.1	45.9	46.7	34.2	34.6	35.2	36.0
47 Brecon Rise	CF48 2EE	Dwelling	45.3	45.7	46.5	47.4	34.7	35.1	35.8	36.6
48 Brecon Rise	CF48 2EE	Dwelling	46.6	47.1	47.9	48.8	35.9	36.4	37.1	37.9
49 Brecon Rise	CF48 2EE	Dwelling	44.9	45.4	46.2	47.0	34.4	34.8	35.5	36.3
50 Brecon Rise	CF48 2EE	Dwelling	46.6	47.2	47.6	48.6	35.9	36.5	36.9	37.7
51 Brecon Rise	CF48 2EE	Dwelling	46.8	47.4	48.1	49.0	36.1	36.6	37.2	38.1
52 Brecon Rise	CF48 2EE	Dwelling	46.5	47.1	47.8	48.7	35.9	36.4	37.0	37.8
53 Brecon Rise	CF48 2EE	Dwelling	46.8	47.3	48.0	48.9	36.1	36.6	37.1	38.0
54 Brecon Rise	CF48 2EE	Dwelling	47.4	47.9	48.4	49.4	36.6	37.1	37.6	38.4
55 Brecon Rise	CF48 2EE	Dwelling	42.0	42.4	43.4	44.2	31.8	32.2	33.0	33.8
56 Brecon Rise	CF48 2EE	Dwelling	43.7	44.2	45.1	45.9	33.3	33.7	34.5	35.3
57 Brecon Rise	CF48 2EE	Dwelling	42.7	43.1	43.6	44.5	32.4	32.8	33.3	34.0
58 Brecon Rise	CF48 2EE	Dwelling	42.6	43.0	43.5	44.3	32.3	32.7	33.1	33.9
59 Brecon Rise	CF48 2EE	Dwelling	48.2	48.7	48.9	49.9	37.4	37.8	38.0	38.9
60 Brecon Rise	CF48 2EE	Dwelling	47.9	48.5	48.7	49.6	37.1	37.6	37.8	38.6
61 Brecon Rise	CF48 2EE	Dwelling	47.3	47.8	48.4	49.3	36.5	37.0	37.5	38.4
62 Brecon Rise	CF48 2EE	Dwelling	46.8	47.4	47.9	48.9	36.1	36.6	37.1	38.0
63 Brecon Rise	CF48 2EE	Dwelling	47.0	47.5	48.1	49.0	36.3	36.7	37.2	38.0
64 Brecon Rise	CF48 2EE	Dwelling	48.9	49.5	49.9	50.8	38.0	38.5	38.9	39.7
65 Brecon Rise	CF48 2EE	Dwelling	45.5	45.9	46.5	47.4	34.9	35.3	35.8	36.6
66 Brecon Rise	CF48 2EE	Dwelling	45.9	46.4	47.2	48.1	35.3	35.7	36.4	37.2
67 Brecon Rise	CF48 2EE	Dwelling	45.4	45.9	46.6	47.5	34.9	35.3	35.9	36.7
68 Brecon Rise	CF48 2EE	Dwelling	48.4	48.9	49.3	50.2	37.5	38.0	38.3	39.1
69 Brecon Rise	CF48 2EE	Dwelling	45.2	45.6	46.5	47.4	34.6	35.1	35.8	36.6
70 Brecon Rise	CF48 2EF	Dwelling	42.5	42.9	43.5	44.4	32.3	32.6	33.2	33.9
71 Brecon Rise	CF48 2EF	Dwelling	46.9	47.4	47.7	48.6	36.2	36.7	36.9	37.7
72 Brecon Rise	CF48 2EF	Dwelling	48.8	49.4	49.7	50.7	37.9	38.4	38.7	39.6
73 Brecon Rise	CF48 2EF	Dwelling	48.1	48.7	49.0	49.9	37.3	37.8	38.0	38.9
74 Brecon Rise	CF48 2EF	Dwelling	43.0	43.6	44.0	44.9	32.7	33.3	33.6	34.4
75 Brecon Rise	CF48 2EF	Dwelling	44.7	45.2	45.3	46.3	34.2	34.7	34.8	35.6
76 Brecon Rise	CF48 2EF	Dwelling	42.4	42.7	43.3	44.1	32.2	32.4	32.9	33.6
77 Brecon Rise	CF48 2EF	Dwelling	48.8	49.4	49.6	50.5	37.9	38.4	38.6	39.5
78 Brecon Rise	CF48 2EF	Dwelling	48.9	49.5	49.6	50.6	38.0	38.5	38.6	39.5

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
79 Brecon Rise	CF48 2EF	Dwelling	42.3	42.6	43.1	43.9	32.1	32.3	32.8	33.5
80 Brecon Rise	CF48 2EF	Dwelling	49.4	50.0	50.0	51.0	38.5	39.0	39.0	39.9
81 Brecon Rise	CF48 2EF	Dwelling	48.7	49.3	49.6	50.6	37.8	38.3	38.6	39.5
82 Brecon Rise	CF48 2EF	Dwelling	48.5	49.1	49.4	50.4	37.6	38.1	38.5	39.3
83 Brecon Rise	CF48 2EF	Dwelling	44.4	44.9	45.4	46.4	34.0	34.4	34.9	35.7
84 Brecon Rise	CF48 2EF	Dwelling	43.5	44.0	44.6	45.6	33.1	33.6	34.2	35.0
85 Brecon Rise	CF48 2EF	Dwelling	46.3	46.9	47.3	48.3	35.7	36.2	36.6	37.4
86 Brecon Rise	CF48 2EF	Dwelling	43.5	44.1	44.4	45.3	33.2	33.7	33.9	34.7
87 Brecon Rise	CF48 2EF	Dwelling	48.9	49.5	49.7	50.6	38.0	38.5	38.7	39.5
88 Brecon Rise	CF48 2EF	Dwelling	49.2	49.7	49.9	50.8	38.3	38.7	38.9	39.7
89 Brecon Rise	CF48 2EF	Dwelling	40.7	41.0	42.1	43.0	30.6	30.9	31.9	32.7
90 Brecon Rise	CF48 2EF	Dwelling	48.8	49.4	49.6	50.5	37.9	38.4	38.6	39.4
91 Brecon Rise	CF48 2EF	Dwelling	43.0	43.4	44.0	44.8	32.7	33.0	33.6	34.3
92 Brecon Rise	CF48 2EF	Dwelling	48.3	48.9	49.0	50.0	37.5	38.0	38.1	39.0
93 Brecon Rise	CF48 2EF	Dwelling	44.5	45.0	45.7	46.5	34.1	34.5	35.1	35.9
94 Brecon Rise	CF48 2EF	Dwelling	47.6	48.2	48.7	49.7	36.8	37.3	37.8	38.7
95 Brecon Rise	CF48 2EF	Dwelling	45.8	46.4	47.1	48.0	35.2	35.7	36.4	37.2
96 Brecon Rise	CF48 2EF	Dwelling	46.5	47.0	47.4	48.3	35.8	36.3	36.6	37.5
97 Brecon Rise	CF48 2EF	Dwelling	43.2	43.7	44.3	45.3	32.9	33.3	33.9	34.7
98 Brecon Rise	CF48 2EF	Dwelling	45.5	46.0	46.6	47.5	34.9	35.4	35.9	36.7
99 Brecon Rise	CF48 2EF	Dwelling	47.8	48.3	48.7	49.7	37.0	37.5	37.8	38.7
100 Brecon Rise	CF48 2EF	Dwelling	47.0	47.5	48.2	49.1	36.3	36.7	37.3	38.1
101 Brecon Rise	CF48 2EF	Dwelling	45.8	46.3	47.1	48.0	35.2	35.7	36.4	37.2
102 Brecon Rise	CF48 2EF	Dwelling	43.7	44.2	45.0	46.0	33.3	33.8	34.5	35.3
103 Brecon Rise	CF48 2EF	Dwelling	46.4	46.8	47.4	48.3	35.7	36.1	36.6	37.5
104 Brecon Rise	CF48 2EF	Dwelling	47.0	47.5	48.1	49.0	36.2	36.7	37.3	38.1
105 Brecon Rise	CF48 2EF	Dwelling	48.3	48.9	49.2	50.2	37.5	38.0	38.3	39.1
1 Ash Grove	CF48 2EG	Dwelling	52.6	52.0	53.1	54.1	41.3	40.7	41.7	42.6
2 Ash Grove	CF48 2EG	Dwelling	48.5	48.1	49.0	50.0	37.6	37.3	38.1	39.0
3 Ash Grove	CF48 2EG	Dwelling	58.3	57.3	57.4	58.4	46.4	45.6	45.6	46.5
4 Ash Grove	CF48 2EG	Dwelling	53.1	52.8	53.4	54.5	41.8	41.5	42.0	43.0
5 Ash Grove	CF48 2EG	Dwelling	53.3	53.0	53.6	54.6	42.0	41.7	42.2	43.2
6 Ash Grove	CF48 2EG	Dwelling	54.6	54.3	55.5	56.5	43.2	42.8	43.9	44.8
55A Maple Crescent	CF48 2EH	Dwelling	53.5	52.4	53.6	54.6	42.1	41.2	42.2	43.1
56A Maple Crescent	CF48 2EH	Dwelling	50.5	49.4	50.8	51.9	39.4	38.5	39.7	40.7
57A Maple Crescent	CF48 2EH	Dwelling	42.6	42.1	42.5	43.5	32.4	31.8	32.2	33.1
1 Maple Crescent	CF48 2EH	Dwelling	49.0	48.0	49.6	50.7	38.1	37.2	38.7	39.6
2 Maple Crescent	CF48 2EH	Dwelling	48.4	47.4	49.1	50.2	37.5	36.7	38.2	39.1
3 Maple Crescent	CF48 2EH	Dwelling	48.9	47.9	49.4	50.5	38.0	37.1	38.5	39.4
4 Maple Crescent	CF48 2EH	Dwelling	49.3	48.4	49.8	50.8	38.4	37.5	38.8	39.7
5 Maple Crescent	CF48 2EH	Dwelling	42.1	41.7	42.4	43.4	31.9	31.5	32.1	33.0
6 Maple Crescent	CF48 2EH	Dwelling	49.9	48.9	50.1	51.2	38.9	38.0	39.1	40.0
7 Maple Crescent	CF48 2EH	Dwelling	47.5	46.5	48.5	49.6	36.8	35.8	37.7	38.6
8 Maple Crescent	CF48 2EH	Dwelling	46.0	45.0	46.4	47.5	35.4	34.5	35.8	36.7
9 Maple Crescent	CF48 2EH	Dwelling	48.2	47.2	48.9	49.9	37.4	36.4	38.0	38.9
10 Maple Crescent	CF48 2EH	Dwelling	47.5	46.5	48.1	49.1	36.8	35.9	37.3	38.2
11 Maple Crescent	CF48 2EH	Dwelling	47.8	46.8	48.4	49.4	37.0	36.1	37.5	38.4
12 Maple Crescent	CF48 2EH	Dwelling	49.2	48.1	49.9	50.9	38.3	37.3	38.9	39.8
13 Maple Crescent	CF48 2EH	Dwelling	46.2	45.2	46.3	47.3	35.6	34.7	35.6	36.5
14 Maple Crescent	CF48 2EH	Dwelling	43.3	42.7	43.4	44.4	32.9	32.4	33.0	33.9
15 Maple Crescent	CF48 2EH	Dwelling	46.0	44.9	45.9	47.0	35.4	34.4	35.3	36.3
16 Maple Crescent	CF48 2EH	Dwelling	43.9	43.3	43.6	44.6	33.5	32.9	33.3	34.2
17 Maple Crescent	CF48 2EH	Dwelling	48.9	47.8	49.4	50.4	38.0	37.0	38.4	39.4
18 Maple Crescent	CF48 2EH	Dwelling	48.1	47.1	48.9	50.0	37.3	36.4	38.0	39.0
19 Maple Crescent	CF48 2EH	Dwelling	48.1	47.1	48.3	49.4	37.3	36.3	37.5	38.4
20 Maple Crescent	CF48 2EH	Dwelling	42.9	42.2	42.8	43.8	32.6	32.0	32.5	33.4
21 Maple Crescent	CF48 2EH	Dwelling	42.9	42.3	42.8	43.8	32.6	32.1	32.5	33.4
22 Maple Crescent	CF48 2EH	Dwelling	42.8	42.2	42.7	43.7	32.5	32.0	32.4	33.3
23 Maple Crescent	CF48 2EH	Dwelling	47.3	46.5	47.0	48.0	36.5	35.8	36.2	37.1
24 Maple Crescent	CF48 2EH	Dwelling	42.9	42.2	42.6	43.6	32.6	32.0	32.3	33.2
25 Maple Crescent	CF48 2EH	Dwelling	47.4	46.7	47.1	48.1	36.7	36.0	36.3	37.2
26 Maple Crescent	CF48 2EH	Dwelling	42.8	42.2	42.6	43.6	32.5	31.9	32.3	33.2
27 Maple Crescent	CF48 2EH	Dwelling	47.4	46.7	47.1	48.1	36.7	36.0	36.3	37.2
28 Maple Crescent	CF48 2EH	Dwelling	42.7	42.0	42.4	43.4	32.4	31.7	32.1	33.0
29 Maple Crescent	CF48 2EH	Dwelling	42.8	42.2	42.6	43.6	32.5	31.9	32.3	33.2
30 Maple Crescent	CF48 2EH	Dwelling	42.9	42.2	42.7	43.7	32.6	32.0	32.4	33.3
31 Maple Crescent	CF48 2EH	Dwelling	42.8	42.1	42.6	43.6	32.5	31.9	32.3	33.2
32 Maple Crescent	CF48 2EH	Dwelling	43.0	42.4	42.9	43.9	32.7	32.1	32.6	33.5
33 Maple Crescent	CF48 2EH	Dwelling	42.7	41.9	42.5	43.5	32.4	31.7	32.3	33.2
34 Maple Crescent	CF48 2EH	Dwelling	47.5	46.8	47.3	48.3	36.8	36.1	36.5	37.4
35 Maple Crescent	CF48 2EH	Dwelling	53.8	53.6	54.0	55.1	42.4	42.2	42.6	43.6
36 Maple Crescent	CF48 2EH	Dwelling	53.4	52.9	54.1	55.1	42.0	41.6	42.6	43.6
37 Maple Crescent	CF48 2EH	Dwelling	51.1	50.7	51.8	52.9	40.0	39.6	40.6	41.6
38 Maple Crescent	CF48 2EH	Dwelling	55.0	54.6	55.5	56.5	43.5	43.1	43.9	44.8
39 Maple Crescent	CF48 2EH	Dwelling	45.9	44.9	46.2	47.2	35.3	34.4	35.6	36.5
40 Maple Crescent	CF48 2EH	Dwelling	51.5	50.9	51.9	52.9	40.3	39.8	40.7	41.6
41 Maple Crescent	CF48 2EH	Dwelling	48.9	48.2	48.9	49.9	38.0	37.3	38.0	38.9
42 Maple Crescent	CF48 2EH	Dwelling	48.7	47.7	49.1	50.1	37.8	36.9	38.2	39.1
43 Maple Crescent	CF48 2EH	Dwelling	47.8	47.2	47.7	48.7	37.0	36.4	36.9	37.8
44 Maple Crescent	CF48 2EH	Dwelling	47.9	46.8	48.5	49.5	37.1	36.1	37.6	38.5
45 Maple Crescent	CF48 2EH	Dwelling	48.1	47.2	48.1	49.1	37.2	36.4	37.3	38.2
46 Maple Crescent	CF48 2EH	Dwelling	52.1	51.0	52.2	53.2	40.9	39.9	40.9	41.9
47 Maple Crescent	CF48 2EH	Dwelling	48.7	47.7	49.1	50.1	37.8	36.9	38.2	39.1
48 Maple Crescent	CF48 2EH	Dwelling	53.0	51.9	53.3	54.3	41.7	40.7	41.9	42.9
49 Maple Crescent	CF48 2EH	Dwelling	52.3	51.3	52.5	53.6	41.1	40.1	41.3	42.2
50 Maple Crescent	CF48 2EH	Dwelling	52.5	51.4	52.9	53.9	41.3	40.3	41.6	42.5
51 Maple Crescent	CF48 2EH	Dwelling	50.0	49.0	50.5	51.5	39.0	38.1	39.4	40.4
52 Maple Crescent	CF48 2EH	Dwelling	47.4	46.5	47.3	48.3	36.7	35.8	36.5	37.4
53 Maple Crescent	CF48 2EH	Dwelling	51.6	50.5	51.6	52.7	40.4	39.5	40.4	41.4
54 Maple Crescent	CF48 2EH	Dwelling	41.9	41.1	41.9	42.9	31.7	30.9	31.7	32.6
55 Maple Crescent	CF48 2EH	Dwelling	52.7	51.6	52.8	53.9	41.4	40.4	41.5	42.4
56 Maple Crescent	CF48 2EH	Dwelling	53.1	52.1	53.1	54.1	41.8	40.8	41.8	42.7
57 Maple Crescent	CF48 2EH	Dwelling	51.6	50.6	51.6	52.7	40.5	39.5	40.5	41.4
58 Maple Crescent	CF48 2EH	Dwelling	45.7	44.9	45.6	46.6	35.2	34.4	35.0	35.9
59 Maple Crescent	CF48 2EH	Dwelling	43.6	43.0	43.6	44.6	33.2	32.7	33.2	34.1
60 Maple Crescent	CF48 2EH	Dwelling	45.6	44.7	45.4	46.4	35.0	34.2	34.8	35.7
61 Maple Crescent	CF48 2EH	Dwelling	40.8	40.0	40.9	41.9	30.7	30.0	30.8	31.7
62 Maple Crescent	CF48 2EH	Dwelling	48.9	47.9	49.3	50.3	38.0	37.1	38.3	39.2
63 Maple Crescent	CF48 2EH	Dwelling	50.6	49.5	50.8	51.8	39.5	38.5	39.7	40.6
64 Maple Crescent	CF48 2EH	Dwelling	49.7	48.6	50.1	51.2	38.7	37.7	39.1	40.0
65 Maple Crescent	CF48 2EH	Dwelling	49.4	48.4	50.1	51.1	38.5	37.5	39.1	40.0
66 Maple Crescent	CF48 2EH	Dwelling	48.7	47.6	49.0	50.1	37.8	36.8	38.1	39.0
67 Maple Crescent	CF48 2EH	Dwelling	50.1	49.1	50.6	51.6	39.1	38.2	39.5	40.5
68 Maple Crescent	CF48 2EH	Dwelling	50.8	49.8	51.5	52.5	39.7	38.8	40.3	41.2
69 Maple Crescent	CF48 2EH	Dwelling	46.8	45.9	47.5	48.5	36.1	35.3	36.7	37.6
70 Maple Crescent	CF48 2EH	Dwelling	46.3	45.4	47.0	48.0	35.7	34.9	36.3	37.2
71 Maple Crescent	CF48 2EH	Dwelling	50.6	49.6	51.4	52.5	39.5	38.6	40.3	41.2

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
Glenn Villa 1 The Hawthorns	CF48 2EJ	Dwelling	58.1	59.0	59.8	59.6	46.3	47.1	47.8	47.6
2 The Hawthorns	CF48 2EJ	Dwelling	55.0	55.9	56.7	56.4	43.5	44.3	45.0	44.7
3 The Hawthorns	CF48 2EJ	Dwelling	56.5	57.4	58.1	58.0	44.8	45.6	46.2	46.1
4 The Hawthorns	CF48 2EJ	Dwelling	51.1	51.8	52.0	52.7	40.0	40.6	40.8	41.4
5 The Hawthorns	CF48 2EJ	Dwelling	49.5	50.1	50.6	51.4	38.5	39.1	39.5	40.2
6 The Hawthorns	CF48 2EJ	Dwelling	45.6	46.1	47.3	48.1	35.0	35.5	36.5	37.3
7 The Hawthorns	CF48 2EJ	Dwelling	43.9	44.4	45.5	46.3	33.5	34.0	34.9	35.6
8 The Hawthorns	CF48 2EJ	Dwelling	48.0	48.6	49.3	50.1	37.2	37.7	38.3	39.1
9 The Hawthorns	CF48 2EJ	Dwelling	42.5	42.9	43.8	44.6	32.2	32.6	33.4	34.1
10 The Hawthorns	CF48 2EJ	Dwelling	41.9	42.5	43.7	43.9	31.7	32.3	33.3	33.5
11 The Hawthorns	CF48 2EJ	Dwelling	46.0	46.8	47.9	47.8	35.4	36.1	37.1	37.0
12 The Hawthorns	CF48 2EJ	Dwelling	44.4	44.9	45.5	46.1	33.9	34.4	34.9	35.5
13 The Hawthorns	CF48 2EJ	Dwelling	44.2	44.7	45.4	46.1	33.8	34.2	34.8	35.4
Ciltawel 14 The Hawthorns	CF48 2EJ	Dwelling	42.2	42.6	43.5	44.3	32.0	32.3	33.1	33.8
15 The Hawthorns	CF48 2EJ	Dwelling	46.9	47.4	48.3	49.2	36.2	36.7	37.5	38.2
Braemar 16 The Hawthorns	CF48 2EJ	Dwelling	42.2	42.7	43.6	44.4	31.9	32.4	33.2	33.9
Bethany 17 The Hawthorns	CF48 2EJ	Dwelling	41.3	41.8	43.3	43.6	31.2	31.6	33.0	33.2
Ffostyll 18 The Hawthorns	CF48 2EJ	Dwelling	43.6	44.0	44.7	45.5	33.2	33.6	34.3	34.9
19 The Hawthorns	CF48 2EJ	Dwelling	45.4	46.0	47.0	47.9	34.9	35.3	36.3	37.1
20 The Hawthorns	CF48 2EJ	Dwelling	47.2	47.8	48.3	49.2	36.5	37.0	37.5	38.2
21 The Hawthorns	CF48 2EJ	Dwelling	46.8	47.4	47.8	48.6	36.1	36.6	37.0	37.8
22 The Hawthorns	CF48 2EJ	Dwelling	47.5	48.1	48.5	49.3	36.8	37.3	37.6	38.4
23 The Hawthorns	CF48 2EJ	Dwelling	50.3	51.0	51.4	51.9	39.3	39.9	40.2	40.7
24 The Hawthorns	CF48 2EJ	Dwelling	46.3	46.9	47.4	48.2	35.6	36.2	36.7	37.3
Brynawelon 25 The Hawthorns	CF48 2EJ	Dwelling	43.5	44.1	44.5	45.1	33.2	33.6	34.0	34.5
26 The Hawthorns	CF48 2EJ	Dwelling	47.6	48.2	48.6	49.4	36.8	37.3	37.8	38.5
27 The Hawthorns	CF48 2EJ	Dwelling	43.3	43.8	44.4	45.1	33.0	33.4	33.9	34.5
28 The Hawthorns	CF48 2EJ	Dwelling	46.4	46.9	47.6	48.5	35.7	36.2	36.9	37.6
Maes Y Coed 29 The Hawthorns	CF48 2EJ	Dwelling	43.6	44.1	44.8	45.7	33.2	33.6	34.3	35.1
30 The Hawthorns	CF48 2EJ	Dwelling	43.7	44.2	45.1	46.0	33.3	33.8	34.6	35.4
31 The Hawthorns	CF48 2EJ	Dwelling	44.5	45.1	45.7	46.6	34.1	34.6	35.1	35.9
32 The Hawthorns	CF48 2EJ	Dwelling	44.9	45.5	46.1	47.0	34.4	34.9	35.5	36.3
33 The Hawthorns	CF48 2EJ	Dwelling	44.6	45.2	45.8	46.7	34.1	34.6	35.2	36.0
34 The Hawthorns	CF48 2EJ	Dwelling	43.7	44.2	44.7	45.5	33.3	33.8	34.2	34.9
35 The Hawthorns	CF48 2EJ	Dwelling	46.8	47.3	47.6	48.4	36.1	36.6	36.8	37.5
36 The Hawthorns	CF48 2EJ	Dwelling	44.4	45.0	45.5	46.2	34.0	34.5	35.0	35.5
37 The Hawthorns	CF48 2EJ	Dwelling	44.4	45.0	45.3	46.0	34.0	34.5	34.7	35.4
38 The Hawthorns	CF48 2EJ	Dwelling	39.9	40.4	41.0	41.8	29.9	30.4	30.9	31.6
39 The Hawthorns	CF48 2EJ	Dwelling	40.6	41.1	41.8	42.6	30.6	31.0	31.6	32.3
40 The Hawthorns	CF48 2EJ	Dwelling	42.6	43.2	43.6	44.5	32.3	32.8	33.3	34.0
41 The Hawthorns	CF48 2EJ	Dwelling	44.5	45.1	45.5	46.4	34.1	34.5	35.0	35.7
42 The Hawthorns	CF48 2EJ	Dwelling	39.2	39.6	40.4	41.1	29.3	29.7	30.3	31.0
43 The Hawthorns	CF48 2EJ	Dwelling	45.8	46.4	47.2	47.7	35.2	35.7	36.5	36.9
44 The Hawthorns	CF48 2EJ	Dwelling	42.9	43.5	43.9	44.8	32.6	33.1	33.5	34.3
Llys Pendyrus 45 The Hawthorns	CF48 2EJ	Dwelling	45.7	46.3	47.1	47.6	35.2	35.7	36.4	36.8
46 The Hawthorns	CF48 2EJ	Dwelling	42.3	42.8	43.9	44.2	32.0	32.5	33.5	33.8
47 The Hawthorns	CF48 2EJ	Dwelling	43.4	43.9	44.4	45.3	33.0	33.5	34.0	34.7
48 The Hawthorns	CF48 2EJ	Dwelling	46.2	46.8	46.9	47.8	35.6	36.1	36.2	37.0
49 The Hawthorns	CF48 2EJ	Dwelling	41.2	41.6	42.0	42.8	31.1	31.4	31.8	32.5
50 The Hawthorns	CF48 2EJ	Dwelling	45.2	45.7	46.6	47.2	34.7	35.2	35.9	36.5
51 The Hawthorns	CF48 2EJ	Dwelling	44.7	45.2	46.0	46.8	34.2	34.7	35.3	36.1
52 The Hawthorns	CF48 2EJ	Dwelling	45.3	45.8	46.5	47.4	34.8	35.2	35.8	36.6
53 The Hawthorns	CF48 2EJ	Dwelling	43.1	43.6	44.3	45.2	32.7	33.2	33.9	34.7
54 The Hawthorns	CF48 2EJ	Dwelling	41.4	41.8	43.0	43.8	31.2	31.6	32.6	33.4
55 The Hawthorns	CF48 2EJ	Dwelling	41.8	42.3	43.5	44.4	31.6	32.1	33.2	33.9
56 The Hawthorns	CF48 2EJ	Dwelling	44.5	45.1	46.1	47.0	34.1	34.5	35.5	36.2
57 The Hawthorns	CF48 2EJ	Dwelling	40.1	40.4	41.5	42.3	30.1	30.4	31.3	32.0
58 The Hawthorns	CF48 2EJ	Dwelling	43.6	44.0	44.5	45.3	33.2	33.6	34.0	34.7
59 The Hawthorns	CF48 2EJ	Dwelling	44.4	44.9	45.6	46.3	34.0	34.4	35.0	35.7
60 The Hawthorns	CF48 2EJ	Dwelling	44.0	44.5	45.0	45.7	33.6	34.0	34.4	35.1
61 The Hawthorns	CF48 2EJ	Dwelling	43.3	43.7	44.1	44.9	33.0	33.3	33.7	34.4
62 The Hawthorns	CF48 2EJ	Dwelling	44.8	45.2	45.7	46.4	34.3	34.7	35.1	35.7
Ty Can Y Gwynt 63 The Hawthorns	CF48 2EJ	Dwelling	40.8	41.2	41.7	42.5	30.7	31.1	31.5	32.2
Ballyroe 64 The Hawthorns	CF48 2EJ	Dwelling	42.9	43.4	43.8	44.7	32.6	33.1	33.4	34.2
65 The Hawthorns	CF48 2EJ	Dwelling	38.8	39.3	40.0	40.8	28.9	29.3	30.0	30.7
66 The Hawthorns	CF48 2EJ	Dwelling	42.1	42.5	43.1	43.9	31.9	32.3	32.8	33.5
67 The Hawthorns	CF48 2EJ	Dwelling	39.7	40.1	40.8	41.6	29.7	30.1	30.7	31.4
68 The Hawthorns	CF48 2EJ	Dwelling	42.0	42.5	43.1	43.9	31.8	32.3	32.8	33.5
3 Linden Way	CF48 2EL	Dwelling	49.3	48.4	49.7	50.7	38.4	37.5	38.7	39.6
4 Linden Way	CF48 2EL	Dwelling	49.2	48.3	49.4	50.5	38.3	37.5	38.5	39.4
5 Linden Way	CF48 2EL	Dwelling	51.1	50.2	51.4	52.4	40.0	39.1	40.2	41.2
6 Linden Way	CF48 2EL	Dwelling	49.6	48.7	49.9	51.0	38.6	37.8	38.9	39.8
7 Linden Way	CF48 2EL	Dwelling	50.9	49.9	51.4	52.4	39.8	38.9	40.2	41.1
8 Linden Way	CF48 2EL	Dwelling	49.3	48.4	49.7	50.8	38.4	37.5	38.7	39.7
9 Linden Way	CF48 2EL	Dwelling	49.6	48.7	50.3	51.4	38.6	37.8	39.3	40.2
10 Linden Way	CF48 2EL	Dwelling	49.7	48.7	50.7	51.7	38.7	37.8	39.6	40.6
11 Linden Way	CF48 2EL	Dwelling	48.9	47.9	49.3	50.3	38.0	37.1	38.3	39.2
12 Linden Way	CF48 2EL	Dwelling	49.4	48.4	49.9	51.0	38.5	37.5	38.9	39.9
13 Linden Way	CF48 2EL	Dwelling	41.6	40.7	41.9	42.9	31.4	30.6	31.7	32.6
14 Linden Way	CF48 2EL	Dwelling	47.9	46.9	48.5	49.5	37.1	36.2	37.6	38.6
15 Linden Way	CF48 2EL	Dwelling	47.9	46.8	48.5	49.5	37.1	36.1	37.6	38.5
16 Linden Way	CF48 2EL	Dwelling	48.5	47.5	49.0	50.0	37.6	36.7	38.1	39.0
17 Linden Way	CF48 2EL	Dwelling	44.9	44.1	44.9	45.9	34.4	33.6	34.4	35.3
18 Linden Way	CF48 2EL	Dwelling	48.1	47.1	48.9	49.9	37.3	36.4	38.0	38.9
19 Linden Way	CF48 2EL	Dwelling	40.5	39.7	40.6	41.6	30.4	29.7	30.5	31.4
20 Linden Way	CF48 2EL	Dwelling	48.5	47.6	49.3	50.3	37.6	36.8	38.3	39.3
21 Linden Way	CF48 2EL	Dwelling	51.3	50.1	51.4	52.4	40.1	39.1	40.2	41.2
22 Linden Way	CF48 2EL	Dwelling	50.9	49.8	51.1	52.1	39.8	38.8	40.0	40.9
23 Linden Way	CF48 2EL	Dwelling	43.1	42.6	43.1	44.1	32.8	32.4	32.8	33.7
24 Linden Way	CF48 2EL	Dwelling	42.9	42.4	43.0	44.0	32.6	32.2	32.7	33.6
25 Linden Way	CF48 2EL	Dwelling	51.5	50.4	51.7	52.7	40.3	39.3	40.5	41.4
26 Linden Way	CF48 2EL	Dwelling	51.3	50.2	51.5	52.5	40.2	39.2	40.3	41.2
27 Linden Way	CF48 2EL	Dwelling	49.2	48.2	49.9	50.9	38.3	37.4	38.8	39.8
28 Linden Way	CF48 2EL	Dwelling	42.8	42.5	43.1	44.1	32.5	32.2	32.7	33.6
29 Linden Way	CF48 2EL	Dwelling	50.5	49.4	51.1	52.1	39.4	38.5	39.9	40.9
30 Linden Way	CF48 2EL	Dwelling	51.4	50.4	51.4	52.4	40.2	39.4	40.2	41.2
31 Linden Way	CF48 2EL	Dwelling	48.6	47.7	48.8	49.8	37.7	36.9	37.9	38.8
32 Linden Way	CF48 2EL	Dwelling	42.2	41.8	42.5	43.6	31.9	31.6	32.3	33.2
33 Linden Way	CF48 2EL	Dwelling	42.0	41.6	42.4	43.4	31.7	31.4	32.1	33.0
34 Linden Way	CF48 2EL	Dwelling	41.5	40.6	41.8	42.8	31.3	30.6	31.6	32.5
35 Linden Way	CF48 2EL	Dwelling	48.6	47.7	49.1	50.1	37.7	36.9	38.1	39.0
36 Linden Way	CF48 2EL	Dwelling	48.4	47.5	49.1	50.1	37.6	36.8	38.2	39.1
37 Linden Way	CF48 2EL	Dwelling	49.1	48.1	50.0	51.0	38.1	37.3	39.0	39.9
38 Linden Way	CF48 2EL	Dwelling	49.2	48.2	50.2	51.2	38.3	37.4	39.1	40.1
1 Beechwood Avenue	CF48 2EP	Dwelling	48.3	48.1	48.7	49.8	37.5	37.2	37.8	38.8
2 Beechwood Avenue	CF48 2EP	Dwelling	48.4	48.1	48.5	49.6	37.6	37.3	37.7	38.6
3 Beechwood Avenue	CF48 2EP	Dwelling	45.1	45.0	45.2	46.2	34.6	34.5	34.6	35.6

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
4 Beechwood Avenue	CF48 2EP	Dwelling	47.3	47.0	47.4	48.4	36.6	36.3	36.6	37.5
5 Beechwood Avenue	CF48 2EP	Dwelling	44.1	44.0	44.3	45.3	33.7	33.6	33.9	34.8
6 Beechwood Avenue	CF48 2EP	Dwelling	43.5	43.3	43.7	44.7	33.1	33.0	33.3	34.2
7 Beechwood Avenue	CF48 2EP	Dwelling	43.5	43.2	43.8	44.8	33.1	32.9	33.4	34.3
8 Beechwood Avenue	CF48 2EP	Dwelling	43.1	42.9	43.5	44.5	32.8	32.6	33.1	34.0
9 Beechwood Avenue	CF48 2EP	Dwelling	43.2	42.9	43.5	44.5	32.9	32.6	33.1	34.0
10 Beechwood Avenue	CF48 2EP	Dwelling	51.9	50.8	52.0	53.0	40.7	39.7	40.7	41.7
11 Beechwood Avenue	CF48 2EP	Dwelling	43.4	43.2	43.6	44.6	33.0	32.8	33.2	34.1
12 Beechwood Avenue	CF48 2EP	Dwelling	51.9	50.9	52.0	53.0	40.7	39.8	40.7	41.7
13 Beechwood Avenue	CF48 2EP	Dwelling	39.7	39.0	39.8	40.8	29.7	29.1	29.8	30.7
14 Beechwood Avenue	CF48 2EP	Dwelling	42.0	41.7	42.3	43.3	31.8	31.5	32.1	33.0
15 Beechwood Avenue	CF48 2EP	Dwelling	42.6	42.2	42.9	43.9	32.3	32.0	32.6	33.5
16 Beechwood Avenue	CF48 2EP	Dwelling	39.6	38.8	40.8	41.8	29.7	28.9	30.7	31.6
1 Sycamore Crescent	CF48 2ET	Dwelling	50.0	49.0	50.4	51.4	39.0	38.0	39.4	40.3
2 Sycamore Crescent	CF48 2ET	Dwelling	46.3	46.0	46.6	47.6	35.7	35.3	35.9	36.8
3 Sycamore Crescent	CF48 2ET	Dwelling	45.7	45.3	45.9	46.9	35.1	34.8	35.3	36.2
4 Sycamore Crescent	CF48 2ET	Dwelling	43.2	42.9	43.5	44.5	32.9	32.6	33.1	34.0
5 Sycamore Crescent	CF48 2ET	Dwelling	42.5	42.3	42.9	43.9	32.2	32.0	32.6	33.5
6 Sycamore Crescent	CF48 2ET	Dwelling	42.4	42.1	42.7	43.7	32.1	31.9	32.4	33.3
7 Sycamore Crescent	CF48 2ET	Dwelling	43.3	43.1	43.6	44.6	33.0	32.8	33.2	34.1
8 Sycamore Crescent	CF48 2ET	Dwelling	48.8	47.9	49.3	50.3	37.9	37.1	38.4	39.3
9 Sycamore Crescent	CF48 2ET	Dwelling	45.0	44.9	45.4	46.4	34.5	34.4	34.8	35.7
10 Sycamore Crescent	CF48 2ET	Dwelling	52.3	51.4	52.7	53.7	41.0	40.2	41.4	42.3
11 Sycamore Crescent	CF48 2ET	Dwelling	48.5	48.3	49.1	50.1	37.7	37.5	38.1	39.0
12 Sycamore Crescent	CF48 2ET	Dwelling	47.8	47.5	48.3	49.3	37.0	36.8	37.4	38.3
13 Sycamore Crescent	CF48 2ET	Dwelling	41.8	41.0	42.2	43.2	31.6	30.9	32.0	32.9
14 Sycamore Crescent	CF48 2ET	Dwelling	47.4	47.1	47.8	48.8	36.6	36.4	37.0	37.9
15 Sycamore Crescent	CF48 2ET	Dwelling	46.8	46.0	47.1	48.1	36.1	35.4	36.4	37.3
16 Sycamore Crescent	CF48 2ET	Dwelling	44.0	43.9	44.2	45.2	33.6	33.5	33.7	34.6
17 Sycamore Crescent	CF48 2ET	Dwelling	43.4	43.3	43.7	44.7	33.0	32.9	33.3	34.2
18 Sycamore Crescent	CF48 2ET	Dwelling	47.3	47.0	47.5	48.5	36.5	36.3	36.8	37.7
19 Sycamore Crescent	CF48 2ET	Dwelling	47.4	47.0	47.9	48.9	36.6	36.3	37.1	38.0
20 Sycamore Crescent	CF48 2ET	Dwelling	40.1	39.3	40.3	41.3	30.0	29.4	30.3	31.2
21 Sycamore Crescent	CF48 2ET	Dwelling	50.8	49.9	50.5	51.6	39.7	38.9	39.5	40.4
The Green	CF48 2EU	Dwelling	46.7	46.6	47.3	48.3	36.0	35.9	36.6	37.5
2 The Green	CF48 2EU	Dwelling	53.5	52.9	54.1	55.1	42.2	41.6	42.6	43.5
3 The Green	CF48 2EU	Dwelling	51.9	51.3	52.8	53.8	40.7	40.1	41.5	42.4
Trefechan Nursery School Rowan Rise	CF48 2EW	OSR	52.3	51.6	52.7	53.7	41.1	40.4	41.4	42.3
1 Rowan Rise	CF48 2EW	Dwelling	48.4	48.1	48.8	49.8	37.5	37.3	37.9	38.8
2 Rowan Rise	CF48 2EW	Dwelling	42.0	41.2	42.9	43.8	31.8	31.1	32.5	33.4
3 Rowan Rise	CF48 2EW	Dwelling	49.7	49.4	49.9	50.9	38.7	38.4	38.9	39.8
4 Rowan Rise	CF48 2EW	Dwelling	50.1	49.1	50.0	51.1	39.1	38.2	39.0	39.9
5 Rowan Rise	CF48 2EW	Dwelling	52.8	51.8	52.7	53.8	41.5	40.6	41.4	42.4
6 Rowan Rise	CF48 2EW	Dwelling	52.7	51.6	52.7	53.8	41.4	40.4	41.4	42.4
7 Rowan Rise	CF48 2EW	Dwelling	47.8	47.6	47.9	48.9	37.0	36.8	37.1	38.0
8 Rowan Rise	CF48 2EW	Dwelling	46.9	46.7	47.0	48.0	36.2	36.0	36.3	37.2
9 Rowan Rise	CF48 2EW	Dwelling	52.4	51.4	52.6	53.7	41.1	40.2	41.4	42.3
10 Rowan Rise	CF48 2EW	Dwelling	52.0	50.9	52.3	53.3	40.8	39.8	41.0	42.0
11 Rowan Rise	CF48 2EW	Dwelling	51.9	50.9	52.2	53.3	40.7	39.8	41.0	41.9
12 Rowan Rise	CF48 2EW	Dwelling	44.2	43.9	44.5	45.5	33.8	33.5	34.0	34.9
13 Rowan Rise	CF48 2EW	Dwelling	43.8	43.5	44.3	45.3	33.4	33.1	33.8	34.7
14 Rowan Rise	CF48 2EW	Dwelling	43.6	43.4	44.1	45.1	33.3	33.0	33.7	34.6
15 Rowan Rise	CF48 2EW	Dwelling	51.6	50.6	52.0	53.1	40.4	39.5	40.8	41.7
16 Rowan Rise	CF48 2EW	Dwelling	51.8	50.7	52.1	53.2	40.6	39.6	40.9	41.8
17 Rowan Rise	CF48 2EW	Dwelling	50.6	49.6	51.3	52.4	39.6	38.6	40.2	41.1
18 Rowan Rise	CF48 2EW	Dwelling	49.8	48.8	50.7	51.8	38.8	37.9	39.6	40.6
19 Rowan Rise	CF48 2EW	Dwelling	49.2	48.3	50.2	51.2	38.2	37.4	39.1	40.0
20 Rowan Rise	CF48 2EW	Dwelling	47.8	46.9	48.5	49.6	37.0	36.2	37.7	38.6
21 Rowan Rise	CF48 2EW	Dwelling	48.9	47.9	49.6	50.6	38.0	37.1	38.6	39.5
22 Rowan Rise	CF48 2EW	Dwelling	50.1	49.0	50.4	51.4	39.0	38.1	39.3	40.2
1 Crabtree Walk	CF48 2EY	Dwelling	42.3	41.0	42.5	43.5	32.1	30.9	32.2	33.2
2 Crabtree Walk	CF48 2EY	Dwelling	53.5	52.6	53.2	54.3	42.1	41.3	41.9	42.8
3 Crabtree Walk	CF48 2EY	Dwelling	45.4	45.1	46.1	47.1	34.9	34.6	35.5	36.3
4 Crabtree Walk	CF48 2EY	Dwelling	46.4	46.4	47.0	48.0	35.8	35.7	36.3	37.2
5 Crabtree Walk	CF48 2EY	Dwelling	40.1	39.5	41.3	42.3	30.1	29.5	31.2	32.1
6 Crabtree Walk	CF48 2EY	Dwelling	53.5	52.9	53.4	54.5	42.2	41.6	42.1	43.0
7 Crabtree Walk	CF48 2EY	Dwelling	45.0	44.6	45.7	46.7	34.5	34.1	35.1	36.0
8 Crabtree Walk	CF48 2EY	Dwelling	40.1	39.4	41.1	42.1	30.1	29.4	30.9	31.8
9 Crabtree Walk	CF48 2EY	Dwelling	48.9	48.6	49.5	50.5	38.0	37.7	38.5	39.4
10 Crabtree Walk	CF48 2EY	Dwelling	40.6	40.1	40.8	41.8	30.5	30.0	30.7	31.6
11 Crabtree Walk	CF48 2EY	Dwelling	46.3	46.0	46.5	47.5	35.7	35.3	35.9	36.7
12 Crabtree Walk	CF48 2EY	Dwelling	49.3	49.2	50.0	50.9	38.4	38.2	38.9	39.8
13 Crabtree Walk	CF48 2EY	Dwelling	50.4	50.0	50.7	51.6	39.3	39.0	39.6	40.4
14 Crabtree Walk	CF48 2EY	Dwelling	47.9	47.6	48.7	49.7	37.1	36.8	37.8	38.7
15 Crabtree Walk	CF48 2EY	Dwelling	47.9	47.4	48.5	49.5	37.1	36.7	37.7	38.5
16 Crabtree Walk	CF48 2EY	Dwelling	49.2	49.1	49.9	50.9	38.2	38.2	38.9	39.8
18 Crabtree Walk	CF48 2EY	Dwelling	47.6	47.3	48.3	49.4	36.8	36.5	37.5	38.4
20 Crabtree Walk	CF48 2EY	Dwelling	48.1	47.9	49.0	49.9	37.3	37.1	38.0	38.9
22 Crabtree Walk	CF48 2EY	Dwelling	47.7	47.3	48.1	49.0	36.9	36.5	37.3	38.1
24 Crabtree Walk	CF48 2EY	Dwelling	48.3	47.6	48.5	49.5	37.4	36.8	37.6	38.5
Old Age Pensioners Hall The Birchway	CF48 2HA	OSR	54.4	54.0	55.2	56.2	42.9	42.6	43.7	44.6
1 The Birchway	CF48 2HA	Dwelling	57.5	56.7	56.9	57.9	45.8	45.0	45.2	46.1
2 The Birchway	CF48 2HA	Dwelling	43.2	42.4	43.4	44.4	32.9	32.1	33.0	33.9
3 The Birchway	CF48 2HA	Dwelling	52.3	52.3	52.9	53.9	41.1	41.0	41.6	42.5
4 The Birchway	CF48 2HA	Dwelling	50.5	50.2	51.0	52.0	39.4	39.2	39.9	40.8
5 The Birchway	CF48 2HA	Dwelling	53.8	53.4	54.4	55.4	42.4	42.1	42.9	43.8
6 The Birchway	CF48 2HA	Dwelling	49.7	49.3	50.1	51.1	38.7	38.3	39.1	40.0
7 The Birchway	CF48 2HA	Dwelling	54.0	53.7	55.2	56.2	42.6	42.3	43.7	44.6
8 The Birchway	CF48 2HA	Dwelling	50.2	49.9	50.8	51.8	39.1	38.8	39.7	40.6
9 The Birchway	CF48 2HA	Dwelling	54.3	53.9	54.8	55.8	42.8	42.5	43.3	44.2
10 The Birchway	CF48 2HA	Dwelling	48.7	48.4	49.3	50.3	37.8	37.6	38.4	39.2
11 The Birchway	CF48 2HA	Dwelling	53.0	52.8	53.3	54.4	41.7	41.5	42.0	42.9
12 The Birchway	CF48 2HA	Dwelling	48.7	47.7	48.8	49.9	37.8	36.9	37.9	38.9
13 The Birchway	CF48 2HA	Dwelling	53.7	53.4	54.6	55.6	42.3	42.1	43.1	44.0
14 The Birchway	CF48 2HA	Dwelling	47.3	47.2	48.0	49.0	36.6	36.5	37.2	38.1
15 The Birchway	CF48 2HA	Dwelling	51.7	51.6	52.0	53.1	40.5	40.4	40.8	41.7
16 The Birchway	CF48 2HA	Dwelling	47.0	46.0	47.6	48.6	36.3	35.4	36.8	37.7
17 The Birchway	CF48 2HA	Dwelling	52.6	52.3	53.6	54.6	41.3	41.1	42.2	43.1
18 The Birchway	CF48 2HA	Dwelling	50.3	50.1	51.0	52.0	39.3	39.1	39.9	40.8
19 The Birchway	CF48 2HA	Dwelling	47.1	46.7	47.3	48.3	36.4	36.0	36.5	37.4
20 The Birchway	CF48 2HA	Dwelling	49.1	49.0	49.5	50.5	38.2	38.1	38.6	39.5
21 The Birchway	CF48 2HA	Dwelling	51.8	51.6	52.3	53.3	40.6	40.4	41.0	41.9
22 The Birchway	CF48 2HA	Dwelling	51.0	50.7	51.9	52.9	39.9	39.6	40.7	41.6
23 The Birchway	CF48 2HA	Dwelling	48.6	48.8	49.1	50.1	37.7	37.9	38.1	39.0
24 The Birchway	CF48 2HA	Dwelling	48.0	47.8	48.5	49.5	37.1	37.0	37.7	38.6
25 The Birchway	CF48 2HA	Dwelling	52.4	52.1	52.9	53.9	41.2	40.9	41.6	42.5
26 The Birchway	CF48 2HA	Dwelling	48.6	48.4	49.5	50.5	37.7	37.6	38.5	39.4

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
27 The Birchway	CF48 2HA	Dwelling	48.9	48.9	49.3	50.3	38.0	38.0	38.4	39.2
28 The Birchway	CF48 2HA	Dwelling	47.1	47.0	47.3	48.3	36.4	36.2	36.6	37.4
29 The Birchway	CF48 2HA	Dwelling	50.7	50.5	51.3	52.3	39.6	39.4	40.1	41.0
30 The Birchway	CF48 2HA	Dwelling	46.4	46.3	46.9	47.9	35.8	35.7	36.2	37.1
31 The Birchway	CF48 2HA	Dwelling	48.1	48.1	48.4	49.4	37.3	37.2	37.6	38.4
32 The Birchway	CF48 2HA	Dwelling	47.5	46.5	47.8	48.9	36.7	35.8	37.0	38.0
33 The Birchway	CF48 2HA	Dwelling	49.3	49.1	49.8	50.8	38.4	38.2	38.8	39.7
34 The Birchway	CF48 2HA	Dwelling	47.5	46.6	47.8	48.8	36.7	35.9	37.0	37.9
35 The Birchway	CF48 2HA	Dwelling	45.4	45.0	45.6	46.6	34.8	34.4	35.0	35.9
36 The Birchway	CF48 2HA	Dwelling	49.4	48.9	49.7	50.7	38.5	37.9	38.7	39.6
37 The Birchway	CF48 2HA	Dwelling	47.8	47.5	48.2	49.2	37.0	36.7	37.4	38.3
38 The Birchway	CF48 2HA	Dwelling	49.6	49.0	49.6	50.7	38.6	38.1	38.7	39.6
39 The Birchway	CF48 2HA	Dwelling	46.6	46.9	47.0	48.0	36.0	36.2	36.2	37.2
40 The Birchway	CF48 2HA	Dwelling	50.5	49.5	50.7	51.7	39.5	38.6	39.6	40.5
41 The Birchway	CF48 2HA	Dwelling	47.8	46.9	47.9	49.0	37.0	36.2	37.1	38.0
42 The Birchway	CF48 2HA	Dwelling	45.0	44.6	45.1	46.1	34.5	34.1	34.6	35.5
43 The Birchway	CF48 2HA	Dwelling	44.2	43.8	44.4	45.4	33.8	33.4	33.9	34.8
44 The Birchway	CF48 2HA	Dwelling	51.2	50.3	51.5	52.5	40.0	39.2	40.3	41.2
45 The Birchway	CF48 2HA	Dwelling	48.5	47.7	48.7	49.7	37.6	36.9	37.8	38.7
46 The Birchway	CF48 2HA	Dwelling	51.3	50.5	51.4	52.4	40.1	39.4	40.2	41.1
47 The Birchway	CF48 2HA	Dwelling	39.3	38.9	39.5	40.5	29.4	29.0	29.5	30.4
48 The Birchway	CF48 2HA	Dwelling	45.2	44.3	45.7	46.7	34.7	33.8	35.2	36.0
49 The Birchway	CF48 2HA	Dwelling	48.1	47.4	48.8	49.7	37.2	36.6	37.9	38.7
51 The Birchway	CF48 2HA	Dwelling	39.1	38.6	39.4	40.3	29.2	28.7	29.4	30.3
53 The Birchway	CF48 2HA	Dwelling	51.4	50.8	51.6	52.6	40.3	39.7	40.4	41.3
55 The Birchway	CF48 2HA	Dwelling	48.1	47.1	48.5	49.5	37.3	36.3	37.6	38.5
57 The Birchway	CF48 2HA	Dwelling	48.1	47.1	48.7	49.7	37.3	36.4	37.8	38.7
59 The Birchway	CF48 2HA	Dwelling	39.9	39.6	40.2	41.2	29.9	29.6	30.1	31.0
1 Cherry Tree Close	CF48 2HB	Dwelling	49.8	49.6	51.8	52.8	38.8	38.6	40.6	41.5
2 Cherry Tree Close	CF48 2HB	Dwelling	46.1	46.1	46.4	47.4	35.5	35.4	35.8	36.6
3 Cherry Tree Close	CF48 2HB	Dwelling	46.1	46.0	46.5	47.5	35.5	35.4	35.8	36.7
4 Cherry Tree Close	CF48 2HB	Dwelling	45.5	45.3	45.8	46.8	34.9	34.8	35.2	36.1
5 Cherry Tree Close	CF48 2HB	Dwelling	50.1	50.0	51.5	52.6	39.0	39.0	40.4	41.3
6 Cherry Tree Close	CF48 2HB	Dwelling	54.5	53.9	54.9	55.9	43.0	42.4	43.4	44.3
7 Cherry Tree Close	CF48 2HB	Dwelling	55.9	55.2	56.2	57.3	44.3	43.7	44.6	45.5
8 Cherry Tree Close	CF48 2HB	Dwelling	52.3	51.5	53.1	54.2	41.1	40.3	41.8	42.7
1 Laburnum Lane	CF48 2HD	Dwelling	48.0	47.4	49.2	50.1	37.1	36.6	38.2	39.1
2 Laburnum Lane	CF48 2HD	Dwelling	50.4	50.2	51.8	52.8	39.3	39.2	40.6	41.5
3 Laburnum Lane	CF48 2HD	Dwelling	47.3	46.8	49.0	50.0	36.5	36.1	38.1	39.0
4 Laburnum Lane	CF48 2HD	Dwelling	50.0	49.6	50.8	51.8	39.0	38.6	39.7	40.6
5 Laburnum Lane	CF48 2HD	Dwelling	47.3	46.8	48.2	49.2	36.5	36.1	37.4	38.2
6 Laburnum Lane	CF48 2HD	Dwelling	51.1	50.5	51.4	52.4	40.0	39.4	40.3	41.2
7 Laburnum Lane	CF48 2HD	Dwelling	47.3	46.8	47.5	48.5	36.6	36.1	36.7	37.6
8 Laburnum Lane	CF48 2HD	Dwelling	45.8	45.3	45.9	46.9	35.2	34.7	35.3	36.2
9 Laburnum Lane	CF48 2HD	Dwelling	48.9	47.8	49.3	50.3	38.0	37.0	38.4	39.3
10 Laburnum Lane	CF48 2HD	Dwelling	50.1	49.0	50.5	51.5	39.0	38.1	39.4	40.4
11 Laburnum Lane	CF48 2HD	Dwelling	48.3	47.2	49.1	50.1	37.4	36.5	38.1	39.0
12 Laburnum Lane	CF48 2HD	Dwelling	49.6	48.6	50.4	51.5	38.7	37.7	39.4	40.3
13 Laburnum Lane	CF48 2HD	Dwelling	48.6	47.5	49.3	50.3	37.7	36.8	38.4	39.3
14 Laburnum Lane	CF48 2HD	Dwelling	49.6	48.5	50.3	51.3	38.6	37.7	39.2	40.2
15 Laburnum Lane	CF48 2HD	Dwelling	48.2	47.2	48.7	49.7	37.4	36.4	37.8	38.7
16 Laburnum Lane	CF48 2HD	Dwelling	49.4	48.3	50.2	51.2	38.4	37.5	39.1	40.1
17 Laburnum Lane	CF48 2HD	Dwelling	46.2	45.7	46.6	47.6	35.5	35.1	35.9	36.8
18 Laburnum Lane	CF48 2HD	Dwelling	49.4	48.4	50.1	51.1	38.5	37.5	39.1	40.0
19 Laburnum Lane	CF48 2HD	Dwelling	45.7	45.2	46.2	47.2	35.1	34.6	35.6	36.4
20 Laburnum Lane	CF48 2HD	Dwelling	48.9	47.9	49.9	50.9	38.0	37.1	38.8	39.8
21 Laburnum Lane	CF48 2HD	Dwelling	49.3	49.0	49.9	50.8	38.4	38.1	38.9	39.7
22 Laburnum Lane	CF48 2HD	Dwelling	49.8	48.9	50.7	51.7	38.8	38.0	39.6	40.5
23 Laburnum Lane	CF48 2HD	Dwelling	48.3	48.0	48.9	49.9	37.5	37.2	38.0	38.9
24 Laburnum Lane	CF48 2HD	Dwelling	48.4	47.4	49.3	50.3	37.5	36.6	38.4	39.2
25 Laburnum Lane	CF48 2HD	Dwelling	49.7	49.4	50.4	51.4	38.7	38.4	39.3	40.2
26 Laburnum Lane	CF48 2HD	Dwelling	48.1	47.3	48.6	49.6	37.3	36.5	37.8	38.6
27 Laburnum Lane	CF48 2HD	Dwelling	39.9	39.3	40.8	41.8	29.9	29.4	30.7	31.6
28 Laburnum Lane	CF48 2HD	Dwelling	50.3	49.6	50.9	51.9	39.3	38.7	39.8	40.7
29 Laburnum Lane	CF48 2HD	Dwelling	47.6	47.2	47.7	48.7	36.8	36.4	36.9	37.8
30 Laburnum Lane	CF48 2HD	Dwelling	46.3	45.7	47.0	47.9	35.6	35.1	36.2	37.1
31 Laburnum Lane	CF48 2HD	Dwelling	46.4	45.9	47.0	47.9	35.8	35.3	36.3	37.1
32 Laburnum Lane	CF48 2HD	Dwelling	51.6	50.7	51.9	53.0	40.4	39.6	40.7	41.6
Bronant Bronant Vaynor Lane	CF48 2HE	Dwelling	56.1	55.2	58.6	59.6	44.5	43.7	46.7	47.6
Bryn-Onen Bryn-Onen Vaynor Lane	CF48 2HE	Dwelling	58.2	57.8	60.1	61.1	46.4	46.0	48.0	48.9
Harwin Harwin Vaynor Lane	CF48 2HE	Dwelling	46.3	46.3	49.0	50.2	35.7	35.6	38.1	39.1
New Haven New Haven Vaynor Lane	CF48 2HE	Dwelling	59.0	58.6	60.4	61.4	47.1	46.7	48.4	49.3
Uplands Uplands Vaynor Lane	CF48 2HE	Dwelling	61.5	60.8	63.3	64.3	49.4	48.7	50.9	51.9
Woodbury Woodbury Vaynor Lane	CF48 2HE	Dwelling	49.7	49.9	52.2	53.4	38.7	38.8	41.0	42.1
Wycombe Wycombe Vaynor Lane	CF48 2HE	Dwelling	55.3	54.1	58.4	59.5	43.8	42.7	46.6	47.5
Leiros Upper Vaynor Road	CF48 2HF	Dwelling	60.3	59.3	61.8	62.9	48.3	47.3	49.6	50.6
Trevalyn Trevalyn Upper Vaynor Road	CF48 2HF	Dwelling	59.2	58.0	61.2	62.3	47.2	46.1	49.1	50.0
Yr Aelwyn Yr Aelwyn Upper Vaynor Road	CF48 2HF	Dwelling	59.6	59.0	61.2	62.2	47.6	47.1	49.0	49.9
Ty Teulu 1 Carn Gwilym Goch	CF48 2HG	Dwelling	57.5	58.0	58.3	59.2	45.8	46.2	46.5	47.2
Bryngolwg Bryngolwg Lon Maes Du	CF48 2HH	Dwelling	56.1	55.0	58.6	59.6	44.5	43.5	46.7	47.6
Brynheulog Brynheulog Lon Maes Du	CF48 2HH	Dwelling	51.0	51.0	52.1	53.2	39.9	39.9	40.9	41.9
Dunromin Dunromin Lon Maes Du	CF48 2HH	Dwelling	59.3	58.7	61.2	62.3	47.3	46.8	49.1	50.0
Glascoed Glas Coed Lon Maes Du	CF48 2HH	Dwelling	52.7	51.6	55.4	56.4	41.4	40.4	43.8	44.7
Highcroft Highcroft Lon Maes Du	CF48 2HH	Dwelling	49.3	49.4	50.3	51.4	38.3	38.4	39.3	40.2
Pencerrig Pencerrig Lon Maes Du	CF48 2HH	Dwelling	51.4	52.0	53.0	54.0	40.3	40.8	41.6	42.6
Bucklands Bucklands Upper High Street	CF48 2HN	Dwelling	54.9	54.4	58.3	59.3	43.4	42.9	46.5	47.4
Cilsanws House Cilsanws House Upper High Street	CF48 2HN	Dwelling	70.9	70.6	71.8	72.7	57.8	57.5	58.6	59.4
Danydarren Farm The Barn Dan Y Darren Farm The Barn A470 From A4054 Junction To Llwynon	CF48 2HP	Dwelling	58.0	58.7	58.6	59.2	46.2	46.8	46.8	47.3
Salubrious Place 1 Salubrious Place Upper High Street	CF48 2HW	Dwelling	63.4	63.2	65.0	65.9	51.0	50.9	52.4	53.3
Salubrious Place 2 Salubrious Place Upper High Street	CF48 2HW	Dwelling	63.2	63.0	64.6	65.5	50.9	50.7	52.2	52.9
Salubrious Place 3 Salubrious Place Upper High Street	CF48 2HW	Dwelling	62.4	62.2	64.1	65.0	50.2	50.0	51.6	52.4
Alpine House Alpine House Upper High Street	CF48 2HW	Dwelling	52.7	53.0	55.5	56.6	41.4	41.6	43.9	45.0
Ardwyn Ardwyn Upper High Street	CF48 2HW	Dwelling	63.6	63.3	65.1	66.0	51.2	50.9	52.6	53.4
Ashburn Ashburn Upper High Street	CF48 2HW	Dwelling	65.6	65.4	67.5	68.4	53.1	52.8	54.7	55.6
Ashville Ashville Upper High Street	CF48 2HW	Dwelling	58.1	58.3	59.3	60.3	46.3	46.5	47.3	48.2
Beechdene Beechdene Upper High Street	CF48 2HW	Dwelling	63.7	63.6	65.6	66.6	51.4	51.2	53.0	53.9
Belmont Belmont Upper High Street	CF48 2HW	Dwelling	60.2	60.0	62.2	63.2	48.2	48.0	50.0	50.8
Brig Y Bryn Brig-Y-Bryn Upper High Street	CF48 2HW	Dwelling	53.5	54.0	55.8	57.0	42.1	42.6	44.2	45.3
Bryn Gwyn Bryn Gwyn Upper High Street	CF48 2HW	Dwelling	65.6	65.3	67.5	68.5	53.0	52.8	54.7	55.6
Bryn Y Wawr Bryn-Y-Wawr Upper High Street	CF48 2HW	Dwelling	52.7	53.2	55.9	57.1	41.4	41.9	44.3	45.4
Cefn Coed House Cefn Coed House Upper High Street	CF48 2HW	Dwelling	64.3	64.1	66.2	67.2	51.9	51.7	53.6	54.4
Courtville Courtville Upper High Street	CF48 2HW	Dwelling	63.6	63.4	65.7	66.7	51.2	51.0	53.1	54.0
Dalry Dalry Upper High Street	CF48 2HW	Dwelling	63.2	62.9	65.0	65.9	50.9	50.6	52.5	53.3
Dan Y Garreg Dan-Y-Garreg Upper High Street	CF48 2HW	Dwelling	54.0	54.1	55.5	56.5	42.6	42.6	44.0	44.8
Devonia Devonia Upper High Street	CF48 2HW	Dwelling	57.7	57.6	59.8	60.9	45.9	45.8	47.8	48.8
Dunelm Dunelm Upper High Street	CF48 2HW	Dwelling	53.1	53.3	54.7	55.7	41.8	41.9	43.2	44.1
Endberry Cottage Endberry Cottage Upper High Street	CF48 2HW	Dwelling	51.3	51.5	53.5	54.5	40.2	40.3	42.1	43.1

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
Garreg Fawr Garreg Fawr Upper High Street	CF48 2HW	Dwelling	53.4	53.8	54.6	55.7	42.1	42.4	43.1	44.1
Glan-Taf House Glan-Taf House Upper High Street	CF48 2HW	Dwelling	55.8	55.7	58.6	59.7	44.2	44.1	46.7	47.7
Glasfryn Glasfryn Upper High Street	CF48 2HW	Dwelling	65.6	65.3	67.0	68.0	53.0	52.8	54.3	55.2
Glen Rosa Glen Rosa Upper High Street	CF48 2HW	Dwelling	58.5	58.3	60.9	61.9	46.7	46.4	48.8	49.7
Gwynfa Gwynfa Upper High Street	CF48 2HW	Dwelling	65.6	65.3	67.5	68.5	53.0	52.8	54.7	55.6
Hebrew Congregational Cemetery Chapel Upper High Street	CF48 2HW	OSR	64.8	64.8	66.7	67.7	52.3	52.3	54.0	54.9
Inglenook Inglenook Upper High Street	CF48 2HW	Dwelling	51.4	52.0	55.0	56.1	40.2	40.8	43.4	44.5
Justacot Justacot Upper High Street	CF48 2HW	Dwelling	56.4	56.3	58.5	59.4	44.8	44.7	46.6	47.5
Lyndhurst Lyndhurst Upper High Street	CF48 2HW	Dwelling	57.5	57.2	59.9	60.9	45.7	45.5	47.9	48.8
Maestaf Maestaf Upper High Street	CF48 2HW	Dwelling	59.9	59.6	62.1	63.1	47.9	47.6	49.9	50.8
Melrose Melrose Upper High Street	CF48 2HW	Dwelling	51.9	52.2	55.1	56.3	40.7	40.9	43.6	44.6
Nantsiarad Nantsiarad High Street	CF48 2HW	Dwelling	59.5	59.2	61.0	61.9	47.6	47.2	48.9	49.6
Narbeth House Narberth Cottage Upper High Street	CF48 2HW	Dwelling	64.3	64.0	66.3	67.2	51.9	51.6	53.6	54.5
Oakland House Oakland House Upper High Street	CF48 2HW	Dwelling	55.5	56.0	58.1	59.3	43.9	44.3	46.3	47.4
Reservoir House Resevoir House Upper High Street	CF48 2HW	Dwelling	65.3	64.9	67.3	68.3	52.7	52.4	54.5	55.4
Salubrious Place Upper High Street	CF48 2HW	Dwelling	63.4	63.2	65.0	65.9	51.0	50.9	52.4	53.3
Shearling Shearling Upper High Street	CF48 2HW	Dwelling	51.6	52.1	56.4	57.6	40.4	40.9	44.7	45.8
St Annes St. Annes Upper High Street	CF48 2HW	Dwelling	65.8	65.5	67.8	68.8	53.2	52.9	55.0	55.9
Stonycroft Stonycroft Upper High Street	CF48 2HW	Dwelling	55.1	54.9	56.9	57.9	43.6	43.4	45.2	46.1
Thistlewood Thistlewood Upper High Street	CF48 2HW	Dwelling	56.2	56.7	59.0	60.2	44.6	45.0	47.1	48.2
Trelai Trelai Upper High Street	CF48 2HW	Dwelling	63.9	63.7	65.5	66.5	51.5	51.3	53.0	53.8
Two Hoots Two Hoots Upper High Street	CF48 2HW	Dwelling	53.9	54.1	56.0	57.0	42.5	42.7	44.4	45.2
Ty Ardd Ty Ardd Upper High Street	CF48 2HW	Dwelling	59.3	59.2	60.9	61.7	47.4	47.3	48.7	49.5
Tynygarn Tynygarn Upper High Street	CF48 2HW	Dwelling	63.2	63.0	64.6	65.4	50.9	50.7	52.1	52.8
Werncoed Werncoed Upper High Street	CF48 2HW	Dwelling	58.1	57.9	60.5	61.5	46.3	46.1	48.5	49.4
Wolverdare Wolverdare Upper High Street	CF48 2HW	Dwelling	52.3	52.5	55.0	56.1	41.0	41.3	43.5	44.4
Woody Bank Woody Bank Upper High Street	CF48 2HW	Dwelling	54.2	54.9	56.2	57.2	42.8	43.4	44.5	45.5
12 High Trees	CF48 2LE	Dwelling	49.8	48.7	50.2	51.2	38.8	37.8	39.1	40.1
12-13 Well Street	CF48 2LL	Dwelling	53.9	53.5	54.6	55.3	42.5	42.2	43.2	43.8
Glanyrafon Glanyrafon Well Street	CF48 2LL	Dwelling	52.1	51.9	53.3	54.1	40.9	40.7	41.9	42.7
Ty Dafydd Ty Dafydd Well Street	CF48 2LL	Dwelling	52.6	52.7	53.2	53.8	41.3	41.4	41.9	42.4
1 Well Street	CF48 2LL	Dwelling	52.3	52.1	52.6	53.0	41.0	40.9	41.3	41.7
2 Well Street	CF48 2LL	Dwelling	55.2	55.0	55.2	55.7	43.7	43.5	43.6	44.1
3 Well Street	CF48 2LL	Dwelling	54.4	54.2	54.6	55.1	43.0	42.8	43.2	43.6
4 Well Street	CF48 2LL	Dwelling	55.4	55.3	56.0	56.3	43.8	43.7	44.3	44.6
5 Well Street	CF48 2LL	Dwelling	54.4	54.5	55.4	55.6	43.0	43.0	43.8	44.1
6 Well Street	CF48 2LL	Dwelling	54.3	54.3	55.3	55.6	42.8	42.9	43.7	44.0
7 Well Street	CF48 2LL	Dwelling	53.4	53.3	54.5	55.0	42.0	42.0	43.0	43.5
15 Well Street	CF48 2LL	Dwelling	51.7	51.2	52.8	53.6	40.6	40.1	41.5	42.2
1 Rock Lane	CF48 2LN	Dwelling	55.2	55.1	55.3	55.8	43.7	43.6	43.8	44.2
2 Rock Lane	CF48 2LN	Dwelling	49.4	49.4	50.8	51.5	38.5	38.4	39.7	40.3
Alamdale Alamdale Brewery Lane	CF48 2LP	Dwelling	55.6	54.9	56.0	57.0	44.0	43.4	44.4	45.2
Dan Y Deri House Dan-Y-Deri House Brewery Lane	CF48 2LP	Dwelling	55.3	55.4	56.7	57.2	43.7	43.8	45.0	45.4
Deepdene Deepdene Brewery Lane	CF48 2LP	Dwelling	56.8	56.0	56.8	57.8	45.1	44.4	45.1	46.0
Ty Pont Pren Ty Pont Pren Brewery Lane	CF48 2LP	Dwelling	51.6	51.4	53.9	54.9	40.4	40.2	42.5	43.4
Vale View Brewery Lane	CF48 2LP	Dwelling	56.2	55.5	56.3	57.2	44.6	44.0	44.6	45.5
Ysgol Y Graig School Building No. 3 Brewery Lane	CF48 2LR	OSR	52.0	51.4	53.2	54.1	40.8	40.3	41.8	42.7
Ysgol Y Graig School Brewery Lane	CF48 2LR	OSR	52.0	51.4	53.2	54.1	40.8	40.3	41.8	42.7
Holly Cottages 1 Holly Cottages Dan-Y-Deri Lane	CF48 2LS	Dwelling	51.3	50.9	52.5	53.4	40.1	39.8	41.2	42.0
Park View 1 Park View Houses Dan-Y-Deri Lane	CF48 2LS	Dwelling	50.3	50.0	53.0	53.9	39.3	39.0	41.7	42.5
Maesyberllan Cottages 1-2 Maesyberllan Cottages Dan-Y-Deri Lane	CF48 2LS	Dwelling	55.9	55.8	56.5	57.1	44.3	44.2	44.8	45.4
Holly Cottages 2 Holly Cottages Dan-Y-Deri Lane	CF48 2LS	Dwelling	51.2	50.9	52.8	53.6	40.0	39.8	41.5	42.2
Laburnum Cottages 2 Laburnum Cottages Dan-Y-Deri Lane	CF48 2LS	Dwelling	50.6	50.4	52.9	53.8	39.5	39.3	41.6	42.4
Park View 2 Park View Houses Dan-Y-Deri Lane	CF48 2LS	Dwelling	53.6	53.2	54.9	55.8	42.2	41.9	43.4	44.2
Laburnum Cottages Dan-Y-Deri Lane	CF48 2LS	Dwelling	49.5	49.0	50.3	51.2	38.5	38.1	39.2	40.0
Maesyberllan Cottages Dan-Y-Deri Lane	CF48 2LS	Dwelling	55.9	55.8	56.5	57.1	44.3	44.2	44.8	45.4
4 Dan-Y-Deri Lane	CF48 2LS	Dwelling	53.4	53.0	54.1	55.0	42.0	41.7	42.7	43.4
5 Dan-Y-Deri Lane	CF48 2LS	Dwelling	55.6	55.1	56.0	56.8	44.0	43.5	44.4	45.1
9 Dan-Y-Deri Lane	CF48 2LS	Dwelling	55.0	54.0	55.4	56.4	43.5	42.6	43.8	44.7
1 Price Street	CF48 2LT	Dwelling	52.5	52.2	54.6	55.5	41.2	40.9	43.1	43.9
2 Price Street	CF48 2LT	Dwelling	57.3	56.7	57.5	58.5	45.6	45.0	45.7	46.6
3 Price Street	CF48 2LT	Dwelling	57.2	56.5	57.3	58.3	45.5	44.8	45.5	46.4
4 Price Street	CF48 2LT	Dwelling	57.5	56.8	57.5	58.5	45.7	45.1	45.8	46.6
5 Price Street	CF48 2LT	Dwelling	57.4	56.8	57.6	58.5	45.7	45.1	45.8	46.7
6 Price Street	CF48 2LT	Dwelling	53.2	53.4	53.5	54.3	41.8	42.0	42.1	42.8
7 Price Street	CF48 2LT	Dwelling	53.5	53.6	54.0	54.7	42.1	42.3	42.6	43.2
8 Price Street	CF48 2LT	Dwelling	53.6	53.7	54.5	55.2	42.2	42.3	43.0	43.7
Vaughan Terrace 1 Brewery Lane	CF48 2LU	Dwelling	57.5	57.5	58.2	58.8	45.7	45.7	46.4	46.9
Vaughan Terrace 2 Brewery Lane	CF48 2LU	Dwelling	57.1	57.3	57.3	57.6	45.4	45.6	45.5	45.8
Vaughan Terrace 3 Brewery Lane	CF48 2LU	Dwelling	53.2	53.3	53.1	53.7	41.8	41.9	41.8	42.3
East Riding East Riding Bagnetts Lane	CF48 2LW	Dwelling	50.3	50.4	52.6	53.4	39.3	39.3	41.3	42.1
Tawelfa Tawelfa Bagnetts Lane	CF48 2LW	Dwelling	53.9	53.9	55.0	55.7	42.5	42.5	43.5	44.1
Morlais Villas 1 Morlais Villas Lower Vaynor Road	CF48 2LY	Dwelling	51.9	51.1	52.6	53.6	40.6	40.0	41.3	42.2
Morlais Villas 2 Morlais Villas Lower Vaynor Road	CF48 2LY	Dwelling	53.3	52.8	53.7	54.6	42.0	41.5	42.3	43.2
9A Lower Vaynor Road	CF48 2LY	Dwelling	60.2	59.5	58.5	59.6	48.2	47.6	46.7	47.6
9B Lower Vaynor Road	CF48 2LY	Dwelling	57.2	56.3	57.5	58.5	45.5	44.7	45.7	46.6
Cartref Cartref Lower Vaynor Road	CF48 2LY	Dwelling	63.3	62.3	65.1	66.1	50.9	50.1	52.6	53.5
Park View Park View Lower Vaynor Road	CF48 2LY	Dwelling	54.8	54.3	54.9	55.9	43.3	42.9	43.4	44.3
Taf Fechan House Taf Fechan House Lower Vaynor Road	CF48 2LY	Dwelling	52.4	52.1	52.5	53.4	41.2	40.9	41.2	42.1
2 Lower Vaynor Road	CF48 2LY	Dwelling	58.9	59.0	55.5	56.1	47.0	47.1	43.9	44.5
3 Lower Vaynor Road	CF48 2LY	Dwelling	53.9	54.0	53.0	53.8	42.5	42.6	41.7	42.4
4 Lower Vaynor Road	CF48 2LY	Dwelling	58.0	57.8	56.3	57.2	46.1	46.0	44.7	45.5
5 Lower Vaynor Road	CF48 2LY	Dwelling	56.4	56.1	54.7	55.7	44.7	44.4	43.2	44.1
10 Lower Vaynor Road	CF48 2LY	Dwelling	55.3	54.5	55.6	56.6	43.7	43.0	44.0	44.9
11 Lower Vaynor Road	CF48 2LY	Dwelling	55.8	55.1	56.8	57.8	44.2	43.6	45.1	46.0
Old Police Station 12 Lower Vaynor Road	CF48 2LY	Dwelling	55.6	54.8	55.3	56.3	44.0	43.3	43.7	44.6
14 Lower Vaynor Road	CF48 2LY	Dwelling	55.5	55.4	55.4	56.3	43.9	43.8	43.9	44.7
15 Lower Vaynor Road	CF48 2LY	Dwelling	53.7	53.6	52.8	53.6	42.3	42.3	41.5	42.2
16 Lower Vaynor Road	CF48 2LY	Dwelling	55.8	55.8	56.3	57.2	44.2	44.2	44.6	45.4
17 Lower Vaynor Road	CF48 2LY	Dwelling	53.7	53.6	52.4	53.1	42.3	42.3	41.1	41.8
18 Lower Vaynor Road	CF48 2LY	Dwelling	53.9	53.7	54.9	55.8	42.5	42.3	43.4	44.2
19 Lower Vaynor Road	CF48 2LY	Dwelling	55.8	55.6	56.8	57.7	44.2	44.0	45.1	45.9
20 Lower Vaynor Road	CF48 2LY	Dwelling	52.7	52.6	54.2	55.1	41.4	41.3	42.8	43.5
21 Lower Vaynor Road	CF48 2LY	Dwelling	50.5	50.5	53.1	54.0	39.4	39.5	41.8	42.6
Maesteg Cottages 1 Maesteg Cottages New Church Street	CF48 2NA	Dwelling	57.5	57.7	57.7	58.5	45.7	45.9	45.9	46.7
Maesteg Cottages 2 Maesteg Cottages New Church Street	CF48 2NA	Dwelling	56.6	56.9	56.7	57.5	45.0	45.2	45.0	45.7
Maesteg Cottages 3 Maesteg Cottages New Church Street	CF48 2NA	Dwelling	49.0	48.6	49.5	50.4	38.1	37.7	38.5	39.3
Maesteg Cottages 4 Maesteg Cottages New Church Street	CF48 2NA	Dwelling	55.1	54.5	56.3	57.2	43.5	43.1	44.6	45.5
Aloha Aloha New Church Street	CF48 2NA	Dwelling	59.3	58.3	63.5	64.5	47.4	46.5	51.1	52.0
Cefn Coed Community Centre Old Drill Hall Road	CF48 2NA	OSR	57.9	58.1	59.2	60.1	46.0	46.2	47.3	48.1
Cherry Cottage Cherry Cottage New Church Street	CF48 2NA	Dwelling	61.7	60.8	63.0	63.9	49.5	48.7	50.7	51.5
Cobwebs Cobwebs New Church Street	CF48 2NA	Dwelling	57.3	56.8	58.9	59.9	45.5	45.1	47.0	47.9
Glan Yr Eglwys Glan Yr Eglwys New Church Street	CF48 2NA	Dwelling	58.3	57.2	60.2	61.3	46.5	45.5	48.2	49.1
Gwynfryn Gwynfryn New Church Street	CF48 2NA	Dwelling	53.7	53.3	53.7	54.7	42.3	41.9	42.3	43.2
Milliners Cottage Milliners Cottage New Church Street	CF48 2NA	Dwelling	55.3	55.0	56.9	57.8	43.7	43.5	45.2	46.0
Orchard House Orchard House New Church Street	CF48 2NA	Dwelling	53.5	53.5	56.2	57.1	42.2	42.1	44.6	45.4
Sheridan Sheridan New Church Street	CF48 2NA	Dwelling	53.7	53.9	55.4	56.2	42.3	42.5	43.8	44.6

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
St Johns Church Hall New Church Street	CF48 2NA	OSR	58.6	57.9	59.6	60.6	46.7	46.1	47.6	48.5
St Johns Church New Church Street	CF48 2NA	OSR	57.0	56.4	59.8	60.8	45.3	44.8	47.8	48.7
Tanybryn Tanybryn New Church Street	CF48 2NA	Dwelling	57.3	56.9	57.9	58.9	45.6	45.2	46.1	47.0
Valbonne Valbonne New Church Street	CF48 2NA	Dwelling	61.7	61.2	63.3	64.3	49.5	49.1	51.0	51.9
3A Station Road	CF48 2NB	Dwelling	48.7	48.6	49.1	50.1	37.8	37.7	38.2	39.0
3C Station Road	CF48 2NB	Dwelling	48.7	48.6	49.1	50.1	37.8	37.7	38.2	39.0
Cefn Rugby Club Station Road	CF48 2NB	OSR	58.8	59.3	60.3	61.4	46.9	47.3	48.2	49.3
Ty Vaynor Flat 1 Ty Vaynor Flat 1 Station Road	CF48 2NB	Dwelling	54.9	55.4	56.8	57.9	43.4	43.9	45.1	46.1
Ty Ystradfellte Flat 10 Ty Ystradfellte Flat 10 Station Road	CF48 2NB	Dwelling	52.3	52.6	54.7	55.7	41.0	41.4	43.2	44.1
Ty Penderyn Flat 11 Ty Penderyn Flat 11 Station Road	CF48 2NB	Dwelling	56.2	56.4	57.8	58.9	44.5	44.8	46.0	47.0
Ty Vaynor Ground Floor Station Road	CF48 2NB	Dwelling	56.2	56.4	57.8	58.9	44.5	44.8	46.0	47.0
Station Hotel Station Road	CF48 2NB	Dwelling	56.2	56.3	57.7	58.5	44.6	44.6	45.9	46.6
Station Road	CF48 2NB	Dwelling	48.7	48.6	49.1	50.1	37.8	37.7	38.2	39.0
1 Station Road	CF48 2NB	Dwelling	57.4	57.6	58.5	59.3	45.6	45.8	46.6	47.4
2 Station Road	CF48 2NB	Dwelling	57.4	57.6	58.5	59.3	45.6	45.8	46.6	47.4
Yewtree Cottages 1 Yew Tree Cottages Station Road	CF48 2ND	Dwelling	56.7	56.9	57.8	58.9	45.0	45.2	46.0	47.0
Yewtree Cottages 2 Yew Tree Cottages Station Road	CF48 2ND	Dwelling	56.9	57.1	57.9	59.0	45.2	45.4	46.1	47.0
Yewtree Cottages Station Road	CF48 2ND	Dwelling	56.7	56.9	57.8	58.9	45.0	45.2	46.0	47.0
Llysfaen Care Home Maesygarreg	CF48 2NE	Dwelling	54.3	54.7	56.0	57.1	42.9	43.2	44.4	45.3
1 Tawelfryn	CF48 2NG	Dwelling	51.9	52.1	58.5	59.7	40.7	40.8	46.6	47.7
2 Tawelfryn	CF48 2NG	Dwelling	52.9	53.1	59.5	60.7	41.6	41.7	47.6	48.7
3 Tawelfryn	CF48 2NG	Dwelling	51.9	52.1	59.1	60.3	40.7	40.8	47.2	48.3
4 Tawelfryn	CF48 2NG	Dwelling	52.8	52.9	59.7	60.9	41.5	41.5	47.7	48.8
7 Tawelfryn	CF48 2NG	Dwelling	65.8	65.8	67.0	68.0	53.2	53.2	54.3	55.2
8 Tawelfryn	CF48 2NG	Dwelling	63.6	63.6	65.2	66.2	51.2	51.2	52.6	53.5
9 Tawelfryn	CF48 2NG	Dwelling	50.1	50.0	56.1	57.3	39.1	39.0	44.5	45.6
10 Tawelfryn	CF48 2NG	Dwelling	62.0	62.2	63.4	64.5	49.8	49.9	51.0	52.0
11 Tawelfryn	CF48 2NG	Dwelling	64.8	64.8	66.1	67.1	52.3	52.3	53.5	54.3
12 Tawelfryn	CF48 2NG	Dwelling	60.5	60.4	62.7	63.7	48.5	48.3	50.4	51.3
Fleur De Lys Fleur De Lys Jobs Lane	CF48 2NH	Dwelling	48.6	49.0	49.3	50.3	37.7	38.1	38.3	39.2
Hawthorns Hawthorns Jobs Lane	CF48 2NH	Dwelling	60.9	61.4	60.9	62.1	48.8	49.2	48.8	49.8
Kilcohen House Kilcohen Jobs Lane	CF48 2NH	Dwelling	51.1	51.5	51.9	53.0	40.0	40.3	40.7	41.7
Mowbray House Mowbray House Jobs Lane	CF48 2NH	Dwelling	51.8	52.1	52.6	53.7	40.6	40.9	41.3	42.3
Oakdene Oakdene Jobs Lane	CF48 2NH	Dwelling	55.1	55.5	55.7	56.8	43.6	44.0	44.1	45.1
Tanglewood Tanglewood Jobs Lane	CF48 2NH	Dwelling	57.2	57.7	58.0	59.1	45.5	45.9	46.2	47.2
Tir Pontycapel Tir Pontycapel Jobs Lane	CF48 2NH	Dwelling	52.0	52.3	52.7	53.8	40.8	41.0	41.4	42.4
Ty Dafydd Ty Dafydd Jobs Lane	CF48 2NH	Dwelling	53.1	53.7	53.6	54.7	41.8	42.3	42.2	43.2
Ty Garregwen Ty Garregwen Jobs Lane	CF48 2NH	Dwelling	59.6	60.4	60.1	61.3	47.7	48.3	48.1	49.1
Westwood Westwood Jobs Lane	CF48 2NH	Dwelling	58.8	59.1	59.1	60.3	46.9	47.2	47.2	48.3
Windrush Windrush Jobs Lane	CF48 2NH	Dwelling	51.5	51.8	52.3	53.4	40.4	40.6	41.0	42.0
Grawen Cottages 1 Grawen Houses Grawen Lane	CF48 2NL	Dwelling	62.9	63.4	64.1	65.4	50.6	51.0	51.7	52.8
Grawen Cottages 2 Grawen Houses Grawen Lane	CF48 2NL	Dwelling	54.9	55.1	56.7	57.8	43.4	43.5	45.0	46.0
Grawen Cottages 3 Grawen Houses Grawen Lane	CF48 2NL	Dwelling	49.0	49.1	50.8	51.9	38.1	38.1	39.7	40.7
Grawen Cottages 5 Grawen Houses Grawen Lane	CF48 2NL	Dwelling	54.2	54.2	55.2	56.4	42.7	42.8	43.7	44.7
Grawen Cottages 6 Grawen Houses Grawen Lane	CF48 2NL	Dwelling	50.0	50.1	51.3	52.4	39.0	39.0	40.1	41.1
Grawen Cottages Grawen Lane	CF48 2NL	Dwelling	50.0	50.1	51.3	52.4	39.0	39.1	40.1	41.1
Foxfields Foxfields Grawen Lane	CF48 2NN	Dwelling	52.7	53.2	54.8	56.0	41.4	41.9	43.3	44.3
Grawen House Grawen House Grawen Lane	CF48 2NN	Dwelling	59.2	59.6	61.2	62.4	47.2	47.7	49.1	50.2
Ty Nant Ty Nant Grawen Lane	CF48 2NN	Dwelling	54.1	54.6	55.4	56.4	42.6	43.1	43.8	44.8
Autumn Leaves Autumn Leaves Grawen Lane	CF48 2NP	Dwelling	58.0	58.4	59.8	61.0	46.2	46.5	47.8	48.9
Capel Tabor Grawen Lane	CF48 2NP	OSR	66.0	65.7	67.5	68.4	53.4	53.1	54.8	55.6
Carnbrae Carnbrae Grawen Lane	CF48 2NP	Dwelling	49.4	49.5	50.3	51.4	38.4	38.5	39.3	40.2
Katerry Katerry Grawen Lane	CF48 2NP	Dwelling	57.6	58.1	59.5	60.7	45.8	46.3	47.5	48.6
Lyndale House Lyndale House Grawen Lane	CF48 2NP	Dwelling	56.9	57.4	59.6	60.8	45.2	45.6	47.6	48.7
Metford House Metford House Grawen Lane	CF48 2NP	Dwelling	55.2	55.5	58.6	59.8	43.6	44.0	46.7	47.8
Alamdra Alamdra Heol-Y-Mynydd	CF48 2NQ	Dwelling	53.5	53.6	58.5	59.7	42.1	42.2	46.7	47.7
Caversham Caversham Heol-Y-Mynydd	CF48 2NQ	Dwelling	54.1	54.4	57.1	58.3	42.7	42.9	45.4	46.4
Cotham Cotham Heol-Y-Mynydd	CF48 2NQ	Dwelling	55.8	56.3	56.6	57.7	44.2	44.6	45.0	45.9
Delfryn Delfryn Heol-Y-Mynydd	CF48 2NQ	Dwelling	55.2	55.6	56.9	58.1	43.6	44.0	45.2	46.2
Eryl Taf Eryl Taf Heol-Y-Mynydd	CF48 2NQ	Dwelling	51.5	51.7	53.9	55.1	40.3	40.5	42.5	43.5
Fairways Fairways Heol-Y-Mynydd	CF48 2NQ	Dwelling	55.7	56.3	57.7	58.9	44.1	44.6	46.0	47.0
Goleufryn Goleufryn Heol-Y-Mynydd	CF48 2NQ	Dwelling	57.5	58.1	59.2	60.4	45.8	46.3	47.3	48.3
Heather Dene Heather Dene Heol-Y-Mynydd	CF48 2NQ	Dwelling	53.2	53.7	55.6	56.8	41.9	42.3	44.0	45.1
Penlan Penlan Heol-Y-Mynydd	CF48 2NQ	Dwelling	54.7	55.1	57.1	58.3	43.2	43.6	45.4	46.4
Ty Croeso Ty Croeso Heol-Y-Mynydd	CF48 2NQ	Dwelling	52.4	52.7	54.8	55.9	41.2	41.4	43.3	44.3
Ty Gwyn Ty Gwyn Heol-Y-Mynydd	CF48 2NQ	Dwelling	55.9	56.2	57.9	59.1	44.2	44.6	46.1	47.1
Yr-Hafod Yr-Hafod Heol-Y-Mynydd	CF48 2NQ	Dwelling	50.3	50.7	54.8	56.0	39.2	39.6	43.3	44.4
Vaynor Villas 1 Vaynor Villas Upper Vaynor Road	CF48 2NR	Dwelling	63.6	63.3	65.8	66.7	51.3	51.0	53.2	54.0
Vaynor Villas 10 Vaynor Villas Upper Vaynor Road	CF48 2NR	Dwelling	47.0	46.4	48.1	49.1	36.3	35.7	37.3	38.1
Vaynor Villas 11 Vaynor Villas Upper Vaynor Road	CF48 2NR	Dwelling	59.6	58.6	61.8	62.8	47.6	46.7	49.6	50.5
Vaynor Villas 12 Vaynor Villas Upper Vaynor Road	CF48 2NR	Dwelling	60.0	59.0	62.3	63.3	48.0	47.1	50.1	51.0
Vaynor Villas 13 Vaynor Villas Upper Vaynor Road	CF48 2NR	Dwelling	60.5	59.5	62.7	63.7	48.4	47.5	50.4	51.3
Vaynor Villas 14 Vaynor Villas Upper Vaynor Road	CF48 2NR	Dwelling	60.6	59.6	62.7	63.8	48.5	47.6	50.4	51.4
Vaynor Villas 15 Vaynor Villas Upper Vaynor Road	CF48 2NR	Dwelling	59.5	58.3	61.7	62.7	47.5	46.4	49.5	50.4
Vaynor Villas 2 Vaynor Villas Upper Vaynor Road	CF48 2NR	Dwelling	65.0	64.6	67.3	68.2	52.5	52.1	54.6	55.4
Vaynor Villas 3 Vaynor Villas Upper Vaynor Road	CF48 2NR	Dwelling	63.9	63.5	66.1	67.1	51.5	51.2	53.5	54.3
Vaynor Villas 4 Vaynor Villas Upper Vaynor Road	CF48 2NR	Dwelling	61.8	61.6	63.5	64.5	49.6	49.5	51.1	52.0
Vaynor Villas 5 Vaynor Villas Upper Vaynor Road	CF48 2NR	Dwelling	58.9	58.9	60.6	61.6	47.0	47.0	48.5	49.4
Vaynor Villas 6 Vaynor Villas Upper Vaynor Road	CF48 2NR	Dwelling	58.9	58.9	61.0	61.9	47.0	47.0	48.9	49.6
Vaynor Villas 7 Vaynor Villas Upper Vaynor Road	CF48 2NR	Dwelling	46.4	45.7	47.7	48.7	35.8	35.1	36.9	37.8
Vaynor Villas 8 Vaynor Villas Upper Vaynor Road	CF48 2NR	Dwelling	47.2	46.5	48.5	49.4	36.5	35.9	37.6	38.5
Vaynor Villas 9 Vaynor Villas Upper Vaynor Road	CF48 2NR	Dwelling	52.7	52.3	55.4	56.4	41.4	41.1	43.8	44.8
Colindale Colindale Upper Vaynor Road	CF48 2NR	Dwelling	55.3	55.4	56.3	57.2	43.7	43.9	44.6	45.4
Fernlea Fernlea Upper Vaynor Road	CF48 2NR	Dwelling	65.4	64.5	67.1	68.1	52.8	52.1	54.4	55.3
St Davids St. Davids Upper Vaynor Road	CF48 2NR	Dwelling	59.4	58.3	61.7	62.7	47.4	46.5	49.5	50.4
Ty Llwyn Ty Llwyn Upper Vaynor Road	CF48 2NR	Dwelling	53.9	53.9	56.8	57.9	42.5	42.5	45.1	46.1
Tynewydd Tynewydd Bungalow Upper Vaynor Road	CF48 2NR	Dwelling	59.0	58.7	63.0	64.0	47.1	46.8	50.7	51.6
1 Gersanws	CF48 2NS	Dwelling	52.5	52.2	53.1	54.1	41.2	41.0	41.8	42.7
2 Gersanws	CF48 2NS	Dwelling	48.6	48.1	49.5	50.4	37.8	37.3	38.5	39.3
3 Gersanws	CF48 2NS	Dwelling	49.0	48.9	49.7	50.8	38.1	38.0	38.8	39.7
4 Gersanws	CF48 2NS	Dwelling	49.4	49.3	50.3	51.3	38.4	38.3	39.2	40.2
5 Gersanws	CF48 2NS	Dwelling	53.5	53.3	56.7	57.8	42.1	42.0	45.0	46.0
6 Gersanws	CF48 2NS	Dwelling	58.2	58.5	59.7	60.7	46.4	46.7	47.7	48.6
7 Gersanws	CF48 2NS	Dwelling	58.2	58.5	59.7	60.8	46.3	46.6	47.7	48.7
8 Gersanws	CF48 2NS	Dwelling	53.7	53.3	53.9	54.9	42.3	42.0	42.5	43.4
9 Gersanws	CF48 2NS	Dwelling	61.0	61.3	61.9	62.9	48.9	49.1	49.7	50.6
10 Gersanws	CF48 2NS	Dwelling	60.9	61.2	61.8	62.9	48.8	49.1	49.6	50.6
11 Gersanws	CF48 2NS	Dwelling	61.1	61.4	62.1	63.2	49.0	49.2	49.9	50.9
12 Gersanws	CF48 2NS	Dwelling	56.7	57.0	59.9	61.1	45.0	45.3	47.9	48.9
13 Gersanws	CF48 2NS	Dwelling	53.8	53.9	57.1	58.2	42.4	42.5	45.3	46.4
14 Gersanws	CF48 2NS	Dwelling	51.8	51.8	55.6	56.8	40.6	40.6	44.0	45.1
15 Gersanws	CF48 2NS	Dwelling	52.0	52.2	57.9	59.2	40.8	40.9	46.1	47.2
16 Gersanws	CF48 2NS	Dwelling	56.9	57.3	59.2	60.4	45.2	45.6	47.3	48.3
17 Gersanws	CF48 2NS	Dwelling	56.1	56.6	58.6	59.8	44.5	44.9	46.7	47.8
18 Gersanws	CF48 2NS	Dwelling	51.9	52.2	53.8	54.8	40.7	40.9	42.4	43.3
19 Gersanws	CF48 2NS	Dwelling	55.0	55.5	56.0	57.0	43.5	43.9	44.4	45.3
20 Gersanws	CF48 2NS	Dwelling	52.2	52.3	53.4	54.4	40.9	41.0	42.0	43.0

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
21 Gersanws	CF48 2NS	Dwelling	50.7	50.5	51.7	52.6	39.6	39.4	40.5	41.3
22 Gersanws	CF48 2NS	Dwelling	52.1	52.2	53.3	54.4	40.9	41.0	42.0	43.0
23 Gersanws	CF48 2NS	Dwelling	53.0	53.1	58.5	59.7	41.7	41.8	46.6	47.7
24 Gersanws	CF48 2NS	Dwelling	48.9	49.0	54.1	55.3	38.0	38.1	42.6	43.7
25 Gersanws	CF48 2NS	Dwelling	48.7	48.7	54.5	55.7	37.8	37.8	43.0	44.1
26 Gersanws	CF48 2NS	Dwelling	48.0	47.9	48.8	49.9	37.2	37.1	37.9	38.8
27 Gersanws	CF48 2NS	Dwelling	52.0	51.9	52.7	53.7	40.8	40.7	41.4	42.3
28 Gersanws	CF48 2NS	Dwelling	50.4	50.0	51.2	52.1	39.4	39.0	40.1	40.9
29 Gersanws	CF48 2NS	Dwelling	48.0	47.8	48.9	49.8	37.2	37.0	38.0	38.8
Ael Y Bryn Ael-Y-Bryn Cloth Hall Lane	CF48 2NT	Dwelling	55.4	56.0	57.5	58.7	43.9	44.4	45.8	46.8
Awelfryn Awelfryn Cloth Hall Lane	CF48 2NT	Dwelling	52.8	52.7	55.1	56.2	41.5	41.4	43.6	44.6
Brendale Brendale Cloth Hall Lane	CF48 2NT	Dwelling	55.6	55.9	57.2	58.4	44.0	44.3	45.5	46.5
Bryn Siriol Bryn Siriol Cloth Hall Lane	CF48 2NT	Dwelling	56.7	57.1	57.6	58.8	45.0	45.3	45.8	46.9
Bryn Y Bannau Bryn Y Bannau Cloth Hall Lane	CF48 2NT	Dwelling	53.2	53.5	55.5	56.6	41.9	42.2	43.9	44.9
Brynhir Brynhir Cloth Hall Lane	CF48 2NT	Dwelling	56.4	56.8	57.4	58.5	44.7	45.1	45.6	46.6
Brynteg Brynteg Cloth Hall Lane	CF48 2NT	Dwelling	50.8	50.7	52.2	53.1	39.7	39.6	41.0	41.8
Changing Room Lon Maes Du	CF48 2NT	OSR	53.0	52.7	55.0	56.0	41.6	41.4	43.5	44.4
Chelford Chelford Cloth Hall Lane	CF48 2NT	Dwelling	55.7	55.9	57.7	58.8	44.1	44.3	45.9	46.9
Cyfarthfa Cyfarthfa Cloth Hall Lane	CF48 2NT	Dwelling	53.6	54.0	56.6	57.8	42.2	42.6	44.9	46.0
Fronheulog Flat 1 Fronheulog Flat 1 Ground Floor Cloth Hall Lane	CF48 2NT	Dwelling	54.8	55.1	55.6	56.6	43.3	43.5	44.0	44.9
Garreg Wen Garreg Wen Cloth Hall Lane	CF48 2NT	Dwelling	49.8	49.6	52.0	53.0	38.8	38.6	40.8	41.6
Gelli Haf Gelli Haf Cloth Hall Lane	CF48 2NT	Dwelling	51.5	51.9	55.2	56.4	40.3	40.7	43.7	44.7
Golf House Golf House Cloth Hall Lane	CF48 2NT	Dwelling	55.3	55.9	56.5	57.6	43.8	44.3	44.9	45.9
Hillside Hillside Cloth Hall Lane	CF48 2NT	Dwelling	56.2	56.7	58.1	59.2	44.6	45.0	46.3	47.3
Holford House Cloth Hall Lane	CF48 2NT	Dwelling	55.5	56.0	57.0	58.1	44.0	44.3	45.2	46.2
Merthyr Tydfil Golf Club Cloth Hall Lane	CF48 2NT	OSR	51.9	51.4	53.2	54.1	40.7	40.2	41.8	42.7
Norland Norland Cloth Hall Lane	CF48 2NT	Dwelling	51.6	52.1	54.2	55.3	40.4	40.9	42.7	43.8
Pendre Pendre Cloth Hall Lane	CF48 2NT	Dwelling	54.4	55.0	56.4	57.5	42.9	43.5	44.7	45.8
Pensanws Pensanws Cloth Hall Lane	CF48 2NT	Dwelling	54.8	55.2	56.0	57.1	43.3	43.6	44.3	45.4
Redroofs Redroofs Cloth Hall Lane	CF48 2NT	Dwelling	48.3	47.7	51.7	52.8	37.5	36.9	40.6	41.5
Ty Y Mynydd Ty-Y-Mynydd Cloth Hall Lane	CF48 2NT	Dwelling	53.9	54.4	56.1	57.2	42.5	42.9	44.5	45.5
Cilsanws Bungalow 1 Cilsanws Bungalow Cilsanws Lane	CF48 2NU	Dwelling	56.0	56.5	57.6	58.8	44.4	44.8	45.8	46.9
Pleasant View 1 Pleasant View Cilsanws Lane	CF48 2NU	Dwelling	55.5	55.9	57.1	58.2	43.9	44.3	45.4	46.3
Cilsanws Bungalow 2 Cilsanws Bungalow Cilsanws Lane	CF48 2NU	Dwelling	50.9	51.2	55.0	56.2	39.8	40.1	43.5	44.6
Pleasant View 2 Pleasant View Cilsanws Lane	CF48 2NU	Dwelling	56.0	56.5	57.3	58.4	44.4	44.8	45.6	46.5
Pleasant View 3 Pleasant View Cilsanws Lane	CF48 2NU	Dwelling	57.1	57.6	58.2	59.3	45.4	45.9	46.3	47.3
Pleasant View 4 Pleasant View Cilsanws Lane	CF48 2NU	Dwelling	48.2	48.5	50.9	52.1	37.3	37.7	39.8	40.9
Aelybryn Aelybryn Cilsanws Lane	CF48 2NU	Dwelling	54.0	54.5	55.9	57.0	42.6	43.0	44.3	45.3
Bryn Awel Bryn Awel Cilsanws Lane	CF48 2NU	Dwelling	55.0	55.5	56.3	57.4	43.5	43.9	44.6	45.6
Brynhyfryd House Brynhyfryd House Cilsanws Lane	CF48 2NU	Dwelling	56.6	57.2	58.0	59.1	44.9	45.4	46.2	47.2
Carn Gwilym Carn Gwilym Cilsanws Lane	CF48 2NU	Dwelling	51.8	52.0	54.3	55.4	40.6	40.8	42.8	43.8
Casa Mia Casa Mia Cilsanws Lane	CF48 2NU	Dwelling	55.6	56.2	56.7	57.8	44.0	44.6	45.0	46.0
Greystones Greystones Cilsanws Lane	CF48 2NU	Dwelling	55.0	55.6	56.1	57.3	43.5	44.0	44.5	45.5
Gwenlais Gwenlais Cilsanws Lane	CF48 2NU	Dwelling	52.6	52.8	54.9	55.9	41.4	41.5	43.4	44.3
Hafan Wen Hafan Wen Cilsanws Lane	CF48 2NU	Dwelling	55.6	56.1	57.7	58.9	44.0	44.5	45.9	47.0
Heddfan Heddfan Cilsanws Lane	CF48 2NU	Dwelling	54.9	55.5	56.0	57.1	43.4	43.9	44.4	45.4
Llyswen Llyswen Cilsanws Lane	CF48 2NU	Dwelling	55.4	56.0	57.3	58.5	43.9	44.3	45.6	46.6
Mayrose Cottage Mayrose Cottage Cilsanws Lane	CF48 2NU	Dwelling	52.5	52.9	53.9	54.9	41.2	41.6	42.5	43.3
Nelita Nelita Cilsanws Lane	CF48 2NU	Dwelling	56.6	57.2	57.5	58.6	44.9	45.5	45.7	46.7
O'R Diwedd O'R Diwedd Cilsanws Lane	CF48 2NU	Dwelling	52.5	52.8	54.1	55.1	41.3	41.5	42.6	43.6
Pant Y Bryn Pant Y Bryn Cilsanws Lane	CF48 2NU	Dwelling	53.7	54.2	56.7	57.8	42.3	42.8	45.0	46.0
Penybryn Penybryn Cilsanws Lane	CF48 2NU	Dwelling	50.9	51.3	52.2	53.2	39.8	40.2	40.9	41.9
Prencelyn Prencelyn Cilsanws Lane	CF48 2NU	Dwelling	54.4	55.0	55.7	56.8	42.9	43.5	44.1	45.1
The Links The Links Cilsanws Lane	CF48 2NU	Dwelling	56.1	56.7	57.3	58.5	44.5	45.0	45.6	46.6
Tygs Tygs Cilsanws Lane	CF48 2NU	Dwelling	59.4	59.5	60.7	61.6	47.5	47.5	48.6	49.4
Ty-Rhosyn Gwyllt Ty-Rhosyn Gwyllt Cilsanws Lane	CF48 2NU	Dwelling	55.2	55.7	56.7	57.7	43.7	44.1	45.0	45.9
Fairview Houses 1 Fairview Houses Grawen Lane	CF48 2NW	Dwelling	58.2	58.7	59.1	60.3	46.4	46.8	47.2	48.3
Fairview Houses 10 Fairview Houses Grawen Lane	CF48 2NW	Dwelling	58.5	59.1	60.4	61.6	46.6	47.2	48.3	49.4
Fairview Houses 11 Fairview Houses Grawen Lane	CF48 2NW	Dwelling	59.0	59.6	60.8	61.9	47.1	47.6	48.7	49.7
Fairview Houses 12 Fairview Houses Grawen Lane	CF48 2NW	Dwelling	59.1	59.7	60.9	62.0	47.2	47.7	48.7	49.8
Fairview Houses 13 Fairview Houses Grawen Lane	CF48 2NW	Dwelling	59.0	59.6	60.8	62.0	47.1	47.7	48.7	49.8
Fairview Houses 2 Fairview Houses Grawen Lane	CF48 2NW	Dwelling	57.8	58.3	59.3	60.4	46.0	46.5	47.3	48.4
Fairview Houses 3 Fairview Houses Grawen Lane	CF48 2NW	Dwelling	57.7	58.2	59.8	61.0	45.9	46.4	47.8	48.9
Fairview Houses 4 Fairview Houses Grawen Lane	CF48 2NW	Dwelling	57.9	58.5	59.5	60.7	46.1	46.6	47.5	48.6
Fairview Houses 5 Fairview Houses Grawen Lane	CF48 2NW	Dwelling	57.7	58.3	59.0	60.2	45.9	46.5	47.1	48.1
Fairview Houses 6 Fairview Houses Grawen Lane	CF48 2NW	Dwelling	58.0	58.5	59.2	60.3	46.1	46.7	47.2	48.3
Fairview Houses 7 Fairview Houses Grawen Lane	CF48 2NW	Dwelling	58.1	58.7	59.4	60.6	46.2	46.8	47.5	48.5
Fairview Houses 8 Fairview Houses Grawen Lane	CF48 2NW	Dwelling	58.5	59.1	60.1	61.2	46.6	47.1	48.0	49.1
Fairview Houses 9 Fairview Houses Grawen Lane	CF48 2NW	Dwelling	58.5	59.1	60.4	61.6	46.6	47.2	48.3	49.4
1 Somerset Close	CF48 2NY	Dwelling	44.6	44.2	46.3	47.3	34.1	33.7	35.7	36.6
2 Somerset Close	CF48 2NY	Dwelling	47.9	47.3	49.3	50.2	37.1	36.5	38.3	39.2
3 Somerset Close	CF48 2NY	Dwelling	58.6	58.4	59.4	60.5	46.7	46.6	47.4	48.4
4 Somerset Close	CF48 2NY	Dwelling	55.3	55.3	56.0	57.0	43.7	43.8	44.4	45.3
5 Somerset Close	CF48 2NY	Dwelling	45.8	45.3	49.1	50.1	35.2	34.8	38.2	39.1
6 Somerset Close	CF48 2NY	Dwelling	52.1	51.8	53.8	54.8	40.9	40.6	42.4	43.3
7 Somerset Close	CF48 2NY	Dwelling	50.0	49.9	51.5	52.6	38.9	38.9	40.3	41.3
Allteryn Allteryn Somerset Lane	CF48 2PA	Dwelling	57.7	58.0	59.2	60.3	45.9	46.2	47.3	48.2
Brynawelon Brynawelon Somerset Lane	CF48 2PA	Dwelling	48.0	48.2	51.0	52.2	37.1	37.4	39.9	40.9
Bryncerddin Bryncerdin Somerset Lane	CF48 2PA	Dwelling	53.1	52.3	55.6	56.6	41.8	41.1	44.1	44.9
Brynglas Brynglas Somerset Lane	CF48 2PA	Dwelling	55.9	56.3	57.0	58.0	44.3	44.7	45.3	46.2
Maes Yr Haf Maes Yr Haf Somerset Lane	CF48 2PA	Dwelling	55.1	54.2	57.4	58.4	43.6	42.8	45.7	46.5
Meadow View Meadow View Somerset Lane	CF48 2PA	Dwelling	52.9	52.9	55.9	57.1	41.6	41.6	44.3	45.4
Ponsford Ponsford Somerset Lane	CF48 2PA	Dwelling	53.8	53.4	55.0	55.9	42.4	42.0	43.4	44.3
Rosewater Rosewater Somerset Lane	CF48 2PA	Dwelling	54.9	53.9	57.8	58.8	43.4	42.5	46.0	46.9
Somerset House Somerset House Somerset Lane	CF48 2PA	Dwelling	57.4	57.5	59.2	60.2	45.6	45.8	47.2	48.1
The Annexe Somerset Lane	CF48 2PA	Dwelling	62.4	62.4	63.4	64.4	50.2	50.2	51.0	51.9
Woodstock Woodstock Somerset Lane	CF48 2PA	Dwelling	57.6	57.7	59.2	60.2	45.8	45.9	47.3	48.2
1 Somerset Lane	CF48 2PA	Dwelling	62.4	62.4	63.4	64.4	50.2	50.2	51.0	51.9
2 Somerset Lane	CF48 2PA	Dwelling	52.6	52.1	55.8	56.7	41.4	40.9	44.2	45.0
Maen Mellin Maen Mellin St Johns Close	CF48 2PE	Dwelling	57.2	56.5	58.7	59.7	45.5	44.8	46.8	47.7
1 St Johns Close	CF48 2PE	Dwelling	55.4	54.4	57.2	58.2	43.8	43.0	45.5	46.4
2 St Johns Close	CF48 2PE	Dwelling	57.4	57.2	57.6	58.5	45.6	45.5	45.8	46.6
3 St Johns Close	CF48 2PE	Dwelling	56.6	55.9	59.7	60.7	44.9	44.3	47.7	48.6
4 St Johns Close	CF48 2PE	Dwelling	57.6	57.6	57.7	58.6	45.8	45.8	45.9	46.7
5 St Johns Close	CF48 2PE	Dwelling	59.3	59.1	59.5	60.4	47.3	47.2	47.5	48.4
6 St Johns Close	CF48 2PE	Dwelling	58.1	58.0	59.0	59.9	46.2	46.2	47.1	47.9
7 St Johns Close	CF48 2PE	Dwelling	55.0	54.5	56.1	57.0	43.5	43.0	44.5	45.3
8 St Johns Close	CF48 2PE	Dwelling	54.4	54.0	54.8	55.7	43.0	42.6	43.3	44.1
13-14 High Street	CF48 2PG	Dwelling	53.4	53.7	53.7	54.2	42.0	42.3	42.3	42.7
34A High Street	CF48 2PG	Dwelling	54.9	55.3	55.1	55.6	43.4	43.8	43.6	44.0
Bridge House Bridge House High Street	CF48 2PG	Dwelling	59.2	59.4	59.5	59.8	47.2	47.5	47.5	47.8
Brithdir Cottage Brithdir Cottage High Street	CF48 2PG	Dwelling	54.8	55.3	55.1	55.7	43.3	43.8	43.5	44.1
Hen Dy Cwrdd Chapel High Street	CF48 2PG	OSR	54.1	54.0	55.5	56.3	42.7	42.6	43.9	44.7
High Street	CF48 2PG	Dwelling	60.5	60.7	61.0	60.9	48.4	48.6	48.8	48.8
High Street	CF48 2PG	Dwelling	71.2	71.4	71.7	71.5	58.1	58.2	58.5	58.4
1 High Street	CF48 2PG	Dwelling	53.2	53.6	53.5	54.2	41.9	42.2	42.2	42.7
2 High Street	CF48 2PG	Dwelling	49.8	50.4	50.1	50.8	38.8	39.3	39.1	39.7

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
15 High Street	CF48 2PG	Dwelling	54.4	54.9	54.6	55.2	43.0	43.4	43.2	43.7
16 High Street	CF48 2PG	Dwelling	55.4	56.0	55.7	56.3	43.9	44.4	44.1	44.6
17 High Street	CF48 2PG	Dwelling	55.5	56.0	55.7	56.3	43.9	44.4	44.1	44.7
18 High Street	CF48 2PG	Dwelling	55.5	56.1	55.8	56.4	44.0	44.4	44.2	44.7
19 High Street	CF48 2PG	Dwelling	55.0	55.5	55.2	55.8	43.5	43.9	43.7	44.2
20 High Street	CF48 2PG	Dwelling	54.3	54.8	54.6	55.2	42.9	43.3	43.1	43.7
21 High Street	CF48 2PG	Dwelling	54.2	54.7	54.5	55.1	42.8	43.2	43.0	43.6
22 High Street	CF48 2PG	Dwelling	50.5	51.0	50.8	51.4	39.5	39.9	39.7	40.2
23 High Street	CF48 2PG	Dwelling	54.7	55.2	54.9	55.5	43.2	43.6	43.4	43.9
27 High Street	CF48 2PG	Dwelling	54.4	54.8	54.7	55.4	42.9	43.3	43.2	43.8
28 High Street	CF48 2PG	Dwelling	55.4	56.0	55.7	56.3	43.9	44.4	44.1	44.7
29 High Street	CF48 2PG	Dwelling	55.1	55.6	55.3	56.0	43.6	44.1	43.8	44.4
30 High Street	CF48 2PG	Dwelling	50.7	51.3	51.0	51.6	39.6	40.2	39.9	40.4
31 High Street	CF48 2PG	Dwelling	53.8	54.2	54.2	54.8	42.4	42.8	42.8	43.3
32 High Street	CF48 2PG	Dwelling	55.7	56.2	56.0	56.6	44.1	44.6	44.4	45.0
35 High Street	CF48 2PG	Dwelling	54.8	55.3	55.1	55.7	43.3	43.8	43.5	44.1
36 High Street	CF48 2PG	Dwelling	54.5	55.1	54.8	55.4	43.0	43.5	43.3	43.8
37 High Street	CF48 2PG	Dwelling	55.5	56.2	55.8	56.5	44.0	44.6	44.2	44.9
38 High Street	CF48 2PG	Dwelling	56.5	57.2	56.8	57.5	44.9	45.4	45.1	45.7
184 High Street	CF48 2PG	Dwelling	53.1	52.9	53.3	53.8	41.7	41.6	42.0	42.4
186 High Street	CF48 2PG	Dwelling	53.9	53.7	54.0	54.5	42.5	42.3	42.5	43.0
195 High Street	CF48 2PG	Dwelling	71.8	71.9	72.3	72.1	58.6	58.7	59.0	58.9
196 High Street	CF48 2PG	Dwelling	71.4	71.5	71.8	71.7	58.2	58.3	58.6	58.5
197 High Street	CF48 2PG	Dwelling	71.6	71.8	72.1	71.9	58.4	58.6	58.9	58.7
198 High Street	CF48 2PG	Dwelling	52.7	52.5	52.8	53.3	41.4	41.2	41.5	42.0
199 High Street	CF48 2PG	Dwelling	55.5	55.6	55.7	56.0	44.0	44.0	44.1	44.3
200 High Street	CF48 2PG	Dwelling	71.5	71.7	72.0	71.8	58.3	58.5	58.8	58.6
202 High Street	CF48 2PG	Dwelling	71.8	72.0	72.3	72.1	58.6	58.8	59.1	58.9
204 High Street	CF48 2PG	Dwelling	71.8	72.0	72.3	72.1	58.6	58.8	59.1	58.9
205 High Street	CF48 2PG	Dwelling	71.7	71.8	72.2	72.0	58.5	58.6	58.9	58.8
206 High Street	CF48 2PG	Dwelling	71.6	71.8	72.1	72.0	58.5	58.6	58.9	58.7
207 High Street	CF48 2PG	Dwelling	71.4	71.6	71.9	71.7	58.3	58.4	58.7	58.5
164A First Floor Flat High Street	CF48 2PH	Dwelling	54.4	53.9	54.4	55.2	42.9	42.5	43.0	43.6
166A High Street	CF48 2PH	Dwelling	55.3	55.5	56.1	56.1	43.8	43.9	44.5	44.5
50A High Street	CF48 2PH	Dwelling	54.9	55.5	55.2	55.9	43.4	43.9	43.7	44.3
50B High Street	CF48 2PH	Dwelling	54.9	55.4	55.1	55.7	43.4	43.8	43.6	44.2
Cefn Cottage Cefn Cottage High Street	CF48 2PH	Dwelling	53.9	54.0	54.9	55.4	42.5	42.6	43.4	43.8
High Street	CF48 2PH	Dwelling	54.1	54.4	54.6	55.1	42.7	42.9	43.1	43.6
Ty Carmel High Street	CF48 2PH	Dwelling	55.4	56.1	55.6	56.3	43.9	44.4	44.0	44.7
46 High Street	CF48 2PH	Dwelling	54.8	55.4	55.1	55.8	43.3	43.8	43.6	44.2
47 High Street	CF48 2PH	Dwelling	55.2	55.7	55.5	56.2	43.7	44.2	43.9	44.5
48 High Street	CF48 2PH	Dwelling	55.3	55.8	55.6	56.2	43.7	44.2	44.0	44.6
49 High Street	CF48 2PH	Dwelling	54.0	54.4	54.3	55.0	42.5	42.9	42.9	43.4
50 High Street	CF48 2PH	Dwelling	54.4	54.8	54.7	55.4	42.9	43.3	43.2	43.8
51 High Street	CF48 2PH	Dwelling	54.5	54.9	54.8	55.4	43.0	43.4	43.3	43.8
52 High Street	CF48 2PH	Dwelling	55.0	55.6	55.4	56.1	43.5	44.0	43.8	44.5
53 High Street	CF48 2PH	Dwelling	54.8	55.4	55.2	55.9	43.3	43.8	43.6	44.3
54 High Street	CF48 2PH	Dwelling	71.2	71.3	71.7	71.5	58.0	58.2	58.5	58.3
55 High Street	CF48 2PH	Dwelling	55.3	55.9	55.6	56.4	43.8	44.3	44.0	44.7
56 High Street	CF48 2PH	Dwelling	55.2	55.8	55.6	56.3	43.7	44.2	44.0	44.7
57 High Street	CF48 2PH	Dwelling	55.3	55.8	55.6	56.3	43.7	44.2	44.0	44.7
58 High Street	CF48 2PH	Dwelling	55.2	55.7	55.4	56.2	43.6	44.1	43.9	44.5
154 High Street	CF48 2PH	Dwelling	53.0	52.6	53.7	54.5	41.6	41.3	42.4	43.0
155 High Street	CF48 2PH	Dwelling	52.9	52.3	53.7	54.5	41.6	41.1	42.3	43.0
156 High Street	CF48 2PH	Dwelling	48.7	48.8	51.5	52.1	37.8	37.9	40.3	40.9
157 High Street	CF48 2PH	Dwelling	53.2	52.8	53.6	54.4	41.9	41.5	42.2	42.9
Llanberis Cottage 159 High Street	CF48 2PH	Dwelling	55.5	55.0	55.5	56.2	44.0	43.5	43.9	44.6
162 High Street	CF48 2PH	Dwelling	54.6	54.0	54.9	55.6	43.1	42.6	43.3	44.0
163 High Street	CF48 2PH	Dwelling	55.2	54.8	55.7	56.3	43.7	43.3	44.1	44.6
165 High Street	CF48 2PH	Dwelling	54.2	53.7	54.4	55.1	42.8	42.3	42.9	43.6
166 High Street	CF48 2PH	Dwelling	53.5	53.3	54.1	54.7	42.2	41.9	42.6	43.2
167 High Street	CF48 2PH	Dwelling	52.7	52.6	53.2	53.7	41.4	41.3	41.8	42.3
168 High Street	CF48 2PH	Dwelling	53.9	53.5	54.2	54.9	42.5	42.2	42.8	43.4
169 High Street	CF48 2PH	Dwelling	71.0	71.2	71.5	71.3	57.9	58.0	58.3	58.2
Whitehorse Court 1 Whitehorse Court High Street	CF48 2PL	Dwelling	56.1	56.7	56.4	57.2	44.5	45.0	44.7	45.4
142A High Street	CF48 2PL	Dwelling	71.6	71.7	72.1	71.9	58.4	58.5	58.8	58.7
Whitehorse Court 2 Whitehorse Court High Street	CF48 2PL	Dwelling	59.7	59.8	60.5	60.8	47.7	47.8	48.4	48.7
Whitehorse Court 3 Whitehorse Court High Street	CF48 2PL	Dwelling	55.1	55.6	55.5	56.3	43.6	44.0	43.9	44.7
Whitehorse Court 4 Whitehorse Court High Street	CF48 2PL	Dwelling	68.8	68.9	69.3	69.1	55.9	56.0	56.3	56.2
62A High Street	CF48 2PL	Dwelling	54.1	54.6	54.5	55.3	42.7	43.1	43.0	43.7
62B High Street	CF48 2PL	Dwelling	53.6	54.0	54.0	54.7	42.3	42.6	42.6	43.2
62C High Street	CF48 2PL	Dwelling	52.7	53.0	53.0	53.6	41.4	41.6	41.7	42.2
62D High Street	CF48 2PL	Dwelling	53.3	53.5	53.6	54.3	41.9	42.2	42.2	42.9
Flat Above High Street	CF48 2PL	Dwelling	53.1	52.4	54.6	55.5	41.7	41.2	43.1	43.9
High Street	CF48 2PL	Dwelling	53.0	52.5	55.0	55.9	41.7	41.2	43.5	44.3
60 High Street	CF48 2PL	Dwelling	53.8	54.2	54.2	54.8	42.4	42.8	42.8	43.3
61 High Street	CF48 2PL	Dwelling	53.9	54.2	54.3	54.8	42.5	42.8	42.9	43.3
62 High Street	CF48 2PL	Dwelling	53.2	53.4	53.5	54.0	41.8	42.1	42.1	42.5
63 High Street	CF48 2PL	Dwelling	54.6	55.0	54.9	55.6	43.1	43.5	43.4	44.0
71 High Street	CF48 2PL	Dwelling	50.8	51.1	50.9	51.6	39.7	40.0	39.8	40.4
72 High Street	CF48 2PL	Dwelling	71.0	71.1	70.9	70.8	57.9	58.0	57.8	57.7
73 High Street	CF48 2PL	Dwelling	53.3	53.4	53.6	54.2	42.0	42.1	42.2	42.8
134 High Street	CF48 2PL	Dwelling	71.3	71.4	71.7	71.5	58.1	58.2	58.5	58.3
135 High Street	CF48 2PL	Dwelling	71.4	71.6	71.8	71.7	58.2	58.4	58.6	58.5
136 High Street	CF48 2PL	Dwelling	54.9	54.6	54.8	55.7	43.4	43.1	43.3	44.1
138 High Street	CF48 2PL	Dwelling	53.1	52.4	54.6	55.5	41.7	41.2	43.1	43.9
139 High Street	CF48 2PL	Dwelling	55.5	55.2	56.2	56.9	44.0	43.7	44.5	45.2
140 High Street	CF48 2PL	Dwelling	64.2	64.4	64.8	64.6	51.8	51.9	52.3	52.2
142 High Street	CF48 2PL	Dwelling	54.9	54.7	55.9	56.6	43.4	43.2	44.3	44.9
145 High Street	CF48 2PL	Dwelling	51.5	51.2	53.4	54.1	40.3	40.0	42.0	42.7
147 High Street	CF48 2PL	Dwelling	51.6	51.2	53.9	54.7	40.4	40.0	42.5	43.2
148 High Street	CF48 2PL	Dwelling	51.2	50.8	53.6	54.4	40.1	39.7	42.2	42.9
149 High Street	CF48 2PL	Dwelling	53.0	52.5	53.7	54.4	41.7	41.2	42.3	43.0
150 High Street	CF48 2PL	Dwelling	55.6	55.2	55.7	56.3	44.1	43.7	44.1	44.7
151 High Street	CF48 2PL	Dwelling	55.9	55.6	55.9	56.6	44.3	44.0	44.3	44.9
152 High Street	CF48 2PL	Dwelling	64.0	64.1	64.6	64.5	51.6	51.7	52.1	52.0
Tan Y Bryn Court 1 Tan-Y-Bryn Court High Street	CF48 2PN	Dwelling	53.4	53.3	54.9	55.8	42.1	42.0	43.3	44.2
Tan Y Bryn Court 2 Tan-Y-Bryn Court High Street	CF48 2PN	Dwelling	54.3	54.1	54.8	55.6	42.9	42.7	43.3	44.0
97A Flat A High Street	CF48 2PN	Dwelling	57.8	57.9	58.3	59.2	46.0	46.1	46.4	47.3
98-99 High Street	CF48 2PN	Dwelling	58.1	58.4	58.8	59.8	46.3	46.6	46.9	47.8
Flat 1 High Street	CF48 2PN	Dwelling	57.7	57.8	58.6	59.3	45.9	46.0	46.8	47.4
Flat Above High Street	CF48 2PN	Dwelling	54.3	54.4	54.5	55.3	42.9	43.0	43.0	43.7
Flat Above High Street	CF48 2PN	Dwelling	55.8	56.0	56.0	56.9	44.2	44.4	44.4	45.2
Glen Dere Glen Dere High Street	CF48 2PN	Dwelling	59.9	60.1	60.2	61.1	47.9	48.0	48.1	49.0
High Street	CF48 2PN	Dwelling	50.8	50.6	50.8	51.4	39.7	39.5	39.7	40.3
The Lord Raglan High Street	CF48 2PN	Dwelling	54.6	55.0	54.9	55.8	43.2	43.5	43.4	44.2
75 High Street	CF48 2PN	Dwelling	51.0	51.4	51.1	51.9	39.9	40.3	40.0	40.7

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
76 High Street	CF48 2PN	Dwelling	51.7	52.2	51.8	52.6	40.5	40.9	40.6	41.3
77 High Street	CF48 2PN	Dwelling	51.4	51.9	51.5	52.3	40.3	40.7	40.3	41.0
78 High Street	CF48 2PN	Dwelling	51.6	52.0	51.6	52.4	40.4	40.8	40.4	41.1
Ty Cyffion 79 High Street	CF48 2PN	Dwelling	51.3	51.8	51.3	52.1	40.2	40.6	40.1	40.8
80 High Street	CF48 2PN	Dwelling	71.8	71.9	71.1	71.0	58.6	58.7	58.0	57.9
81 High Street	CF48 2PN	Dwelling	54.3	54.5	54.2	54.9	42.8	43.0	42.7	43.4
84 High Street	CF48 2PN	Dwelling	50.7	50.8	50.6	51.3	39.6	39.7	39.5	40.2
85 High Street	CF48 2PN	Dwelling	51.4	51.6	51.3	52.0	40.2	40.4	40.1	40.8
86 High Street	CF48 2PN	Dwelling	73.1	73.2	72.4	72.3	59.8	59.9	59.1	59.0
87 High Street	CF48 2PN	Dwelling	54.3	54.4	54.1	54.8	42.8	43.0	42.7	43.3
88 High Street	CF48 2PN	Dwelling	51.8	52.1	51.9	52.6	40.6	40.8	40.7	41.3
89 High Street	CF48 2PN	Dwelling	51.2	51.5	51.3	52.1	40.1	40.3	40.2	40.9
90 High Street	CF48 2PN	Dwelling	54.8	55.1	54.9	55.6	43.3	43.6	43.4	44.1
93 High Street	CF48 2PN	Dwelling	56.5	56.8	57.1	58.0	44.9	45.1	45.3	46.1
97 High Street	CF48 2PN	Dwelling	51.3	51.4	51.5	52.2	40.1	40.2	40.3	40.9
100 High Street	CF48 2PN	Dwelling	52.4	52.6	52.6	53.4	41.1	41.3	41.3	42.0
Cuddfan 101 High Street	CF48 2PN	Dwelling	60.0	60.3	60.4	61.5	48.0	48.3	48.3	49.3
102 High Street	CF48 2PN	Dwelling	54.5	54.7	56.1	57.1	43.1	43.3	44.5	45.4
103 High Street	CF48 2PN	Dwelling	53.3	53.6	53.6	54.5	42.0	42.2	42.2	43.0
104 High Street	CF48 2PN	Dwelling	56.0	56.4	57.7	58.9	44.4	44.7	45.9	47.0
105 High Street	CF48 2PN	Dwelling	53.0	52.8	53.3	54.2	41.7	41.5	42.0	42.7
Tynycoed 107 High Street	CF48 2PN	Dwelling	70.8	69.7	74.9	75.9	57.7	56.7	61.4	62.3
109 High Street	CF48 2PN	Dwelling	59.6	59.0	58.4	59.1	47.6	47.1	46.5	47.1
110 High Street	CF48 2PN	Dwelling	61.8	61.8	61.2	61.4	49.6	49.6	49.1	49.2
111 High Street	CF48 2PN	Dwelling	53.8	53.1	53.4	54.2	42.4	41.8	42.0	42.7
112 High Street	CF48 2PN	Dwelling	52.8	52.2	52.5	53.3	41.5	41.0	41.2	41.9
113 High Street	CF48 2PN	Dwelling	51.1	50.9	51.4	52.0	40.0	39.8	40.2	40.8
114 High Street	CF48 2PN	Dwelling	51.7	51.3	51.9	52.6	40.5	40.2	40.7	41.4
115 High Street	CF48 2PN	Dwelling	51.8	51.4	52.0	52.8	40.6	40.2	40.8	41.5
Drovers Arms 116 High Street	CF48 2PN	Dwelling	55.0	55.0	54.7	55.2	43.5	43.4	43.2	43.6
118 High Street	CF48 2PN	Dwelling	54.9	54.7	55.2	55.9	43.4	43.2	43.7	44.3
119 High Street	CF48 2PN	Dwelling	51.2	51.0	51.2	51.9	40.1	39.8	40.1	40.7
120 High Street	CF48 2PN	Dwelling	50.3	50.2	50.2	50.7	39.2	39.2	39.2	39.6
123 High Street	CF48 2PN	Dwelling	56.1	55.8	55.9	56.6	44.4	44.2	44.3	44.9
125 High Street	CF48 2PN	Dwelling	55.6	55.4	55.8	56.5	44.0	43.8	44.2	44.8
126 High Street	CF48 2PN	Dwelling	51.4	51.1	51.2	51.9	40.2	40.0	40.1	40.7
127 High Street	CF48 2PN	Dwelling	56.1	56.0	56.1	56.8	44.5	44.4	44.5	45.1
1 Pearces Court	CF48 2PP	Dwelling	54.5	54.7	55.7	56.8	43.1	43.2	44.1	45.1
2 Pearces Court	CF48 2PP	Dwelling	59.9	59.9	60.0	60.9	47.9	47.9	48.0	48.8
4 Pearces Court	CF48 2PP	Dwelling	56.3	56.7	56.4	57.6	44.7	45.0	44.8	45.8
Plasnewydd Residential Home Old Chapel Road	CF48 2PR	Dwelling	53.6	53.9	54.8	55.8	42.3	42.5	43.3	44.2
1 Old Chapel Road	CF48 2PR	Dwelling	58.0	58.0	58.9	59.2	46.1	46.2	47.0	47.2
2 Old Chapel Road	CF48 2PR	Dwelling	58.7	58.7	59.8	60.1	46.8	46.8	47.8	48.1
3 Old Chapel Road	CF48 2PR	Dwelling	57.9	57.8	58.5	59.0	46.1	46.0	46.7	47.0
4 Old Chapel Road	CF48 2PR	Dwelling	54.2	54.4	54.6	55.5	42.8	43.0	43.2	43.9
1 Bank Terrace	CF48 2PS	Dwelling	53.8	54.0	53.5	54.2	42.4	42.6	42.1	42.7
2 Bank Terrace	CF48 2PS	Dwelling	53.8	53.9	53.5	54.2	42.4	42.5	42.2	42.8
3 Bank Terrace	CF48 2PS	Dwelling	53.9	54.1	53.6	54.3	42.5	42.6	42.2	42.8
4 Bank Terrace	CF48 2PS	Dwelling	54.0	54.0	53.9	54.7	42.6	42.6	42.5	43.2
5 Bank Terrace	CF48 2PS	Dwelling	56.8	56.5	57.2	58.0	45.1	44.9	45.5	46.2
6 Bank Terrace	CF48 2PS	Dwelling	52.1	52.7	52.3	53.2	40.9	41.4	41.0	41.9
7 Bank Terrace	CF48 2PS	Dwelling	54.0	53.8	54.7	55.6	42.6	42.4	43.2	44.0
8 Bank Terrace	CF48 2PS	Dwelling	56.5	56.0	57.1	58.1	44.8	44.4	45.4	46.2
Llwyncelyn Cottages 1 Llwyncelyn Cottages Triangle	CF48 2PT	Dwelling	53.6	54.4	55.2	56.2	42.3	42.9	43.7	44.5
Llwyncelyn Cottages 2 Llwyncelyn Cottages Triangle	CF48 2PT	Dwelling	53.2	53.0	55.2	56.2	41.9	41.7	43.6	44.5
Llwyncelyn Cottages 3 Llwyncelyn Cottages Triangle	CF48 2PT	Dwelling	53.1	53.2	55.9	56.9	41.8	41.8	44.3	45.2
Granny Flat Triangle	CF48 2PT	Dwelling	51.4	51.8	51.4	52.4	40.2	40.6	40.3	41.1
Triangle	CF48 2PT	Dwelling	52.9	52.8	54.9	55.9	41.6	41.5	43.4	44.3
Flat 1 Triangle	CF48 2PT	Dwelling	55.0	54.7	56.6	57.5	43.5	43.2	44.9	45.7
6 Triangle	CF48 2PT	Dwelling	54.6	55.2	54.7	55.7	43.1	43.7	43.2	44.1
The Cobblers 7 Triangle	CF48 2PT	Dwelling	55.3	55.3	56.4	57.4	43.7	43.8	44.8	45.6
8 Triangle	CF48 2PT	Dwelling	51.4	51.8	51.4	52.4	40.2	40.6	40.3	41.1
Cefn Coed Club Bryntaf	CF48 2PU	Dwelling	59.0	59.9	59.2	60.3	47.1	47.9	47.2	48.2
1 Bryntaf	CF48 2PU	Dwelling	52.9	52.6	54.7	55.7	41.6	41.3	43.2	44.1
2 Bryntaf	CF48 2PU	Dwelling	53.1	53.5	53.9	55.0	41.8	42.1	42.5	43.5
3 Bryntaf	CF48 2PU	Dwelling	52.0	52.6	52.7	53.9	40.7	41.3	41.5	42.5
4 Bryntaf	CF48 2PU	Dwelling	50.6	51.1	51.7	52.9	39.5	40.0	40.5	41.6
5 Bryntaf	CF48 2PU	Dwelling	49.6	49.5	52.6	53.5	38.6	38.5	41.3	42.1
6 Bryntaf	CF48 2PU	Dwelling	55.3	56.1	56.5	57.5	43.8	44.5	44.8	45.7
7 Bryntaf	CF48 2PU	Dwelling	58.0	58.9	58.8	59.8	46.2	47.0	46.9	47.8
8 Bryntaf	CF48 2PU	Dwelling	56.1	57.1	57.0	58.0	44.5	45.3	45.2	46.2
9 Bryntaf	CF48 2PU	Dwelling	53.3	54.0	54.5	55.5	41.9	42.5	43.0	43.9
10 Bryntaf	CF48 2PU	Dwelling	58.7	59.6	59.2	60.2	46.8	47.6	47.3	48.2
11 Bryntaf	CF48 2PU	Dwelling	59.2	60.2	59.5	60.6	47.3	48.2	47.5	48.5
12 Bryntaf	CF48 2PU	Dwelling	52.6	53.3	53.6	54.8	41.4	41.9	42.2	43.3
13 Bryntaf	CF48 2PU	Dwelling	58.5	59.5	58.8	59.9	46.7	47.5	46.9	47.9
14 Bryntaf	CF48 2PU	Dwelling	51.6	52.2	52.3	53.5	40.4	40.9	41.1	42.1
15 Bryntaf	CF48 2PU	Dwelling	52.1	52.8	52.6	53.6	40.9	41.5	41.3	42.2
16 Bryntaf	CF48 2PU	Dwelling	50.5	51.0	51.1	52.2	39.4	39.9	40.0	41.0
17 Bryntaf	CF48 2PU	Dwelling	57.5	58.0	58.2	59.4	45.7	46.2	46.4	47.4
18 Bryntaf	CF48 2PU	Dwelling	57.3	58.1	57.6	58.7	45.6	46.3	45.8	46.8
19 Bryntaf	CF48 2PU	Dwelling	52.9	53.5	54.1	55.3	41.6	42.1	42.7	43.8
20 Bryntaf	CF48 2PU	Dwelling	53.8	54.2	55.0	56.2	42.4	42.7	43.5	44.5
21 Bryntaf	CF48 2PU	Dwelling	56.1	56.8	56.4	57.5	44.5	45.1	44.7	45.7
22 Bryntaf	CF48 2PU	Dwelling	52.8	53.2	53.7	54.8	41.5	41.8	42.3	43.3
23 Bryntaf	CF48 2PU	Dwelling	54.5	54.9	55.3	56.4	43.1	43.4	43.7	44.7
24 Bryntaf	CF48 2PU	Dwelling	53.7	54.2	56.3	57.3	42.3	42.7	44.7	45.6
25 Bryntaf	CF48 2PU	Dwelling	55.3	55.7	55.8	56.9	43.7	44.1	44.2	45.2
26 Bryntaf	CF48 2PU	Dwelling	57.0	57.5	58.5	59.5	45.3	45.7	46.7	47.5
27 Bryntaf	CF48 2PU	Dwelling	55.9	56.5	57.9	58.9	44.3	44.8	46.1	47.0
28 Bryntaf	CF48 2PU	Dwelling	56.8	57.2	58.4	59.4	45.1	45.4	46.5	47.4
29 Bryntaf	CF48 2PU	Dwelling	55.4	55.9	56.9	57.9	43.9	44.3	45.2	46.1
30 Bryntaf	CF48 2PU	Dwelling	57.6	57.4	58.2	59.2	45.8	45.6	46.4	47.3
31 Bryntaf	CF48 2PU	Dwelling	54.6	53.9	56.3	57.2	43.1	42.5	44.6	45.5
32 Bryntaf	CF48 2PU	Dwelling	52.7	52.2	55.0	56.0	41.4	40.9	43.5	44.4
33 Bryntaf	CF48 2PU	Dwelling	58.0	58.7	58.8	59.8	46.1	46.8	46.9	47.8
34 Bryntaf	CF48 2PU	Dwelling	56.6	57.3	57.5	58.5	44.9	45.5	45.7	46.6
35 Bryntaf	CF48 2PU	Dwelling	52.5	52.5	54.5	55.5	41.2	41.2	43.0	43.9
36 Bryntaf	CF48 2PU	Dwelling	56.3	57.1	56.7	57.8	44.7	45.4	45.0	46.0
37 Bryntaf	CF48 2PU	Dwelling	53.4	54.2	54.0	55.1	42.1	42.7	42.6	43.5
38 Bryntaf	CF48 2PU	Dwelling	47.6	47.5	50.7	51.7	36.8	36.8	39.6	40.5
39 Bryntaf	CF48 2PU	Dwelling	49.4	49.3	53.2	54.2	38.4	38.3	41.9	42.7
40 Bryntaf	CF48 2PU	Dwelling	49.4	49.0	52.1	53.1	38.4	38.1	40.8	41.7
41 Bryntaf	CF48 2PU	Dwelling	51.8	52.4	52.0	53.1	40.6	41.2	40.8	41.7
42 Bryntaf	CF48 2PU	Dwelling	58.0	58.8	58.3	59.4	46.2	46.9	46.5	47.5
43 Bryntaf	CF48 2PU	Dwelling	53.7	54.2	54.1	55.2	42.3	42.8	42.7	43.7
44 Bryntaf	CF48 2PU	Dwelling	56.1	57.0	56.5	57.5	44.5	45.3	44.8	45.8

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
1 Monumental Terrace	CF48 2PW	Dwelling	53.4	53.1	55.5	56.4	42.1	41.8	43.9	44.7
2 Monumental Terrace	CF48 2PW	Dwelling	53.6	53.6	53.8	54.7	42.2	42.2	42.4	43.2
3 Monumental Terrace	CF48 2PW	Dwelling	54.2	54.3	54.4	55.2	42.8	42.8	43.0	43.7
4 Monumental Terrace	CF48 2PW	Dwelling	54.4	54.4	54.5	55.3	43.0	43.0	43.1	43.7
5 Monumental Terrace	CF48 2PW	Dwelling	50.5	50.3	50.6	51.3	39.4	39.2	39.5	40.1
6 Monumental Terrace	CF48 2PW	Dwelling	54.8	54.8	54.5	55.0	43.3	43.3	43.0	43.5
7 Monumental Terrace	CF48 2PW	Dwelling	54.5	54.4	54.4	55.0	43.1	43.0	43.0	43.5
8 Monumental Terrace	CF48 2PW	Dwelling	54.1	54.1	54.9	55.5	42.7	42.6	43.4	43.9
9 Monumental Terrace	CF48 2PW	Dwelling	55.2	55.2	55.0	55.5	43.7	43.6	43.5	43.9
10 Monumental Terrace	CF48 2PW	Dwelling	51.0	51.0	50.7	51.2	39.9	39.9	39.6	40.0
11 Monumental Terrace	CF48 2PW	Dwelling	50.9	50.5	50.8	51.6	39.8	39.5	39.7	40.4
Ein Lle Heddychlon Ein Lle Heddychlon Pontycapel Road	CF48 2PY	Dwelling	52.0	52.6	52.4	53.6	40.8	41.3	41.2	42.2
Old Brewery Cottage Old Brewery Cottage Pontycapel Road	CF48 2PY	Dwelling	55.9	56.6	56.2	57.3	44.3	44.9	44.5	45.5
Springfield House Springfield House Pontycapel Road	CF48 2PY	Dwelling	54.9	55.6	55.4	56.6	43.4	44.0	43.9	44.9
The Grange The Grange Pontycapel Road	CF48 2PY	Dwelling	50.1	50.6	50.8	51.9	39.0	39.5	39.7	40.7
Maesycelyn 2 Maseycelyn Pontycapel Road	CF48 2RA	Dwelling	55.5	56.4	56.0	57.0	44.0	44.7	44.4	45.3
37A Pontycapel Road	CF48 2RA	Dwelling	60.0	61.0	60.2	61.3	48.0	48.9	48.2	49.2
Brooklands 37B Pontycapel Road	CF48 2RA	Dwelling	59.0	60.0	59.3	60.4	47.1	48.0	47.4	48.3
Maesycoed Maesycoed Pontycapel Road	CF48 2RA	Dwelling	54.8	55.5	55.0	56.1	43.3	43.9	43.5	44.4
37 Pontycapel Road	CF48 2RA	Dwelling	57.3	58.2	57.6	58.7	45.6	46.3	45.8	46.8
40 Pontycapel Road	CF48 2RA	Dwelling	58.6	59.6	59.0	60.0	46.8	47.6	47.0	48.0
1 Brynhyfryd Terrace	CF48 2RB	Dwelling	53.6	54.4	54.0	55.0	42.2	42.9	42.5	43.5
2 Brynhyfryd Terrace	CF48 2RB	Dwelling	49.9	50.6	50.5	51.6	38.9	39.6	39.4	40.4
3 Brynhyfryd Terrace	CF48 2RB	Dwelling	50.1	50.8	50.8	51.9	39.1	39.7	39.7	40.7
4 Brynhyfryd Terrace	CF48 2RB	Dwelling	46.4	46.8	46.9	47.9	35.7	36.1	36.2	37.1
5 Brynhyfryd Terrace	CF48 2RB	Dwelling	53.5	54.2	53.9	55.0	42.1	42.8	42.5	43.4
6 Brynhyfryd Terrace	CF48 2RB	Dwelling	52.2	52.8	52.6	53.6	41.0	41.5	41.3	42.2
15A Pontycapel Road	CF48 2RD	Dwelling	54.1	54.6	54.4	55.4	42.7	43.1	42.9	43.8
33A Pontycapel Road	CF48 2RD	Dwelling	53.5	54.1	54.0	55.1	42.1	42.7	42.5	43.5
Assembly Of God Pentecostal Church Pontycapel Road	CF48 2RD	OSR	50.5	51.2	50.9	51.9	39.5	40.1	39.8	40.7
Bernoi Bernol Pontycapel Road	CF48 2RD	Dwelling	49.5	49.7	50.4	51.4	38.6	38.7	39.4	40.2
Brynolaf Brynolaf Pontycapel Road	CF48 2RD	Dwelling	56.0	57.0	56.3	57.4	44.4	45.2	44.7	45.6
Fairholme Fairholme Pontycapel Road	CF48 2RD	Dwelling	50.5	50.8	51.6	52.6	39.4	39.7	40.4	41.3
Fir Tree Bungalow Fir Tree Bungalow Pontycapel Road	CF48 2RD	Dwelling	55.9	56.8	56.3	57.4	44.3	45.1	44.7	45.6
Gored House Gored House Pontycapel Road	CF48 2RD	Dwelling	52.0	52.7	52.3	53.3	40.8	41.4	41.0	41.9
Ivy Cottage Ivy Cottage Wern Road	CF48 2RD	Dwelling	59.8	60.7	60.0	61.1	47.8	48.6	48.0	48.9
Pontycapel Road	CF48 2RD	Dwelling	51.0	51.4	51.4	52.1	39.9	40.2	40.2	40.9
Tegfan Tegfan Pontycapel Road	CF48 2RD	Dwelling	53.2	53.7	53.7	54.7	41.9	42.4	42.3	43.2
1 Pontycapel Road	CF48 2RD	Dwelling	53.3	54.0	53.6	54.4	42.0	42.6	42.2	42.9
3 Pontycapel Road	CF48 2RD	Dwelling	54.4	55.0	54.8	55.6	42.9	43.5	43.3	44.0
7 Pontycapel Road	CF48 2RD	Dwelling	52.2	52.8	52.4	53.3	41.0	41.5	41.1	41.9
8 Pontycapel Road	CF48 2RD	Dwelling	55.1	56.1	55.3	56.3	43.6	44.4	43.7	44.6
9 Pontycapel Road	CF48 2RD	Dwelling	56.4	57.2	56.6	57.5	44.8	45.5	44.9	45.8
12 Pontycapel Road	CF48 2RD	Dwelling	55.8	56.6	55.9	56.9	44.2	44.9	44.3	45.2
13 Pontycapel Road	CF48 2RD	Dwelling	49.1	49.6	49.6	50.6	38.2	38.6	38.7	39.5
14 Pontycapel Road	CF48 2RD	Dwelling	50.6	50.9	51.0	52.1	39.5	39.8	39.9	40.8
15 Pontycapel Road	CF48 2RD	Dwelling	51.7	52.0	52.0	52.9	40.5	40.8	40.8	41.6
31 Pontycapel Road	CF48 2RD	Dwelling	51.0	51.6	51.5	52.5	39.9	40.4	40.3	41.3
32 Pontycapel Road	CF48 2RD	Dwelling	50.5	51.1	51.0	52.1	39.4	40.0	39.9	40.9
33 Pontycapel Road	CF48 2RD	Dwelling	50.6	51.2	51.1	52.2	39.6	40.1	40.0	41.0
45 Pontycapel Road	CF48 2RD	Dwelling	50.7	51.3	51.3	52.4	39.6	40.2	40.1	41.1
46 Pontycapel Road	CF48 2RD	Dwelling	51.2	51.9	51.6	52.7	40.1	40.7	40.4	41.4
47 Pontycapel Road	CF48 2RD	Dwelling	52.5	52.7	53.5	54.3	41.2	41.4	42.1	42.8
51 Pontycapel Road	CF48 2RD	Dwelling	52.8	53.2	53.4	54.4	41.5	41.9	42.1	42.9
52 Pontycapel Road	CF48 2RD	Dwelling	50.6	51.0	51.2	52.1	39.6	39.9	40.0	40.9
53 Pontycapel Road	CF48 2RD	Dwelling	48.6	48.8	49.1	49.9	37.7	37.9	38.2	38.8
Penywern Cottages 1 Penywern Cottages Wern Road	CF48 2RE	Dwelling	59.4	60.4	59.7	60.7	47.5	48.3	47.7	48.7
Penywern Cottages 2 Penywern Cottages Wern Road	CF48 2RE	Dwelling	59.0	59.9	59.2	60.3	47.1	47.9	47.3	48.2
Canberra House Canberra House Wern Road	CF48 2RE	Dwelling	47.4	47.5	47.8	48.8	36.6	36.7	37.0	37.9
Erw Coed Erw Coed Wern Road	CF48 2RE	Dwelling	49.7	50.5	50.3	51.3	38.8	39.4	39.2	40.1
Preswylfa Preswylfa Wern Road	CF48 2RE	Dwelling	59.0	60.0	59.2	60.3	47.1	47.9	47.3	48.2
Ty Heulwen Ty Heulwen Wern Road	CF48 2RE	Dwelling	58.6	59.5	58.8	59.9	46.7	47.5	46.9	47.9
1 Taff Fawr Close	CF48 2RF	Dwelling	51.6	52.3	52.2	53.3	40.5	41.0	41.0	42.0
2 Taff Fawr Close	CF48 2RF	Dwelling	52.6	53.4	53.4	54.5	41.3	42.0	42.0	43.0
3 Taff Fawr Close	CF48 2RF	Dwelling	51.5	52.2	52.3	53.4	40.3	41.0	41.1	42.1
Merthyr Tydfil County Borough Council Meals On Wheels Centre Maesygarreg	CF48 2RG	OSR	63.1	63.5	63.6	64.8	50.7	51.1	51.3	52.3
1 Maesygarreg	CF48 2RG	Dwelling	61.9	62.5	63.1	64.2	49.7	50.2	50.7	51.8
2 Maesygarreg	CF48 2RG	Dwelling	62.0	62.5	63.1	64.3	49.7	50.2	50.8	51.8
3 Maesygarreg	CF48 2RG	Dwelling	58.8	59.3	59.8	61.0	46.9	47.4	47.8	48.9
4 Maesygarreg	CF48 2RG	Dwelling	59.7	60.2	60.4	61.6	47.7	48.1	48.3	49.4
5 Maesygarreg	CF48 2RG	Dwelling	64.4	64.9	64.8	66.1	52.0	52.4	52.3	53.4
6 Maesygarreg	CF48 2RG	Dwelling	65.4	65.9	65.4	66.6	52.8	53.2	52.9	54.0
7 Maesygarreg	CF48 2RG	Dwelling	67.0	67.5	66.5	67.7	54.3	54.7	53.8	54.9
8 Maesygarreg	CF48 2RG	Dwelling	65.2	65.5	64.0	65.2	52.6	52.9	51.6	52.7
9 Maesygarreg	CF48 2RG	Dwelling	65.6	66.0	65.1	66.3	53.0	53.4	52.6	53.6
10 Maesygarreg	CF48 2RG	Dwelling	61.2	61.8	61.4	62.6	49.0	49.6	49.2	50.3
11 Maesygarreg	CF48 2RG	Dwelling	60.6	61.3	61.1	62.3	48.5	49.1	49.0	50.0
12 Maesygarreg	CF48 2RG	Dwelling	56.8	57.3	57.0	58.1	45.1	45.5	45.3	46.3
13 Maesygarreg	CF48 2RG	Dwelling	57.8	58.5	58.2	59.4	46.0	46.7	46.4	47.5
14 Maesygarreg	CF48 2RG	Dwelling	57.7	58.4	59.0	60.1	45.9	46.6	47.1	48.1
15 Maesygarreg	CF48 2RG	Dwelling	58.2	58.9	59.5	60.6	46.4	47.0	47.5	48.6
16 Maesygarreg	CF48 2RG	Dwelling	55.5	55.9	56.4	57.6	43.9	44.3	44.7	45.8
17 Maesygarreg	CF48 2RG	Dwelling	54.8	55.0	55.2	56.3	43.3	43.5	43.6	44.7
18 Maesygarreg	CF48 2RG	Dwelling	55.0	55.2	55.4	56.5	43.5	43.7	43.9	44.9
19 Maesygarreg	CF48 2RG	Dwelling	62.4	62.9	62.8	64.0	50.1	50.6	50.5	51.6
20 Maesygarreg	CF48 2RG	Dwelling	54.5	54.7	55.0	56.1	43.1	43.3	43.5	44.5
21 Maesygarreg	CF48 2RG	Dwelling	51.6	51.8	52.3	53.4	40.4	40.6	41.0	42.0
22 Maesygarreg	CF48 2RG	Dwelling	58.0	58.6	58.5	59.7	46.2	46.7	46.7	47.7
23 Maesygarreg	CF48 2RG	Dwelling	57.7	58.3	58.4	59.6	45.9	46.5	46.6	47.6
24 Maesygarreg	CF48 2RG	Dwelling	57.9	58.6	58.4	59.6	46.1	46.7	46.6	47.6
25 Maesygarreg	CF48 2RG	Dwelling	60.9	61.6	61.4	62.5	48.8	49.4	49.2	50.3
26 Maesygarreg	CF48 2RG	Dwelling	57.3	58.0	58.0	59.1	45.6	46.2	46.1	47.2
27 Maesygarreg	CF48 2RG	Dwelling	60.7	61.4	61.3	62.5	48.7	49.3	49.2	50.2
28 Maesygarreg	CF48 2RG	Dwelling	60.8	61.5	61.4	62.6	48.7	49.3	49.3	50.3
29 Maesygarreg	CF48 2RG	Dwelling	59.4	59.9	60.0	61.2	47.4	47.9	48.0	49.1
30 Maesygarreg	CF48 2RG	Dwelling	51.6	52.0	52.6	53.7	40.4	40.8	41.3	42.3
31 Maesygarreg	CF48 2RG	Dwelling	57.0	57.4	57.7	58.9	45.3	45.7	45.9	47.0
32 Maesygarreg	CF48 2RG	Dwelling	53.4	53.9	54.5	55.7	42.0	42.5	43.0	44.1
33 Maesygarreg	CF48 2RG	Dwelling	58.4	59.0	59.1	60.3	46.5	47.0	47.2	48.2
34 Maesygarreg	CF48 2RG	Dwelling	56.3	56.8	57.9	59.1	44.6	45.1	46.1	47.1
35 Maesygarreg	CF48 2RG	Dwelling	54.1	54.6	54.7	55.8	42.7	43.1	43.2	44.2
36 Maesygarreg	CF48 2RG	Dwelling	56.5	57.2	57.2	58.4	44.9	45.4	45.5	46.5
37 Maesygarreg	CF48 2RG	Dwelling	57.6	58.3	58.5	59.7	45.9	46.4	46.7	47.7
Cefn Isaf Flats Flat 10 Cefn Isaf Wern Road	CF48 2RH	Dwelling	51.1	51.3	51.9	52.8	40.0	40.2	40.6	41.5
Cefn Isaf Flats Flat 16 Cefn Isaf Wern Road	CF48 2RH	Dwelling	51.7	52.1	52.5	53.3	40.6	40.9	41.2	42.0
Cefn Isaf Flats Flat 2 Cefn Isaf Wern Road	CF48 2RH	Dwelling	53.2	54.1	53.5	54.5	41.9	42.6	42.1	43.0
Cefn Isaf Flats Flat 29 Cefn Isaf Wern Road	CF48 2RH	Dwelling	52.9	53.4	53.4	54.4	41.6	42.0	42.0	42.9

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
Cefn Isaf Flats Flat 3 Cefn Isaf Wern Road	CF48 2RH	Dwelling	52.9	53.4	53.4	54.4	41.6	42.0	42.1	42.9
Cefn Isaf Flats Flat 4 Cefn Isaf Wern Road	CF48 2RH	Dwelling	52.9	53.5	53.6	54.6	41.5	42.1	42.2	43.1
Cefn Isaf Flats Flat 6 Cefn Isaf Wern Road	CF48 2RH	Dwelling	56.8	57.7	57.1	58.2	45.1	45.9	45.4	46.3
1 South Terrace	CF48 2RL	Dwelling	52.7	53.0	54.1	55.1	41.5	41.7	42.7	43.5
2 South Terrace	CF48 2RL	Dwelling	49.9	50.0	51.6	52.5	38.9	39.0	40.4	41.2
3 South Terrace	CF48 2RL	Dwelling	51.5	52.2	51.8	52.9	40.3	41.0	40.6	41.5
4 South Terrace	CF48 2RL	Dwelling	56.5	57.3	56.8	57.8	44.8	45.5	45.1	46.0
5 South Terrace	CF48 2RL	Dwelling	56.3	57.0	56.6	57.6	44.6	45.3	44.9	45.8
6 South Terrace	CF48 2RL	Dwelling	52.1	52.2	53.7	54.6	40.9	41.0	42.3	43.1
7 South Terrace	CF48 2RL	Dwelling	53.6	53.5	54.3	55.2	42.2	42.1	42.9	43.7
8 South Terrace	CF48 2RL	Dwelling	56.3	57.0	56.5	57.5	44.6	45.3	44.8	45.7
9 South Terrace	CF48 2RL	Dwelling	52.5	52.6	53.6	54.4	41.2	41.3	42.2	42.9
10 South Terrace	CF48 2RL	Dwelling	50.3	51.0	50.6	51.6	39.3	39.9	39.5	40.4
11 South Terrace	CF48 2RL	Dwelling	53.1	53.1	53.9	54.7	41.8	41.7	42.5	43.2
12 South Terrace	CF48 2RL	Dwelling	53.1	53.1	54.3	55.2	41.8	41.8	42.8	43.6
13 South Terrace	CF48 2RL	Dwelling	53.3	53.2	54.3	55.2	42.0	41.9	42.9	43.7
14 South Terrace	CF48 2RL	Dwelling	53.7	53.5	54.5	55.4	42.3	42.2	43.1	43.8
15 South Terrace	CF48 2RL	Dwelling	53.6	53.5	54.5	55.3	42.2	42.1	43.0	43.8
16 South Terrace	CF48 2RL	Dwelling	53.7	53.6	54.6	55.4	42.4	42.2	43.1	43.9
17 South Terrace	CF48 2RL	Dwelling	53.6	53.5	54.4	55.2	42.3	42.1	42.9	43.7
18 South Terrace	CF48 2RL	Dwelling	49.0	48.7	50.3	51.2	38.0	37.8	39.3	40.1
19 South Terrace	CF48 2RL	Dwelling	53.8	53.7	54.5	55.3	42.4	42.3	43.0	43.7
20 South Terrace	CF48 2RL	Dwelling	52.6	52.7	53.3	54.1	41.3	41.5	42.0	42.7
21 South Terrace	CF48 2RL	Dwelling	56.7	57.5	57.0	58.0	45.0	45.7	45.2	46.2
22 South Terrace	CF48 2RL	Dwelling	57.8	58.7	58.0	59.1	46.0	46.8	46.2	47.2
23 South Terrace	CF48 2RL	Dwelling	53.2	54.0	53.5	54.6	41.9	42.6	42.2	43.1
24 South Terrace	CF48 2RL	Dwelling	53.7	54.5	54.1	55.1	42.3	43.0	42.7	43.6
25 South Terrace	CF48 2RL	Dwelling	54.9	55.7	55.2	56.3	43.4	44.1	43.7	44.6
26 South Terrace	CF48 2RL	Dwelling	54.9	55.7	55.2	56.3	43.4	44.1	43.7	44.7
27 South Terrace	CF48 2RL	Dwelling	52.2	52.4	52.7	53.6	41.0	41.1	41.4	42.2
28 South Terrace	CF48 2RL	Dwelling	55.0	55.8	55.3	56.3	43.5	44.2	43.7	44.7
29 South Terrace	CF48 2RL	Dwelling	54.9	55.7	55.1	56.2	43.3	44.1	43.6	44.5
30 South Terrace	CF48 2RL	Dwelling	52.3	52.5	52.7	53.5	41.0	41.2	41.4	42.2
31 South Terrace	CF48 2RL	Dwelling	59.5	60.4	59.7	60.7	47.6	48.4	47.7	48.6
32 South Terrace	CF48 2RL	Dwelling	50.5	50.8	50.8	51.7	39.4	39.7	39.7	40.5
33 South Terrace	CF48 2RL	Dwelling	51.9	52.1	52.3	53.2	40.7	40.9	41.0	41.8
34 South Terrace	CF48 2RL	Dwelling	56.3	57.2	56.6	57.6	44.7	45.4	44.9	45.9
35 South Terrace	CF48 2RL	Dwelling	57.0	57.9	57.3	58.3	45.3	46.1	45.5	46.5
36 South Terrace	CF48 2RL	Dwelling	57.4	58.3	57.6	58.7	45.7	46.5	45.9	46.8
37 South Terrace	CF48 2RL	Dwelling	58.1	59.0	58.4	59.4	46.3	47.1	46.5	47.4
38 South Terrace	CF48 2RL	Dwelling	53.7	54.2	54.2	55.3	42.3	42.8	42.8	43.8
7A Holford Street	CF48 2RN	Dwelling	53.1	53.0	53.6	54.3	41.7	41.7	42.3	42.8
Holford Street	CF48 2RN	Dwelling	52.1	52.5	52.9	53.8	40.8	41.2	41.6	42.4
Holford Street	CF48 2RN	Dwelling	55.7	56.3	56.1	57.0	44.1	44.6	44.5	45.3
1 Holford Street	CF48 2RN	Dwelling	57.8	58.4	57.9	58.6	46.0	46.5	46.1	46.7
2 Holford Street	CF48 2RN	Dwelling	55.9	56.7	56.3	57.2	44.3	45.0	44.6	45.4
4 Holford Street	CF48 2RN	Dwelling	56.1	56.9	56.3	57.3	44.5	45.2	44.7	45.5
5 Holford Street	CF48 2RN	Dwelling	52.3	52.5	52.9	53.6	41.1	41.2	41.6	42.3
6 Holford Street	CF48 2RN	Dwelling	53.1	53.6	53.8	54.7	41.8	42.2	42.4	43.2
7 Holford Street	CF48 2RN	Dwelling	53.6	54.3	53.9	54.9	42.2	42.8	42.5	43.4
8 Holford Street	CF48 2RN	Dwelling	52.0	52.6	52.9	53.7	40.8	41.3	41.6	42.3
9 Holford Street	CF48 2RN	Dwelling	52.3	52.8	52.9	53.7	41.1	41.5	41.6	42.4
10 Holford Street	CF48 2RN	Dwelling	56.6	57.3	56.8	57.8	44.9	45.6	45.1	46.0
11 Holford Street	CF48 2RN	Dwelling	55.2	55.9	55.5	56.5	43.6	44.3	43.9	44.8
12 Holford Street	CF48 2RN	Dwelling	53.4	53.8	54.0	54.8	42.0	42.4	42.6	43.3
13 Holford Street	CF48 2RN	Dwelling	53.7	54.2	54.3	55.2	42.3	42.7	42.8	43.6
14 Holford Street	CF48 2RN	Dwelling	54.6	55.3	54.9	55.8	43.2	43.8	43.4	44.2
15 Holford Street	CF48 2RN	Dwelling	54.5	55.1	54.7	55.6	43.0	43.6	43.2	44.0
16 Holford Street	CF48 2RN	Dwelling	52.9	52.9	53.4	54.1	41.6	41.6	42.1	42.6
17 Holford Street	CF48 2RN	Dwelling	52.7	52.8	53.6	54.1	41.4	41.5	42.2	42.7
Dihewydd Dihewydd Old Church Street	CF48 2RP	Dwelling	56.5	57.3	56.8	57.8	44.8	45.6	45.1	46.0
Old Church Street	CF48 2RP	Dwelling	50.2	50.2	51.7	52.4	39.2	39.2	40.5	41.1
1 Old Church Street	CF48 2RP	Dwelling	54.1	54.4	54.6	55.1	42.7	42.9	43.1	43.6
2 Old Church Street	CF48 2RP	Dwelling	54.3	54.7	54.8	55.4	42.9	43.2	43.3	43.9
3 Old Church Street	CF48 2RP	Dwelling	52.0	52.2	53.0	53.7	40.8	40.9	41.7	42.3
4 Old Church Street	CF48 2RP	Dwelling	55.0	55.7	55.2	56.1	43.5	44.1	43.7	44.4
7 Old Church Street	CF48 2RP	Dwelling	56.3	57.1	56.5	57.5	44.7	45.4	44.9	45.7
8 Old Church Street	CF48 2RP	Dwelling	52.4	52.3	52.9	53.7	41.1	41.1	41.6	42.3
9 Old Church Street	CF48 2RP	Dwelling	56.6	57.4	56.9	57.9	45.0	45.7	45.2	46.1
10 Old Church Street	CF48 2RP	Dwelling	55.3	55.8	55.7	56.6	43.8	44.2	44.1	44.9
2 Godrer Coed Road	CF48 2RS	Dwelling	57.6	58.5	57.8	58.9	45.8	46.6	46.0	47.0
3 Godrer Coed Road	CF48 2RS	Dwelling	51.4	52.1	52.1	53.2	40.3	40.9	40.9	41.9
4 Godrer Coed Road	CF48 2RS	Dwelling	58.1	59.0	58.3	59.3	46.3	47.1	46.4	47.4
5 Godrer Coed Road	CF48 2RS	Dwelling	52.9	53.4	53.4	54.4	41.6	42.1	42.0	42.9
Hedd 9 Godrer Coed Road	CF48 2RS	Dwelling	55.9	56.5	56.3	57.4	44.3	44.8	44.7	45.6
Changing Rooms Pontycapel Road	CF48 2RT	OSR	54.8	55.4	55.2	56.2	43.3	43.9	43.7	44.5
Russett Lodge Russett Lodge Heol-Y-Cae	CF48 2RT	Dwelling	53.9	54.7	54.1	55.0	42.5	43.3	42.6	43.4
1 Heol-Y-Cae	CF48 2RT	Dwelling	54.5	55.3	54.7	55.8	43.0	43.8	43.2	44.2
2 Heol-Y-Cae	CF48 2RT	Dwelling	55.0	55.9	55.3	56.3	43.5	44.3	43.7	44.6
3 Heol-Y-Cae	CF48 2RT	Dwelling	56.4	57.2	56.6	57.6	44.7	45.5	44.9	45.8
4 Heol-Y-Cae	CF48 2RT	Dwelling	46.2	46.4	47.3	48.0	35.6	35.7	36.6	37.2
5 Heol-Y-Cae	CF48 2RT	Dwelling	55.5	56.4	55.7	56.8	44.0	44.7	44.1	45.1
6 Heol-Y-Cae	CF48 2RT	Dwelling	55.6	56.4	55.8	56.8	44.0	44.8	44.2	45.1
7 Heol-Y-Cae	CF48 2RT	Dwelling	56.6	57.3	56.7	57.7	44.9	45.6	45.0	45.9
8 Heol-Y-Cae	CF48 2RT	Dwelling	55.8	56.7	56.0	57.0	44.2	45.0	44.3	45.3
9 Heol-Y-Cae	CF48 2RT	Dwelling	47.0	47.2	48.0	48.7	36.3	36.4	37.2	37.8
10 Heol-Y-Cae	CF48 2RT	Dwelling	55.6	56.3	55.8	56.8	44.0	44.7	44.2	45.1
12 Heol-Y-Cae	CF48 2RT	Dwelling	54.5	55.3	54.9	55.8	43.1	43.8	43.3	44.2
13 Heol-Y-Cae	CF48 2RT	Dwelling	54.9	55.5	55.3	56.1	43.4	43.9	43.7	44.5
14 Heol-Y-Cae	CF48 2RT	Dwelling	54.1	54.8	54.7	55.5	42.7	43.3	43.2	43.9
15 Heol-Y-Cae	CF48 2RT	Dwelling	51.6	51.8	51.9	52.4	40.4	40.6	40.6	41.1
19 Heol-Y-Cae	CF48 2RT	Dwelling	55.4	56.1	55.6	56.4	43.9	44.5	44.0	44.8
20 Heol-Y-Cae	CF48 2RT	Dwelling	54.3	54.9	54.5	55.4	42.8	43.4	43.1	43.8
22 Heol-Y-Cae	CF48 2RT	Dwelling	51.0	51.4	51.8	52.5	39.9	40.2	40.6	41.2
23 Heol-Y-Cae	CF48 2RT	Dwelling	54.7	55.4	54.9	55.7	43.2	43.8	43.4	44.1
24 Heol-Y-Cae	CF48 2RT	Dwelling	50.1	50.8	50.3	51.1	39.1	39.7	39.3	39.9
25 Heol-Y-Cae	CF48 2RT	Dwelling	54.4	55.1	54.7	55.5	43.0	43.6	43.2	44.0
27 Heol-Y-Cae	CF48 2RT	Dwelling	49.1	49.2	49.9	50.6	38.2	38.3	38.9	39.5
28 Heol-Y-Cae	CF48 2RT	Dwelling	49.3	49.3	49.8	50.3	38.4	38.4	38.8	39.3
29 Heol-Y-Cae	CF48 2RT	Dwelling	54.9	55.6	55.1	55.9	43.4	44.1	43.6	44.3
30 Heol-Y-Cae	CF48 2RT	Dwelling	54.3	55.0	54.5	55.3	42.9	43.4	43.0	43.8
31 Heol-Y-Cae	CF48 2RT	Dwelling	52.6	53.0	52.7	53.3	41.3	41.7	41.4	41.9
32 Heol-Y-Cae	CF48 2RT	Dwelling	53.3	53.8	53.6	54.4	41.9	42.4	42.2	43.0
33 Heol-Y-Cae	CF48 2RT	Dwelling	54.7	55.3	54.8	55.6	43.2	43.7	43.3	44.0
34 Heol-Y-Cae	CF48 2RT	Dwelling	54.7	55.3	55.0	55.8	43.2	43.7	43.5	44.2
35 Heol-Y-Cae	CF48 2RT	Dwelling	51.8	52.5	52.0	52.8	40.6	41.2	40.8	41.5
36 Heol-Y-Cae	CF48 2RT	Dwelling	49.8	50.3	50.1	50.8	38.8	39.3	39.1	39.7

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
37 Heol-Y-Cae	CF48 2RT	Dwelling	54.0	54.4	54.2	54.7	42.6	42.9	42.8	43.2
38 Heol-Y-Cae	CF48 2RT	Dwelling	54.3	54.7	54.5	55.0	42.8	43.2	43.0	43.4
39 Heol-Y-Cae	CF48 2RT	Dwelling	49.3	49.8	49.6	50.3	38.4	38.8	38.6	39.2
40 Heol-Y-Cae	CF48 2RT	Dwelling	54.3	54.9	54.5	55.3	42.9	43.4	43.0	43.7
41 Heol-Y-Cae	CF48 2RT	Dwelling	54.3	55.0	54.5	55.3	42.9	43.4	43.1	43.7
42 Heol-Y-Cae	CF48 2RT	Dwelling	54.6	55.2	54.8	55.6	43.1	43.7	43.3	44.0
43 Heol-Y-Cae	CF48 2RT	Dwelling	52.0	52.7	52.3	53.1	40.8	41.4	41.0	41.8
44 Heol-Y-Cae	CF48 2RT	Dwelling	52.0	52.4	52.3	53.2	40.7	41.2	41.1	41.8
Hunt Terrace 1 Hunt Terrace Holford Street	CF48 2RW	Dwelling	54.9	55.4	55.3	56.1	43.4	43.8	43.7	44.5
Hunt Terrace 2 Hunt Terrace Holford Street	CF48 2RW	Dwelling	56.2	56.9	56.4	57.3	44.6	45.2	44.8	45.6
25A Holford Street	CF48 2RW	Dwelling	53.5	53.5	54.7	55.5	42.1	42.2	43.2	43.9
25B Holford Street	CF48 2RW	Dwelling	52.8	53.0	54.3	55.2	41.5	41.7	42.8	43.6
25C Holford Street	CF48 2RW	Dwelling	52.9	53.0	54.2	55.1	41.6	41.7	42.7	43.5
Hunt Terrace 3 Hunt Terrace Holford Street	CF48 2RW	Dwelling	55.2	55.9	55.4	56.3	43.7	44.3	43.9	44.7
Hunt Terrace 4 Hunt Terrace Holford Street	CF48 2RW	Dwelling	54.0	54.5	54.3	55.1	42.6	43.1	42.9	43.6
Holford Street	CF48 2RW	Dwelling	52.9	53.0	53.2	53.8	41.6	41.6	41.9	42.4
The Willows The Willows Holford Street	CF48 2RW	Dwelling	51.8	52.0	53.3	54.2	40.6	40.8	41.9	42.7
18 Holford Street	CF48 2RW	Dwelling	52.5	52.9	53.7	54.4	41.2	41.6	42.3	42.9
19 Holford Street	CF48 2RW	Dwelling	55.2	55.8	55.6	56.5	43.7	44.2	44.0	44.8
21 Holford Street	CF48 2RW	Dwelling	52.0	52.7	52.3	53.2	40.8	41.4	41.0	41.9
22 Holford Street	CF48 2RW	Dwelling	55.5	56.2	55.8	56.7	43.9	44.5	44.2	45.0
23 Holford Street	CF48 2RW	Dwelling	55.7	56.4	56.0	56.9	44.1	44.8	44.4	45.2
24 Holford Street	CF48 2RW	Dwelling	52.8	52.8	53.4	54.1	41.5	41.5	42.0	42.6
26 Holford Street	CF48 2RW	Dwelling	53.1	53.1	54.4	55.3	41.8	41.8	42.9	43.8
28 Holford Street	CF48 2RW	Dwelling	52.7	52.8	54.0	55.0	41.4	41.5	42.6	43.4
37 Holford Street	CF48 2RW	Dwelling	58.0	58.1	58.9	59.2	46.2	46.3	47.0	47.2
42 Holford Street	CF48 2RW	Dwelling	52.5	52.5	53.1	53.6	41.2	41.3	41.7	42.2
43 Holford Street	CF48 2RW	Dwelling	53.9	54.4	54.2	55.0	42.5	43.0	42.8	43.4
Flat 1 Swn-Yr-Afon Swn Yr Afon	CF48 2SA	Dwelling	54.7	55.6	55.0	56.1	43.2	44.0	43.5	44.4
Flat 4 Swn-Yr-Afon Swn Yr Afon	CF48 2SA	Dwelling	54.7	55.6	55.0	56.1	43.2	44.0	43.5	44.4
Ty Newydd Ty Newydd Maesgwynne	CF48 2SB	Dwelling	53.1	53.5	53.6	54.4	41.7	42.1	42.2	42.9
1 Maesgwynne	CF48 2SB	Dwelling	53.2	53.7	53.7	54.7	41.8	42.3	42.3	43.2
2 Maesgwynne	CF48 2SB	Dwelling	52.7	53.2	53.3	54.2	41.5	41.9	41.9	42.8
3 Maesgwynne	CF48 2SB	Dwelling	54.9	55.5	55.1	56.0	43.4	44.0	43.6	44.4
4 Maesgwynne	CF48 2SB	Dwelling	51.8	52.5	52.0	52.9	40.6	41.2	40.8	41.6
5 Maesgwynne	CF48 2SB	Dwelling	54.5	55.2	54.7	55.6	43.0	43.7	43.2	44.0
6 Maesgwynne	CF48 2SB	Dwelling	54.6	55.3	54.8	55.6	43.1	43.8	43.3	44.1
7 Maesgwynne	CF48 2SB	Dwelling	52.3	53.0	52.5	53.4	41.1	41.7	41.2	42.0
8 Maesgwynne	CF48 2SB	Dwelling	54.8	55.5	55.0	55.9	43.3	44.0	43.5	44.3
9 Maesgwynne	CF48 2SB	Dwelling	55.2	55.9	55.4	56.3	43.7	44.3	43.8	44.6
10 Maesgwynne	CF48 2SB	Dwelling	53.1	53.9	53.3	54.3	41.8	42.5	42.0	42.8
11 Maesgwynne	CF48 2SB	Dwelling	53.0	53.7	53.3	54.2	41.7	42.3	41.9	42.8
12 Maesgwynne	CF48 2SB	Dwelling	52.9	53.6	53.2	54.2	41.6	42.3	41.9	42.7
13 Maesgwynne	CF48 2SB	Dwelling	52.8	53.5	53.1	54.1	41.5	42.1	41.8	42.6
14 Maesgwynne	CF48 2SB	Dwelling	52.8	53.5	53.1	54.1	41.5	42.1	41.8	42.7
15 Maesgwynne	CF48 2SB	Dwelling	52.7	53.3	53.0	53.9	41.4	42.0	41.7	42.5
16 Maesgwynne	CF48 2SB	Dwelling	55.5	56.3	55.7	56.7	43.9	44.7	44.1	45.0
17 Maesgwynne	CF48 2SB	Dwelling	54.2	54.7	54.2	55.0	42.8	43.2	42.8	43.5
18 Maesgwynne	CF48 2SB	Dwelling	55.8	56.7	55.9	56.9	44.2	45.0	44.3	45.2
19 Maesgwynne	CF48 2SB	Dwelling	55.3	56.2	55.4	56.4	43.8	44.6	43.9	44.7
20 Maesgwynne	CF48 2SB	Dwelling	56.0	56.9	56.3	57.3	44.4	45.2	44.6	45.5
21 Maesgwynne	CF48 2SB	Dwelling	57.0	57.9	57.3	58.3	45.3	46.1	45.5	46.4
22 Maesgwynne	CF48 2SB	Dwelling	56.7	57.6	56.9	57.9	45.0	45.8	45.2	46.1
23 Maesgwynne	CF48 2SB	Dwelling	53.3	54.1	53.8	54.8	42.0	42.7	42.4	43.3
24 Maesgwynne	CF48 2SB	Dwelling	52.9	53.7	53.3	54.2	41.6	42.3	41.9	42.8
25 Maesgwynne	CF48 2SB	Dwelling	55.0	55.7	55.3	56.2	43.5	44.1	43.7	44.5
26 Maesgwynne	CF48 2SB	Dwelling	54.9	55.6	55.2	56.1	43.4	44.1	43.7	44.5
27 Maesgwynne	CF48 2SB	Dwelling	55.6	56.3	55.8	56.8	44.0	44.6	44.2	45.1
28 Maesgwynne	CF48 2SB	Dwelling	51.5	51.6	51.8	52.4	40.3	40.4	40.6	41.2
Changing Rooms Rear Of Maesgwynne Housing Estate Maesgwynne Industrial Estate	CF48 2SD	OSR	55.1	56.0	55.3	56.3	43.6	44.3	43.7	44.6
Unit F Unit F Maesgwynne Industrial Estate	CF48 2SD	OSR	54.9	55.8	55.1	56.2	43.4	44.2	43.6	44.5
12A Cyfarthfa Gardens	CF48 2SE	Dwelling	56.3	57.1	56.5	57.5	44.6	45.4	44.9	45.7
1 Cyfarthfa Gardens	CF48 2SE	Dwelling	57.2	58.2	57.5	58.5	45.5	46.3	45.7	46.6
2 Cyfarthfa Gardens	CF48 2SE	Dwelling	57.2	58.1	57.5	58.5	45.5	46.3	45.7	46.6
3 Cyfarthfa Gardens	CF48 2SE	Dwelling	55.5	56.5	55.8	56.9	43.9	44.8	44.2	45.2
4 Cyfarthfa Gardens	CF48 2SE	Dwelling	57.3	58.3	57.6	58.6	45.6	46.4	45.8	46.7
5 Cyfarthfa Gardens	CF48 2SE	Dwelling	54.7	55.6	55.1	56.2	43.2	44.0	43.6	44.5
6 Cyfarthfa Gardens	CF48 2SE	Dwelling	51.1	51.7	51.8	52.8	39.9	40.5	40.6	41.5
7 Cyfarthfa Gardens	CF48 2SE	Dwelling	55.4	56.1	55.8	56.8	43.9	44.5	44.2	45.1
8 Cyfarthfa Gardens	CF48 2SE	Dwelling	55.3	56.1	55.6	56.6	43.7	44.4	44.0	44.9
9 Cyfarthfa Gardens	CF48 2SE	Dwelling	55.5	56.4	55.7	56.7	43.9	44.7	44.1	45.0
10 Cyfarthfa Gardens	CF48 2SE	Dwelling	47.5	47.6	48.1	48.8	36.7	36.8	37.3	37.9
11 Cyfarthfa Gardens	CF48 2SE	Dwelling	55.3	56.0	55.8	56.8	43.8	44.4	44.2	45.1
12 Cyfarthfa Gardens	CF48 2SE	Dwelling	55.9	56.8	56.1	57.1	44.3	45.1	44.5	45.3
14 Cyfarthfa Gardens	CF48 2SE	Dwelling	56.4	57.2	56.6	57.6	44.7	45.5	45.0	45.8
15 Cyfarthfa Gardens	CF48 2SE	Dwelling	55.9	56.7	56.2	57.2	44.3	45.0	44.5	45.4
16 Cyfarthfa Gardens	CF48 2SE	Dwelling	55.4	56.3	55.7	56.7	43.9	44.6	44.1	45.0
17 Cyfarthfa Gardens	CF48 2SE	Dwelling	54.8	55.6	55.2	56.1	43.3	44.0	43.6	44.5
18 Cyfarthfa Gardens	CF48 2SE	Dwelling	54.1	54.8	54.5	55.5	42.7	43.3	43.0	43.9
19 Cyfarthfa Gardens	CF48 2SE	Dwelling	53.3	53.9	53.7	54.7	42.0	42.5	42.3	43.2
20 Cyfarthfa Gardens	CF48 2SE	Dwelling	52.3	53.0	52.6	53.6	41.1	41.7	41.3	42.2
21 Cyfarthfa Gardens	CF48 2SE	Dwelling	48.4	48.9	48.9	49.8	37.5	37.9	38.0	38.8
22 Cyfarthfa Gardens	CF48 2SE	Dwelling	52.0	52.7	52.4	53.4	40.8	41.4	41.2	42.0
23 Cyfarthfa Gardens	CF48 2SE	Dwelling	50.3	50.8	50.4	51.2	39.3	39.7	39.4	40.1
24 Cyfarthfa Gardens	CF48 2SE	Dwelling	49.9	50.5	50.4	51.3	38.9	39.5	39.3	40.1
25 Cyfarthfa Gardens	CF48 2SE	Dwelling	47.4	47.4	47.9	48.6	36.6	36.7	37.1	37.7
26 Cyfarthfa Gardens	CF48 2SE	Dwelling	52.9	53.5	53.3	54.2	41.6	42.1	41.9	42.7
27 Cyfarthfa Gardens	CF48 2SE	Dwelling	54.5	55.2	54.8	55.7	43.0	43.7	43.3	44.1
28 Cyfarthfa Gardens	CF48 2SE	Dwelling	54.4	55.2	54.7	55.6	43.0	43.7	43.2	44.0
29 Cyfarthfa Gardens	CF48 2SE	Dwelling	54.9	55.7	55.1	56.0	43.4	44.1	43.6	44.4
30 Cyfarthfa Gardens	CF48 2SE	Dwelling	54.9	55.6	55.1	56.0	43.4	44.1	43.6	44.4
31 Cyfarthfa Gardens	CF48 2SE	Dwelling	54.3	55.1	54.6	55.6	42.9	43.6	43.2	44.0
32 Cyfarthfa Gardens	CF48 2SE	Dwelling	55.5	56.4	55.8	56.8	44.0	44.7	44.2	45.1
33 Cyfarthfa Gardens	CF48 2SE	Dwelling	55.7	56.5	56.0	56.9	44.1	44.8	44.3	45.2
34 Cyfarthfa Gardens	CF48 2SE	Dwelling	55.7	56.5	56.0	56.9	44.1	44.9	44.4	45.2
35 Cyfarthfa Gardens	CF48 2SE	Dwelling	50.6	50.9	51.3	52.3	39.5	39.8	40.2	41.0
36 Cyfarthfa Gardens	CF48 2SE	Dwelling	48.2	48.0	49.1	49.9	37.4	37.2	38.1	38.9
37 Cyfarthfa Gardens	CF48 2SE	Dwelling	48.5	48.5	49.1	49.9	37.6	37.6	38.2	38.9
38 Cyfarthfa Gardens	CF48 2SE	Dwelling	54.8	55.3	55.0	55.9	43.3	43.7	43.5	44.3
39 Cyfarthfa Gardens	CF48 2SE	Dwelling	54.7	55.3	55.1	56.1	43.2	43.8	43.6	44.5
40 Cyfarthfa Gardens	CF48 2SE	Dwelling	55.0	55.7	55.4	56.4	43.5	44.1	43.8	44.7
41 Cyfarthfa Gardens	CF48 2SE	Dwelling	48.0	48.1	48.6	49.4	37.2	37.2	37.8	38.4
42 Cyfarthfa Gardens	CF48 2SE	Dwelling	56.4	57.3	56.7	57.7	44.7	45.5	45.0	45.9
43 Cyfarthfa Gardens	CF48 2SE	Dwelling	55.9	56.7	56.2	57.2	44.3	45.0	44.6	45.5
44 Cyfarthfa Gardens	CF48 2SE	Dwelling	56.9	57.8	57.2	58.2	45.2	46.0	45.4	46.3
45 Cyfarthfa Gardens	CF48 2SE	Dwelling	55.6	56.5	56.0	57.0	44.1	44.8	44.4	45.3
46 Cyfarthfa Gardens	CF48 2SE	Dwelling	57.3	58.2	57.6	58.6	45.6	46.4	45.8	46.7

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
47 Cyfarthfa Gardens	CF48 2SE	Dwelling	57.0	57.9	57.3	58.4	45.3	46.1	45.6	46.5
48 Cyfarthfa Gardens	CF48 2SE	Dwelling	56.5	57.4	56.9	58.0	44.9	45.6	45.2	46.1
49 Cyfarthfa Gardens	CF48 2SE	Dwelling	53.9	54.7	54.6	55.7	42.5	43.2	43.1	44.1
50 Cyfarthfa Gardens	CF48 2SE	Dwelling	52.9	53.6	53.4	54.5	41.6	42.2	42.1	43.0
51 Cyfarthfa Gardens	CF48 2SE	Dwelling	53.8	54.5	54.5	55.6	42.4	43.0	43.1	44.0
52 Cyfarthfa Gardens	CF48 2SE	Dwelling	51.2	51.7	52.1	53.1	40.1	40.5	40.9	41.8
53 Cyfarthfa Gardens	CF48 2SE	Dwelling	54.8	55.6	55.5	56.5	43.3	44.0	43.9	44.8
54 Cyfarthfa Gardens	CF48 2SE	Dwelling	53.2	53.7	53.8	54.8	41.9	42.3	42.4	43.3
55 Cyfarthfa Gardens	CF48 2SE	Dwelling	54.5	55.2	55.1	56.1	43.1	43.6	43.6	44.5
56 Cyfarthfa Gardens	CF48 2SE	Dwelling	53.5	54.1	54.3	55.3	42.2	42.7	42.8	43.8
57 Cyfarthfa Gardens	CF48 2SE	Dwelling	50.5	50.6	51.3	52.2	39.4	39.5	40.2	41.0
58 Cyfarthfa Gardens	CF48 2SE	Dwelling	54.8	55.6	55.0	56.0	43.3	44.0	43.5	44.4
59 Cyfarthfa Gardens	CF48 2SE	Dwelling	53.0	53.9	53.6	54.6	41.7	42.5	42.2	43.1
Gurnos Farm Cottages 1 Gurnos Farm Cottages Gurnos Ring Road	CF48 2SH	Dwelling	57.3	56.2	61.3	62.4	45.6	44.6	49.2	50.1
Gurnos Farm Cottages 2 Gurnos Farm Cottages Gurnos Ring Road	CF48 2SH	Dwelling	56.1	54.9	58.3	59.3	44.4	43.3	46.4	47.4
Gurnos Farm Cottages 3 Gurnos Farm Cottages Gurnos Ring Road	CF48 2SH	Dwelling	56.8	55.6	59.1	60.2	45.1	44.0	47.2	48.1
Gurnos Farm Gurnos Farm Gurnos Ring Road	CF48 2SH	Dwelling	59.8	58.8	64.3	65.4	47.8	46.9	51.9	52.8
Penmoelallt Farm Farmhouse Lane To Penmoelallt Farm	CF48 2SN	Dwelling	42.0	42.5	42.9	43.9	31.8	32.2	32.6	33.5
Ffrwd-Isaf Farm Ffrwd Isaf Farmhouse A470 From A4054 Junction To Llwynon	CF48 2SP	Dwelling	58.6	58.8	61.6	63.0	46.7	46.9	49.5	50.7
Unit 35 Flat Above Pant Industrial Estate	CF48 2SR	Dwelling	58.1	59.4	63.5	63.5	46.3	47.5	51.2	51.1
Hall And Pavilion Bryniau Road	CF48 2SR	OSR	55.1	56.5	59.9	59.8	43.6	44.8	47.9	47.8
Kimberley Bungalow Kimberley Bungalow Pontsarn Road	CF48 2TN	Dwelling	52.2	52.2	58.4	59.7	41.0	40.9	46.6	47.7
Dan Y Castell Farm Dan-Y-Castell Farm Pontsarn Road	CF48 2TP	Dwelling	44.9	44.3	46.0	47.0	34.4	33.8	35.4	36.3
Castle Farm Cottage Castle Farm Cottage Pant Road	CF48 2UY	Dwelling	45.1	45.4	46.1	46.9	34.6	34.9	35.4	36.2
Morlais Castle Golf Club Pant Road	CF48 2UY	OSR	45.1	45.4	46.1	46.9	34.6	34.8	35.4	36.2
Pant Cemetery U/C Road To Pontsticill	CF48 2UY	OSR	57.8	58.8	59.7	59.4	46.0	46.9	47.7	47.4
Morlais Castle Golf Club Stewards Flat Pant Road	CF48 2UY	Dwelling	45.1	45.4	46.1	46.9	34.6	34.8	35.4	36.2
Garth House Garth Cottage Garth Lane	CF48 2YA	Dwelling	37.0	37.4	39.1	39.9	27.3	27.6	29.1	29.9
Garth Farm Garth Farm Garth Lane	CF48 2YA	Dwelling	46.4	46.9	47.4	48.3	35.8	36.2	36.7	37.4
The Bungalow The Bungalow Garth Lane	CF48 2YA	Dwelling	44.4	45.0	45.7	46.3	34.0	34.5	35.1	35.6
Bwythyn Pen Y Bryn Bwthyn Pen Y Bryn Rhymney Common Road	CF48 2YG	Dwelling	58.0	55.6	56.9	55.1	46.1	44.0	45.2	43.6
Castle House Castle House Pengarnddu	CF48 2YG	Dwelling	50.6	51.0	52.6	53.5	39.5	39.9	41.3	42.1
K And M Robins Garage Flat K & M Robins Garage Flat At Rhymney Common Road	CF48 2YG	Dwelling	50.6	49.2	50.7	50.5	39.5	38.3	39.6	39.5
Station House Station House Rhymney Common Road	CF48 2YG	Dwelling	60.8	58.3	59.8	57.5	48.7	46.5	47.8	45.7
Canol Tai 1 Canol Tai Blaen Dowlais	CF48 3AA	Dwelling	51.3	51.5	51.9	52.5	40.2	40.3	40.7	41.2
Canol Tai 2 Canol Tai Blaen Dowlais	CF48 3AA	Dwelling	50.8	51.2	51.1	51.9	39.7	40.1	40.0	40.7
Canol Tai 3 Canol Tai Blaen Dowlais	CF48 3AA	Dwelling	50.7	51.1	51.2	51.9	39.6	40.0	40.0	40.7
Canol Tai 4 Canol Tai Blaen Dowlais	CF48 3AA	Dwelling	50.7	51.1	51.2	52.0	39.6	40.0	40.1	40.8
Canol Tai 5 Canol Tai Blaen Dowlais	CF48 3AA	Dwelling	50.8	51.2	51.2	52.0	39.7	40.0	40.1	40.8
Canol Tai 6 Canol Tai Blaen Dowlais	CF48 3AA	Dwelling	50.7	51.1	51.1	51.9	39.6	40.0	40.0	40.7
Canol Tai 7 Canol Tai Blaen Dowlais	CF48 3AA	Dwelling	50.7	51.1	51.1	51.8	39.6	40.0	40.0	40.6
Canol Tai 8 Canol Tai Blaen Dowlais	CF48 3AA	Dwelling	50.6	51.0	51.0	51.8	39.5	39.8	39.9	40.6
Canol Tai 9 Canol Tai Blaen Dowlais	CF48 3AA	Dwelling	50.2	50.6	50.6	51.4	39.2	39.5	39.6	40.2
Moriah Houses 1 Mount Pleasant Street	CF48 3AD	Dwelling	48.9	50.0	49.3	50.2	38.0	39.0	38.4	39.1
Moriah Houses 2 Mount Pleasant Street	CF48 3AD	Dwelling	46.8	48.1	47.2	48.1	36.1	37.2	36.5	37.3
Moriah Houses 3 Mount Pleasant Street	CF48 3AD	Dwelling	49.5	50.7	50.0	50.9	38.6	39.6	39.0	39.8
Moriah Houses 4 Mount Pleasant Street	CF48 3AD	Dwelling	49.9	51.0	50.3	51.3	38.9	39.9	39.3	40.1
22A Mount Pleasant Street	CF48 3AF	Dwelling	45.3	46.5	45.9	46.8	34.8	35.8	35.2	36.1
First Floor Flat 29A Mount Pleasant Street	CF48 3AF	Dwelling	58.3	59.6	58.6	59.4	46.5	47.6	46.7	47.4
Morlais Tavern Inn 31-33 Mount Pleasant Street	CF48 3AF	Dwelling	49.7	50.9	50.0	50.9	38.7	39.8	39.0	39.7
47A Mount Pleasant Street	CF48 3AF	Dwelling	49.9	50.9	50.2	51.1	38.9	39.8	39.2	39.9
Mount Pleasant Street	CF48 3AF	Dwelling	46.9	48.1	47.4	48.3	36.2	37.3	36.6	37.4
10 Mount Pleasant Street	CF48 3AF	Dwelling	50.0	51.0	50.5	51.2	39.0	39.9	39.4	40.0
11 Mount Pleasant Street	CF48 3AF	Dwelling	49.7	50.7	50.1	50.9	38.7	39.6	39.1	39.8
12 Mount Pleasant Street	CF48 3AF	Dwelling	49.6	50.7	50.1	50.9	38.7	39.6	39.1	39.8
14 Mount Pleasant Street	CF48 3AF	Dwelling	46.4	47.6	46.9	47.9	35.7	36.8	36.2	37.0
15 Mount Pleasant Street	CF48 3AF	Dwelling	46.3	47.4	46.7	47.7	35.6	36.6	36.0	36.9
16 Mount Pleasant Street	CF48 3AF	Dwelling	46.7	47.9	47.2	48.2	36.0	37.1	36.5	37.3
17 Mount Pleasant Street	CF48 3AF	Dwelling	46.8	48.0	47.3	48.2	36.1	37.2	36.5	37.4
18 Mount Pleasant Street	CF48 3AF	Dwelling	45.8	47.0	46.3	47.3	35.2	36.3	35.7	36.5
19 Mount Pleasant Street	CF48 3AF	Dwelling	45.5	46.7	45.9	46.9	34.9	36.0	35.3	36.2
20 Mount Pleasant Street	CF48 3AF	Dwelling	50.0	51.2	50.5	51.4	39.0	40.0	39.4	40.2
21 Mount Pleasant Street	CF48 3AF	Dwelling	46.0	47.2	46.6	47.5	35.4	36.5	35.9	36.8
22 Mount Pleasant Street	CF48 3AF	Dwelling	48.4	49.5	48.9	49.8	37.6	38.5	38.0	38.8
23 Mount Pleasant Street	CF48 3AF	Dwelling	46.3	47.5	46.7	47.7	35.6	36.7	36.0	36.9
24 Mount Pleasant Street	CF48 3AF	Dwelling	45.5	46.7	46.0	46.9	35.0	36.0	35.4	36.2
25 Mount Pleasant Street	CF48 3AF	Dwelling	50.8	51.8	51.2	52.1	39.7	40.6	40.1	40.8
26 Mount Pleasant Street	CF48 3AF	Dwelling	47.3	48.5	47.8	48.7	36.6	37.6	37.0	37.8
29 Mount Pleasant Street	CF48 3AF	Dwelling	56.5	57.8	56.8	57.6	44.9	46.0	45.1	45.8
30 Mount Pleasant Street	CF48 3AF	Dwelling	54.4	55.6	54.7	55.5	43.0	44.0	43.2	43.9
34 Mount Pleasant Street	CF48 3AF	Dwelling	48.4	49.5	48.7	49.6	37.5	38.5	37.8	38.6
35 Mount Pleasant Street	CF48 3AF	Dwelling	48.7	49.9	49.1	50.0	37.8	38.9	38.2	39.0
36 Mount Pleasant Street	CF48 3AF	Dwelling	48.0	49.0	48.4	49.3	37.2	38.1	37.5	38.3
37 Mount Pleasant Street	CF48 3AF	Dwelling	47.2	48.3	47.6	48.5	36.5	37.5	36.8	37.6
38 Mount Pleasant Street	CF48 3AF	Dwelling	50.3	51.4	50.7	51.6	39.3	40.2	39.6	40.4
39 Mount Pleasant Street	CF48 3AF	Dwelling	50.4	51.4	50.7	51.6	39.3	40.2	39.6	40.4
40 Mount Pleasant Street	CF48 3AF	Dwelling	50.1	51.1	50.4	51.3	39.1	40.0	39.3	40.1
41 Mount Pleasant Street	CF48 3AF	Dwelling	46.7	47.8	47.1	48.0	36.0	37.0	36.4	37.2
42 Mount Pleasant Street	CF48 3AF	Dwelling	46.7	47.8	47.1	48.0	36.0	37.0	36.4	37.2
43 Mount Pleasant Street	CF48 3AF	Dwelling	47.4	48.5	47.8	48.7	36.7	37.7	37.0	37.8
44 Mount Pleasant Street	CF48 3AF	Dwelling	47.5	48.6	47.9	48.8	36.7	37.7	37.1	37.9
45 Mount Pleasant Street	CF48 3AF	Dwelling	48.1	49.1	48.6	49.5	37.3	38.2	37.7	38.5
47 Mount Pleasant Street	CF48 3AF	Dwelling	50.2	51.2	50.6	51.5	39.2	40.0	39.5	40.3
Ivor Independent Chapel Ivor Street	CF48 3AG	OSR	45.8	46.4	46.6	47.5	35.2	35.7	36.0	36.7
Stables Court 1 Garden Street	CF48 3AG	Dwelling	46.3	46.9	47.0	47.9	35.6	36.2	36.3	37.1
Stables Court 2 Garden Street	CF48 3AG	Dwelling	45.2	45.8	46.0	46.9	34.7	35.2	35.4	36.2
Stables Court 3 Garden Street	CF48 3AG	Dwelling	46.4	46.9	47.1	47.9	35.7	36.2	36.3	37.1
Stables Court 4 Garden Street	CF48 3AG	Dwelling	45.3	45.8	45.8	46.7	34.7	35.2	35.2	36.0
Stables Court 5 Garden Street	CF48 3AG	Dwelling	44.8	45.3	45.3	46.1	34.3	34.8	34.8	35.5
Stables Court 6 Garden Street	CF48 3AG	Dwelling	45.7	46.2	46.0	46.8	35.1	35.6	35.4	36.1
Stables Court 7 Garden Street	CF48 3AG	Dwelling	46.1	46.8	46.8	47.7	35.5	36.1	36.1	36.9
Stables Court 8 Garden Street	CF48 3AG	Dwelling	51.5	52.5	51.9	52.6	40.4	41.2	40.7	41.3
Stables Court 12 Garden Street	CF48 3AG	Dwelling	52.4	53.3	52.7	53.4	41.2	41.9	41.4	42.1
Stables Court 13 Garden Street	CF48 3AG	Dwelling	44.8	45.5	45.3	46.2	34.3	34.9	34.8	35.5
Stables Court 14 Garden Street	CF48 3AG	Dwelling	45.3	45.8	45.8	46.6	34.8	35.2	35.2	35.9
Stables Court 15 Garden Street	CF48 3AG	Dwelling	46.4	46.9	47.2	48.0	35.7	36.2	36.4	37.1
Stables Court 16 Garden Street	CF48 3AG	Dwelling	50.6	51.2	51.0	51.8	39.5	40.0	39.9	40.6
Stables Court 17 Garden Street	CF48 3AG	Dwelling	45.2	45.8	45.5	46.3	34.6	35.2	34.9	35.7
Stables Court 18 Garden Street	CF48 3AG	Dwelling	50.5	51.1	50.9	51.7	39.5	40.0	39.8	40.5
Stables Court 19 Garden Street	CF48 3AG	Dwelling	49.4	50.0	49.7	50.5	38.5	39.0	38.7	39.4
Stables Court 20 Garden Street	CF48 3AG	Dwelling	47.4	47.9	47.7	48.5	36.6	37.1	36.9	37.6
Stables Court 21 Garden Street	CF48 3AG	Dwelling	47.9	48.5	48.6	49.5	37.1	37.6	37.7	38.5
Stables Court 22 Garden Street	CF48 3AG	Dwelling	51.7	52.2	52.0	52.8	40.5	41.0	40.8	41.5
Stables Court 23 Garden Street	CF48 3AG	Dwelling	51.6	52.1	52.0	52.7	40.4	40.9	40.8	41.4
Stables Court 24 Garden Street	CF48 3AG	Dwelling	51.9	52.4	52.2	53.0	40.7	41.2	41.0	41.7
Stables Court 25 Garden Street	CF48 3AG	Dwelling	46.8	47.3	47.4	48.3	36.1	36.6	36.6	37.4
Stables Court 26 Garden Street	CF48 3AG	Dwelling	51.6	52.1	51.9	52.6	40.4	40.9	40.7	41.4

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
Stables Court 27 Garden Street	CF48 3AG	Dwelling	44.3	44.9	44.7	45.5	33.9	34.4	34.2	34.9
Stables Court 28 Garden Street	CF48 3AG	Dwelling	47.6	48.1	48.2	49.0	36.8	37.2	37.4	38.0
Stables Court 29 Garden Street	CF48 3AG	Dwelling	45.9	46.4	46.8	47.7	35.2	35.7	36.1	36.9
Stables Court 30 Garden Street	CF48 3AG	Dwelling	50.1	50.7	50.2	50.9	39.1	39.6	39.2	39.8
Stables Court 31 Garden Street	CF48 3AG	Dwelling	51.6	52.1	51.7	52.4	40.5	40.9	40.5	41.1
2 Mount Pleasant Street	CF48 3AH	Dwelling	46.8	48.0	47.2	48.0	36.1	37.2	36.5	37.2
3 Mount Pleasant Street	CF48 3AH	Dwelling	50.0	51.4	50.6	51.1	39.0	40.2	39.5	40.0
4 Mount Pleasant Street	CF48 3AH	Dwelling	49.0	50.1	49.5	50.1	38.1	39.1	38.5	39.1
5 Mount Pleasant Street	CF48 3AH	Dwelling	46.7	48.0	47.2	48.0	36.0	37.2	36.5	37.2
6 Mount Pleasant Street	CF48 3AH	Dwelling	49.1	50.2	49.5	50.3	38.2	39.1	38.6	39.2
7 Mount Pleasant Street	CF48 3AH	Dwelling	49.0	50.1	49.4	50.2	38.1	39.0	38.5	39.1
8 Mount Pleasant Street	CF48 3AH	Dwelling	45.3	46.6	45.9	46.7	34.8	35.9	35.3	36.0
9 Mount Pleasant Street	CF48 3AH	Dwelling	46.3	47.5	46.8	47.7	35.6	36.7	36.1	36.9
Morlais Medical Centre Berry Square	CF48 3AL	OSR	49.9	50.9	50.3	51.1	38.9	39.8	39.3	40.0
1 Berry Square	CF48 3AL	Dwelling	50.1	51.2	50.5	51.4	39.1	40.1	39.5	40.2
2 Berry Square	CF48 3AL	Dwelling	47.7	48.7	48.2	49.1	36.9	37.8	37.3	38.2
3 Berry Square	CF48 3AL	Dwelling	47.6	48.6	48.1	49.0	36.8	37.7	37.2	38.1
4 Berry Square	CF48 3AL	Dwelling	48.2	49.1	48.6	49.5	37.4	38.2	37.7	38.6
5 Berry Square	CF48 3AL	Dwelling	47.9	48.9	48.3	49.2	37.1	37.9	37.5	38.3
6 Berry Square	CF48 3AL	Dwelling	48.7	49.7	49.1	50.0	37.8	38.7	38.2	38.9
7 Berry Square	CF48 3AL	Dwelling	48.9	49.9	49.4	50.1	38.0	38.9	38.4	39.1
8 Berry Square	CF48 3AL	Dwelling	48.0	48.9	48.2	49.1	37.2	38.0	37.4	38.1
9 Berry Square	CF48 3AL	Dwelling	52.5	53.5	52.8	53.5	41.2	42.2	41.5	42.1
30 Berry Square	CF48 3AL	Dwelling	45.3	46.4	45.9	46.7	34.7	35.7	35.2	36.0
31 Berry Square	CF48 3AL	Dwelling	47.6	48.6	48.0	48.8	36.8	37.7	37.2	37.9
32 Berry Square	CF48 3AL	Dwelling	45.6	46.8	46.1	46.9	35.0	36.1	35.5	36.2
33 Berry Square	CF48 3AL	Dwelling	50.4	51.4	50.8	51.4	39.3	40.3	39.7	40.2
34 Berry Square	CF48 3AL	Dwelling	49.6	50.5	49.9	50.7	38.6	39.5	38.9	39.6
35 Berry Square	CF48 3AL	Dwelling	52.4	54.3	52.6	53.5	41.2	42.8	41.3	42.1
36 Berry Square	CF48 3AL	Dwelling	50.1	51.2	50.5	51.2	39.1	40.1	39.5	40.0
37 Berry Square	CF48 3AL	Dwelling	49.9	50.8	50.2	51.0	38.9	39.7	39.1	39.9
Cwm Cottages 1 Cwm Cottages Walter Street	CF48 3AP	Dwelling	49.9	51.6	50.5	51.1	38.9	40.4	39.4	39.9
Cwm Cottages 2 Cwm Cottages Walter Street	CF48 3AP	Dwelling	46.0	47.4	46.7	47.4	35.4	36.6	36.0	36.6
Ael Y Bryn North Ael-Y-Bryn North Walter Street	CF48 3AP	Dwelling	52.7	54.1	52.8	53.3	41.4	42.6	41.5	42.0
Ael Y Bryn South Ael-Y-Bryn South Walter Street	CF48 3AP	Dwelling	49.8	51.5	50.5	51.0	38.8	40.3	39.5	39.9
Broadfield House Walter Street	CF48 3AP	Dwelling	49.3	50.5	49.8	50.5	38.4	39.4	38.8	39.4
The Nook The Nook Walter Street	CF48 3AP	Dwelling	50.4	51.8	51.0	51.5	39.4	40.6	39.9	40.3
1A Broad Street	CF48 3AR	Dwelling	50.1	51.9	50.5	51.2	39.1	40.7	39.5	40.1
2A Broad Street	CF48 3AR	Dwelling	52.2	54.4	52.4	53.3	41.0	42.9	41.1	41.9
1 Broad Street	CF48 3AR	Dwelling	52.4	53.9	52.5	53.1	41.2	42.5	41.2	41.8
2 Broad Street	CF48 3AR	Dwelling	48.7	50.8	48.9	49.8	37.8	39.7	38.0	38.8
3 Broad Street	CF48 3AR	Dwelling	51.9	54.1	52.5	53.0	40.7	42.6	41.3	41.7
4 Broad Street	CF48 3AR	Dwelling	55.8	58.2	55.8	56.8	44.2	46.3	44.2	45.1
5 Broad Street	CF48 3AR	Dwelling	51.3	53.5	51.6	52.5	40.2	42.1	40.4	41.2
6 Broad Street	CF48 3AR	Dwelling	53.1	55.2	53.4	54.3	41.8	43.7	42.0	42.8
7 Broad Street	CF48 3AR	Dwelling	70.0	72.6	70.0	71.0	57.0	59.3	56.9	57.8
8 Broad Street	CF48 3AR	Dwelling	60.7	63.3	60.7	61.7	48.6	51.0	48.6	49.5
9 Broad Street	CF48 3AR	Dwelling	56.9	59.3	56.9	57.9	45.2	47.4	45.2	46.1
10 Broad Street	CF48 3AR	Dwelling	48.4	50.1	48.8	49.8	37.5	39.1	37.9	38.8
11 Broad Street	CF48 3AR	Dwelling	46.7	48.4	47.0	48.0	36.0	37.6	36.3	37.2
12 Broad Street	CF48 3AR	Dwelling	46.2	47.9	46.6	47.6	35.6	37.1	35.9	36.8
13 Broad Street	CF48 3AR	Dwelling	47.3	49.0	47.8	48.8	36.5	38.1	37.0	37.9
14 Broad Street	CF48 3AR	Dwelling	49.8	51.3	50.3	51.3	38.8	40.2	39.3	40.1
15 Broad Street	CF48 3AR	Dwelling	48.5	50.2	48.9	50.0	37.6	39.1	38.0	39.0
16 Broad Street	CF48 3AR	Dwelling	46.9	48.5	47.4	48.4	36.2	37.6	36.6	37.5
17 Broad Street	CF48 3AR	Dwelling	47.1	48.7	47.5	48.6	36.4	37.8	36.8	37.7
18 Broad Street	CF48 3AR	Dwelling	47.8	49.4	48.3	49.3	37.0	38.4	37.4	38.4
19 Broad Street	CF48 3AR	Dwelling	47.9	49.5	48.3	49.4	37.1	38.6	37.4	38.4
20 Broad Street	CF48 3AR	Dwelling	46.3	47.9	46.7	47.8	35.7	37.1	36.0	37.0
21 Broad Street	CF48 3AR	Dwelling	50.9	53.0	51.3	52.4	39.8	41.7	40.1	41.1
22 Broad Street	CF48 3AR	Dwelling	53.0	55.0	53.4	54.5	41.7	43.5	42.0	43.0
23 Broad Street	CF48 3AR	Dwelling	52.1	54.0	52.5	53.6	40.9	42.5	41.2	42.2
24 Broad Street	CF48 3AR	Dwelling	46.9	48.4	47.4	48.3	36.2	37.5	36.6	37.5
25 Broad Street	CF48 3AR	Dwelling	49.0	50.4	49.4	50.4	38.1	39.3	38.4	39.3
26 Broad Street	CF48 3AR	Dwelling	48.6	49.8	49.0	49.9	37.7	38.8	38.1	38.9
27 Broad Street	CF48 3AR	Dwelling	46.6	48.2	47.0	48.0	35.9	37.4	36.3	37.2
28 Broad Street	CF48 3AR	Dwelling	49.0	50.2	49.4	50.3	38.1	39.1	38.4	39.2
29 Broad Street	CF48 3AR	Dwelling	49.6	51.2	50.0	50.9	38.7	40.0	38.9	39.8
30 Broad Street	CF48 3AR	Dwelling	49.7	50.8	50.2	51.0	38.8	39.7	39.1	39.9
31 Broad Street	CF48 3AR	Dwelling	49.5	50.6	50.0	50.8	38.6	39.5	38.9	39.7
32 Broad Street	CF48 3AR	Dwelling	48.3	50.1	48.6	49.6	37.5	39.1	37.7	38.6
33 Broad Street	CF48 3AR	Dwelling	52.2	54.0	52.4	53.4	41.0	42.6	41.2	42.0
34 Broad Street	CF48 3AR	Dwelling	50.4	51.5	50.9	51.7	39.4	40.3	39.7	40.5
35 Broad Street	CF48 3AR	Dwelling	45.2	46.5	45.6	46.4	34.7	35.9	35.0	35.7
36 Broad Street	CF48 3AR	Dwelling	49.3	50.6	49.7	50.5	38.4	39.5	38.7	39.5
37 Broad Street	CF48 3AR	Dwelling	45.8	47.1	46.3	47.1	35.2	36.4	35.6	36.3
38 Broad Street	CF48 3AR	Dwelling	48.2	49.7	48.7	49.6	37.4	38.7	37.8	38.6
39 Broad Street	CF48 3AR	Dwelling	48.8	50.1	49.2	50.0	37.9	39.1	38.3	39.0
40 Broad Street	CF48 3AR	Dwelling	47.8	49.3	48.2	49.0	37.0	38.3	37.4	38.1
41 Broad Street	CF48 3AR	Dwelling	48.0	49.5	48.4	49.2	37.2	38.5	37.6	38.3
42 Broad Street	CF48 3AR	Dwelling	48.7	50.1	49.1	49.9	37.8	39.1	38.2	38.8
43 Broad Street	CF48 3AR	Dwelling	48.3	49.7	48.8	49.5	37.5	38.7	37.9	38.5
44 Broad Street	CF48 3AR	Dwelling	49.4	50.7	49.8	50.5	38.4	39.6	38.8	39.4
45 Broad Street	CF48 3AR	Dwelling	48.7	50.5	49.1	49.9	37.8	39.5	38.1	38.9
46 Broad Street	CF48 3AR	Dwelling	48.8	50.2	49.4	50.0	37.9	39.2	38.4	38.9
47 Broad Street	CF48 3AR	Dwelling	49.3	50.6	49.9	50.5	38.4	39.6	38.9	39.4
2 Cross Morlais Street	CF48 3AS	Dwelling	46.4	47.9	46.9	47.8	35.8	37.1	36.2	37.0
3 Cross Morlais Street	CF48 3AS	Dwelling	69.8	72.4	69.8	70.8	56.8	59.2	56.8	57.7
4 Cross Morlais Street	CF48 3AS	Dwelling	60.4	63.1	61.4	61.6	48.3	50.7	49.2	49.4
5 Cross Morlais Street	CF48 3AS	Dwelling	59.4	62.5	60.8	60.9	47.5	50.2	48.7	48.8
6 Cross Morlais Street	CF48 3AS	Dwelling	68.7	72.3	70.5	70.7	55.8	59.0	57.4	57.6
7 Cross Morlais Street	CF48 3AS	Dwelling	49.8	51.1	50.3	51.2	38.8	40.0	39.2	40.0
2 Overton Street	CF48 3AT	Dwelling	53.1	54.3	53.4	54.3	41.8	42.9	42.1	42.8
3 Overton Street	CF48 3AT	Dwelling	50.8	51.9	51.2	52.1	39.7	40.7	40.1	40.8
4 Overton Street	CF48 3AT	Dwelling	51.7	52.9	52.1	53.0	40.6	41.6	40.8	41.6
5 Overton Street	CF48 3AT	Dwelling	50.8	52.0	51.2	52.1	39.7	40.8	40.0	40.8
6 Overton Street	CF48 3AT	Dwelling	47.8	49.1	48.2	49.1	37.0	38.2	37.3	38.2
7 Overton Street	CF48 3AT	Dwelling	48.2	49.5	48.6	49.5	37.4	38.5	37.7	38.6
8 Overton Street	CF48 3AT	Dwelling	50.1	51.9	50.4	51.6	39.1	40.7	39.4	40.4
9 Overton Street	CF48 3AT	Dwelling	48.2	49.4	48.8	49.7	37.3	38.4	37.9	38.7
10 Overton Street	CF48 3AT	Dwelling	48.8	50.2	49.2	50.3	37.9	39.2	38.3	39.2
Off Side 11 Overton Street	CF48 3AT	Dwelling	50.8	52.1	51.2	52.2	39.7	40.9	40.0	40.9
12 Overton Street	CF48 3AT	Dwelling	48.1	49.5	48.6	49.6	37.3	38.5	37.7	38.6
13 Overton Street	CF48 3AT	Dwelling	50.1	51.4	50.6	51.6	39.1	40.2	39.5	40.4
14 Overton Street	CF48 3AT	Dwelling	47.9	49.3	48.4	49.4	37.1	38.3	37.5	38.4
15 Overton Street	CF48 3AT	Dwelling	48.5	49.9	48.9	50.0	37.7	38.9	38.0	38.9
16 Overton Street	CF48 3AT	Dwelling	48.5	49.9	48.9	49.9	37.7	38.9	38.0	38.9

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
17 Overton Street	CF48 3AT	Dwelling	51.1	52.3	51.5	52.4	40.0	41.1	40.3	41.1
18 Overton Street	CF48 3AT	Dwelling	69.5	70.8	69.7	70.5	56.5	57.7	56.7	57.4
Odessa Street	CF48 3AU	Dwelling	69.8	72.4	69.9	71.2	56.8	59.1	56.9	58.1
2 Odessa Street	CF48 3AU	Dwelling	69.6	72.3	69.7	71.1	56.7	59.1	56.7	58.0
3 Odessa Street	CF48 3AU	Dwelling	69.6	72.3	69.7	71.1	56.6	59.0	56.7	57.9
4 Odessa Street	CF48 3AU	Dwelling	69.6	72.3	69.7	71.1	56.6	59.1	56.7	57.9
5 Odessa Street	CF48 3AU	Dwelling	51.5	52.9	51.8	52.8	40.3	41.6	40.6	41.5
6 Odessa Street	CF48 3AU	Dwelling	69.2	71.9	69.3	70.7	56.3	58.7	56.4	57.6
7 Odessa Street	CF48 3AU	Dwelling	50.7	52.3	50.9	52.0	39.6	41.1	39.8	40.8
8 Odessa Street	CF48 3AU	Dwelling	69.7	72.4	69.8	71.1	56.7	59.1	56.8	58.0
9 Odessa Street	CF48 3AU	Dwelling	69.2	71.9	69.3	70.7	56.3	58.7	56.4	57.6
10 Odessa Street	CF48 3AU	Dwelling	69.7	72.4	69.8	71.2	56.7	59.2	56.8	58.0
11 Odessa Street	CF48 3AU	Dwelling	69.7	72.4	69.8	71.2	56.7	59.2	56.8	58.0
12 Odessa Street	CF48 3AU	Dwelling	69.4	72.1	69.5	70.9	56.4	58.9	56.5	57.8
13 Odessa Street	CF48 3AU	Dwelling	69.8	72.5	69.9	71.3	56.8	59.3	56.9	58.1
14 Odessa Street	CF48 3AU	Dwelling	69.1	71.8	69.2	70.6	56.2	58.6	56.3	57.5
15 Odessa Street	CF48 3AU	Dwelling	48.1	49.6	48.7	49.8	37.3	38.6	37.8	38.8
16 Odessa Street	CF48 3AU	Dwelling	48.4	49.8	49.0	50.0	37.6	38.8	38.0	39.0
17 Odessa Street	CF48 3AU	Dwelling	47.8	49.2	48.3	49.4	37.0	38.2	37.5	38.4
18 Odessa Street	CF48 3AU	Dwelling	48.0	49.3	48.5	49.6	37.2	38.4	37.7	38.6
19 Odessa Street	CF48 3AU	Dwelling	47.4	48.9	48.0	49.1	36.7	38.0	37.2	38.1
20 Odessa Street	CF48 3AU	Dwelling	48.2	49.7	48.7	49.8	37.3	38.7	37.8	38.8
21 Odessa Street	CF48 3AU	Dwelling	51.7	53.2	52.2	53.3	40.5	41.9	41.0	41.9
22 Odessa Street	CF48 3AU	Dwelling	48.1	49.6	48.6	49.7	37.3	38.6	37.7	38.7
23 Odessa Street	CF48 3AU	Dwelling	47.7	49.2	48.2	49.3	36.9	38.2	37.4	38.3
24 Odessa Street	CF48 3AU	Dwelling	50.9	52.4	51.4	52.5	39.8	41.1	40.3	41.2
25 Odessa Street	CF48 3AU	Dwelling	69.5	72.2	69.6	71.0	56.6	59.0	56.7	57.9
26 Odessa Street	CF48 3AU	Dwelling	69.1	71.8	69.2	70.6	56.2	58.6	56.3	57.5
27 Odessa Street	CF48 3AU	Dwelling	48.2	49.6	48.6	49.7	37.4	38.6	37.7	38.7
28 Odessa Street	CF48 3AU	Dwelling	69.5	72.2	69.6	71.0	56.6	58.9	56.7	57.8
29 Odessa Street	CF48 3AU	Dwelling	71.4	72.7	71.2	72.5	58.2	59.4	58.1	59.2
Lansdown Morlais Street	CF48 3AY	Dwelling	67.6	70.3	68.0	69.2	54.8	57.3	55.2	56.2
1 Morlais Street	CF48 3AY	Dwelling	70.6	73.4	70.8	72.1	57.6	60.0	57.7	58.9
Penybryn 2 Morlais Street	CF48 3AY	Dwelling	70.6	73.3	70.7	72.1	57.5	60.0	57.6	58.9
3 Morlais Street	CF48 3AY	Dwelling	70.7	73.5	70.8	72.2	57.6	60.1	57.7	58.9
4 Morlais Street	CF48 3AY	Dwelling	70.8	73.5	70.9	72.3	57.7	60.1	57.8	59.0
5 Morlais Street	CF48 3AY	Dwelling	70.8	73.5	70.9	72.3	57.7	60.2	57.8	59.0
6 Morlais Street	CF48 3AY	Dwelling	70.8	73.5	70.9	72.2	57.7	60.1	57.8	59.0
7 Morlais Street	CF48 3AY	Dwelling	70.4	73.1	70.5	71.9	57.4	59.8	57.4	58.6
8 Morlais Street	CF48 3AY	Dwelling	70.1	72.9	70.3	71.6	57.1	59.6	57.2	58.4
9 Morlais Street	CF48 3AY	Dwelling	70.9	73.6	71.0	72.3	57.8	60.2	57.9	59.1
10 Morlais Street	CF48 3AY	Dwelling	70.6	73.3	70.7	72.1	57.5	60.0	57.7	58.8
13 Morlais Street	CF48 3AY	Dwelling	71.1	73.8	71.4	72.6	58.0	60.4	58.3	59.3
Morlais House Flat 2 Morlais House 15 Flat 2 Morlais Street	CF48 3AY	Dwelling	70.3	73.0	70.4	71.8	57.3	59.7	57.4	58.6
16 Morlais Street	CF48 3AY	Dwelling	70.7	73.4	70.8	72.2	57.6	60.1	57.7	58.9
17 Morlais Street	CF48 3AY	Dwelling	70.9	73.7	71.0	72.4	57.8	60.3	57.9	59.1
18 Morlais Street	CF48 3AY	Dwelling	70.9	73.6	71.0	72.4	57.8	60.2	57.9	59.1
19 Morlais Street	CF48 3AY	Dwelling	70.8	73.6	71.0	72.3	57.7	60.2	57.8	59.0
1A Regent Street	CF48 3BA	Dwelling	68.5	72.3	70.5	70.7	55.7	59.0	57.5	57.6
1 Regent Street	CF48 3BA	Dwelling	68.6	72.4	70.6	70.8	55.8	59.1	57.6	57.7
2 Regent Street	CF48 3BA	Dwelling	68.6	72.3	70.5	70.7	55.7	59.1	57.5	57.6
3 Regent Street	CF48 3BA	Dwelling	68.6	72.3	70.6	70.7	55.8	59.1	57.5	57.6
4 Regent Street	CF48 3BA	Dwelling	68.8	72.5	70.6	70.8	55.9	59.3	57.5	57.7
5 Regent Street	CF48 3BA	Dwelling	58.2	61.3	60.3	60.5	46.3	49.2	48.3	48.5
6 Regent Street	CF48 3BA	Dwelling	68.3	72.2	70.2	70.4	55.5	58.9	57.1	57.3
7 Regent Street	CF48 3BA	Dwelling	68.7	72.4	70.4	70.6	55.8	59.1	57.3	57.5
8 Regent Street	CF48 3BA	Dwelling	68.7	72.5	70.5	70.7	55.9	59.2	57.4	57.6
9 Regent Street	CF48 3BA	Dwelling	68.7	72.5	70.5	70.7	55.8	59.3	57.4	57.6
10 Regent Street	CF48 3BA	Dwelling	68.2	72.1	70.1	70.3	55.4	58.8	57.1	57.2
11 Regent Street	CF48 3BA	Dwelling	57.4	60.3	59.4	59.6	45.6	48.3	47.4	47.6
12 Regent Street	CF48 3BA	Dwelling	68.3	72.0	70.2	70.5	55.5	58.8	57.2	57.4
14 Regent Street	CF48 3BA	Dwelling	66.0	69.6	67.6	67.9	53.4	56.6	54.8	55.1
15 Regent Street	CF48 3BA	Dwelling	68.8	72.5	70.5	70.7	55.9	59.2	57.4	57.6
16 Regent Street	CF48 3BA	Dwelling	68.9	72.6	70.6	70.8	56.0	59.3	57.5	57.7
17 Regent Street	CF48 3BA	Dwelling	69.0	72.6	70.6	70.7	56.1	59.3	57.5	57.6
18 Regent Street	CF48 3BA	Dwelling	69.1	72.7	70.7	70.9	56.1	59.4	57.6	57.8
19 Regent Street	CF48 3BA	Dwelling	64.1	67.7	66.0	66.2	51.7	54.9	53.4	53.6
20 Regent Street	CF48 3BA	Dwelling	65.3	69.0	67.1	67.3	52.8	56.1	54.4	54.5
21 Regent Street	CF48 3BA	Dwelling	68.9	72.6	70.7	70.9	56.0	59.3	57.6	57.8
22 Regent Street	CF48 3BA	Dwelling	68.9	72.6	70.7	70.9	56.0	59.3	57.6	57.8
23 Regent Street	CF48 3BA	Dwelling	68.8	72.5	70.7	70.8	55.9	59.2	57.6	57.7
25 Regent Street	CF48 3BA	Dwelling	68.8	72.4	70.6	70.8	55.9	59.2	57.5	57.7
26 Regent Street	CF48 3BA	Dwelling	68.6	72.2	70.4	70.6	55.7	59.0	57.4	57.5
27 Regent Street	CF48 3BA	Dwelling	65.2	68.8	67.4	67.6	52.7	55.9	54.6	54.8
1 Thomas Terrace	CF48 3BB	Dwelling	52.7	53.8	52.5	53.2	41.4	42.4	41.2	41.8
2 Thomas Terrace	CF48 3BB	Dwelling	50.0	52.0	50.6	51.5	39.0	40.7	39.5	40.3
28A Balaclava Road	CF48 3BS	Dwelling	65.9	69.6	68.6	68.8	53.3	56.6	55.8	55.9
Brynawel Brynawel Balaclava Road	CF48 3BS	Dwelling	65.4	68.8	67.5	67.6	52.9	55.9	54.8	54.9
Tal Y Bryn Tal-Y-Bryn Balaclava Road	CF48 3BS	Dwelling	51.0	52.8	52.0	52.5	39.8	41.5	40.8	41.2
Uplands Uplands Balaclava Road	CF48 3BS	Dwelling	49.6	51.2	50.4	51.0	38.7	40.0	39.4	39.9
24 Balaclava Road	CF48 3BS	Dwelling	50.2	52.4	51.5	51.8	39.1	41.1	40.3	40.6
25 Balaclava Road	CF48 3BS	Dwelling	50.0	52.2	51.2	51.6	39.0	41.0	40.1	40.4
26 Balaclava Road	CF48 3BS	Dwelling	48.0	50.1	49.2	49.7	37.2	39.1	38.3	38.7
27 Balaclava Road	CF48 3BS	Dwelling	53.8	56.6	55.5	55.7	42.4	44.9	44.0	44.1
28 Balaclava Road	CF48 3BS	Dwelling	62.1	65.6	63.9	64.1	49.8	53.0	51.5	51.6
29 Balaclava Road	CF48 3BS	Dwelling	64.6	68.2	66.3	66.5	52.1	55.4	53.6	53.8
30 Balaclava Road	CF48 3BS	Dwelling	57.0	60.7	58.8	59.0	45.3	48.6	46.9	47.0
31 Balaclava Road	CF48 3BS	Dwelling	57.3	61.0	59.1	59.3	45.5	48.9	47.2	47.3
32 Balaclava Road	CF48 3BS	Dwelling	56.6	60.3	58.4	58.6	44.9	48.3	46.5	46.7
33 Balaclava Road	CF48 3BS	Dwelling	64.2	67.9	65.9	66.1	51.7	55.1	53.3	53.5
34 Balaclava Road	CF48 3BS	Dwelling	64.1	67.8	65.9	66.1	51.7	55.0	53.3	53.4
35 Balaclava Road	CF48 3BS	Dwelling	64.0	67.7	65.7	65.9	51.6	54.9	53.2	53.3
36 Balaclava Road	CF48 3BS	Dwelling	63.9	67.6	65.6	65.8	51.5	54.8	53.1	53.2
37 Balaclava Road	CF48 3BS	Dwelling	63.9	67.6	65.7	65.8	51.5	54.8	53.1	53.2
38 Balaclava Road	CF48 3BS	Dwelling	63.9	67.6	65.6	65.8	51.5	54.8	53.1	53.2
39 Balaclava Road	CF48 3BS	Dwelling	63.9	67.6	65.6	65.8	51.5	54.8	53.1	53.2
40 Balaclava Road	CF48 3BS	Dwelling	63.9	67.5	65.6	65.8	51.5	54.8	53.0	53.2
41 Balaclava Road	CF48 3BS	Dwelling	57.8	61.5	59.6	59.8	46.0	49.4	47.6	47.8
42 Balaclava Road	CF48 3BS	Dwelling	63.8	67.5	65.6	65.8	51.4	54.7	53.0	53.2
44 Balaclava Road	CF48 3BS	Dwelling	61.7	65.3	63.4	63.6	49.5	52.7	51.1	51.2
45 Balaclava Road	CF48 3BS	Dwelling	62.9	66.3	64.4	64.6	50.6	53.7	52.0	52.1
46 Balaclava Road	CF48 3BS	Dwelling	62.3	65.6	63.9	64.0	50.1	53.0	51.5	51.5
2 Caradoc Place	CF48 3GH	Dwelling	52.4	52.7	53.6	54.3	41.2	41.4	42.2	42.9
3 Caradoc Place	CF48 3GH	Dwelling	52.7	52.9	53.8	54.5	41.4	41.6	42.4	43.0
Caeharris House Caeharris House High Street	CF48 3HA	Dwelling	53.1	53.4	53.1	53.6	41.8	42.0	41.8	42.2
Engine House Engine House High Street	CF48 3HA	OSR	51.6	52.1	51.7	52.4	40.5	40.9	40.5	41.1
Guest Memorial Sports & Social Club High Street	CF48 3HA	Dwelling	47.0	47.4	47.5	48.2	36.3	36.7	36.7	37.3

Address	Postcode	Type	Daytime Noise Level				Night-time Noise Level			
			$L_{A10,18\ hour}$				$L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
High Street	CF48 3HA	Dwelling	53.7	54.0	53.8	54.4	42.3	42.6	42.4	42.9
Hillside High Street	CF48 3HA	Dwelling	53.6	54.0	53.8	54.4	42.2	42.6	42.4	42.9
Ty Ar Y Bryn High Street	CF48 3HA	Dwelling	52.3	52.5	52.4	52.8	41.1	41.2	41.1	41.5
165 High Street	CF48 3HA	Dwelling	53.9	54.2	53.9	54.4	42.5	42.8	42.5	43.0
167 High Street	CF48 3HA	Dwelling	53.7	54.0	53.8	54.4	42.3	42.6	42.4	42.9
91A High Street Caeharris	CF48 3HB	Dwelling	52.9	53.3	53.0	53.6	41.6	41.9	41.7	42.2
Antelope Hotel High Street Caeharris	CF48 3HB	Dwelling	53.1	53.5	53.4	54.0	41.8	42.2	42.0	42.6
Dowlais Primary School - Junior Department High Street Caeharris	CF48 3HB	OSR	47.3	47.7	48.0	48.8	36.6	36.9	37.2	37.9
First Floor Flat High Street Caeharris	CF48 3HB	Dwelling	52.4	52.8	52.6	53.3	41.2	41.5	41.4	41.9
Flat 1 High Street Caeharris	CF48 3HB	Dwelling	72.0	72.1	71.9	72.2	58.8	58.9	58.7	59.0
Flat 4 High Street Caeharris	CF48 3HB	Dwelling	52.5	52.8	52.8	53.4	41.2	41.5	41.5	42.1
Flat Above 88 Flat 1 High Street Caeharris	CF48 3HB	Dwelling	52.7	53.1	52.8	53.4	41.4	41.8	41.5	42.0
Gwernllwyn School House Gwernllwyn School House High Street Caeharris	CF48 3HB	Dwelling	55.5	55.6	55.5	55.9	43.9	44.0	43.9	44.3
High Street Caeharris	CF48 3HB	Dwelling	54.8	54.9	54.8	55.4	43.3	43.4	43.3	43.8
Ynys Dawel Ynys Dawel High Street Caeharris	CF48 3HB	Dwelling	48.7	49.1	49.5	50.2	37.9	38.1	38.5	39.1
3 High Street Caeharris	CF48 3HB	Dwelling	50.6	50.8	51.0	51.6	39.5	39.7	39.9	40.4
4 High Street Caeharris	CF48 3HB	Dwelling	49.8	50.1	50.3	51.0	38.8	39.1	39.3	39.9
6 High Street Caeharris	CF48 3HB	Dwelling	49.5	49.8	49.8	50.5	38.6	38.8	38.8	39.4
7 High Street Caeharris	CF48 3HB	Dwelling	50.2	50.4	50.5	51.2	39.1	39.4	39.5	40.0
8 High Street Caeharris	CF48 3HB	Dwelling	49.3	49.5	49.8	50.4	38.3	38.5	38.8	39.4
9 High Street Caeharris	CF48 3HB	Dwelling	49.7	50.0	50.1	50.8	38.8	39.0	39.1	39.7
13 High Street Caeharris	CF48 3HB	Dwelling	72.0	72.1	71.9	72.2	58.8	58.9	58.7	59.0
85 High Street Caeharris	CF48 3HB	Dwelling	71.8	71.9	71.7	72.0	58.6	58.7	58.6	58.8
87 High Street Caeharris	CF48 3HB	Dwelling	52.8	53.1	52.9	53.5	41.5	41.8	41.6	42.1
88 High Street Caeharris	CF48 3HB	Dwelling	52.7	53.1	52.8	53.4	41.4	41.8	41.5	42.0
90 High Street Caeharris	CF48 3HB	Dwelling	52.6	52.9	52.6	53.2	41.3	41.6	41.4	41.9
92 High Street Caeharris	CF48 3HB	Dwelling	53.3	53.6	53.4	53.9	41.9	42.3	42.0	42.5
93 High Street Caeharris	CF48 3HB	Dwelling	54.8	55.0	54.8	55.3	43.3	43.5	43.3	43.8
1 Azalea Park	CF48 3HD	Dwelling	58.1	58.2	58.1	58.4	46.3	46.4	46.3	46.5
2 Azalea Park	CF48 3HD	Dwelling	57.8	57.9	57.8	58.2	46.0	46.1	46.0	46.3
3 Azalea Park	CF48 3HD	Dwelling	49.0	49.4	49.2	49.8	38.1	38.4	38.3	38.8
4 Azalea Park	CF48 3HD	Dwelling	61.3	61.4	61.2	61.5	49.2	49.2	49.1	49.3
5 Azalea Park	CF48 3HD	Dwelling	52.0	52.4	52.2	52.9	40.8	41.1	41.0	41.6
6 Azalea Park	CF48 3HD	Dwelling	52.2	52.6	52.3	52.9	41.0	41.3	41.1	41.6
7 Azalea Park	CF48 3HD	Dwelling	48.5	49.0	48.6	49.3	37.7	38.1	37.7	38.3
8 Azalea Park	CF48 3HD	Dwelling	46.1	46.3	46.4	47.0	35.5	35.7	35.8	36.2
9 Azalea Park	CF48 3HD	Dwelling	52.3	52.8	52.4	53.1	41.1	41.5	41.2	41.7
10 Azalea Park	CF48 3HD	Dwelling	50.6	50.9	50.7	51.3	39.5	39.8	39.6	40.1
11 Azalea Park	CF48 3HD	Dwelling	52.5	53.0	52.6	53.2	41.2	41.6	41.3	41.9
12 Azalea Park	CF48 3HD	Dwelling	50.1	50.5	50.4	51.0	39.1	39.4	39.3	39.9
13 Azalea Park	CF48 3HD	Dwelling	52.2	52.7	52.3	53.0	41.0	41.4	41.1	41.7
14 Azalea Park	CF48 3HD	Dwelling	50.2	50.6	50.6	51.3	39.2	39.5	39.5	40.1
16 Azalea Park	CF48 3HD	Dwelling	50.5	51.0	50.8	51.5	39.5	39.9	39.7	40.3
18 Azalea Park	CF48 3HD	Dwelling	53.1	53.6	53.2	53.8	41.8	42.2	41.9	42.4
20 Azalea Park	CF48 3HD	Dwelling	52.4	52.9	52.5	53.2	41.2	41.6	41.3	41.8
22 Azalea Park	CF48 3HD	Dwelling	52.0	52.3	52.2	52.8	40.8	41.1	41.0	41.5
24 Azalea Park	CF48 3HD	Dwelling	50.8	51.3	51.2	51.9	39.7	40.1	40.1	40.7
26 Azalea Park	CF48 3HD	Dwelling	47.5	47.8	48.1	48.8	36.8	37.0	37.3	37.9
28 Azalea Park	CF48 3HD	Dwelling	52.8	53.3	53.1	53.8	41.5	41.9	41.7	42.4
1 Dennithorne Close	CF48 3HE	Dwelling	50.9	51.2	51.5	52.2	39.8	40.1	40.3	40.9
2 Dennithorne Close	CF48 3HE	Dwelling	48.3	48.5	49.1	49.8	37.4	37.7	38.1	38.8
3 Dennithorne Close	CF48 3HE	Dwelling	51.9	52.2	52.4	53.1	40.7	41.0	41.2	41.8
4 Dennithorne Close	CF48 3HE	Dwelling	47.4	47.7	48.2	48.9	36.7	36.9	37.4	38.0
5 Dennithorne Close	CF48 3HE	Dwelling	53.4	53.7	53.7	54.3	42.0	42.3	42.3	42.8
6 Dennithorne Close	CF48 3HE	Dwelling	52.6	52.9	52.9	53.6	41.3	41.6	41.6	42.2
7 Dennithorne Close	CF48 3HE	Dwelling	51.2	51.6	51.7	52.4	40.1	40.4	40.5	41.1
8 Dennithorne Close	CF48 3HE	Dwelling	52.4	52.8	52.6	53.3	41.1	41.5	41.3	41.9
9 Dennithorne Close	CF48 3HE	Dwelling	49.9	50.2	50.4	51.1	38.9	39.2	39.3	39.9
10 Dennithorne Close	CF48 3HE	Dwelling	52.8	53.2	53.1	53.8	41.5	41.9	41.7	42.4
11 Dennithorne Close	CF48 3HE	Dwelling	49.9	50.3	50.4	51.0	38.9	39.2	39.3	39.9
12 Dennithorne Close	CF48 3HE	Dwelling	50.1	50.4	50.6	51.2	39.1	39.4	39.5	40.1
13 Dennithorne Close	CF48 3HE	Dwelling	52.4	52.9	52.8	53.4	41.2	41.6	41.5	42.1
14 Dennithorne Close	CF48 3HE	Dwelling	49.5	49.9	50.1	50.8	38.5	38.9	39.1	39.7
15 Dennithorne Close	CF48 3HE	Dwelling	52.8	53.3	53.1	53.8	41.5	41.9	41.7	42.4
16 Dennithorne Close	CF48 3HE	Dwelling	47.2	47.4	47.6	48.2	36.4	36.6	36.8	37.3
17 Dennithorne Close	CF48 3HE	Dwelling	50.3	50.8	50.7	51.4	39.3	39.7	39.6	40.2
18 Dennithorne Close	CF48 3HE	Dwelling	46.5	46.7	46.7	47.3	35.8	36.0	36.0	36.5
19 Dennithorne Close	CF48 3HE	Dwelling	52.9	53.4	53.2	53.9	41.6	42.1	41.8	42.5
20 Dennithorne Close	CF48 3HE	Dwelling	49.6	50.0	50.1	50.8	38.6	39.0	39.1	39.7
21 Dennithorne Close	CF48 3HE	Dwelling	53.1	53.7	53.4	54.1	41.8	42.3	42.0	42.7
22 Dennithorne Close	CF48 3HE	Dwelling	46.4	46.7	47.2	47.9	35.8	36.0	36.5	37.1
23 Dennithorne Close	CF48 3HE	Dwelling	53.6	54.1	53.8	54.5	42.2	42.7	42.4	43.0
24 Dennithorne Close	CF48 3HE	Dwelling	51.9	52.3	52.3	52.9	40.7	41.1	41.0	41.6
25 Dennithorne Close	CF48 3HE	Dwelling	48.8	49.2	49.4	50.2	37.9	38.3	38.5	39.1
26 Dennithorne Close	CF48 3HE	Dwelling	52.7	53.2	52.9	53.6	41.4	41.8	41.6	42.2
27 Dennithorne Close	CF48 3HE	Dwelling	48.0	48.5	48.6	49.4	37.2	37.6	37.7	38.4
28 Dennithorne Close	CF48 3HE	Dwelling	52.4	52.8	52.5	53.1	41.1	41.5	41.2	41.8
29 Dennithorne Close	CF48 3HE	Dwelling	50.1	50.6	50.6	51.4	39.1	39.5	39.6	40.2
30 Dennithorne Close	CF48 3HE	Dwelling	51.4	51.8	51.7	52.3	40.3	40.6	40.5	41.0
32 Dennithorne Close	CF48 3HE	Dwelling	52.1	52.5	52.2	52.8	40.9	41.2	41.0	41.5
34 Dennithorne Close	CF48 3HE	Dwelling	51.8	52.4	52.0	52.7	40.6	41.1	40.8	41.4
36 Dennithorne Close	CF48 3HE	Dwelling	47.8	48.3	48.3	49.0	37.0	37.4	37.4	38.1
38 Dennithorne Close	CF48 3HE	Dwelling	49.9	50.4	50.3	51.0	38.9	39.3	39.2	39.9
40 Dennithorne Close	CF48 3HE	Dwelling	48.5	49.0	48.8	49.6	37.7	38.1	37.9	38.6
42 Dennithorne Close	CF48 3HE	Dwelling	48.6	49.1	49.1	49.8	37.7	38.2	38.1	38.8
44 Dennithorne Close	CF48 3HE	Dwelling	47.9	48.3	48.4	49.1	37.1	37.5	37.5	38.2
46 Dennithorne Close	CF48 3HE	Dwelling	49.8	50.3	50.3	51.1	38.8	39.2	39.3	39.9
48 Dennithorne Close	CF48 3HE	Dwelling	47.0	47.3	47.7	48.4	36.3	36.6	36.9	37.5
50 Dennithorne Close	CF48 3HE	Dwelling	47.0	47.4	47.8	48.6	36.3	36.6	37.0	37.7
52 Dennithorne Close	CF48 3HE	Dwelling	47.0	47.4	47.8	48.6	36.3	36.6	37.0	37.7
1 Calluna Close	CF48 3HF	Dwelling	51.5	51.9	52.1	52.8	40.3	40.7	40.8	41.5
2 Calluna Close	CF48 3HF	Dwelling	49.1	49.4	49.7	50.4	38.2	38.4	38.7	39.3
3 Calluna Close	CF48 3HF	Dwelling	48.3	48.6	49.0	49.7	37.4	37.7	38.1	38.7
4 Calluna Close	CF48 3HF	Dwelling	48.9	49.3	49.6	50.3	38.0	38.4	38.6	39.2
5 Calluna Close	CF48 3HF	Dwelling	48.5	48.8	49.3	50.0	37.6	37.9	38.3	39.0
6 Calluna Close	CF48 3HF	Dwelling	47.1	47.5	48.0	48.7	36.4	36.7	37.2	37.8
7 Calluna Close	CF48 3HF	Dwelling	51.1	51.5	51.8	52.5	40.0	40.4	40.6	41.2
8 Calluna Close	CF48 3HF	Dwelling	48.0	48.4	48.8	49.6	37.2	37.5	37.9	38.6
9 Calluna Close	CF48 3HF	Dwelling	49.8	50.1	50.7	51.4	38.8	39.1	39.6	40.2
10 Calluna Close	CF48 3HF	Dwelling	46.4	46.9	47.4	48.2	35.8	36.2	36.6	37.3
11 Calluna Close	CF48 3HF	Dwelling	46.6	46.9	47.7	48.4	35.9	36.2	37.0	37.6
12 Calluna Close	CF48 3HF	Dwelling	46.6	47.0	47.7	48.4	35.9	36.3	36.9	37.6
13 Calluna Close	CF48 3HF	Dwelling	46.3	46.6	47.4	48.1	35.6	35.9	36.7	37.2
14 Calluna Close	CF48 3HF	Dwelling	45.7	46.2	46.8	47.6	35.1	35.5	36.1	36.8
15 Calluna Close	CF48 3HF	Dwelling	47.5	47.8	48.6	49.3	36.7	37.0	37.7	38.4
16 Calluna Close	CF48 3HF	Dwelling	47.2	47.7	48.2	49.0	36.5	36.9	37.3	38.0
17 Calluna Close	CF48 3HF	Dwelling	47.8	48.2	49.0	49.8	37.0	37.4	38.1	38.8

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
18 Calluna Close	CF48 3HF	Dwelling	47.5	48.0	48.4	49.2	36.7	37.2	37.5	38.2
19 Calluna Close	CF48 3HF	Dwelling	51.2	51.7	51.7	52.5	40.1	40.5	40.5	41.2
20 Calluna Close	CF48 3HF	Dwelling	47.3	47.7	48.3	49.1	36.6	37.0	37.4	38.1
21 Calluna Close	CF48 3HF	Dwelling	51.9	52.4	52.4	53.2	40.7	41.1	41.2	41.8
22 Calluna Close	CF48 3HF	Dwelling	45.0	45.3	45.5	46.2	34.5	34.8	34.9	35.5
23 Calluna Close	CF48 3HF	Dwelling	51.4	51.9	51.8	52.5	40.2	40.7	40.6	41.3
24 Calluna Close	CF48 3HF	Dwelling	46.3	46.7	47.3	48.1	35.7	36.0	36.6	37.3
25 Calluna Close	CF48 3HF	Dwelling	51.2	51.7	51.6	52.4	40.1	40.5	40.4	41.1
26 Calluna Close	CF48 3HF	Dwelling	46.9	47.4	48.0	48.8	36.2	36.6	37.2	37.9
27 Calluna Close	CF48 3HF	Dwelling	47.6	48.1	48.8	49.6	36.9	37.3	37.9	38.6
28 Calluna Close	CF48 3HF	Dwelling	47.7	48.1	48.5	49.3	36.9	37.3	37.7	38.4
29 Calluna Close	CF48 3HF	Dwelling	48.1	48.5	49.2	50.0	37.2	37.6	38.3	39.0
30 Calluna Close	CF48 3HF	Dwelling	50.2	50.7	50.9	51.7	39.2	39.6	39.8	40.5
31 Calluna Close	CF48 3HF	Dwelling	44.7	45.1	45.6	46.3	34.2	34.6	35.0	35.7
32 Calluna Close	CF48 3HF	Dwelling	46.4	46.9	47.5	48.3	35.8	36.1	36.7	37.5
33 Calluna Close	CF48 3HF	Dwelling	47.6	48.1	48.6	49.4	36.8	37.2	37.7	38.4
1 Japonica Drive	CF48 3HG	Dwelling	47.9	48.3	48.6	49.3	37.1	37.5	37.7	38.3
2 Japonica Drive	CF48 3HG	Dwelling	48.6	48.9	49.1	49.9	37.7	38.0	38.2	38.9
3 Japonica Drive	CF48 3HG	Dwelling	48.8	49.2	49.3	50.1	37.9	38.3	38.4	39.0
4 Japonica Drive	CF48 3HG	Dwelling	48.7	49.1	49.5	50.2	37.8	38.1	38.5	39.2
5 Japonica Drive	CF48 3HG	Dwelling	48.6	49.0	49.1	49.8	37.7	38.1	38.1	38.8
6 Japonica Drive	CF48 3HG	Dwelling	48.4	48.8	49.2	50.0	37.5	37.9	38.3	38.9
7 Japonica Drive	CF48 3HG	Dwelling	49.2	49.7	49.8	50.5	38.3	38.7	38.8	39.4
8 Japonica Drive	CF48 3HG	Dwelling	47.3	47.8	48.1	48.8	36.6	37.0	37.2	37.9
9 Japonica Drive	CF48 3HG	Dwelling	48.8	49.2	49.4	50.1	37.9	38.3	38.4	39.1
10 Japonica Drive	CF48 3HG	Dwelling	48.5	48.9	48.8	49.5	37.6	38.0	37.9	38.5
11 Japonica Drive	CF48 3HG	Dwelling	49.9	50.4	50.5	51.3	38.9	39.4	39.5	40.1
12 Japonica Drive	CF48 3HG	Dwelling	45.5	45.9	46.1	46.8	35.0	35.3	35.5	36.1
13 Japonica Drive	CF48 3HG	Dwelling	49.9	50.4	50.6	51.4	38.9	39.3	39.6	40.2
14 Japonica Drive	CF48 3HG	Dwelling	48.5	49.0	48.9	49.6	37.7	38.1	38.0	38.6
15 Japonica Drive	CF48 3HG	Dwelling	47.0	47.4	47.8	48.6	36.3	36.7	37.0	37.7
16 Japonica Drive	CF48 3HG	Dwelling	47.2	47.6	48.0	48.8	36.5	36.8	37.2	37.9
18A Market Street	CF48 3HL	Dwelling	43.5	43.8	44.1	44.9	33.1	33.4	33.7	34.3
19A Market Street	CF48 3HL	Dwelling	43.6	44.0	44.3	45.1	33.2	33.6	33.9	34.5
22A Market Street	CF48 3HL	Dwelling	46.9	47.5	47.3	48.0	36.2	36.7	36.5	37.2
Flat At Market Street	CF48 3HL	Dwelling	46.6	47.1	47.7	48.6	35.9	36.4	36.9	37.7
16 Market Street	CF48 3HL	Dwelling	44.7	45.2	45.6	46.4	34.2	34.7	35.0	35.7
17 Market Street	CF48 3HL	Dwelling	44.6	45.1	45.2	46.1	34.1	34.6	34.7	35.4
18 Market Street	CF48 3HL	Dwelling	45.7	46.1	46.3	47.2	35.1	35.5	35.7	36.4
19 Market Street	CF48 3HL	Dwelling	44.8	45.2	45.8	46.6	34.3	34.7	35.2	35.9
20 Market Street	CF48 3HL	Dwelling	49.1	49.4	49.4	49.9	38.2	38.4	38.4	38.9
23 Market Street	CF48 3HL	Dwelling	50.3	50.5	50.5	51.0	39.3	39.5	39.4	39.9
24 Market Street	CF48 3HL	Dwelling	54.3	54.5	54.4	54.8	42.9	43.0	42.9	43.3
25 Market Street	CF48 3HL	Dwelling	52.7	52.9	52.8	53.2	41.4	41.6	41.5	41.8
26 Market Street	CF48 3HL	Dwelling	55.2	55.4	55.2	55.6	43.7	43.8	43.7	44.0
27 Market Street	CF48 3HL	Dwelling	48.4	48.6	48.4	49.0	37.5	37.8	37.6	38.0
28 Market Street	CF48 3HL	Dwelling	47.3	47.6	47.5	48.1	36.5	36.8	36.8	37.3
29 Market Street	CF48 3HL	Dwelling	56.1	56.3	56.1	56.4	44.5	44.6	44.5	44.8
30 Market Street	CF48 3HL	Dwelling	49.1	49.3	49.2	49.7	38.2	38.3	38.3	38.7
31 Market Street	CF48 3HL	Dwelling	57.0	57.1	56.9	57.3	45.3	45.4	45.2	45.5
32 Market Street	CF48 3HL	Dwelling	52.9	53.0	52.9	53.3	41.6	41.7	41.6	41.9
33 Market Street	CF48 3HL	Dwelling	57.8	58.0	57.8	58.1	46.0	46.1	46.0	46.2
34 Market Street	CF48 3HL	Dwelling	69.6	69.7	69.5	69.7	56.6	56.7	56.5	56.7
Dowlais Primary School Nursery And Infants Department Market Street	CF48 3HW	OSR	46.4	46.8	46.9	47.6	35.8	36.1	36.2	36.8
School Bungalow School Bungalow Market Street	CF48 3HW	Dwelling	47.7	48.0	48.0	48.7	36.9	37.2	37.2	37.8
Maes Y Ffynon 1 East Street	CF48 3LA	Dwelling	51.8	52.4	51.9	52.5	40.6	41.1	40.7	41.2
Maes Y Ffynon 2 East Street	CF48 3LA	Dwelling	47.6	48.0	48.0	48.7	36.8	37.2	37.2	37.8
Maes Y Ffynon 3 East Street	CF48 3LA	Dwelling	47.6	48.0	47.7	48.3	36.8	37.2	36.9	37.4
Maes Y Ffynon 4 East Street	CF48 3LA	Dwelling	48.8	49.2	49.1	49.6	37.9	38.2	38.2	38.7
Maes Y Ffynon 5 East Street	CF48 3LA	Dwelling	47.9	48.3	48.1	48.7	37.1	37.5	37.3	37.8
Maes Y Ffynon 6 East Street	CF48 3LA	Dwelling	50.8	51.2	50.9	51.4	39.7	40.0	39.8	40.2
Maes Y Ffynon 7 East Street	CF48 3LA	Dwelling	52.6	52.8	52.7	53.1	41.4	41.5	41.4	41.8
Maes Y Ffynon 8 East Street	CF48 3LA	Dwelling	49.3	49.5	49.4	49.9	38.3	38.5	38.4	38.9
Maes Y Ffynon 9 East Street	CF48 3LA	Dwelling	55.5	55.7	55.5	55.9	44.0	44.2	43.9	44.3
Maes Y Ffynon 10 East Street	CF48 3LA	Dwelling	55.9	56.1	55.9	56.2	44.3	44.5	44.2	44.6
Maes Y Ffynon 11 East Street	CF48 3LA	Dwelling	45.7	46.1	46.0	46.6	35.1	35.5	35.4	35.9
Maes Y Ffynon 12 East Street	CF48 3LA	Dwelling	57.6	57.8	57.6	57.9	45.8	46.0	45.8	46.1
Maes Y Ffynon 13 East Street	CF48 3LA	Dwelling	46.8	47.1	47.2	47.8	36.1	36.4	36.4	37.0
Maes Y Ffynon 14 East Street	CF48 3LA	Dwelling	45.7	46.0	46.0	46.6	35.1	35.4	35.4	35.9
Maes Y Ffynon 15 East Street	CF48 3LA	Dwelling	52.3	52.7	52.4	53.0	41.1	41.4	41.2	41.7
Maes Y Ffynon 16 East Street	CF48 3LA	Dwelling	55.5	55.8	55.5	55.9	44.0	44.2	44.0	44.3
Maes Y Ffynon 17 East Street	CF48 3LA	Dwelling	57.8	58.1	57.8	58.2	46.0	46.2	46.0	46.4
17 Bryn Mair	CF48 3LB	Dwelling	59.3	60.4	59.6	60.3	47.4	48.4	47.6	48.2
18 Bryn Mair	CF48 3LB	Dwelling	47.3	48.0	47.7	48.5	36.5	37.2	36.9	37.6
19 Bryn Mair	CF48 3LB	Dwelling	48.7	49.8	49.0	49.7	37.8	38.8	38.1	38.7
20 Bryn Mair	CF48 3LB	Dwelling	47.0	47.8	47.6	48.4	36.3	37.0	36.9	37.5
21 Bryn Mair	CF48 3LB	Dwelling	49.1	50.0	49.6	50.3	38.1	39.0	38.6	39.3
22 Bryn Mair	CF48 3LB	Dwelling	50.1	51.0	50.5	51.2	39.1	39.9	39.4	40.1
23 Bryn Mair	CF48 3LB	Dwelling	48.7	49.6	49.2	49.9	37.8	38.6	38.3	38.9
24 Bryn Mair	CF48 3LB	Dwelling	47.8	48.6	48.3	49.0	37.0	37.8	37.4	38.1
25 Bryn Mair	CF48 3LB	Dwelling	48.5	49.4	49.0	49.8	37.7	38.4	38.1	38.8
26 Bryn Mair	CF48 3LB	Dwelling	48.1	48.9	48.6	49.3	37.3	38.0	37.7	38.4
27 Bryn Mair	CF48 3LB	Dwelling	47.4	48.3	47.9	48.6	36.7	37.4	37.1	37.7
28 Bryn Mair	CF48 3LB	Dwelling	48.2	48.9	48.7	49.4	37.3	38.0	37.8	38.5
29 Bryn Mair	CF48 3LB	Dwelling	53.3	53.9	53.4	54.0	41.9	42.5	42.0	42.6
30 Bryn Mair	CF48 3LB	Dwelling	53.8	54.4	53.9	54.5	42.4	43.0	42.5	43.0
31 Bryn Mair	CF48 3LB	Dwelling	54.6	55.2	54.8	55.3	43.2	43.7	43.3	43.7
32 Bryn Mair	CF48 3LB	Dwelling	56.0	56.6	56.1	56.6	44.4	44.9	44.5	44.9
33 Bryn Mair	CF48 3LB	Dwelling	46.2	46.7	46.5	47.2	35.6	36.0	35.9	36.4
34 Bryn Mair	CF48 3LB	Dwelling	48.2	48.5	48.4	48.9	37.3	37.7	37.5	38.0
35 Bryn Mair	CF48 3LB	Dwelling	46.7	47.3	47.1	47.7	36.0	36.5	36.3	36.9
36 Bryn Mair	CF48 3LB	Dwelling	45.9	46.4	46.3	46.9	35.3	35.8	35.6	36.2
37 Bryn Mair	CF48 3LB	Dwelling	46.5	47.2	47.0	47.7	35.9	36.5	36.3	36.9
38 Bryn Mair	CF48 3LB	Dwelling	46.3	46.8	46.6	47.3	35.6	36.1	36.0	36.5
Stable Yard Brynteg Brynteg Upper Union Street	CF48 3LG	Dwelling	50.0	50.5	50.5	51.3	39.0	39.4	39.4	40.1
Stable Yard Heddfan Heddfan Upper Union Street	CF48 3LG	Dwelling	46.7	47.4	47.2	48.0	36.0	36.6	36.4	37.2
Stable Yard Stable Cottage Stable Cottage Upper Union Street	CF48 3LG	Dwelling	47.5	48.2	48.3	49.1	36.8	37.3	37.4	38.2
Stable Yard Stable House Stable House Upper Union Street	CF48 3LG	Dwelling	48.8	49.3	49.1	50.0	37.9	38.4	38.2	38.9
Charlotte Gardens 1 Ivor Street	CF48 3LJ	Dwelling	47.9	48.5	48.4	49.3	37.1	37.6	37.5	38.3
Charlotte Gardens 2 Ivor Street	CF48 3LJ	Dwelling	46.5	47.1	46.8	47.7	35.8	36.4	36.1	36.9
Charlotte Gardens 3 Ivor Street	CF48 3LJ	Dwelling	51.2	51.7	51.5	52.3	40.1	40.5	40.4	41.0
Charlotte Gardens 4 Ivor Street	CF48 3LJ	Dwelling	45.2	45.8	45.7	46.5	34.6	35.2	35.1	35.9
Charlotte Gardens 5 Ivor Street	CF48 3LJ	Dwelling	50.0	50.5	50.3	51.0	39.0	39.4	39.3	39.9
Charlotte Gardens 6 Ivor Street	CF48 3LJ	Dwelling	45.9	46.6	46.5	47.4	35.3	35.9	35.8	36.6
Charlotte Gardens 7 Ivor Street	CF48 3LJ	Dwelling	46.7	47.2	47.7	48.6	36.0	36.5	36.9	37.7
Charlotte Gardens 8 Ivor Street	CF48 3LJ	Dwelling	46.0	46.5	47.2	48.0	35.4	35.8	36.4	37.2
Charlotte Gardens 9 Ivor Street	CF48 3LJ	Dwelling	46.6	47.1	47.3	48.2	35.9	36.4	36.6	37.4

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
Charlotte Gardens 10 Ivor Street	CF48 3LJ	Dwelling	49.8	50.3	50.1	50.8	38.8	39.2	39.1	39.7
All Saints Church Garden Street	CF48 3LL	OSR	45.0	45.6	45.6	46.4	34.5	35.1	35.0	35.7
The Pavilion The Pavilion Garden Street	CF48 3LL	OSR	47.6	48.1	48.0	48.9	36.8	37.2	37.2	38.0
1 Ivor Street	CF48 3LP	Dwelling	48.5	49.0	49.0	49.8	37.6	38.1	38.1	38.8
3 Ivor Street	CF48 3LP	Dwelling	49.1	49.7	49.4	50.3	38.2	38.7	38.5	39.2
5 Ivor Street	CF48 3LP	Dwelling	48.7	49.2	49.1	49.9	37.8	38.3	38.2	38.9
7 Ivor Street	CF48 3LP	Dwelling	48.9	49.5	49.5	50.4	38.0	38.5	38.6	39.3
9 Ivor Street	CF48 3LP	Dwelling	47.9	48.4	48.7	49.5	37.1	37.6	37.8	38.5
11 Ivor Street	CF48 3LP	Dwelling	50.6	51.2	51.0	51.8	39.6	40.1	39.9	40.6
13 Ivor Street	CF48 3LP	Dwelling	46.4	46.9	47.4	48.2	35.7	36.2	36.6	37.4
15 Ivor Street	CF48 3LP	Dwelling	47.8	48.4	48.5	49.3	37.0	37.5	37.6	38.3
17 Ivor Street	CF48 3LP	Dwelling	44.6	45.3	45.2	46.0	34.1	34.7	34.7	35.4
19 Ivor Street	CF48 3LP	Dwelling	45.4	46.1	45.8	46.6	34.8	35.4	35.2	35.9
21 Ivor Street	CF48 3LP	Dwelling	48.6	49.3	49.0	49.9	37.8	38.3	38.1	38.8
23 Ivor Street	CF48 3LP	Dwelling	45.2	45.9	45.7	46.5	34.7	35.3	35.1	35.8
25 Ivor Street	CF48 3LP	Dwelling	44.5	45.2	45.0	45.9	34.1	34.7	34.5	35.2
27 Ivor Street	CF48 3LP	Dwelling	48.7	49.4	49.1	49.9	37.8	38.4	38.2	38.9
29 Ivor Street	CF48 3LP	Dwelling	48.0	48.7	48.4	49.2	37.2	37.8	37.5	38.2
31 Ivor Street	CF48 3LP	Dwelling	50.2	50.8	50.7	51.5	39.2	39.7	39.6	40.3
33 Ivor Street	CF48 3LP	Dwelling	45.9	46.5	46.4	47.2	35.3	35.9	35.7	36.4
Dowlais Community Centre Boxing Club Station Road	CF48 3LU	OSR	50.8	51.5	51.3	52.2	39.7	40.3	40.1	40.9
Dowlais Community Centre Station Road	CF48 3LW	OSR	53.4	54.2	53.7	54.5	42.1	42.8	42.3	43.1
Orchard House Orchard House Gwernllwyn Road	CF48 3NA	Dwelling	46.6	47.1	47.2	48.1	35.9	36.4	36.5	37.2
The Rectory The Rectory Gwernllwyn Road	CF48 3NA	Dwelling	46.4	46.9	47.0	47.8	35.7	36.2	36.3	37.0
1A Gwernllwyn Uchaf	CF48 3NB	Dwelling	48.1	48.6	48.3	49.2	37.3	37.7	37.4	38.2
3A Gwernllwyn Uchaf	CF48 3NB	Dwelling	45.3	45.8	46.0	46.9	34.7	35.2	35.4	36.2
1 Gwernllwyn Uchaf	CF48 3NB	Dwelling	51.4	51.9	51.6	52.3	40.2	40.7	40.4	41.0
2 Gwernllwyn Uchaf	CF48 3NB	Dwelling	47.9	48.4	48.4	49.2	37.1	37.5	37.5	38.2
3 Gwernllwyn Uchaf	CF48 3NB	Dwelling	45.3	45.8	46.0	46.9	34.7	35.2	35.4	36.2
Tre-Ivor Flat 3 Lower Row	CF48 3ND	Dwelling	48.1	48.7	49.0	49.9	37.3	37.8	38.1	38.9
Lower Row	CF48 3ND	Dwelling	50.1	50.6	50.8	51.8	39.0	39.6	39.7	40.6
Lower Row	CF48 3ND	Dwelling	51.8	52.3	52.3	53.2	40.6	41.1	41.0	41.8
4 Lower Row	CF48 3ND	Dwelling	49.1	49.7	50.0	50.9	38.2	38.7	39.0	39.8
5 Lower Row	CF48 3ND	Dwelling	49.2	49.8	50.0	50.9	38.3	38.8	39.0	39.8
6 Lower Row	CF48 3ND	Dwelling	49.9	50.5	50.7	51.6	38.9	39.4	39.6	40.4
7 Lower Row	CF48 3ND	Dwelling	49.7	50.3	50.5	51.4	38.7	39.2	39.4	40.2
8 Lower Row	CF48 3ND	Dwelling	49.1	49.7	49.9	50.8	38.2	38.7	38.9	39.7
9 Lower Row	CF48 3ND	Dwelling	48.5	49.1	49.5	50.4	37.6	38.2	38.5	39.3
11 Lower Row	CF48 3ND	Dwelling	49.6	50.2	50.5	51.4	38.6	39.2	39.4	40.2
12 Lower Row	CF48 3ND	Dwelling	49.8	50.3	50.6	51.5	38.8	39.3	39.5	40.3
13 Lower Row	CF48 3ND	Dwelling	49.7	50.3	50.5	51.5	38.7	39.3	39.5	40.3
14 Lower Row	CF48 3ND	Dwelling	49.8	50.3	50.6	51.5	38.8	39.3	39.5	40.3
15 Lower Row	CF48 3ND	Dwelling	50.1	50.7	50.9	51.9	39.1	39.6	39.8	40.7
16 Lower Row	CF48 3ND	Dwelling	50.1	50.6	50.8	51.8	39.0	39.6	39.7	40.6
17 Lower Row	CF48 3ND	Dwelling	50.5	51.1	51.2	52.1	39.4	39.9	40.1	40.9
18 Lower Row	CF48 3ND	Dwelling	50.3	50.9	51.1	52.0	39.2	39.7	39.9	40.8
19 Lower Row	CF48 3ND	Dwelling	50.1	50.7	50.8	51.8	39.1	39.6	39.7	40.6
20 Lower Row	CF48 3ND	Dwelling	49.9	50.4	50.7	51.7	38.9	39.4	39.6	40.5
21 Lower Row	CF48 3ND	Dwelling	49.9	50.5	50.8	51.7	38.9	39.4	39.7	40.5
22 Lower Row	CF48 3ND	Dwelling	49.2	49.8	50.0	50.9	38.2	38.8	38.9	39.8
23 Lower Row	CF48 3ND	Dwelling	49.5	50.1	50.5	51.4	38.6	39.1	39.4	40.3
24 Lower Row	CF48 3ND	Dwelling	49.3	49.9	50.3	51.2	38.4	38.9	39.2	40.1
25 Lower Row	CF48 3ND	Dwelling	49.7	50.3	50.6	51.6	38.7	39.3	39.6	40.4
26 Lower Row	CF48 3ND	Dwelling	50.2	50.8	51.2	52.1	39.2	39.7	40.0	40.9
27 Lower Row	CF48 3ND	Dwelling	49.8	50.3	50.8	51.7	38.8	39.3	39.7	40.5
29 Cross Street	CF48 3NE	Dwelling	48.6	49.2	49.4	50.4	37.7	38.2	38.5	39.3
30 Cross Street	CF48 3NE	Dwelling	48.6	49.1	49.5	50.5	37.7	38.2	38.6	39.4
31 Cross Street	CF48 3NE	Dwelling	47.6	48.2	48.6	49.6	36.8	37.4	37.8	38.6
34 Cross Street	CF48 3NE	Dwelling	48.3	49.0	49.6	50.6	37.5	38.1	38.7	39.5
35 Cross Street	CF48 3NE	Dwelling	48.3	48.9	49.6	50.5	37.4	38.0	38.6	39.5
36 Cross Street	CF48 3NE	Dwelling	46.1	46.7	47.2	48.2	35.5	36.0	36.5	37.3
45-46 Barrack Row	CF48 3NF	Dwelling	46.4	47.0	48.0	49.0	35.7	36.3	37.2	38.1
1 Barrack Row	CF48 3NF	Dwelling	52.2	52.9	53.3	54.3	41.0	41.5	42.0	42.8
2 Barrack Row	CF48 3NF	Dwelling	48.2	48.8	49.8	50.7	37.4	37.9	38.8	39.6
3 Barrack Row	CF48 3NF	Dwelling	49.5	50.2	50.9	51.8	38.6	39.2	39.8	40.6
4 Barrack Row	CF48 3NF	Dwelling	47.0	47.6	48.7	49.6	36.3	36.8	37.8	38.7
5 Barrack Row	CF48 3NF	Dwelling	47.2	47.8	49.1	50.0	36.4	37.0	38.2	39.0
6 Barrack Row	CF48 3NF	Dwelling	46.9	47.5	48.4	49.4	36.2	36.7	37.6	38.4
7 Barrack Row	CF48 3NF	Dwelling	49.2	49.9	50.7	51.6	38.3	38.9	39.6	40.5
8 Barrack Row	CF48 3NF	Dwelling	48.3	49.0	49.8	50.7	37.5	38.1	38.8	39.6
9 Barrack Row	CF48 3NF	Dwelling	48.7	49.4	50.3	51.2	37.8	38.4	39.3	40.1
10 Barrack Row	CF48 3NF	Dwelling	52.3	52.9	53.4	54.4	41.1	41.6	42.0	42.9
11 Barrack Row	CF48 3NF	Dwelling	48.9	49.6	50.3	51.2	38.0	38.6	39.2	40.1
12 Barrack Row	CF48 3NF	Dwelling	52.2	52.8	53.3	54.2	41.0	41.5	41.9	42.8
13 Barrack Row	CF48 3NF	Dwelling	48.7	49.4	50.1	51.0	37.8	38.5	39.1	39.9
14 Barrack Row	CF48 3NF	Dwelling	52.1	52.7	53.2	54.2	40.9	41.4	41.9	42.7
15 Barrack Row	CF48 3NF	Dwelling	49.1	49.8	50.5	51.4	38.2	38.8	39.4	40.2
16 Barrack Row	CF48 3NF	Dwelling	52.5	53.1	53.5	54.4	41.2	41.7	42.1	43.0
17 Barrack Row	CF48 3NF	Dwelling	49.2	49.9	50.5	51.4	38.2	38.9	39.4	40.2
18 Barrack Row	CF48 3NF	Dwelling	52.7	53.3	53.6	54.5	41.4	41.9	42.2	43.0
19 Barrack Row	CF48 3NF	Dwelling	49.2	49.8	50.4	51.3	38.2	38.8	39.4	40.2
20 Barrack Row	CF48 3NF	Dwelling	48.4	49.0	49.7	50.6	37.6	38.1	38.7	39.5
38 Barrack Row	CF48 3NF	Dwelling	52.4	53.0	53.1	54.0	41.1	41.6	41.8	42.6
39 Barrack Row	CF48 3NF	Dwelling	47.6	48.2	48.7	49.6	36.8	37.3	37.8	38.7
40 Barrack Row	CF48 3NF	Dwelling	50.4	51.0	51.6	52.5	39.3	39.9	40.4	41.2
41 Barrack Row	CF48 3NF	Dwelling	49.1	49.8	50.4	51.4	38.2	38.8	39.4	40.2
42 Barrack Row	CF48 3NF	Dwelling	49.4	50.0	50.5	51.4	38.4	39.0	39.4	40.3
43 Barrack Row	CF48 3NF	Dwelling	50.7	51.3	51.8	52.7	39.6	40.2	40.6	41.4
44 Barrack Row	CF48 3NF	Dwelling	51.7	52.3	52.9	53.8	40.5	41.0	41.6	42.4
47 Barrack Row	CF48 3NF	Dwelling	46.1	46.7	47.4	48.4	35.5	36.0	36.7	37.5
48 Barrack Row	CF48 3NF	Dwelling	50.4	51.0	51.7	52.7	39.3	39.9	40.6	41.4
49 Barrack Row	CF48 3NF	Dwelling	50.9	51.5	52.1	53.1	39.8	40.4	40.9	41.8
50 Barrack Row	CF48 3NF	Dwelling	51.3	51.9	52.5	53.4	40.2	40.7	41.2	42.1
51 Barrack Row	CF48 3NF	Dwelling	51.1	51.7	52.3	53.3	40.0	40.5	41.1	41.9
52 Barrack Row	CF48 3NF	Dwelling	51.1	51.7	52.3	53.2	39.9	40.5	41.0	41.9
53 Barrack Row	CF48 3NF	Dwelling	53.6	54.2	54.7	55.6	42.3	42.8	43.2	44.0
54 Barrack Row	CF48 3NF	Dwelling	50.0	50.6	51.3	52.3	39.0	39.5	40.2	41.0
55 Barrack Row	CF48 3NF	Dwelling	51.2	51.8	52.6	53.6	40.0	40.6	41.4	42.2
56 Barrack Row	CF48 3NF	Dwelling	48.1	48.7	49.8	50.8	37.3	37.8	38.8	39.7
58 Barrack Row	CF48 3NF	Dwelling	48.8	49.4	50.5	51.5	37.9	38.5	39.5	40.3
Ty Bryn Wern Ty Bryn Wern Wern Street	CF48 3NG	Dwelling	48.2	49.0	49.5	50.4	37.4	38.1	38.5	39.3
1 Wern Street	CF48 3NG	Dwelling	50.2	50.8	51.7	52.6	39.2	39.7	40.5	41.3
2 Wern Street	CF48 3NG	Dwelling	54.6	55.2	56.0	56.9	43.1	43.7	44.3	45.2
3 Wern Street	CF48 3NG	Dwelling	54.7	55.3	56.1	57.0	43.2	43.7	44.4	45.3
4 Wern Street	CF48 3NG	Dwelling	54.8	55.4	56.2	57.1	43.3	43.9	44.5	45.4
5 Wern Street	CF48 3NG	Dwelling	55.2	55.8	56.5	57.5	43.7	44.2	44.8	45.7
6 Wern Street	CF48 3NG	Dwelling	55.9	56.6	57.2	58.1	44.3	44.9	45.4	46.3

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
7 Wern Street	CF48 3NG	Dwelling	53.5	54.1	54.6	55.5	42.1	42.7	43.1	44.0
8 Wern Street	CF48 3NG	Dwelling	45.8	46.4	47.3	48.3	35.2	35.8	36.6	37.4
9 Wern Street	CF48 3NG	Dwelling	56.4	56.9	57.3	58.3	44.8	45.2	45.6	46.4
10 Wern Street	CF48 3NG	Dwelling	49.3	49.9	51.0	51.9	38.3	38.9	39.8	40.7
11 Wern Street	CF48 3NG	Dwelling	58.9	59.5	59.7	60.6	47.0	47.5	47.7	48.5
12 Wern Street	CF48 3NG	Dwelling	49.0	49.7	50.8	51.8	38.1	38.7	39.7	40.6
13 Wern Street	CF48 3NG	Dwelling	53.5	54.1	54.6	55.5	42.1	42.7	43.1	43.9
14 Wern Street	CF48 3NG	Dwelling	48.8	49.4	50.5	51.5	37.9	38.4	39.4	40.3
15 Wern Street	CF48 3NG	Dwelling	51.4	52.1	52.6	53.5	40.3	40.9	41.3	42.2
16 Wern Street	CF48 3NG	Dwelling	48.4	49.1	50.2	51.2	37.6	38.1	39.2	40.0
17 Wern Street	CF48 3NG	Dwelling	51.4	52.1	52.8	53.7	40.2	40.8	41.5	42.3
18 Wern Street	CF48 3NG	Dwelling	48.5	49.1	50.1	51.0	37.6	38.1	39.0	39.9
1 Alphonso Street	CF48 3NH	Dwelling	49.3	49.9	50.7	51.6	38.3	38.9	39.6	40.4
2 Alphonso Street	CF48 3NH	Dwelling	55.3	55.9	56.6	57.6	43.7	44.3	44.9	45.8
3 Alphonso Street	CF48 3NH	Dwelling	49.0	49.5	50.8	51.7	38.1	38.6	39.7	40.5
4 Alphonso Street	CF48 3NH	Dwelling	49.4	50.0	50.9	51.9	38.5	39.0	39.8	40.7
5 Alphonso Street	CF48 3NH	Dwelling	51.2	51.9	52.9	53.8	40.1	40.6	41.6	42.4
6 Alphonso Street	CF48 3NH	Dwelling	48.4	49.0	50.1	51.1	37.5	38.1	39.1	39.9
7 Alphonso Street	CF48 3NH	Dwelling	52.2	52.8	54.0	55.0	41.0	41.5	42.6	43.4
8 Alphonso Street	CF48 3NH	Dwelling	51.8	52.5	53.7	54.7	40.6	41.2	42.4	43.2
9 Alphonso Street	CF48 3NH	Dwelling	50.3	50.9	52.1	53.1	39.2	39.8	40.9	41.7
10 Alphonso Street	CF48 3NH	Dwelling	49.5	50.2	51.4	52.3	38.6	39.1	40.2	41.1
11 Alphonso Street	CF48 3NH	Dwelling	53.5	54.1	55.2	56.2	42.1	42.7	43.7	44.6
1 Beacons View Beacons View	CF48 3NJ	Dwelling	73.5	74.2	74.5	75.4	60.1	60.7	61.0	61.8
2 Beacons View Beacons View	CF48 3NJ	Dwelling	56.2	56.9	56.6	57.5	44.6	45.2	44.9	45.7
3 Beacons View Beacons View	CF48 3NJ	Dwelling	53.7	54.4	55.4	56.3	42.3	42.9	43.8	44.7
4 Beacons View Beacons View	CF48 3NJ	Dwelling	55.5	56.2	57.2	58.1	44.0	44.5	45.4	46.3
5 Beacons View Beacons View	CF48 3NJ	Dwelling	60.3	60.9	61.6	62.5	48.3	48.8	49.4	50.2
6 Beacons View Beacons View	CF48 3NJ	Dwelling	59.2	59.7	60.8	61.7	47.2	47.7	48.7	49.6
7 Beacons View Beacons View	CF48 3NJ	Dwelling	59.8	60.4	61.3	62.3	47.8	48.3	49.2	50.0
8 Beacons View Beacons View	CF48 3NJ	Dwelling	55.4	56.1	56.9	57.9	43.9	44.5	45.2	46.1
9 Beacons View Beacons View	CF48 3NJ	Dwelling	55.1	55.8	56.8	57.7	43.6	44.2	45.1	45.9
Brynwern Street	CF48 3NL	Dwelling	53.8	54.5	55.3	56.2	42.4	43.0	43.7	44.6
1 Brynwern Street	CF48 3NL	Dwelling	49.3	49.9	51.1	52.0	38.4	38.9	39.9	40.8
2 Brynwern Street	CF48 3NL	Dwelling	50.9	51.5	52.4	53.4	39.8	40.4	41.2	42.0
3 Brynwern Street	CF48 3NL	Dwelling	51.1	51.8	52.6	53.5	40.0	40.6	41.3	42.2
4 Brynwern Street	CF48 3NL	Dwelling	51.3	51.9	52.8	53.7	40.2	40.7	41.5	42.3
5 Brynwern Street	CF48 3NL	Dwelling	51.5	52.1	52.9	53.9	40.3	40.9	41.6	42.5
6 Brynwern Street	CF48 3NL	Dwelling	51.4	52.0	52.8	53.8	40.2	40.8	41.5	42.4
7 Brynwern Street	CF48 3NL	Dwelling	50.9	51.5	52.3	53.3	39.8	40.4	41.1	41.9
8 Brynwern Street	CF48 3NL	Dwelling	50.8	51.4	52.3	53.2	39.7	40.3	41.0	41.9
9 Brynwern Street	CF48 3NL	Dwelling	52.0	52.7	53.2	54.1	40.8	41.4	41.9	42.7
10 Brynwern Street	CF48 3NL	Dwelling	57.2	57.7	58.5	59.5	45.5	45.9	46.7	47.5
11 Brynwern Street	CF48 3NL	Dwelling	53.1	53.7	54.3	55.3	41.8	42.3	42.9	43.7
12 Brynwern Street	CF48 3NL	Dwelling	52.9	53.6	54.5	55.5	41.6	42.2	43.0	43.9
13 Brynwern Street	CF48 3NL	Dwelling	52.9	53.5	54.1	55.0	41.6	42.1	42.7	43.5
14 Brynwern Street	CF48 3NL	Dwelling	51.0	51.6	53.0	54.0	39.9	40.5	41.7	42.5
15 Brynwern Street	CF48 3NL	Dwelling	51.6	52.2	53.5	54.4	40.4	40.9	42.1	43.0
17 Brynwern Street	CF48 3NL	Dwelling	52.7	53.3	54.0	55.0	41.4	42.0	42.6	43.4
18 Brynwern Street	CF48 3NL	Dwelling	52.8	53.4	54.1	55.0	41.5	42.0	42.7	43.5
19 Brynwern Street	CF48 3NL	Dwelling	53.0	53.6	54.3	55.2	41.7	42.2	42.8	43.7
20 Brynwern Street	CF48 3NL	Dwelling	53.7	54.3	55.5	56.4	42.3	42.9	43.9	44.7
1 Cross Houlson Street	CF48 3NN	Dwelling	57.0	57.5	58.6	59.5	45.3	45.7	46.7	47.5
2 Cross Houlson Street	CF48 3NN	Dwelling	56.9	57.4	58.5	59.4	45.2	45.7	46.6	47.4
3 Cross Houlson Street	CF48 3NN	Dwelling	57.1	57.6	58.6	59.6	45.4	45.8	46.7	47.6
4 Cross Houlson Street	CF48 3NN	Dwelling	57.2	57.6	58.7	59.7	45.4	45.9	46.8	47.7
5 Cross Houlson Street	CF48 3NN	Dwelling	57.4	57.9	59.0	60.0	45.7	46.1	47.1	47.9
6 Cross Houlson Street	CF48 3NN	Dwelling	58.0	58.5	59.5	60.5	46.2	46.6	47.6	48.4
1 Rees Street	CF48 3NP	Dwelling	52.3	52.9	53.2	54.1	41.1	41.6	41.9	42.7
2 Rees Street	CF48 3NP	Dwelling	47.5	48.1	48.6	49.5	36.7	37.3	37.7	38.5
3 Rees Street	CF48 3NP	Dwelling	48.8	49.3	49.9	50.8	37.9	38.3	38.9	39.7
4 Rees Street	CF48 3NP	Dwelling	51.9	52.5	53.0	53.9	40.7	41.2	41.7	42.5
5 Rees Street	CF48 3NP	Dwelling	51.9	52.5	53.0	53.9	40.7	41.2	41.7	42.5
6 Rees Street	CF48 3NP	Dwelling	48.7	49.3	50.1	51.0	37.9	38.3	39.0	39.8
7 Rees Street	CF48 3NP	Dwelling	55.8	56.4	55.5	56.4	44.2	44.8	43.9	44.8
8 Rees Street	CF48 3NP	Dwelling	54.3	54.9	54.8	55.7	42.8	43.4	43.3	44.1
9 Rees Street	CF48 3NP	Dwelling	49.0	49.5	50.5	51.4	38.1	38.5	39.4	40.2
10 Rees Street	CF48 3NP	Dwelling	52.0	52.6	53.3	54.2	40.7	41.3	41.9	42.8
11 Rees Street	CF48 3NP	Dwelling	51.6	52.3	52.9	53.8	40.5	41.0	41.6	42.4
12 Rees Street	CF48 3NP	Dwelling	51.7	52.3	53.0	53.9	40.5	41.1	41.7	42.5
13 Rees Street	CF48 3NP	Dwelling	52.0	52.6	53.2	54.1	40.7	41.3	41.8	42.7
14 Rees Street	CF48 3NP	Dwelling	51.7	52.3	53.1	54.0	40.5	41.0	41.7	42.6
15 Rees Street	CF48 3NP	Dwelling	51.6	52.2	53.0	53.9	40.4	41.0	41.6	42.5
16 Rees Street	CF48 3NP	Dwelling	51.6	52.2	53.0	53.9	40.4	41.0	41.7	42.5
17 Rees Street	CF48 3NP	Dwelling	51.5	52.1	52.9	53.8	40.3	40.9	41.6	42.4
18 Rees Street	CF48 3NP	Dwelling	49.9	50.6	51.6	52.6	38.9	39.5	40.5	41.3
Old Penywern Chapel 1 Jones Street	CF48 3NQ	Dwelling	52.2	52.8	53.3	54.2	41.0	41.5	41.9	42.8
Old Penywern Chapel 2 Jones Street	CF48 3NQ	Dwelling	52.3	52.9	53.6	54.5	41.0	41.6	42.2	43.0
Old Penywern Chapel 3 Jones Street	CF48 3NQ	Dwelling	51.8	52.4	52.5	53.4	40.6	41.1	41.2	42.1
Old Penywern Chapel 4 Jones Street	CF48 3NQ	Dwelling	49.3	49.9	50.2	51.1	38.4	38.9	39.1	39.9
1 Davies Street	CF48 3NR	Dwelling	54.4	55.0	55.3	56.3	42.9	43.5	43.8	44.6
2 Davies Street	CF48 3NR	Dwelling	50.2	50.8	51.2	52.1	39.2	39.7	40.1	40.9
3 Davies Street	CF48 3NR	Dwelling	51.1	51.7	52.2	53.1	40.0	40.5	40.9	41.7
4 Davies Street	CF48 3NR	Dwelling	59.7	60.4	58.3	59.3	47.7	48.3	46.5	47.3
5 Davies Street	CF48 3NR	Dwelling	60.8	61.4	58.9	59.9	48.7	49.3	47.0	47.9
6 Davies Street	CF48 3NR	Dwelling	58.4	59.1	57.9	58.8	46.6	47.1	46.1	46.9
7 Davies Street	CF48 3NR	Dwelling	55.0	55.6	56.5	57.4	43.5	44.0	44.8	45.7
8 Davies Street	CF48 3NR	Dwelling	57.4	58.0	57.7	58.6	45.6	46.2	45.9	46.7
9 Davies Street	CF48 3NR	Dwelling	57.1	57.8	56.6	57.5	45.4	46.0	44.9	45.8
10 Davies Street	CF48 3NR	Dwelling	59.9	60.5	58.7	59.6	47.9	48.4	46.8	47.6
11 Davies Street	CF48 3NR	Dwelling	53.3	53.9	54.7	55.7	41.9	42.5	43.2	44.1
12 Davies Street	CF48 3NR	Dwelling	54.8	55.5	54.8	55.8	43.3	43.9	43.3	44.2
13 Davies Street	CF48 3NR	Dwelling	53.2	53.8	54.6	55.5	41.8	42.4	43.1	44.0
1 Jones Street	CF48 3NS	Dwelling	55.2	55.8	53.9	54.8	43.6	44.2	42.5	43.3
2 Jones Street	CF48 3NS	Dwelling	58.8	59.4	56.8	57.8	46.9	47.4	45.1	46.0
3 Jones Street	CF48 3NS	Dwelling	59.7	60.4	57.4	58.4	47.8	48.3	45.7	46.5
4 Jones Street	CF48 3NS	Dwelling	60.8	61.4	57.9	58.9	48.7	49.3	46.1	47.0
5 Jones Street	CF48 3NS	Dwelling	62.1	62.8	58.6	59.6	49.9	50.5	46.8	47.6
6 Jones Street	CF48 3NS	Dwelling	63.4	64.1	59.3	60.2	51.1	51.7	47.3	48.2
7 Jones Street	CF48 3NS	Dwelling	64.9	65.5	60.0	61.0	52.4	52.9	48.0	48.9
1 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	48.0	48.5	48.8	49.7	37.2	37.7	37.9	38.7
10 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	47.6	48.2	48.5	49.4	36.9	37.4	37.6	38.4
11 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	47.7	48.3	48.5	49.4	36.9	37.4	37.6	38.4
12 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	47.7	48.3	48.6	49.5	36.9	37.5	37.7	38.5
13 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	47.7	48.3	48.6	49.5	37.0	37.5	37.7	38.5
14 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	47.5	48.1	48.4	49.3	36.8	37.3	37.5	38.3
15 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	53.2	53.8	54.1	55.0	41.8	42.4	42.6	43.4

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
16 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	47.7	48.3	48.6	49.5	37.0	37.5	37.7	38.5
Clydfa 17 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	48.0	48.6	48.9	49.8	37.2	37.7	38.0	38.8
18 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	49.8	50.5	51.0	52.0	38.8	39.4	39.9	40.8
19 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	47.9	48.5	48.8	49.8	37.1	37.7	37.9	38.8
2 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	47.4	48.0	48.2	49.1	36.6	37.2	37.4	38.2
20 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	51.4	52.1	52.5	53.4	40.3	40.8	41.2	42.0
21 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	50.9	51.5	51.9	52.9	39.8	40.4	40.7	41.6
22 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	50.9	51.6	51.8	52.7	39.8	40.4	40.6	41.4
23 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	50.8	51.4	51.7	52.6	39.7	40.3	40.5	41.3
24 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	50.6	51.3	51.5	52.4	39.6	40.1	40.3	41.2
25 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	50.4	51.0	51.3	52.2	39.4	39.9	40.1	41.0
26 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	55.0	55.7	55.9	56.9	43.5	44.1	44.3	45.2
27 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	49.7	50.3	50.6	51.6	38.7	39.3	39.6	40.4
28 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	51.1	51.8	52.3	53.3	40.0	40.6	41.1	41.9
3 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	47.4	48.0	48.3	49.2	36.7	37.2	37.4	38.2
31 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	62.3	62.9	58.4	59.4	50.0	50.6	46.6	47.4
32 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	61.0	61.7	58.0	59.0	48.9	49.5	46.2	47.0
33 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	59.7	60.3	57.2	58.1	47.7	48.3	45.4	46.3
34 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	59.1	59.7	57.0	58.0	47.2	47.7	45.3	46.1
35 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	57.9	58.5	56.6	57.5	46.0	46.6	44.9	45.7
4 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	47.6	48.2	48.4	49.3	36.8	37.3	37.5	38.3
5 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	47.5	48.1	48.3	49.3	36.8	37.3	37.5	38.3
6 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	47.4	48.0	48.2	49.1	36.7	37.2	37.4	38.2
7 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	48.8	49.3	49.5	50.4	37.9	38.4	38.5	39.3
8 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	48.5	49.1	49.3	50.2	37.7	38.2	38.3	39.1
9 Guest Cottages Guest Cottages	CF48 3NT	Dwelling	48.7	49.3	49.6	50.5	37.8	38.4	38.6	39.4
Bryn Awel Bryn Awel Guest Cottages	CF48 3NT	Dwelling	47.6	48.2	48.4	49.3	36.8	37.3	37.5	38.3
Fronheulog Fronheulog Guest Cottages	CF48 3NT	Dwelling	47.8	48.3	48.8	49.6	37.0	37.5	37.9	38.7
Garn House Garn House Guest Cottages	CF48 3NT	Dwelling	47.7	48.2	48.4	49.3	36.9	37.4	37.6	38.4
Wern House Wern House Guest Cottages	CF48 3NT	Dwelling	47.6	48.2	48.4	49.3	36.9	37.4	37.6	38.4
9A Upper Row	CF48 3NU	Dwelling	55.8	56.4	54.5	55.5	44.2	44.7	43.1	43.9
Penywern Bakery Penywern Bakery Upper Row	CF48 3NU	Dwelling	48.0	48.4	48.9	49.8	37.2	37.5	38.0	38.8
Penywern House Penywern House Upper Row	CF48 3NU	Dwelling	52.4	53.0	52.9	53.8	41.1	41.7	41.6	42.4
3 Upper Row	CF48 3NU	Dwelling	46.1	46.7	47.0	47.9	35.5	36.0	36.3	37.1
4 Upper Row	CF48 3NU	Dwelling	46.7	47.3	47.6	48.6	36.0	36.6	36.9	37.7
5 Upper Row	CF48 3NU	Dwelling	44.8	45.4	45.9	46.8	34.3	34.8	35.3	36.1
6 Upper Row	CF48 3NU	Dwelling	45.6	46.1	46.6	47.5	35.0	35.5	36.0	36.8
7 Upper Row	CF48 3NU	Dwelling	55.9	56.5	54.7	55.6	44.3	44.8	43.2	44.0
8 Upper Row	CF48 3NU	Dwelling	46.3	46.8	47.2	48.1	35.7	36.1	36.5	37.3
9 Upper Row	CF48 3NU	Dwelling	55.8	56.4	54.5	55.5	44.2	44.7	43.1	43.9
10 Upper Row	CF48 3NU	Dwelling	46.3	46.9	47.2	48.1	35.7	36.2	36.5	37.3
11 Upper Row	CF48 3NU	Dwelling	46.4	46.9	47.2	48.1	35.8	36.2	36.5	37.3
12 Upper Row	CF48 3NU	Dwelling	55.0	55.6	54.4	55.3	43.5	44.0	43.0	43.8
13 Upper Row	CF48 3NU	Dwelling	46.6	47.2	47.4	48.3	35.9	36.4	36.7	37.4
14 Upper Row	CF48 3NU	Dwelling	46.8	47.3	47.5	48.4	36.1	36.6	36.8	37.5
15 Upper Row	CF48 3NU	Dwelling	45.6	46.2	46.5	47.4	35.1	35.6	35.8	36.6
16 Upper Row	CF48 3NU	Dwelling	51.9	52.4	52.7	53.7	40.7	41.2	41.5	42.3
17 Upper Row	CF48 3NU	Dwelling	50.1	50.7	51.2	52.1	39.1	39.6	40.0	40.8
18 Upper Row	CF48 3NU	Dwelling	49.8	50.4	50.6	51.5	38.8	39.3	39.5	40.3
20 Upper Row	CF48 3NU	Dwelling	45.4	46.0	46.3	47.2	34.9	35.4	35.7	36.5
21 Upper Row	CF48 3NU	Dwelling	49.9	50.5	50.7	51.6	38.9	39.4	39.6	40.4
22 Upper Row	CF48 3NU	Dwelling	49.5	50.1	50.3	51.2	38.5	39.0	39.3	40.1
23 Upper Row	CF48 3NU	Dwelling	49.1	49.7	50.0	50.9	38.2	38.7	39.0	39.8
24 Upper Row	CF48 3NU	Dwelling	49.4	50.0	50.4	51.3	38.5	39.0	39.3	40.1
25 Upper Row	CF48 3NU	Dwelling	48.7	49.3	49.7	50.6	37.8	38.3	38.7	39.5
26 Upper Row	CF48 3NU	Dwelling	49.0	49.6	49.9	50.8	38.1	38.6	38.9	39.7
27 Upper Row	CF48 3NU	Dwelling	45.9	46.5	46.8	47.7	35.3	35.8	36.1	36.9
28 Upper Row	CF48 3NU	Dwelling	47.1	47.7	48.0	48.9	36.4	36.9	37.2	38.0
29 Upper Row	CF48 3NU	Dwelling	50.2	50.8	51.0	52.0	39.1	39.7	39.9	40.7
30 Upper Row	CF48 3NU	Dwelling	50.2	50.8	51.2	52.1	39.2	39.7	40.0	40.8
31 Upper Row	CF48 3NU	Dwelling	50.0	50.5	51.0	51.9	38.9	39.5	39.9	40.7
32 Upper Row	CF48 3NU	Dwelling	49.8	50.4	50.8	51.7	38.8	39.3	39.7	40.5
33 Upper Row	CF48 3NU	Dwelling	49.6	50.2	50.7	51.6	38.6	39.2	39.6	40.4
34 Upper Row	CF48 3NU	Dwelling	50.5	51.1	51.5	52.4	39.4	40.0	40.3	41.2
35 Upper Row	CF48 3NU	Dwelling	50.9	51.5	52.0	52.9	39.8	40.3	40.8	41.6
36 Upper Row	CF48 3NU	Dwelling	51.4	52.0	52.4	53.4	40.3	40.8	41.2	42.0
1 Houlson Street	CF48 3NW	Dwelling	53.1	53.8	54.6	55.6	41.8	42.4	43.1	44.0
2 Houlson Street	CF48 3NW	Dwelling	53.4	54.0	54.9	55.9	42.0	42.6	43.4	44.3
3 Houlson Street	CF48 3NW	Dwelling	53.6	54.2	55.1	56.0	42.2	42.8	43.5	44.4
4 Houlson Street	CF48 3NW	Dwelling	54.6	55.2	56.0	57.0	43.1	43.7	44.4	45.3
5 Houlson Street	CF48 3NW	Dwelling	55.2	55.8	56.6	57.6	43.7	44.2	45.0	45.8
6 Houlson Street	CF48 3NW	Dwelling	57.3	57.9	58.5	59.4	45.5	46.1	46.6	47.5
7 Houlson Street	CF48 3NW	Dwelling	57.9	58.6	59.3	60.2	46.1	46.7	47.3	48.2
8 Houlson Street	CF48 3NW	Dwelling	58.2	58.8	58.9	59.8	46.4	46.9	46.9	47.8
9 Houlson Street	CF48 3NW	Dwelling	58.0	58.7	57.8	58.8	46.2	46.8	46.0	46.9
10 Houlson Street	CF48 3NW	Dwelling	53.9	54.6	55.8	56.8	42.5	43.1	44.2	45.1
11 Houlson Street	CF48 3NW	Dwelling	53.9	54.6	55.9	56.8	42.5	43.1	44.3	45.1
12 Houlson Street	CF48 3NW	Dwelling	53.2	53.9	54.8	55.8	41.9	42.4	43.3	44.2
13 Houlson Street	CF48 3NW	Dwelling	53.0	53.7	54.7	55.7	41.7	42.3	43.2	44.1
14 Houlson Street	CF48 3NW	Dwelling	49.0	49.7	50.8	51.8	38.1	38.7	39.7	40.6
15 Houlson Street	CF48 3NW	Dwelling	49.2	49.9	51.1	52.0	38.3	38.9	40.0	40.8
16 Houlson Street	CF48 3NW	Dwelling	51.8	52.5	53.4	54.3	40.6	41.2	42.0	42.9
17 Houlson Street	CF48 3NW	Dwelling	48.4	49.0	50.0	51.0	37.5	38.1	39.0	39.8
18 Houlson Street	CF48 3NW	Dwelling	49.8	50.4	51.5	52.4	38.8	39.3	40.3	41.1
19 Houlson Street	CF48 3NW	Dwelling	49.7	50.3	51.4	52.3	38.7	39.2	40.2	41.0
20 Houlson Street	CF48 3NW	Dwelling	49.6	50.2	51.2	52.1	38.7	39.2	40.1	40.9
1 Wern Isaf	CF48 3NY	Dwelling	47.6	48.1	48.3	49.2	36.8	37.3	37.4	38.2
2 Wern Isaf	CF48 3NY	Dwelling	47.8	48.3	48.5	49.4	37.0	37.5	37.7	38.4
3 Wern Isaf	CF48 3NY	Dwelling	48.8	49.4	49.5	50.4	37.9	38.4	38.5	39.3
4 Wern Isaf	CF48 3NY	Dwelling	47.8	48.4	48.5	49.4	37.0	37.5	37.6	38.4
5 Wern Isaf	CF48 3NY	Dwelling	47.0	47.5	47.8	48.7	36.3	36.8	37.0	37.8
6 Wern Isaf	CF48 3NY	Dwelling	48.0	48.5	48.8	49.7	37.2	37.6	37.9	38.7
7 Wern Isaf	CF48 3NY	Dwelling	46.1	46.7	47.2	48.0	35.5	36.0	36.4	37.2
8 Wern Isaf	CF48 3NY	Dwelling	45.9	46.4	46.9	47.8	35.3	35.8	36.2	37.0
9 Wern Isaf	CF48 3NY	Dwelling	47.7	48.3	48.5	49.4	36.9	37.4	37.6	38.4
10 Wern Isaf	CF48 3NY	Dwelling	47.7	48.2	48.3	49.2	36.9	37.4	37.5	38.3
11 Wern Isaf	CF48 3NY	Dwelling	47.1	47.6	47.9	48.7	36.3	36.8	37.1	37.8
12 Wern Isaf	CF48 3NY	Dwelling	46.6	47.1	47.5	48.4	35.9	36.4	36.7	37.5
13 Wern Isaf	CF48 3NY	Dwelling	47.2	47.7	48.0	48.9	36.5	36.9	37.2	38.0
14 Wern Isaf	CF48 3NY	Dwelling	47.5	48.1	48.3	49.2	36.8	37.2	37.5	38.2
15 Wern Isaf	CF48 3NY	Dwelling	48.3	48.8	49.0	49.9	37.4	37.9	38.1	38.9
16 Wern Isaf	CF48 3NY	Dwelling	46.1	46.6	47.0	47.8	35.5	35.9	36.3	37.0
17 Wern Isaf	CF48 3NY	Dwelling	48.4	49.0	49.2	50.1	37.6	38.0	38.3	39.0
18 Wern Isaf	CF48 3NY	Dwelling	48.6	49.1	49.5	50.4	37.7	38.2	38.5	39.3
19 Wern Isaf	CF48 3NY	Dwelling	47.8	48.3	49.0	49.9	37.0	37.5	38.1	38.9
20 Wern Isaf	CF48 3NY	Dwelling	48.8	49.4	49.9	50.9	37.9	38.5	38.9	39.8
21 Wern Isaf	CF48 3NY	Dwelling	49.3	49.9	50.3	51.2	38.4	38.9	39.3	40.1

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
22 Wern Isaf	CF48 3NY	Dwelling	50.0	50.5	50.6	51.5	38.9	39.4	39.5	40.3
23 Wern Isaf	CF48 3NY	Dwelling	49.0	49.5	49.7	50.6	38.1	38.6	38.7	39.5
24 Wern Isaf	CF48 3NY	Dwelling	48.7	49.2	49.6	50.5	37.8	38.3	38.6	39.4
25 Wern Isaf	CF48 3NY	Dwelling	48.4	48.9	49.3	50.2	37.5	38.0	38.4	39.2
26 Wern Isaf	CF48 3NY	Dwelling	49.2	49.7	49.9	50.7	38.3	38.7	38.9	39.6
27 Wern Isaf	CF48 3NY	Dwelling	48.5	48.9	49.1	49.9	37.6	38.0	38.1	38.9
28 Wern Isaf	CF48 3NY	Dwelling	50.3	50.8	50.7	51.5	39.3	39.7	39.6	40.3
29 Wern Isaf	CF48 3NY	Dwelling	49.6	50.1	50.1	50.9	38.7	39.1	39.1	39.8
30 Wern Isaf	CF48 3NY	Dwelling	49.2	49.7	49.8	50.7	38.3	38.7	38.8	39.6
31 Wern Isaf	CF48 3NY	Dwelling	52.5	53.0	52.9	53.7	41.2	41.7	41.5	42.3
32 Wern Isaf	CF48 3NY	Dwelling	54.7	55.0	55.0	55.7	43.2	43.5	43.5	44.1
33 Wern Isaf	CF48 3NY	Dwelling	50.4	50.8	50.7	51.5	39.3	39.7	39.6	40.4
34 Wern Isaf	CF48 3NY	Dwelling	51.9	52.4	52.5	53.4	40.7	41.1	41.2	42.0
35 Wern Isaf	CF48 3NY	Dwelling	52.4	52.8	53.3	54.1	41.1	41.5	41.9	42.7
36 Wern Isaf	CF48 3NY	Dwelling	52.7	53.3	53.2	54.1	41.4	41.9	41.8	42.7
37 Wern Isaf	CF48 3NY	Dwelling	52.4	53.0	53.1	54.0	41.2	41.7	41.7	42.6
38 Wern Isaf	CF48 3NY	Dwelling	52.7	53.3	53.3	54.2	41.4	41.9	41.9	42.7
39 Wern Isaf	CF48 3NY	Dwelling	51.0	51.5	51.9	52.8	39.9	40.4	40.7	41.5
40 Wern Isaf	CF48 3NY	Dwelling	51.8	52.4	52.9	53.8	40.6	41.1	41.6	42.4
41 Wern Isaf	CF48 3NY	Dwelling	52.8	53.3	53.3	54.2	41.5	42.0	42.0	42.8
42 Wern Isaf	CF48 3NY	Dwelling	52.2	52.8	53.0	53.9	41.0	41.5	41.7	42.5
43 Wern Isaf	CF48 3NY	Dwelling	52.7	53.2	53.2	54.1	41.4	41.9	41.9	42.7
44 Wern Isaf	CF48 3NY	Dwelling	51.9	52.5	52.2	53.1	40.7	41.2	40.9	41.8
45 Wern Isaf	CF48 3NY	Dwelling	50.6	51.0	51.3	52.1	39.5	39.9	40.2	40.9
46 Wern Isaf	CF48 3NY	Dwelling	51.8	52.4	52.0	53.0	40.6	41.2	40.8	41.6
47 Wern Isaf	CF48 3NY	Dwelling	51.3	51.7	52.6	53.5	40.1	40.6	41.3	42.1
48 Wern Isaf	CF48 3NY	Dwelling	51.1	51.6	52.4	53.3	40.0	40.4	41.2	41.9
49 Wern Isaf	CF48 3NY	Dwelling	52.1	52.7	52.6	53.6	40.9	41.4	41.3	42.2
50 Wern Isaf	CF48 3NY	Dwelling	52.0	52.5	52.6	53.5	40.8	41.3	41.3	42.2
51 Wern Isaf	CF48 3NY	Dwelling	52.0	52.6	52.5	53.4	40.8	41.3	41.2	42.0
52 Wern Isaf	CF48 3NY	Dwelling	50.4	50.9	51.7	52.6	39.3	39.8	40.6	41.3
53 Wern Isaf	CF48 3NY	Dwelling	52.5	53.1	52.9	53.9	41.3	41.8	41.6	42.5
54 Wern Isaf	CF48 3NY	Dwelling	51.4	52.0	52.2	53.1	40.3	40.7	40.9	41.8
55 Wern Isaf	CF48 3NY	Dwelling	51.1	51.8	52.4	53.3	40.0	40.6	41.1	42.0
56 Wern Isaf	CF48 3NY	Dwelling	50.0	50.5	51.5	52.4	39.0	39.5	40.3	41.1
57 Wern Isaf	CF48 3NY	Dwelling	50.7	51.2	51.8	52.7	39.6	40.1	40.6	41.4
58 Wern Isaf	CF48 3NY	Dwelling	48.9	49.3	49.8	50.7	38.0	38.4	38.8	39.6
59 Wern Isaf	CF48 3NY	Dwelling	48.8	49.3	49.7	50.5	37.9	38.3	38.7	39.4
60 Wern Isaf	CF48 3NY	Dwelling	48.0	48.5	49.1	49.9	37.2	37.6	38.1	38.9
61 Wern Isaf	CF48 3NY	Dwelling	49.9	50.5	50.6	51.5	38.9	39.4	39.5	40.3
62 Wern Isaf	CF48 3NY	Dwelling	49.0	49.6	49.7	50.6	38.1	38.6	38.7	39.5
63 Wern Isaf	CF48 3NY	Dwelling	49.8	50.4	50.4	51.3	38.8	39.3	39.3	40.1
64 Wern Isaf	CF48 3NY	Dwelling	49.8	50.4	50.6	51.5	38.8	39.3	39.5	40.3
65 Wern Isaf	CF48 3NY	Dwelling	47.8	48.3	48.5	49.4	37.0	37.5	37.7	38.4
66 Wern Isaf	CF48 3NY	Dwelling	50.5	51.0	50.8	51.7	39.4	39.9	39.7	40.5
67 Wern Isaf	CF48 3NY	Dwelling	49.9	50.4	50.1	51.0	38.9	39.3	39.1	39.9
68 Wern Isaf	CF48 3NY	Dwelling	50.2	50.7	50.6	51.4	39.2	39.6	39.5	40.2
69 Wern Isaf	CF48 3NY	Dwelling	48.8	49.3	49.1	50.1	37.9	38.3	38.2	39.0
19A Muriel Terrace	CF48 3PB	Dwelling	44.2	44.7	45.3	46.2	33.8	34.2	34.8	35.6
1 Muriel Terrace	CF48 3PB	Dwelling	47.8	48.1	48.3	49.0	37.0	37.3	37.4	38.1
2 Muriel Terrace	CF48 3PB	Dwelling	43.9	44.3	44.6	45.4	33.5	33.8	34.1	34.8
3 Muriel Terrace	CF48 3PB	Dwelling	47.7	48.0	48.1	48.9	36.9	37.2	37.3	38.0
4 Muriel Terrace	CF48 3PB	Dwelling	45.1	45.5	45.7	46.5	34.6	34.9	35.1	35.8
5 Muriel Terrace	CF48 3PB	Dwelling	45.4	45.9	46.2	47.1	34.9	35.3	35.6	36.4
6 Muriel Terrace	CF48 3PB	Dwelling	45.2	45.6	46.1	46.9	34.7	35.0	35.5	36.2
7 Muriel Terrace	CF48 3PB	Dwelling	47.2	47.6	48.0	48.8	36.5	36.9	37.2	37.9
8 Muriel Terrace	CF48 3PB	Dwelling	47.0	47.4	47.8	48.6	36.3	36.6	37.0	37.7
9 Muriel Terrace	CF48 3PB	Dwelling	49.5	50.0	50.0	50.8	38.6	39.0	39.0	39.7
10 Muriel Terrace	CF48 3PB	Dwelling	45.0	45.4	45.7	46.5	34.5	34.9	35.1	35.8
11 Muriel Terrace	CF48 3PB	Dwelling	44.2	44.5	45.0	45.8	33.7	34.1	34.5	35.2
12 Muriel Terrace	CF48 3PB	Dwelling	45.0	45.5	45.6	46.5	34.5	34.9	35.1	35.8
13 Muriel Terrace	CF48 3PB	Dwelling	46.1	46.6	46.9	47.7	35.5	35.9	36.2	36.9
14 Muriel Terrace	CF48 3PB	Dwelling	43.7	44.2	44.4	45.2	33.3	33.7	33.9	34.7
15 Muriel Terrace	CF48 3PB	Dwelling	46.1	46.6	46.8	47.6	35.5	35.9	36.1	36.8
16 Muriel Terrace	CF48 3PB	Dwelling	45.3	45.8	46.0	46.9	34.8	35.2	35.4	36.2
17 Muriel Terrace	CF48 3PB	Dwelling	44.0	44.4	44.9	45.7	33.6	34.0	34.4	35.1
18 Muriel Terrace	CF48 3PB	Dwelling	45.3	45.8	46.1	46.9	34.8	35.2	35.4	36.2
19 Muriel Terrace	CF48 3PB	Dwelling	43.8	44.3	44.9	45.8	33.4	33.9	34.4	35.2
20 Muriel Terrace	CF48 3PB	Dwelling	43.8	44.3	44.5	45.4	33.4	33.8	34.0	34.8
21 Muriel Terrace	CF48 3PB	Dwelling	44.4	44.8	45.1	45.9	34.0	34.3	34.6	35.3
22 Muriel Terrace	CF48 3PB	Dwelling	46.4	46.9	47.1	48.0	35.7	36.2	36.4	37.2
23 Muriel Terrace	CF48 3PB	Dwelling	44.0	44.4	44.9	45.7	33.6	34.0	34.4	35.1
24 Muriel Terrace	CF48 3PB	Dwelling	45.3	45.9	46.1	47.0	34.8	35.3	35.5	36.3
25 Muriel Terrace	CF48 3PB	Dwelling	44.1	44.5	44.9	45.8	33.7	34.0	34.4	35.2
26 Muriel Terrace	CF48 3PB	Dwelling	51.9	52.3	51.9	52.6	40.7	41.1	40.6	41.3
27 Muriel Terrace	CF48 3PB	Dwelling	52.1	52.6	52.1	52.8	40.9	41.3	40.8	41.5
28 Muriel Terrace	CF48 3PB	Dwelling	44.2	44.6	45.1	46.0	33.8	34.2	34.6	35.4
29 Muriel Terrace	CF48 3PB	Dwelling	43.8	44.2	44.7	45.5	33.4	33.8	34.2	35.0
30 Muriel Terrace	CF48 3PB	Dwelling	45.5	46.0	46.3	47.2	34.9	35.4	35.6	36.4
31 Muriel Terrace	CF48 3PB	Dwelling	43.4	43.9	44.4	45.3	33.1	33.5	33.9	34.7
32 Muriel Terrace	CF48 3PB	Dwelling	45.3	45.8	46.0	46.9	34.7	35.2	35.4	36.2
33 Muriel Terrace	CF48 3PB	Dwelling	43.9	44.3	44.8	45.6	33.5	33.8	34.3	35.0
34 Muriel Terrace	CF48 3PB	Dwelling	43.3	43.8	44.4	45.3	33.0	33.4	33.9	34.7
35 Muriel Terrace	CF48 3PB	Dwelling	45.2	45.7	46.1	47.0	34.7	35.1	35.5	36.3
36 Muriel Terrace	CF48 3PB	Dwelling	45.1	45.6	46.0	46.9	34.6	35.0	35.4	36.2
37 Muriel Terrace	CF48 3PB	Dwelling	45.1	45.7	45.9	46.8	34.6	35.1	35.3	36.1
38 Muriel Terrace	CF48 3PB	Dwelling	44.9	45.4	45.7	46.5	34.4	34.8	35.1	35.9
39 Muriel Terrace	CF48 3PB	Dwelling	44.7	45.2	45.4	46.2	34.2	34.6	34.8	35.6
40 Muriel Terrace	CF48 3PB	Dwelling	48.9	49.4	49.2	50.2	38.0	38.5	38.3	39.1
Blanche House Blanche House Cross Blanche Street	CF48 3PD	Dwelling	51.6	52.0	52.2	53.0	40.4	40.8	41.0	41.6
1 Cross Blanche Street	CF48 3PD	Dwelling	49.3	49.6	49.8	50.5	38.3	38.6	38.8	39.4
2 Cross Blanche Street	CF48 3PD	Dwelling	48.0	48.3	48.4	49.1	37.2	37.4	37.5	38.2
3 Cross Blanche Street	CF48 3PD	Dwelling	45.4	45.8	46.1	46.8	34.9	35.2	35.5	36.1
4 Cross Blanche Street	CF48 3PD	Dwelling	44.1	44.5	44.5	45.3	33.7	34.0	34.1	34.7
5 Cross Blanche Street	CF48 3PD	Dwelling	46.1	46.5	47.1	47.9	35.5	35.8	36.4	37.1
6 Cross Blanche Street	CF48 3PD	Dwelling	45.7	46.1	46.8	47.5	35.1	35.4	36.1	36.8
7 Cross Blanche Street	CF48 3PD	Dwelling	45.8	46.1	46.6	47.3	35.2	35.5	35.9	36.6
8 Cross Blanche Street	CF48 3PD	Dwelling	46.2	46.6	47.2	48.0	35.6	35.9	36.5	37.2
9 Cross Blanche Street	CF48 3PD	Dwelling	46.2	46.6	47.3	48.1	35.6	35.9	36.5	37.3
10 Cross Blanche Street	CF48 3PD	Dwelling	46.3	46.8	47.4	48.2	35.7	36.1	36.6	37.4
11 Cross Blanche Street	CF48 3PD	Dwelling	46.0	46.4	46.9	47.7	35.4	35.8	36.2	37.0
12 Cross Blanche Street	CF48 3PD	Dwelling	47.2	47.6	47.8	48.6	36.5	36.8	37.0	37.7
13 Cross Blanche Street	CF48 3PD	Dwelling	45.5	45.8	45.9	46.6	35.0	35.2	35.3	35.9
14 Cross Blanche Street	CF48 3PD	Dwelling	49.0	49.3	49.5	50.2	38.1	38.3	38.5	39.2
15 Cross Blanche Street	CF48 3PD	Dwelling	45.7	46.0	46.1	46.9	35.1	35.4	35.5	36.2
16 Cross Blanche Street	CF48 3PD	Dwelling	52.2	52.6	52.7	53.5	41.0	41.3	41.4	42.1
17 Cross Blanche Street	CF48 3PD	Dwelling	51.6	51.9	52.0	52.7	40.4	40.7	40.8	41.4

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
18 Cross Blanche Street	CF48 3PD	Dwelling	51.2	51.4	51.4	52.0	40.1	40.2	40.2	40.8
19 Cross Blanche Street	CF48 3PD	Dwelling	50.6	50.8	50.8	51.5	39.5	39.7	39.7	40.3
1 Blanche Street	CF48 3PE	Dwelling	55.8	56.1	55.8	56.4	44.2	44.5	44.2	44.7
2 Blanche Street	CF48 3PE	Dwelling	54.3	54.5	54.5	55.1	42.9	43.1	43.0	43.6
3 Blanche Street	CF48 3PE	Dwelling	51.5	51.7	51.7	52.3	40.4	40.5	40.5	41.0
4 Blanche Street	CF48 3PE	Dwelling	55.1	55.3	55.1	55.6	43.6	43.7	43.6	44.1
5 Blanche Street	CF48 3PE	Dwelling	54.9	55.2	55.0	55.5	43.4	43.6	43.4	43.9
6 Blanche Street	CF48 3PE	Dwelling	54.9	55.2	55.1	55.7	43.4	43.6	43.6	44.1
7 Blanche Street	CF48 3PE	Dwelling	54.0	54.2	54.0	54.6	42.6	42.8	42.6	43.1
8 Blanche Street	CF48 3PE	Dwelling	54.7	55.0	54.7	55.3	43.2	43.4	43.2	43.7
10 Blanche Street	CF48 3PE	Dwelling	53.2	53.4	53.3	53.9	41.9	42.0	41.9	42.5
11 Blanche Street	CF48 3PE	Dwelling	54.4	54.6	54.4	55.0	43.0	43.2	43.0	43.5
12 Blanche Street	CF48 3PE	Dwelling	52.4	52.7	52.7	53.4	41.2	41.4	41.4	42.0
13 Blanche Street	CF48 3PE	Dwelling	50.5	50.8	50.9	51.6	39.4	39.7	39.8	40.4
14 Blanche Street	CF48 3PE	Dwelling	50.3	50.5	50.7	51.4	39.2	39.4	39.6	40.2
15 Blanche Street	CF48 3PE	Dwelling	49.7	49.9	50.1	50.9	38.7	38.9	39.1	39.7
16 Blanche Street	CF48 3PE	Dwelling	48.9	49.2	49.4	50.1	38.0	38.2	38.4	39.1
17 Blanche Street	CF48 3PE	Dwelling	50.7	51.0	51.2	51.9	39.6	39.9	40.0	40.7
18 Blanche Street	CF48 3PE	Dwelling	52.7	52.9	52.9	53.6	41.4	41.6	41.6	42.2
19 Blanche Street	CF48 3PE	Dwelling	50.5	50.8	51.0	51.7	39.4	39.7	39.9	40.5
20 Blanche Street	CF48 3PE	Dwelling	49.2	49.5	49.8	50.5	38.3	38.5	38.8	39.4
21 Blanche Street	CF48 3PE	Dwelling	51.0	51.3	51.5	52.2	39.9	40.2	40.3	41.0
22 Blanche Street	CF48 3PE	Dwelling	51.8	52.0	52.0	52.6	40.6	40.8	40.8	41.4
23 Blanche Street	CF48 3PE	Dwelling	54.9	55.2	55.3	56.0	43.4	43.6	43.7	44.3
24 Blanche Street	CF48 3PE	Dwelling	49.7	49.9	49.8	50.5	38.7	38.9	38.8	39.4
25 Blanche Street	CF48 3PE	Dwelling	49.4	49.6	49.7	50.4	38.5	38.6	38.7	39.3
21A High Street Caeharris	CF48 3PH	Dwelling	72.0	72.3	72.8	73.5	58.8	59.1	59.5	60.2
Above Bridge 22 Above Bridge High Street Caeharris	CF48 3PH	Dwelling	50.1	50.5	51.3	52.1	39.1	39.4	40.1	40.9
Above Bridge 23 Above Bridge Glyndwr High Street Caeharris	CF48 3PH	Dwelling	49.9	50.3	51.0	51.8	38.9	39.2	39.9	40.6
Above Bridge 24 Above Bridge High Street Caeharris	CF48 3PH	Dwelling	49.4	49.8	50.6	51.4	38.5	38.8	39.5	40.3
Above Bridge 25 Above Bridge High Street Caeharris	CF48 3PH	Dwelling	49.7	50.1	50.8	51.6	38.7	39.0	39.7	40.4
25A High Street Caeharris	CF48 3PH	Dwelling	52.5	52.8	53.4	54.2	41.2	41.5	42.1	42.7
76A High Street Caeharris	CF48 3PH	Dwelling	71.4	71.7	72.2	72.9	58.2	58.5	58.9	59.6
77A High Street Caeharris	CF48 3PH	Dwelling	71.4	71.7	72.1	72.8	58.2	58.5	58.9	59.5
79A High Street Caeharris	CF48 3PH	Dwelling	71.5	71.8	72.2	72.9	58.4	58.6	59.0	59.6
22 High Street Caeharris	CF48 3PH	Dwelling	70.4	70.7	71.2	71.9	57.3	57.6	58.0	58.7
23 High Street Caeharris	CF48 3PH	Dwelling	69.7	70.0	70.5	71.2	56.7	57.0	57.4	58.1
24 High Street Caeharris	CF48 3PH	Dwelling	69.8	70.1	70.6	71.3	56.8	57.1	57.5	58.1
Derwendeg 25 High Street Caeharris	CF48 3PH	Dwelling	56.7	57.0	57.5	58.3	45.0	45.3	45.8	46.4
26 High Street Caeharris	CF48 3PH	Dwelling	49.1	49.5	50.0	50.9	38.2	38.5	39.0	39.8
27 High Street Caeharris	CF48 3PH	Dwelling	70.5	70.9	71.3	72.0	57.5	57.8	58.2	58.8
59 High Street Caeharris	CF48 3PH	Dwelling	70.9	71.2	71.7	72.4	57.8	58.1	58.5	59.1
60 High Street Caeharris	CF48 3PH	Dwelling	70.6	71.0	71.4	72.2	57.6	57.8	58.3	58.9
62 High Street Caeharris	CF48 3PH	Dwelling	66.8	67.2	67.6	68.4	54.1	54.4	54.9	55.5
63 High Street Caeharris	CF48 3PH	Dwelling	71.0	71.3	71.7	72.5	57.8	58.1	58.6	59.2
64 High Street Caeharris	CF48 3PH	Dwelling	71.0	71.3	71.8	72.5	57.9	58.2	58.6	59.2
65 High Street Caeharris	CF48 3PH	Dwelling	71.0	71.3	71.8	72.5	57.9	58.2	58.6	59.2
66 High Street Caeharris	CF48 3PH	Dwelling	71.0	71.3	71.7	72.5	57.9	58.1	58.6	59.2
67 High Street Caeharris	CF48 3PH	Dwelling	71.1	71.4	71.9	72.6	58.0	58.3	58.7	59.3
68 High Street Caeharris	CF48 3PH	Dwelling	70.5	70.8	71.3	72.0	57.4	57.7	58.1	58.8
69 High Street Caeharris	CF48 3PH	Dwelling	71.1	71.4	71.9	72.6	58.0	58.3	58.7	59.3
70 High Street Caeharris	CF48 3PH	Dwelling	71.3	71.6	72.1	72.8	58.1	58.4	58.8	59.5
71 High Street Caeharris	CF48 3PH	Dwelling	71.4	71.7	72.2	72.9	58.2	58.5	58.9	59.6
72 High Street Caeharris	CF48 3PH	Dwelling	71.5	71.8	72.3	73.0	58.3	58.6	59.0	59.7
73 High Street Caeharris	CF48 3PH	Dwelling	71.3	71.6	72.1	72.8	58.2	58.5	58.9	59.5
74 High Street Caeharris	CF48 3PH	Dwelling	71.3	71.6	72.1	72.8	58.1	58.4	58.8	59.5
75 High Street Caeharris	CF48 3PH	Dwelling	71.5	71.8	72.3	73.0	58.3	58.6	59.0	59.7
76 High Street Caeharris	CF48 3PH	Dwelling	71.4	71.7	72.1	72.8	58.2	58.5	58.9	59.5
77 High Street Caeharris	CF48 3PH	Dwelling	71.4	71.7	72.1	72.8	58.2	58.5	58.9	59.5
78 High Street Caeharris	CF48 3PH	Dwelling	71.4	71.7	72.2	72.8	58.3	58.5	58.9	59.5
79 High Street Caeharris	CF48 3PH	Dwelling	71.5	71.8	72.2	72.9	58.4	58.6	59.0	59.6
80 High Street Caeharris	CF48 3PH	Dwelling	71.8	72.1	72.4	73.1	58.6	58.9	59.2	59.8
81 High Street Caeharris	CF48 3PH	Dwelling	71.5	71.8	72.0	72.7	58.3	58.6	58.8	59.4
82 High Street Caeharris	CF48 3PH	Dwelling	72.5	72.7	72.9	73.5	59.2	59.4	59.6	60.2
13A High Street Top Dowlais	CF48 3PN	Dwelling	68.1	68.4	68.9	69.6	55.3	55.6	56.0	56.6
19A High Street Top Dowlais	CF48 3PN	Dwelling	67.9	68.3	68.7	69.4	55.1	55.4	55.8	56.4
21A High Street Top Dowlais	CF48 3PN	Dwelling	52.8	53.1	53.6	54.4	41.5	41.8	42.3	43.0
High Street Top Dowlais	CF48 3PN	Dwelling	67.8	68.1	68.6	69.3	55.0	55.3	55.7	56.3
High Street Top Dowlais	CF48 3PN	Dwelling	49.2	49.3	50.1	50.9	38.2	38.3	39.1	39.8
Ty-Coed-Cae Ty-Coed-Cae High Street Top Dowlais	CF48 3PN	Dwelling	68.5	68.9	69.3	70.0	55.7	55.9	56.4	57.0
1 High Street Top Dowlais	CF48 3PN	Dwelling	50.8	51.1	51.6	52.4	39.7	40.0	40.4	41.1
2 High Street Top Dowlais	CF48 3PN	Dwelling	67.3	67.6	68.0	68.8	54.5	54.8	55.2	55.9
3 High Street Top Dowlais	CF48 3PN	Dwelling	51.4	51.7	52.2	53.0	40.3	40.5	41.0	41.7
4 High Street Top Dowlais	CF48 3PN	Dwelling	66.6	66.9	67.4	68.1	53.9	54.2	54.6	55.3
5 High Street Top Dowlais	CF48 3PN	Dwelling	48.2	48.5	49.0	49.8	37.4	37.6	38.1	38.8
6 High Street Top Dowlais	CF48 3PN	Dwelling	67.0	67.3	67.8	68.5	54.3	54.6	55.0	55.6
7 High Street Top Dowlais	CF48 3PN	Dwelling	47.4	47.7	48.2	49.0	36.7	36.9	37.3	38.0
8 High Street Top Dowlais	CF48 3PN	Dwelling	50.8	51.2	51.6	52.4	39.7	40.0	40.4	41.1
9 High Street Top Dowlais	CF48 3PN	Dwelling	52.2	52.5	53.1	53.9	40.9	41.2	41.8	42.5
10 High Street Top Dowlais	CF48 3PN	Dwelling	51.1	51.4	52.1	52.9	40.0	40.3	40.9	41.6
11 High Street Top Dowlais	CF48 3PN	Dwelling	52.7	53.0	53.7	54.4	41.4	41.6	42.3	43.0
12 High Street Top Dowlais	CF48 3PN	Dwelling	51.4	51.7	52.3	53.1	40.3	40.5	41.0	41.7
13 High Street Top Dowlais	CF48 3PN	Dwelling	68.0	68.3	68.8	69.5	55.2	55.5	55.9	56.5
14 High Street Top Dowlais	CF48 3PN	Dwelling	51.6	51.9	52.4	53.2	40.4	40.7	41.1	41.8
15 High Street Top Dowlais	CF48 3PN	Dwelling	51.9	52.2	52.7	53.5	40.7	40.9	41.4	42.1
16 High Street Top Dowlais	CF48 3PN	Dwelling	48.2	48.5	49.1	49.9	37.4	37.6	38.2	38.9
17 High Street Top Dowlais	CF48 3PN	Dwelling	52.2	52.5	53.0	53.8	40.9	41.2	41.7	42.4
18 High Street Top Dowlais	CF48 3PN	Dwelling	51.2	51.5	52.1	52.9	40.1	40.3	40.8	41.5
19 High Street Top Dowlais	CF48 3PN	Dwelling	47.2	47.4	48.0	48.8	36.5	36.6	37.2	37.9
20 High Street Top Dowlais	CF48 3PN	Dwelling	50.1	50.4	50.9	51.7	39.1	39.3	39.8	40.5
21 High Street Top Dowlais	CF48 3PN	Dwelling	49.6	49.9	50.4	51.2	38.7	38.9	39.3	40.0
22 High Street Top Dowlais	CF48 3PN	Dwelling	50.8	51.0	51.6	52.4	39.7	39.9	40.4	41.1
24 High Street Top Dowlais	CF48 3PN	Dwelling	67.3	67.6	68.0	68.8	54.5	54.8	55.2	55.9
32 High Street Top Dowlais	CF48 3PN	Dwelling	49.7	50.0	51.3	52.1	38.7	38.9	40.2	40.9
33 High Street Top Dowlais	CF48 3PN	Dwelling	50.1	50.4	51.7	52.5	39.1	39.3	40.5	41.2
35 High Street Top Dowlais	CF48 3PN	Dwelling	49.1	49.3	50.7	51.4	38.2	38.3	39.6	40.2
36 High Street Top Dowlais	CF48 3PN	Dwelling	69.4	69.7	70.2	70.9	56.4	56.7	57.1	57.8
37 High Street Top Dowlais	CF48 3PN	Dwelling	50.6	50.9	52.2	52.9	39.5	39.8	40.9	41.6
38 High Street Top Dowlais	CF48 3PN	Dwelling	69.6	69.9	70.4	71.1	56.6	56.9	57.3	58.0
39 High Street Top Dowlais	CF48 3PN	Dwelling	69.7	70.1	70.5	71.2	56.7	57.0	57.5	58.1
40 High Street Top Dowlais	CF48 3PN	Dwelling	69.8	70.1	70.6	71.3	56.8	57.1	57.5	58.2
41 High Street Top Dowlais	CF48 3PN	Dwelling	69.8	70.1	70.6	71.3	56.8	57.1	57.5	58.1
42 High Street Top Dowlais	CF48 3PN	Dwelling	69.9	70.2	70.7	71.4	56.9	57.2	57.6	58.2
43 High Street Top Dowlais	CF48 3PN	Dwelling	55.3	55.5	56.2	56.9	43.7	44.0	44.6	45.2
45 High Street Top Dowlais	CF48 3PN	Dwelling	53.0	53.3	54.0	54.7	41.7	41.9	42.6	43.2
46 High Street Top Dowlais	CF48 3PN	Dwelling	49.5	49.6	50.8	51.3	38.5	38.6	39.7	40.2
47 High Street Top Dowlais	CF48 3PN	Dwelling	69.8	70.2	70.6	71.3	56.8	57.1	57.5	58.2

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
48 High Street Top Dowlais	CF48 3PN	Dwelling	69.8	70.1	70.6	71.3	56.8	57.1	57.5	58.1
New Houses 1 New Houses High Street Top Dowlais	CF48 3PS	Dwelling	69.7	70.0	70.5	71.2	56.7	57.0	57.4	58.0
New Houses 2 New Houses High Street Top Dowlais	CF48 3PS	Dwelling	69.0	69.3	69.8	70.6	56.1	56.4	56.8	57.5
New Houses 3 New Houses High Street Top Dowlais	CF48 3PS	Dwelling	68.3	68.6	69.1	69.8	55.5	55.7	56.2	56.8
Artificial Pitch Changing Unit 2 Blaen Dowlais	CF48 3PS	OSR	53.1	53.3	53.9	54.6	41.8	42.0	42.5	43.2
Artificial Pitch Changing Unit 3 Blaen Dowlais	CF48 3PS	OSR	52.8	53.1	53.6	54.3	41.5	41.7	42.2	42.9
Karibu Karibu High Street Top Dowlais	CF48 3PS	Dwelling	60.9	61.2	61.7	62.5	48.8	49.1	49.5	50.2
Maes Yr Awel Maes Yr Awel High Street Top Dowlais	CF48 3PS	Dwelling	55.7	56.0	57.0	57.7	44.1	44.4	45.2	45.9
Ty Newydd Ty Newydd High Street Top Dowlais	CF48 3PS	Dwelling	58.1	58.4	59.0	59.7	46.3	46.5	47.0	47.7
Coedcae Row	CF48 3PT	Dwelling	52.0	52.4	52.6	53.4	40.8	41.1	41.3	42.0
Dre-Fach Ifan 13 Coedcae Row	CF48 3PT	Dwelling	50.9	51.3	52.2	53.0	39.8	40.1	41.0	41.7
14 Coedcae Row	CF48 3PT	Dwelling	53.8	53.9	54.4	55.2	42.4	42.5	43.0	43.7
15 Coedcae Row	CF48 3PT	Dwelling	54.0	54.0	54.3	55.1	42.5	42.6	42.9	43.6
16 Coedcae Row	CF48 3PT	Dwelling	53.5	53.9	53.8	54.6	42.1	42.5	42.4	43.1
21 Coedcae Row	CF48 3PT	Dwelling	48.1	48.1	48.9	49.6	37.2	37.3	38.0	38.6
Crossfield 3 Crossfield Station Terrace	CF48 3PU	Dwelling	52.8	53.0	53.3	54.2	41.5	41.6	42.0	42.7
Crossfield 4 Crossfield Station Terrace	CF48 3PU	Dwelling	46.7	47.0	47.8	48.6	36.0	36.3	37.0	37.7
1 Station Terrace	CF48 3PU	Dwelling	49.8	50.3	51.3	52.2	38.8	39.2	40.1	41.0
2 Station Terrace	CF48 3PU	Dwelling	48.6	49.1	49.9	50.8	37.7	38.1	38.9	39.7
3 Station Terrace	CF48 3PU	Dwelling	49.0	49.5	50.6	51.5	38.1	38.5	39.5	40.3
4 Station Terrace	CF48 3PU	Dwelling	50.2	50.7	51.8	52.7	39.2	39.6	40.6	41.4
5 Station Terrace	CF48 3PU	Dwelling	50.2	50.7	51.9	52.8	39.2	39.6	40.7	41.5
6 Station Terrace	CF48 3PU	Dwelling	50.4	50.9	51.9	52.8	39.3	39.8	40.7	41.5
7 Station Terrace	CF48 3PU	Dwelling	50.6	51.1	52.2	53.1	39.5	40.0	41.0	41.8
8 Station Terrace	CF48 3PU	Dwelling	50.5	51.0	52.0	53.0	39.4	39.9	40.8	41.6
9 Station Terrace	CF48 3PU	Dwelling	51.0	51.5	52.4	53.3	39.9	40.3	41.1	42.0
10 Station Terrace	CF48 3PU	Dwelling	50.9	51.5	52.4	53.3	39.8	40.3	41.1	41.9
11 Station Terrace	CF48 3PU	Dwelling	51.4	51.8	52.7	53.6	40.2	40.6	41.4	42.2
12 Station Terrace	CF48 3PU	Dwelling	50.0	50.5	51.9	52.7	39.0	39.4	40.6	41.4
13 Station Terrace	CF48 3PU	Dwelling	48.4	48.8	50.1	51.0	37.5	37.9	39.1	39.9
14 Station Terrace	CF48 3PU	Dwelling	51.2	51.7	52.8	53.7	40.1	40.5	41.5	42.3
15 Station Terrace	CF48 3PU	Dwelling	50.6	51.0	52.3	53.2	39.6	39.9	41.1	41.9
16 Station Terrace	CF48 3PU	Dwelling	48.5	49.0	50.4	51.3	37.6	38.0	39.3	40.1
17 Station Terrace	CF48 3PU	Dwelling	51.4	51.7	53.0	53.9	40.2	40.5	41.7	42.5
18 Station Terrace	CF48 3PU	Dwelling	49.8	50.2	51.6	52.5	38.8	39.2	40.4	41.2
19 Station Terrace	CF48 3PU	Dwelling	49.4	49.8	51.2	52.1	38.4	38.8	40.1	40.9
20 Station Terrace	CF48 3PU	Dwelling	51.1	51.4	52.8	53.6	40.0	40.3	41.5	42.2
21 Station Terrace	CF48 3PU	Dwelling	47.4	47.8	49.1	50.0	36.7	37.0	38.2	39.0
22 Station Terrace	CF48 3PU	Dwelling	48.1	48.5	49.6	50.5	37.3	37.6	38.6	39.4
23 Station Terrace	CF48 3PU	Dwelling	53.8	54.2	54.7	55.5	42.4	42.8	43.2	43.9
24 Station Terrace	CF48 3PU	Dwelling	47.3	47.6	48.6	49.5	36.6	36.8	37.7	38.5
25 Station Terrace	CF48 3PU	Dwelling	51.1	51.4	51.8	52.6	40.0	40.3	40.6	41.3
26 Station Terrace	CF48 3PU	Dwelling	53.4	53.7	54.0	54.8	42.1	42.3	42.6	43.3
27 Station Terrace	CF48 3PU	Dwelling	55.1	55.4	55.7	56.5	43.6	43.9	44.1	44.8
28 Station Terrace	CF48 3PU	Dwelling	52.4	52.7	53.2	54.0	41.2	41.4	41.9	42.6
29 Station Terrace	CF48 3PU	Dwelling	52.0	52.2	52.7	53.5	40.8	41.0	41.4	42.1
30 Station Terrace	CF48 3PU	Dwelling	51.9	52.1	52.6	53.4	40.7	40.9	41.3	42.0
31 Station Terrace	CF48 3PU	Dwelling	47.0	47.2	47.7	48.5	36.3	36.5	36.9	37.6
32 Station Terrace	CF48 3PU	Dwelling	50.7	51.0	51.4	52.1	39.6	39.9	40.2	40.9
33 Station Terrace	CF48 3PU	Dwelling	51.8	52.1	52.5	53.3	40.6	40.9	41.3	42.0
34 Station Terrace	CF48 3PU	Dwelling	54.3	54.6	55.0	55.8	42.9	43.1	43.5	44.2
35 Station Terrace	CF48 3PU	Dwelling	52.8	53.2	53.5	54.3	41.5	41.8	42.1	42.8
36 Station Terrace	CF48 3PU	Dwelling	52.0	52.3	52.8	53.6	40.8	41.0	41.5	42.2
37 Station Terrace	CF48 3PU	Dwelling	52.6	52.9	53.2	54.0	41.3	41.6	41.9	42.6
38 Station Terrace	CF48 3PU	Dwelling	51.2	51.5	51.8	52.6	40.1	40.4	40.6	41.3
39 Station Terrace	CF48 3PU	Dwelling	49.2	49.5	49.8	50.5	38.3	38.5	38.8	39.4
40 Station Terrace	CF48 3PU	Dwelling	54.3	54.6	54.7	55.5	42.9	43.2	43.2	43.9
41 Station Terrace	CF48 3PU	Dwelling	52.5	52.8	53.0	53.8	41.2	41.5	41.7	42.4
42 Station Terrace	CF48 3PU	Dwelling	54.3	54.7	54.8	55.5	42.9	43.2	43.3	43.9
43 Station Terrace	CF48 3PU	Dwelling	54.2	54.5	54.6	55.4	42.7	43.0	43.1	43.8
44 Station Terrace	CF48 3PU	Dwelling	53.9	54.3	54.4	55.1	42.5	42.8	42.9	43.6
45 Station Terrace	CF48 3PU	Dwelling	52.6	53.0	53.2	54.0	41.4	41.6	41.9	42.6
46 Station Terrace	CF48 3PU	Dwelling	51.3	51.6	51.8	52.6	40.1	40.5	40.6	41.3
47 Station Terrace	CF48 3PU	Dwelling	54.2	54.6	54.8	55.6	42.8	43.1	43.3	44.0
48 Station Terrace	CF48 3PU	Dwelling	50.3	50.4	50.9	51.8	39.2	39.3	39.8	40.6
49 Station Terrace	CF48 3PU	Dwelling	48.9	49.3	50.0	50.8	38.0	38.4	38.9	39.7
54A High Street Top Dowlais	CF48 3PW	Dwelling	69.3	69.6	70.1	70.9	56.4	56.7	57.1	57.7
67A High Street Top Dowlais	CF48 3PW	Dwelling	70.5	70.8	71.2	72.0	57.4	57.7	58.1	58.7
Tredegar Arms Flat At High Street Top Dowlais	CF48 3PW	Dwelling	70.2	70.6	71.0	71.8	57.2	57.5	57.9	58.6
High Street Top Dowlais	CF48 3PW	Dwelling	70.2	70.6	71.0	71.8	57.2	57.5	57.9	58.6
Pentecostal Assembly Church High Street	CF48 3PW	OSR	59.0	59.3	59.9	60.7	47.1	47.4	47.9	48.6
50 High Street Top Dowlais	CF48 3PW	Dwelling	69.2	69.5	70.1	70.8	56.3	56.6	57.0	57.7
51 High Street Top Dowlais	CF48 3PW	Dwelling	69.4	69.7	70.3	71.0	56.5	56.7	57.2	57.9
52 High Street Top Dowlais	CF48 3PW	Dwelling	69.2	69.6	70.1	70.8	56.3	56.6	57.1	57.7
55 High Street Top Dowlais	CF48 3PW	Dwelling	69.8	70.2	70.6	71.3	56.8	57.1	57.5	58.2
56 High Street Top Dowlais	CF48 3PW	Dwelling	69.8	70.1	70.6	71.3	56.8	57.1	57.5	58.1
68 High Street Top Dowlais	CF48 3PW	Dwelling	69.6	70.0	70.4	71.2	56.7	56.9	57.4	58.0
69 High Street Top Dowlais	CF48 3PW	Dwelling	69.8	70.2	70.6	71.4	56.8	57.1	57.6	58.2
70 High Street Top Dowlais	CF48 3PW	Dwelling	70.4	70.7	71.2	71.9	57.3	57.6	58.0	58.7
71 High Street Top Dowlais	CF48 3PW	Dwelling	70.4	70.7	71.2	71.9	57.3	57.6	58.1	58.7
72 High Street Top Dowlais	CF48 3PW	Dwelling	70.4	70.7	71.2	71.9	57.3	57.6	58.0	58.7
73 High Street Top Dowlais	CF48 3PW	Dwelling	70.6	70.9	71.4	72.1	57.5	57.8	58.2	58.9
74 High Street Top Dowlais	CF48 3PW	Dwelling	70.2	70.6	71.0	71.8	57.2	57.5	57.9	58.6
75 High Street Top Dowlais	CF48 3PW	Dwelling	70.6	71.0	71.4	72.2	57.6	57.8	58.3	58.9
76 High Street Top Dowlais	CF48 3PW	Dwelling	70.8	71.1	71.6	72.3	57.7	58.0	58.4	59.1
77 High Street Top Dowlais	CF48 3PW	Dwelling	70.5	70.9	71.3	72.1	57.5	57.8	58.2	58.8
78 High Street Top Dowlais	CF48 3PW	Dwelling	70.6	70.9	71.3	72.1	57.5	57.8	58.2	58.8
79 High Street Top Dowlais	CF48 3PW	Dwelling	70.6	70.9	71.4	72.1	57.5	57.8	58.2	58.9
80 High Street Top Dowlais	CF48 3PW	Dwelling	70.6	70.9	71.4	72.1	57.5	57.8	58.2	58.8
81 High Street Top Dowlais	CF48 3PW	Dwelling	70.5	70.9	71.3	72.1	57.5	57.8	58.2	58.8
82 High Street Top Dowlais	CF48 3PW	Dwelling	70.7	71.0	71.5	72.2	57.6	57.9	58.3	58.9
83 High Street Top Dowlais	CF48 3PW	Dwelling	70.6	70.9	71.4	72.1	57.5	57.8	58.2	58.9
84 High Street Top Dowlais	CF48 3PW	Dwelling	70.1	70.5	70.9	71.7	57.1	57.4	57.8	58.5
85 High Street Top Dowlais	CF48 3PW	Dwelling	70.6	70.9	71.4	72.1	57.5	57.8	58.2	58.9
86 High Street Top Dowlais	CF48 3PW	Dwelling	70.7	71.0	71.5	72.2	57.6	57.9	58.3	59.0
Crud Yr Awel Crud Yr Awel Station Approach	CF48 3PY	Dwelling	50.0	50.3	51.1	51.9	39.0	39.3	40.0	40.7
Cysgod Y Llyn Cysgod Y Llyn Station Approach	CF48 3PY	Dwelling	52.6	53.1	53.6	54.5	41.3	41.8	42.2	43.0
Maes Yr Orsaf Maes Yr Orsaf Station Approach	CF48 3PY	Dwelling	49.5	49.9	51.0	51.9	38.5	38.9	39.9	40.7
Station House Station House Station Approach	CF48 3PY	Dwelling	51.8	52.2	53.1	54.0	40.6	41.0	41.8	42.5
1 Coedcae	CF48 3RA	Dwelling	57.2	57.5	58.0	58.7	45.5	45.8	46.1	46.8
2 Coedcae	CF48 3RA	Dwelling	57.1	57.4	57.7	58.5	45.3	45.7	45.9	46.6
3 Coedcae	CF48 3RA	Dwelling	48.2	48.6	48.9	49.7	37.4	37.7	38.0	38.7
4 Coedcae	CF48 3RA	Dwelling	47.4	47.8	48.4	49.2	36.7	37.0	37.5	38.3
1A Blaen Dowlais	CF48 3RB	Dwelling	53.1	53.4	54.1	54.8	41.8	42.1	42.6	43.3
1B Blaen Dowlais	CF48 3RB	Dwelling	48.9	48.8	50.0	50.7	38.0	37.9	39.0	39.6
Blaen Dowlais	CF48 3RB	Dwelling	52.4	52.6	52.9	53.5	41.2	41.4	41.6	42.2
Dowlais Rugby Club Blaen Dowlais	CF48 3RB	OSR	49.6	49.8	50.8	51.5	38.6	38.8	39.7	40.4

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
Dowlais Rugby Club Changing Rooms Blaen Dowlais	CF48 3RB	OSR	54.2	54.6	55.2	55.9	42.8	43.1	43.7	44.3
1 Blaen Dowlais	CF48 3RB	Dwelling	51.9	52.3	52.1	52.9	40.7	41.1	40.9	41.6
2 Blaen Dowlais	CF48 3RB	Dwelling	51.5	51.9	51.7	52.5	40.3	40.7	40.5	41.2
3 Blaen Dowlais	CF48 3RB	Dwelling	51.7	52.1	52.0	52.7	40.5	40.9	40.7	41.4
4 Blaen Dowlais	CF48 3RB	Dwelling	51.8	52.2	52.0	52.7	40.6	41.0	40.8	41.4
5 Blaen Dowlais	CF48 3RB	Dwelling	51.4	51.8	51.6	52.4	40.3	40.6	40.5	41.1
6 Blaen Dowlais	CF48 3RB	Dwelling	51.8	52.2	52.0	52.7	40.6	41.0	40.8	41.4
7 Blaen Dowlais	CF48 3RB	Dwelling	54.0	54.3	54.6	55.3	42.6	42.9	43.1	43.7
8 Blaen Dowlais	CF48 3RB	Dwelling	51.5	51.9	51.7	52.4	40.3	40.7	40.5	41.1
9 Blaen Dowlais	CF48 3RB	Dwelling	54.3	54.6	54.8	55.5	42.8	43.1	43.3	43.9
10 Blaen Dowlais	CF48 3RB	Dwelling	53.1	53.3	53.3	54.0	41.7	42.0	42.0	42.6
11 Blaen Dowlais	CF48 3RB	Dwelling	51.8	52.3	52.0	52.7	40.6	41.0	40.8	41.4
12 Blaen Dowlais	CF48 3RB	Dwelling	51.7	52.1	51.9	52.6	40.5	40.9	40.7	41.3
13 Blaen Dowlais	CF48 3RB	Dwelling	51.7	52.2	51.9	52.6	40.5	40.9	40.7	41.3
14 Blaen Dowlais	CF48 3RB	Dwelling	51.9	52.3	52.0	52.7	40.7	41.0	40.8	41.4
15 Blaen Dowlais	CF48 3RB	Dwelling	54.9	55.3	55.2	55.9	43.4	43.7	43.7	44.3
16 Blaen Dowlais	CF48 3RB	Dwelling	52.2	52.6	52.3	53.0	41.0	41.4	41.0	41.7
17 Blaen Dowlais	CF48 3RB	Dwelling	55.2	55.5	55.4	56.1	43.6	44.0	43.8	44.5
18 Blaen Dowlais	CF48 3RB	Dwelling	52.4	52.6	53.0	53.7	41.2	41.3	41.6	42.3
20 Blaen Dowlais	CF48 3RB	Dwelling	55.3	55.7	55.4	56.1	43.8	44.1	43.9	44.5
22 Blaen Dowlais	CF48 3RB	Dwelling	52.9	53.4	53.0	53.7	41.6	42.0	41.6	42.3
23 Blaen Dowlais	CF48 3RB	Dwelling	52.8	53.0	53.1	53.8	41.5	41.7	41.8	42.4
24 Blaen Dowlais	CF48 3RB	Dwelling	50.2	50.7	50.3	51.0	39.2	39.6	39.2	39.8
25 Blaen Dowlais	CF48 3RB	Dwelling	50.3	50.8	50.3	51.1	39.3	39.7	39.3	39.9
26 Blaen Dowlais	CF48 3RB	Dwelling	56.6	57.1	56.8	57.5	44.9	45.4	45.1	45.7
27 Blaen Dowlais	CF48 3RB	Dwelling	53.9	54.4	53.9	54.6	42.5	42.9	42.5	43.1
28 Blaen Dowlais	CF48 3RB	Dwelling	54.1	54.6	54.1	54.8	42.7	43.1	42.7	43.3
29 Blaen Dowlais	CF48 3RB	Dwelling	54.5	55.0	54.5	55.2	43.1	43.5	43.1	43.7
30 Blaen Dowlais	CF48 3RB	Dwelling	54.6	55.2	54.6	55.3	43.1	43.6	43.1	43.8
31 Blaen Dowlais	CF48 3RB	Dwelling	54.9	55.4	54.8	55.6	43.4	43.8	43.3	44.0
32 Blaen Dowlais	CF48 3RB	Dwelling	57.6	58.1	57.7	58.4	45.9	46.3	45.9	46.6
33 Blaen Dowlais	CF48 3RB	Dwelling	55.3	55.8	55.3	56.0	43.7	44.2	43.7	44.4
34 Blaen Dowlais	CF48 3RB	Dwelling	52.7	53.3	52.7	53.4	41.4	41.9	41.4	42.0
35 Blaen Dowlais	CF48 3RB	Dwelling	53.4	54.0	53.4	54.1	42.1	42.6	42.0	42.7
36 Blaen Dowlais	CF48 3RB	Dwelling	57.2	57.7	57.2	57.9	45.5	45.9	45.4	46.1
37 Blaen Dowlais	CF48 3RB	Dwelling	57.5	58.1	57.4	58.2	45.7	46.2	45.7	46.3
38 Blaen Dowlais	CF48 3RB	Dwelling	60.4	61.0	60.4	61.1	48.4	48.9	48.3	49.0
39 Blaen Dowlais	CF48 3RB	Dwelling	60.2	60.7	60.2	60.9	48.2	48.6	48.1	48.8
40 Blaen Dowlais	CF48 3RB	Dwelling	63.9	64.5	63.8	64.6	51.5	52.0	51.4	52.1
41 Blaen Dowlais	CF48 3RB	Dwelling	63.3	63.9	63.2	64.0	51.0	51.5	50.9	51.6
42 Blaen Dowlais	CF48 3RB	Dwelling	58.4	58.9	58.4	59.1	46.5	47.0	46.5	47.2
43 Blaen Dowlais	CF48 3RB	Dwelling	57.4	58.0	57.4	58.2	45.7	46.2	45.7	46.4
44 Blaen Dowlais	CF48 3RB	Dwelling	56.5	57.1	56.6	57.3	44.9	45.3	44.9	45.6
45 Blaen Dowlais	CF48 3RB	Dwelling	56.2	56.7	56.2	57.0	44.5	45.0	44.6	45.3
46 Blaen Dowlais	CF48 3RB	Dwelling	55.6	56.1	55.7	56.5	44.0	44.5	44.1	44.8
47 Blaen Dowlais	CF48 3RB	Dwelling	53.5	54.0	53.8	54.6	42.2	42.6	42.4	43.1
61 Blaen Dowlais	CF48 3RB	Dwelling	53.9	54.3	54.2	54.9	42.5	42.9	42.7	43.4
62 Blaen Dowlais	CF48 3RB	Dwelling	53.7	54.1	54.0	54.7	42.3	42.7	42.6	43.2
63 Blaen Dowlais	CF48 3RB	Dwelling	53.4	53.8	53.7	54.5	42.1	42.4	42.3	43.0
64 Blaen Dowlais	CF48 3RB	Dwelling	53.1	53.5	53.5	54.2	41.8	42.1	42.1	42.8
65 Blaen Dowlais	CF48 3RB	Dwelling	53.3	53.7	53.6	54.4	41.9	42.3	42.3	42.9
66 Blaen Dowlais	CF48 3RB	Dwelling	53.2	53.6	53.6	54.3	41.8	42.2	42.2	42.9
67 Blaen Dowlais	CF48 3RB	Dwelling	53.2	53.6	53.5	54.3	41.8	42.2	42.2	42.9
68 Blaen Dowlais	CF48 3RB	Dwelling	53.1	53.5	53.5	54.3	41.7	42.1	42.1	42.8
69 Blaen Dowlais	CF48 3RB	Dwelling	53.0	53.4	53.4	54.2	41.7	42.1	42.1	42.8
70 Blaen Dowlais	CF48 3RB	Dwelling	53.1	53.5	53.5	54.2	41.7	42.1	42.1	42.8
71 Blaen Dowlais	CF48 3RB	Dwelling	53.0	53.4	53.5	54.2	41.7	42.1	42.1	42.8
72 Blaen Dowlais	CF48 3RB	Dwelling	53.0	53.4	53.4	54.2	41.7	42.0	42.0	42.7
73 Blaen Dowlais	CF48 3RB	Dwelling	52.8	53.2	53.2	54.0	41.5	41.8	41.9	42.5
74 Blaen Dowlais	CF48 3RB	Dwelling	52.7	53.2	53.2	53.9	41.4	41.8	41.8	42.5
75 Blaen Dowlais	CF48 3RB	Dwelling	52.8	53.2	53.2	54.0	41.5	41.9	41.9	42.6
76 Blaen Dowlais	CF48 3RB	Dwelling	51.3	51.7	51.5	52.2	40.2	40.5	40.3	40.9
77 Blaen Dowlais	CF48 3RB	Dwelling	49.9	50.4	50.4	51.2	38.9	39.3	39.3	40.0
78 Blaen Dowlais	CF48 3RB	Dwelling	50.0	50.5	50.6	51.4	39.0	39.4	39.5	40.2
79 Blaen Dowlais	CF48 3RB	Dwelling	50.2	50.6	50.8	51.6	39.1	39.5	39.7	40.4
80 Blaen Dowlais	CF48 3RB	Dwelling	50.4	50.9	51.3	52.1	39.3	39.7	40.1	40.9
81 Blaen Dowlais	CF48 3RB	Dwelling	51.1	51.5	51.9	52.8	39.9	40.3	40.7	41.5
82 Blaen Dowlais	CF48 3RB	Dwelling	52.3	52.6	53.4	54.2	41.0	41.3	42.1	42.8
5A Rectory Close	CF48 3RD	Dwelling	46.1	46.7	46.9	47.7	35.5	36.0	36.2	36.9
1 Rectory Close	CF48 3RD	Dwelling	45.7	46.2	46.5	47.3	35.1	35.6	35.8	36.5
2 Rectory Close	CF48 3RD	Dwelling	46.1	46.7	46.8	47.6	35.5	36.0	36.1	36.8
3 Rectory Close	CF48 3RD	Dwelling	45.9	46.5	46.6	47.4	35.3	35.8	35.9	36.6
4 Rectory Close	CF48 3RD	Dwelling	46.5	47.0	47.0	47.9	35.8	36.3	36.3	37.0
5 Rectory Close	CF48 3RD	Dwelling	45.8	46.3	46.3	47.1	35.2	35.6	35.6	36.4
6 Rectory Close	CF48 3RD	Dwelling	46.5	47.0	46.8	47.7	35.9	36.3	36.1	36.9
7 Rectory Close	CF48 3RD	Dwelling	43.2	43.6	44.0	44.8	32.8	33.2	33.6	34.3
8 Rectory Close	CF48 3RD	Dwelling	46.1	46.7	46.9	47.7	35.5	36.0	36.2	37.0
Gospel Hall Berry Square	CF48 3RL	OSR	50.4	51.5	50.8	51.7	39.4	40.3	39.7	40.5
31A Victoria Street	CF48 3RN	Dwelling	51.7	52.9	52.1	52.9	40.5	41.6	40.8	41.6
Beulah Chapel Victoria Street	CF48 3RN	OSR	51.5	52.6	51.7	52.7	40.4	41.3	40.5	41.4
Dowlais Community Centre Stephens And George Building Station Road	CF48 3RN	OSR	51.7	52.4	52.0	52.9	40.5	41.2	40.8	41.6
30 Victoria Street	CF48 3RN	Dwelling	70.1	71.4	70.3	71.1	57.1	58.2	57.3	57.9
31 Victoria Street	CF48 3RN	Dwelling	51.7	52.9	52.1	52.9	40.5	41.6	40.8	41.6
33 Victoria Street	CF48 3RN	Dwelling	47.4	48.6	47.8	48.7	36.7	37.7	37.0	37.8
36 Victoria Street	CF48 3RN	Dwelling	48.0	49.3	48.4	49.3	37.2	38.4	37.5	38.3
37 Victoria Street	CF48 3RN	Dwelling	48.9	50.4	49.2	50.2	38.0	39.3	38.3	39.2
39 Victoria Street	CF48 3RN	Dwelling	70.4	72.8	70.5	71.8	57.4	59.5	57.4	58.6
80 Victoria Street	CF48 3RN	Dwelling	47.6	48.7	47.9	48.7	36.8	37.8	37.1	37.8
87 Victoria Street	CF48 3RN	Dwelling	49.9	50.9	50.3	51.1	38.9	39.8	39.2	40.0
20A Alma Street	CF48 3RP	Dwelling	48.6	50.1	49.2	50.3	37.8	39.1	38.3	39.2
20B Alma Street	CF48 3RP	Dwelling	49.1	50.5	49.8	50.8	38.2	39.4	38.8	39.7
20C Alma Street	CF48 3RP	Dwelling	47.9	49.2	48.5	49.5	37.1	38.3	37.6	38.5
Alma Street	CF48 3RP	Dwelling	52.1	54.0	52.5	53.6	40.9	42.5	41.2	42.2
7 Alma Street	CF48 3RP	Dwelling	52.1	54.0	52.5	53.6	40.9	42.5	41.2	42.2
8 Alma Street	CF48 3RP	Dwelling	57.2	59.6	57.4	58.7	45.5	47.6	45.7	46.8
9 Alma Street	CF48 3RP	Dwelling	61.7	64.3	61.9	63.2	49.5	51.9	49.7	50.9
10 Alma Street	CF48 3RP	Dwelling	70.8	73.5	70.9	72.3	57.7	60.2	57.8	59.0
13 Alma Street	CF48 3RP	Dwelling	70.7	73.4	70.8	72.2	57.6	60.1	57.7	58.9
14 Alma Street	CF48 3RP	Dwelling	60.1	62.7	60.3	61.6	48.1	50.4	48.3	49.4
15 Alma Street	CF48 3RP	Dwelling	58.5	60.9	58.8	60.0	46.7	48.8	46.9	48.0
16 Alma Street	CF48 3RP	Dwelling	56.3	58.6	56.6	57.8	44.7	46.7	44.9	46.0
17 Alma Street	CF48 3RP	Dwelling	55.6	57.7	56.0	57.2	44.0	45.9	44.4	45.4
18 Alma Street	CF48 3RP	Dwelling	54.3	56.1	54.7	55.9	42.8	44.5	43.2	44.3
19 Alma Street	CF48 3RP	Dwelling	53.4	55.0	53.9	55.0	42.0	43.5	42.5	43.5
20 Alma Street	CF48 3RP	Dwelling	52.6	54.0	53.1	54.2	41.3	42.6	41.8	42.7
21 Alma Street	CF48 3RP	Dwelling	52.5	54.2	52.9	54.0	41.3	42.7	41.6	42.6
22 Alma Street	CF48 3RP	Dwelling	53.2	55.0	53.6	54.7	41.8	43.5	42.2	43.2

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
23 Alma Street	CF48 3RP	Dwelling	54.8	57.0	55.1	56.3	43.3	45.2	43.6	44.7
25 Alma Street	CF48 3RP	Dwelling	48.1	49.4	48.6	49.7	37.3	38.5	37.7	38.7
26 Alma Street	CF48 3RP	Dwelling	69.5	72.2	69.6	71.0	56.5	59.0	56.6	57.8
29 Alma Street	CF48 3RP	Dwelling	70.0	72.7	70.1	71.5	57.0	59.4	57.1	58.3
30 Alma Street	CF48 3RP	Dwelling	58.9	61.5	59.1	60.4	47.0	49.3	47.1	48.3
31 Alma Street	CF48 3RP	Dwelling	51.2	52.7	51.7	52.7	40.1	41.4	40.5	41.4
32 Alma Street	CF48 3RP	Dwelling	52.9	55.1	53.1	54.3	41.6	43.6	41.8	42.9
33 Alma Street	CF48 3RP	Dwelling	50.4	51.7	50.8	51.8	39.4	40.5	39.7	40.6
34 Alma Street	CF48 3RP	Dwelling	47.9	49.2	48.6	49.5	37.1	38.3	37.7	38.5
35 Alma Street	CF48 3RP	Dwelling	46.7	48.0	47.3	48.2	36.0	37.2	36.5	37.4
36 Alma Street	CF48 3RP	Dwelling	49.0	50.6	49.4	50.4	38.1	39.5	38.4	39.3
37 Alma Street	CF48 3RP	Dwelling	48.4	49.9	48.8	49.8	37.6	38.9	37.9	38.8
38 Alma Street	CF48 3RP	Dwelling	49.9	50.9	50.4	51.3	38.9	39.8	39.3	40.1
39 Alma Street	CF48 3RP	Dwelling	46.9	48.1	47.4	48.4	36.2	37.3	36.7	37.5
40 Alma Street	CF48 3RP	Dwelling	47.4	48.8	47.8	48.8	36.7	37.9	37.0	37.9
41 Alma Street	CF48 3RP	Dwelling	45.6	46.8	46.1	47.0	35.1	36.1	35.5	36.2
1A Spring Street	CF48 3RR	Dwelling	49.6	50.9	50.0	51.0	38.6	39.8	39.0	39.9
Flat 20A The Flat Spring Street	CF48 3RR	Dwelling	70.5	71.6	70.3	71.6	57.5	58.4	57.2	58.4
Spring Street	CF48 3RR	Dwelling	50.0	51.0	50.5	51.5	39.0	39.9	39.4	40.3
1 Spring Street	CF48 3RR	Dwelling	50.3	51.2	51.0	51.9	39.2	40.1	39.9	40.7
2 Spring Street	CF48 3RR	Dwelling	50.6	51.5	51.3	52.3	39.5	40.3	40.2	41.0
3 Spring Street	CF48 3RR	Dwelling	47.3	48.2	47.8	48.8	36.6	37.3	37.0	37.9
4 Spring Street	CF48 3RR	Dwelling	50.5	51.4	51.3	52.2	39.5	40.3	40.1	41.0
5 Spring Street	CF48 3RR	Dwelling	48.7	49.7	49.4	50.4	37.8	38.8	38.4	39.3
6 Spring Street	CF48 3RR	Dwelling	45.6	46.7	46.3	47.3	35.1	36.0	35.6	36.5
7 Spring Street	CF48 3RR	Dwelling	47.8	48.7	48.4	49.4	37.0	37.8	37.5	38.4
8 Spring Street	CF48 3RR	Dwelling	49.1	50.0	49.8	50.8	38.2	39.0	38.8	39.7
9 Spring Street	CF48 3RR	Dwelling	48.4	49.2	48.9	49.9	37.5	38.2	38.0	38.9
10 Spring Street	CF48 3RR	Dwelling	48.5	49.2	49.0	50.0	37.6	38.3	38.1	39.0
11 Spring Street	CF48 3RR	Dwelling	50.6	51.5	51.2	52.2	39.5	40.3	40.1	40.9
12 Spring Street	CF48 3RR	Dwelling	50.3	51.2	51.0	52.0	39.3	40.1	39.9	40.8
13 Spring Street	CF48 3RR	Dwelling	46.9	47.9	47.5	48.5	36.2	37.1	36.8	37.7
15 Spring Street	CF48 3RR	Dwelling	48.3	49.3	48.9	49.8	37.4	38.3	38.0	38.8
16 Spring Street	CF48 3RR	Dwelling	50.3	51.1	50.7	51.7	39.2	40.0	39.6	40.5
17 Spring Street	CF48 3RR	Dwelling	48.8	49.6	49.3	50.3	37.9	38.6	38.3	39.3
18 Spring Street	CF48 3RR	Dwelling	48.7	49.5	49.2	50.2	37.8	38.6	38.3	39.2
19 Spring Street	CF48 3RR	Dwelling	49.2	50.0	49.4	50.5	38.2	38.9	38.4	39.4
21 Spring Street	CF48 3RR	Dwelling	51.1	52.2	51.2	52.3	40.0	41.0	40.1	41.1
22 Spring Street	CF48 3RR	Dwelling	50.9	52.1	51.1	52.2	39.8	40.8	40.0	40.9
23 Spring Street	CF48 3RR	Dwelling	47.8	49.2	48.0	49.1	37.0	38.2	37.2	38.2
24 Spring Street	CF48 3RR	Dwelling	49.5	50.5	49.9	50.9	38.5	39.5	38.9	39.8
25 Spring Street	CF48 3RR	Dwelling	49.3	50.3	49.9	50.9	38.3	39.3	38.9	39.8
26 Spring Street	CF48 3RR	Dwelling	50.5	51.7	50.9	51.9	39.4	40.6	39.8	40.7
27 Spring Street	CF48 3RR	Dwelling	49.4	50.7	49.8	50.8	38.5	39.6	38.8	39.7
28 Spring Street	CF48 3RR	Dwelling	50.5	51.7	50.9	51.9	39.4	40.5	39.8	40.7
30 Spring Street	CF48 3RR	Dwelling	48.4	49.4	48.8	49.8	37.6	38.4	37.9	38.8
31 Spring Street	CF48 3RR	Dwelling	48.4	49.3	48.7	49.7	37.5	38.3	37.8	38.7
33 Spring Street	CF48 3RR	Dwelling	48.3	49.3	48.7	49.7	37.5	38.3	37.8	38.7
34 Spring Street	CF48 3RR	Dwelling	49.8	51.2	50.2	51.2	38.8	40.0	39.1	40.0
35 Spring Street	CF48 3RR	Dwelling	49.7	51.0	50.1	51.1	38.7	39.9	39.0	39.9
36 Spring Street	CF48 3RR	Dwelling	48.1	49.0	48.5	49.6	37.3	38.1	37.7	38.6
37 Spring Street	CF48 3RR	Dwelling	51.7	53.4	52.0	53.1	40.5	42.1	40.7	41.7
40 Spring Street	CF48 3RR	Dwelling	50.4	52.5	50.8	51.9	39.4	41.2	39.7	40.7
Eden 4A Libanus Street	CF48 3RS	Dwelling	50.0	51.0	50.4	51.5	39.0	39.8	39.3	40.3
Libanus Street	CF48 3RS	Dwelling	50.9	51.8	51.5	52.5	39.8	40.6	40.3	41.2
Libanus Street	CF48 3RS	Dwelling	47.9	48.9	48.4	49.5	37.1	38.0	37.6	38.5
1 Libanus Street	CF48 3RS	Dwelling	50.0	51.0	50.5	51.5	39.0	39.9	39.4	40.3
2 Libanus Street	CF48 3RS	Dwelling	49.9	50.8	50.4	51.4	38.9	39.7	39.3	40.2
3 Libanus Street	CF48 3RS	Dwelling	49.7	50.6	50.2	51.2	38.7	39.5	39.1	40.0
5 Libanus Street	CF48 3RS	Dwelling	49.6	50.5	49.9	51.0	38.6	39.4	38.9	39.9
6 Libanus Street	CF48 3RS	Dwelling	50.2	51.1	50.5	51.6	39.2	40.0	39.5	40.4
7 Libanus Street	CF48 3RS	Dwelling	48.5	49.3	49.1	50.1	37.6	38.4	38.2	39.0
8 Libanus Street	CF48 3RS	Dwelling	47.9	48.8	48.5	49.5	37.1	37.9	37.6	38.5
9 Libanus Street	CF48 3RS	Dwelling	51.1	51.9	51.5	52.6	40.0	40.7	40.4	41.3
34A White Street	CF48 3RT	Dwelling	50.5	51.3	51.0	52.0	39.4	40.1	39.9	40.8
34B White Street	CF48 3RT	Dwelling	51.9	52.7	52.2	53.3	40.7	41.5	41.0	41.9
34C White Street	CF48 3RT	Dwelling	49.0	49.8	49.3	50.4	38.1	38.8	38.3	39.3
38A White Street	CF48 3RT	Dwelling	45.9	46.8	46.6	47.6	35.3	36.1	35.9	36.8
White Street	CF48 3RT	Dwelling	48.7	49.6	49.1	50.1	37.8	38.6	38.2	39.0
4 White Street	CF48 3RT	Dwelling	46.7	47.5	47.5	48.4	36.0	36.8	36.7	37.6
5 White Street	CF48 3RT	Dwelling	48.4	49.2	49.2	50.2	37.5	38.2	38.3	39.1
6 White Street	CF48 3RT	Dwelling	45.8	46.7	46.5	47.5	35.2	36.0	35.8	36.7
7 White Street	CF48 3RT	Dwelling	46.7	47.4	47.4	48.4	36.0	36.7	36.6	37.5
8 White Street	CF48 3RT	Dwelling	46.3	47.0	46.8	47.7	35.6	36.3	36.1	36.9
9 White Street	CF48 3RT	Dwelling	50.2	51.1	50.5	51.5	39.2	40.0	39.4	40.3
10 White Street	CF48 3RT	Dwelling	46.3	47.1	46.9	47.9	35.6	36.3	36.2	37.1
11 White Street	CF48 3RT	Dwelling	50.4	51.3	50.6	51.7	39.3	40.1	39.5	40.5
12 White Street	CF48 3RT	Dwelling	45.9	46.7	46.6	47.6	35.3	36.0	35.9	36.8
13 White Street	CF48 3RT	Dwelling	46.8	47.6	47.4	48.4	36.1	36.8	36.7	37.6
14 White Street	CF48 3RT	Dwelling	46.6	47.4	47.3	48.3	35.9	36.6	36.6	37.4
15 White Street	CF48 3RT	Dwelling	46.9	47.7	47.6	48.6	36.2	36.9	36.8	37.7
16 White Street	CF48 3RT	Dwelling	47.7	48.5	48.4	49.4	36.9	37.6	37.5	38.4
17 White Street	CF48 3RT	Dwelling	47.5	48.3	48.1	49.1	36.8	37.4	37.3	38.2
18 White Street	CF48 3RT	Dwelling	47.2	48.0	47.9	48.9	36.5	37.2	37.1	38.0
19 White Street	CF48 3RT	Dwelling	47.7	48.4	48.3	49.3	36.9	37.6	37.5	38.4
20 White Street	CF48 3RT	Dwelling	49.1	49.9	49.7	50.8	38.2	38.9	38.7	39.7
21 White Street	CF48 3RT	Dwelling	46.3	47.1	46.9	48.0	35.6	36.4	36.2	37.1
22 White Street	CF48 3RT	Dwelling	46.6	47.4	47.3	48.3	35.9	36.7	36.5	37.5
23 White Street	CF48 3RT	Dwelling	47.1	47.9	47.7	48.8	36.4	37.1	37.0	37.9
24 White Street	CF48 3RT	Dwelling	47.9	48.7	48.3	49.4	37.1	37.8	37.5	38.4
25 White Street	CF48 3RT	Dwelling	48.7	49.5	49.0	50.1	37.8	38.6	38.1	39.0
26 White Street	CF48 3RT	Dwelling	71.2	72.3	71.0	72.3	58.1	59.0	57.8	59.0
28 White Street	CF48 3RT	Dwelling	68.5	69.6	68.3	69.6	55.7	56.6	55.4	56.6
29 White Street	CF48 3RT	Dwelling	52.2	53.1	52.3	53.5	40.9	41.8	41.1	42.1
30 White Street	CF48 3RT	Dwelling	55.4	56.4	55.4	56.6	43.9	44.8	43.8	44.9
31 White Street	CF48 3RT	Dwelling	54.8	55.8	54.8	56.0	43.3	44.2	43.3	44.4
32 White Street	CF48 3RT	Dwelling	46.2	47.0	46.7	47.8	35.6	36.3	36.0	37.0
33 White Street	CF48 3RT	Dwelling	48.8	49.6	49.3	50.3	37.9	38.6	38.3	39.2
35 White Street	CF48 3RT	Dwelling	49.3	50.3	49.7	50.7	38.4	39.2	38.7	39.6
36 White Street	CF48 3RT	Dwelling	48.6	49.5	49.0	50.1	37.8	38.5	38.1	39.1
38 White Street	CF48 3RT	Dwelling	51.3	52.1	51.7	52.7	40.2	40.9	40.5	41.4
39 White Street	CF48 3RT	Dwelling	47.9	48.8	48.4	49.4	37.1	37.9	37.6	38.4
40 White Street	CF48 3RT	Dwelling	49.3	50.1	50.0	51.0	38.4	39.1	39.0	39.9
41 White Street	CF48 3RT	Dwelling	48.9	49.7	49.6	50.6	38.0	38.7	38.6	39.5
42 White Street	CF48 3RT	Dwelling	48.7	49.8	49.2	50.1	37.8	38.8	38.2	39.1
43 White Street	CF48 3RT	Dwelling	48.2	49.1	48.8	49.7	37.4	38.1	37.9	38.7
Ebenezer House Ebenezer House Alma Terrace	CF48 3RU	Dwelling	48.9	49.9	49.4	50.4	38.0	38.9	38.5	39.3

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
Graig House Graig House Alma Terrace	CF48 3RU	Dwelling	48.5	49.4	49.1	50.0	37.7	38.4	38.1	39.0
St Michaels St. Michaels Alma Terrace	CF48 3RU	Dwelling	47.0	48.0	47.7	48.7	36.3	37.2	36.9	37.8
1 Alma Terrace	CF48 3RU	Dwelling	45.7	46.5	46.4	47.4	35.1	35.8	35.8	36.6
2 Alma Terrace	CF48 3RU	Dwelling	44.5	45.4	45.1	46.1	34.1	34.8	34.6	35.5
3 Alma Terrace	CF48 3RU	Dwelling	48.0	48.8	48.6	49.6	37.2	37.9	37.7	38.6
4 Alma Terrace	CF48 3RU	Dwelling	46.9	47.7	47.6	48.6	36.2	36.9	36.8	37.7
47A Victoria Street	CF48 3RW	Dwelling	51.6	52.5	51.7	52.8	40.4	41.2	40.5	41.5
Bruce Hotel Victoria Street	CF48 3RW	OSR	51.5	52.4	51.8	52.9	40.3	41.1	40.6	41.6
Victoria Street	CF48 3RW	Dwelling	49.5	50.4	49.6	50.7	38.6	39.4	38.6	39.6
41 Victoria Street	CF48 3RW	Dwelling	50.1	51.4	50.4	51.5	39.1	40.3	39.4	40.3
42 Victoria Street	CF48 3RW	Dwelling	48.3	49.4	48.6	49.7	37.5	38.4	37.7	38.7
43 Victoria Street	CF48 3RW	Dwelling	52.8	53.8	53.0	54.1	41.5	42.4	41.7	42.6
44 Victoria Street	CF48 3RW	Dwelling	70.5	71.6	70.3	71.6	57.5	58.4	57.2	58.4
47 Victoria Street	CF48 3RW	Dwelling	47.1	47.9	47.1	48.3	36.4	37.1	36.4	37.4
48 Flat Victoria Street	CF48 3RW	Dwelling	49.5	50.4	49.6	50.7	38.6	39.4	38.6	39.6
Cardigan Arms 49 Victoria Street	CF48 3RW	Dwelling	52.7	53.6	52.8	54.0	41.5	42.2	41.5	42.6
50 Victoria Street	CF48 3RW	Dwelling	49.6	50.4	49.8	50.9	38.6	39.3	38.8	39.8
51 Victoria Street	CF48 3RW	Dwelling	51.1	52.0	51.2	52.4	40.0	40.8	40.0	41.1
55 Victoria Street	CF48 3RW	Dwelling	48.6	49.5	48.9	50.0	37.7	38.5	38.0	39.0
58 Victoria Street	CF48 3RW	Dwelling	52.4	53.2	52.7	53.7	41.2	41.9	41.4	42.3
59 Victoria Street	CF48 3RW	Dwelling	52.5	53.4	52.8	53.8	41.3	42.0	41.5	42.4
60 Victoria Street	CF48 3RW	Dwelling	50.3	51.1	50.7	51.7	39.3	39.9	39.6	40.5
61 Victoria Street	CF48 3RW	Dwelling	52.5	53.4	52.8	53.9	41.3	42.0	41.5	42.4
1 Bryntirion Street	CF48 3RY	Dwelling	48.8	50.2	49.3	50.2	37.9	39.2	38.4	39.1
2 Bryntirion Street	CF48 3RY	Dwelling	48.3	49.8	48.8	49.7	37.5	38.8	37.9	38.7
3 Bryntirion Street	CF48 3RY	Dwelling	46.2	47.2	46.8	47.7	35.6	36.5	36.1	36.9
4 Bryntirion Street	CF48 3RY	Dwelling	46.6	47.7	47.1	48.0	36.0	36.9	36.3	37.2
5 Bryntirion Street	CF48 3RY	Dwelling	47.2	48.2	47.8	48.8	36.5	37.3	37.0	37.9
6 Bryntirion Street	CF48 3RY	Dwelling	45.2	46.3	45.8	46.7	34.7	35.7	35.2	36.0
7 Bryntirion Street	CF48 3RY	Dwelling	49.3	50.8	49.8	50.7	38.4	39.7	38.8	39.6
8 Bryntirion Street	CF48 3RY	Dwelling	48.0	48.8	48.6	49.5	37.2	37.9	37.7	38.5
9 Bryntirion Street	CF48 3RY	Dwelling	46.3	47.3	46.9	47.8	35.6	36.5	36.2	37.0
10 Bryntirion Street	CF48 3RY	Dwelling	49.0	50.2	49.4	50.4	38.0	39.2	38.4	39.3
11 Bryntirion Street	CF48 3RY	Dwelling	45.8	47.0	46.3	47.3	35.2	36.2	35.6	36.5
12 Bryntirion Street	CF48 3RY	Dwelling	51.1	52.9	51.4	52.5	39.9	41.6	40.2	41.2
13 Bryntirion Street	CF48 3RY	Dwelling	50.0	52.0	50.4	51.5	39.0	40.7	39.3	40.3
14 Bryntirion Street	CF48 3RY	Dwelling	52.3	54.4	52.5	53.7	41.0	42.9	41.3	42.3
15 Bryntirion Street	CF48 3RY	Dwelling	45.7	47.5	46.1	47.2	35.1	36.7	35.5	36.4
16 Bryntirion Street	CF48 3RY	Dwelling	47.8	48.7	48.4	49.3	37.0	37.9	37.5	38.4
17 Bryntirion Street	CF48 3RY	Dwelling	52.5	54.8	52.8	54.0	41.3	43.3	41.5	42.5
18 Bryntirion Street	CF48 3RY	Dwelling	49.8	52.2	50.1	51.3	38.8	40.9	39.0	40.1
19 Bryntirion Street	CF48 3RY	Dwelling	47.9	48.9	48.4	49.4	37.1	38.0	37.6	38.4
20 Bryntirion Street	CF48 3RY	Dwelling	47.8	48.8	48.3	49.3	37.0	37.9	37.5	38.3
21 Bryntirion Street	CF48 3RY	Dwelling	48.0	50.3	48.3	49.5	37.2	39.2	37.5	38.5
22 Bryntirion Street	CF48 3RY	Dwelling	50.9	52.9	51.2	52.3	39.8	41.6	40.1	41.1
23 Bryntirion Street	CF48 3RY	Dwelling	49.3	51.2	49.7	50.7	38.3	40.0	38.7	39.6
1 Graig Terrace	CF48 3SA	Dwelling	55.3	57.9	55.6	56.8	43.8	46.1	44.0	45.1
2 Graig Terrace	CF48 3SA	Dwelling	54.3	56.5	54.5	55.4	42.9	44.8	43.0	43.9
3 Graig Terrace	CF48 3SA	Dwelling	47.2	48.7	47.6	48.3	36.5	37.8	36.8	37.4
4 Graig Terrace	CF48 3SA	Dwelling	45.1	46.9	45.9	46.5	34.6	36.2	35.3	35.8
5 Graig Terrace	CF48 3SA	Dwelling	45.2	46.5	45.8	46.7	34.7	35.8	35.2	36.0
7 Graig Terrace	CF48 3SA	Dwelling	46.7	47.8	47.2	48.1	36.0	37.0	36.5	37.2
8 Graig Terrace	CF48 3SA	Dwelling	47.1	48.4	47.7	48.5	36.4	37.5	36.9	37.6
9 Graig Terrace	CF48 3SA	Dwelling	49.6	51.0	49.9	50.8	38.6	39.9	38.9	39.7
10 Graig Terrace	CF48 3SA	Dwelling	48.9	50.4	49.4	50.3	38.0	39.4	38.4	39.2
11 Graig Terrace	CF48 3SA	Dwelling	60.9	63.6	61.0	62.3	48.8	51.2	48.9	50.0
1 Wimbourne Street	CF48 3SB	Dwelling	49.9	50.5	50.4	51.4	38.8	39.4	39.4	40.2
2 Wimbourne Street	CF48 3SB	Dwelling	46.5	47.4	47.1	48.0	35.9	36.6	36.3	37.2
3 Wimbourne Street	CF48 3SB	Dwelling	46.5	47.3	47.0	47.9	35.8	36.5	36.3	37.1
4 Wimbourne Street	CF48 3SB	Dwelling	46.5	47.4	47.0	47.9	35.9	36.7	36.3	37.1
5 Wimbourne Street	CF48 3SB	Dwelling	48.6	49.5	49.2	50.1	37.7	38.6	38.2	39.1
6 Wimbourne Street	CF48 3SB	Dwelling	48.5	49.4	49.1	50.0	37.6	38.5	38.1	39.0
7 Wimbourne Street	CF48 3SB	Dwelling	49.4	50.3	50.1	51.0	38.4	39.2	39.1	39.9
8 Wimbourne Street	CF48 3SB	Dwelling	47.2	48.1	47.8	48.7	36.5	37.3	37.0	37.8
9 Wimbourne Street	CF48 3SB	Dwelling	48.3	49.2	49.0	49.9	37.5	38.2	38.1	38.9
10 Wimbourne Street	CF48 3SB	Dwelling	48.9	50.1	49.5	50.4	38.0	39.0	38.5	39.3
11 Wimbourne Street	CF48 3SB	Dwelling	46.5	47.8	47.0	48.0	35.9	37.0	36.3	37.1
12 Wimbourne Street	CF48 3SB	Dwelling	46.7	47.9	47.2	48.2	36.0	37.1	36.5	37.3
14 Wimbourne Street	CF48 3SB	Dwelling	49.1	50.3	49.7	50.6	38.2	39.2	38.7	39.5
15 Wimbourne Street	CF48 3SB	Dwelling	43.4	44.7	43.9	44.9	33.1	34.2	33.5	34.4
16 Wimbourne Street	CF48 3SB	Dwelling	48.9	50.1	49.5	50.4	38.0	39.1	38.5	39.3
17 Wimbourne Street	CF48 3SB	Dwelling	47.0	48.2	47.5	48.4	36.3	37.4	36.7	37.5
3A Winifred Street	CF48 3SD	Dwelling	43.2	44.1	43.9	44.7	32.9	33.7	33.5	34.2
Winifred Street	CF48 3SD	Dwelling	46.8	48.1	47.4	48.1	36.1	37.3	36.6	37.3
1 Winifred Street	CF48 3SD	Dwelling	46.7	47.7	47.3	48.1	36.1	36.9	36.6	37.3
2 Winifred Street	CF48 3SD	Dwelling	43.3	44.4	44.0	44.7	33.0	34.0	33.6	34.2
3 Winifred Street	CF48 3SD	Dwelling	47.1	48.0	47.7	48.6	36.4	37.1	36.9	37.7
4 Winifred Street	CF48 3SD	Dwelling	45.6	46.4	46.3	47.2	35.0	35.7	35.6	36.4
5 Winifred Street	CF48 3SD	Dwelling	45.4	46.3	46.2	47.1	34.8	35.7	35.5	36.3
6 Winifred Street	CF48 3SD	Dwelling	45.9	47.0	46.7	47.6	35.3	36.3	36.0	36.8
7 Winifred Street	CF48 3SD	Dwelling	48.9	49.9	49.6	50.5	38.0	38.9	38.6	39.4
8 Winifred Street	CF48 3SD	Dwelling	46.4	47.3	47.3	48.2	35.8	36.5	36.6	37.4
9 Winifred Street	CF48 3SD	Dwelling	46.9	47.6	47.5	48.5	36.2	36.8	36.8	37.6
10 Winifred Street	CF48 3SD	Dwelling	45.0	45.8	45.8	46.8	34.5	35.2	35.2	36.1
11 Winifred Street	CF48 3SD	Dwelling	46.0	46.9	47.0	48.0	35.4	36.2	36.3	37.1
12 Winifred Street	CF48 3SD	Dwelling	45.4	46.2	46.4	47.3	34.9	35.6	35.7	36.5
13 Winifred Street	CF48 3SD	Dwelling	47.0	47.8	48.0	48.9	36.3	37.0	37.2	38.0
14 Winifred Street	CF48 3SD	Dwelling	47.1	47.8	48.0	48.9	36.4	37.0	37.2	38.0
15 Winifred Street	CF48 3SD	Dwelling	50.1	50.8	51.0	51.9	39.1	39.7	39.9	40.7
20 Winifred Street	CF48 3SD	Dwelling	47.8	48.5	48.5	49.5	37.0	37.6	37.7	38.5
21 Winifred Street	CF48 3SD	Dwelling	48.0	48.6	48.7	49.7	37.2	37.8	37.8	38.7
22 Winifred Street	CF48 3SD	Dwelling	47.1	47.7	47.8	48.7	36.4	36.9	37.0	37.8
23 Winifred Street	CF48 3SD	Dwelling	47.7	48.4	48.5	49.4	36.9	37.5	37.6	38.4
24 Winifred Street	CF48 3SD	Dwelling	43.4	44.1	44.2	45.1	33.0	33.7	33.7	34.6
25 Winifred Street	CF48 3SD	Dwelling	46.4	47.1	47.1	48.1	35.8	36.4	36.4	37.2
26 Winifred Street	CF48 3SD	Dwelling	45.4	46.0	45.9	46.9	34.8	35.4	35.3	36.2
27 Winifred Street	CF48 3SD	Dwelling	49.9	50.5	50.8	51.8	38.9	39.5	39.7	40.6
28 Winifred Street	CF48 3SD	Dwelling	48.6	49.2	49.4	50.4	37.7	38.3	38.5	39.3
29 Winifred Street	CF48 3SD	Dwelling	54.7	55.4	55.5	56.4	43.3	43.8	43.9	44.8
30 Winifred Street	CF48 3SD	Dwelling	47.8	48.5	48.5	49.5	37.0	37.6	37.7	38.5
31 Winifred Street	CF48 3SD	Dwelling	44.2	44.9	44.9	45.9	33.8	34.4	34.4	35.3
32 Winifred Street	CF48 3SD	Dwelling	46.7	47.4	47.5	48.4	36.0	36.6	36.7	37.6
33 Winifred Street	CF48 3SD	Dwelling	44.2	45.0	45.0	46.0	33.8	34.5	34.5	35.3
34 Winifred Street	CF48 3SD	Dwelling	44.4	45.2	45.2	46.2	34.0	34.6	34.7	35.5
35 Winifred Street	CF48 3SD	Dwelling	44.1	44.9	44.9	45.9	33.7	34.4	34.4	35.3
36 Winifred Street	CF48 3SD	Dwelling	48.8	49.4	49.6	50.5	37.9	38.5	38.6	39.4
37 Winifred Street	CF48 3SD	Dwelling	46.4	47.1	47.2	48.2	35.7	36.4	36.5	37.3

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
38 Winifred Street	CF48 3SD	Dwelling	47.9	48.6	48.6	49.5	37.1	37.7	37.7	38.5
39 Winifred Street	CF48 3SD	Dwelling	47.8	48.5	48.5	49.4	37.0	37.6	37.6	38.5
40 Winifred Street	CF48 3SD	Dwelling	48.0	48.8	48.9	49.8	37.2	37.9	38.0	38.8
41 Winifred Street	CF48 3SD	Dwelling	47.0	47.8	47.8	48.7	36.3	37.0	37.0	37.8
42 Winifred Street	CF48 3SD	Dwelling	47.8	48.5	48.5	49.4	37.0	37.6	37.6	38.5
43 Winifred Street	CF48 3SD	Dwelling	54.9	55.5	54.5	55.5	43.4	43.9	43.1	43.9
44 Winifred Street	CF48 3SD	Dwelling	47.9	48.7	48.7	49.6	37.1	37.8	37.8	38.6
45 Winifred Street	CF48 3SD	Dwelling	48.0	48.8	48.7	49.6	37.2	37.9	37.8	38.6
46 Winifred Street	CF48 3SD	Dwelling	48.2	48.9	48.9	49.8	37.4	38.0	38.0	38.8
47 Winifred Street	CF48 3SD	Dwelling	47.9	48.7	48.7	49.6	37.1	37.8	37.8	38.7
48 Winifred Street	CF48 3SD	Dwelling	46.1	47.2	47.0	47.8	35.4	36.5	36.2	37.0
49 Winifred Street	CF48 3SD	Dwelling	42.0	43.1	42.5	43.4	31.8	32.8	32.2	33.0
Glen View 50 Winifred Street	CF48 3SD	Dwelling	43.7	44.7	44.3	45.2	33.3	34.2	33.8	34.6
52 Winifred Street	CF48 3SD	Dwelling	47.5	48.7	48.2	49.0	36.8	37.8	37.4	38.1
53 Winifred Street	CF48 3SD	Dwelling	44.3	45.6	44.8	45.5	33.8	35.0	34.3	34.9
54 Winifred Street	CF48 3SD	Dwelling	47.9	48.5	48.1	49.0	37.1	37.6	37.3	38.1
Francis Street	CF48 3SE	Dwelling	48.3	49.1	48.8	49.7	37.4	38.2	37.9	38.7
2 Francis Street	CF48 3SE	Dwelling	48.7	49.6	49.3	50.2	37.8	38.6	38.3	39.2
3 Francis Street	CF48 3SE	Dwelling	47.9	48.8	48.5	49.4	37.1	37.9	37.6	38.4
4 Francis Street	CF48 3SE	Dwelling	48.6	49.5	49.3	50.2	37.8	38.5	38.3	39.2
5 Francis Street	CF48 3SE	Dwelling	48.9	49.6	49.5	50.5	37.9	38.7	38.6	39.4
6 Francis Street	CF48 3SE	Dwelling	47.2	48.0	47.9	48.8	36.4	37.1	37.1	37.9
7 Francis Street	CF48 3SE	Dwelling	48.7	49.4	49.4	50.4	37.8	38.5	38.5	39.3
8 Francis Street	CF48 3SE	Dwelling	51.7	52.4	52.4	53.3	40.6	41.2	41.1	42.0
9 Francis Street	CF48 3SE	Dwelling	47.0	47.8	47.6	48.6	36.3	37.0	36.8	37.7
10 Francis Street	CF48 3SE	Dwelling	49.4	50.2	50.1	51.0	38.5	39.2	39.0	39.9
11 Francis Street	CF48 3SE	Dwelling	49.2	50.0	49.9	50.9	38.3	39.0	38.9	39.8
12 Francis Street	CF48 3SE	Dwelling	47.8	48.6	48.6	49.5	37.0	37.7	37.7	38.6
13 Francis Street	CF48 3SE	Dwelling	48.1	48.9	48.8	49.8	37.3	37.9	37.9	38.8
14 Francis Street	CF48 3SE	Dwelling	48.8	49.6	49.5	50.5	37.9	38.6	38.6	39.4
15 Francis Street	CF48 3SE	Dwelling	47.7	48.5	48.4	49.4	36.9	37.6	37.5	38.4
16 Francis Street	CF48 3SE	Dwelling	50.4	51.2	51.0	52.0	39.4	40.1	39.9	40.8
Cumorah 17 Francis Street	CF48 3SE	Dwelling	46.7	47.6	47.4	48.4	36.0	36.8	36.6	37.5
18 Francis Street	CF48 3SE	Dwelling	48.0	48.9	48.6	49.6	37.2	38.0	37.7	38.6
19 Francis Street	CF48 3SE	Dwelling	47.6	48.5	48.2	49.2	36.9	37.6	37.3	38.2
20 Francis Street	CF48 3SE	Dwelling	51.2	51.9	52.3	53.3	40.1	40.7	41.1	41.9
21 Francis Street	CF48 3SE	Dwelling	51.7	52.2	52.3	53.3	40.5	41.0	41.1	41.9
22 Francis Street	CF48 3SE	Dwelling	50.4	51.1	51.1	52.1	39.4	39.9	40.0	40.9
23 Francis Street	CF48 3SE	Dwelling	52.4	53.2	52.8	53.9	41.1	41.9	41.5	42.5
24 Francis Street	CF48 3SE	Dwelling	53.6	54.3	54.4	55.4	42.2	42.9	43.0	43.8
25 Francis Street	CF48 3SE	Dwelling	53.5	54.2	54.3	55.3	42.2	42.8	42.9	43.7
26 Francis Street	CF48 3SE	Dwelling	49.9	50.6	50.8	51.8	38.9	39.5	39.7	40.6
27 Francis Street	CF48 3SE	Dwelling	52.0	52.7	52.8	53.8	40.8	41.5	41.5	42.4
28 Francis Street	CF48 3SE	Dwelling	54.1	54.9	55.0	56.0	42.7	43.4	43.5	44.4
29 Francis Street	CF48 3SE	Dwelling	53.4	54.1	54.2	55.2	42.0	42.7	42.7	43.6
31 Francis Street	CF48 3SE	Dwelling	55.9	56.8	56.2	57.4	44.3	45.1	44.6	45.6
32 Francis Street	CF48 3SE	Dwelling	55.1	56.0	55.4	56.6	43.6	44.3	43.9	44.9
33 Francis Street	CF48 3SE	Dwelling	50.7	51.6	51.2	52.3	39.6	40.4	40.1	41.0
34 Francis Street	CF48 3SE	Dwelling	52.1	52.9	52.6	53.7	40.9	41.6	41.4	42.3
35 Francis Street	CF48 3SE	Dwelling	52.1	52.9	52.7	53.8	40.9	41.6	41.5	42.4
36 Francis Street	CF48 3SE	Dwelling	48.3	49.1	49.0	50.1	37.5	38.2	38.1	39.1
37 Francis Street	CF48 3SE	Dwelling	50.0	50.8	50.7	51.7	39.0	39.7	39.6	40.5
38 Francis Street	CF48 3SE	Dwelling	50.6	51.4	51.3	52.3	39.5	40.2	40.2	41.1
39 Francis Street	CF48 3SE	Dwelling	47.6	48.4	48.4	49.4	36.9	37.5	37.5	38.4
40 Francis Street	CF48 3SE	Dwelling	47.0	47.7	47.8	48.8	36.3	36.9	37.0	37.9
41 Francis Street	CF48 3SE	Dwelling	46.3	47.2	47.1	48.1	35.7	36.5	36.4	37.2
42 Francis Street	CF48 3SE	Dwelling	49.3	49.9	50.0	51.0	38.3	38.9	39.0	39.8
43 Francis Street	CF48 3SE	Dwelling	48.9	49.6	49.7	50.7	38.0	38.6	38.7	39.6
44 Francis Street	CF48 3SE	Dwelling	49.5	50.3	50.2	51.2	38.6	39.2	39.2	40.0
45 Francis Street	CF48 3SE	Dwelling	51.8	52.5	52.7	53.7	40.6	41.2	41.4	42.3
46 Francis Street	CF48 3SE	Dwelling	50.6	51.3	51.8	52.7	39.6	40.2	40.6	41.4
48 Francis Street	CF48 3SE	Dwelling	49.1	49.8	50.1	51.0	38.2	38.8	39.0	39.9
49 Francis Street	CF48 3SE	Dwelling	48.2	49.0	48.8	49.7	37.4	38.1	37.9	38.8
50 Francis Street	CF48 3SE	Dwelling	49.0	49.7	49.9	50.8	38.1	38.7	38.9	39.7
51 Francis Street	CF48 3SE	Dwelling	48.9	49.5	49.8	50.8	38.0	38.6	38.8	39.7
52 Francis Street	CF48 3SE	Dwelling	48.2	48.8	48.9	49.8	37.4	37.9	38.0	38.8
53 Francis Street	CF48 3SE	Dwelling	47.5	48.2	48.2	49.1	36.8	37.3	37.3	38.2
54 Francis Street	CF48 3SE	Dwelling	49.0	49.9	49.6	50.5	38.1	38.9	38.6	39.4
55 Francis Street	CF48 3SE	Dwelling	48.9	49.8	49.5	50.4	38.0	38.8	38.5	39.3
56 Francis Street	CF48 3SE	Dwelling	49.5	50.4	50.0	50.9	38.5	39.4	38.9	39.8
2 Cross Francis Street	CF48 3SF	Dwelling	46.0	46.7	46.9	47.9	35.4	36.1	36.2	37.0
3 Cross Francis Street	CF48 3SF	Dwelling	48.5	49.2	49.1	50.1	37.6	38.3	38.2	39.0
4 Cross Francis Street	CF48 3SF	Dwelling	50.4	51.1	51.1	52.0	39.3	40.0	40.0	40.8
5 Cross Francis Street	CF48 3SF	Dwelling	49.8	50.6	50.5	51.5	38.8	39.5	39.5	40.3
6 Cross Francis Street	CF48 3SF	Dwelling	49.7	50.5	50.4	51.4	38.7	39.4	39.4	40.2
7 Cross Francis Street	CF48 3SF	Dwelling	49.2	49.9	50.1	51.1	38.3	38.9	39.1	39.9
8 Cross Francis Street	CF48 3SF	Dwelling	48.7	49.5	49.7	50.6	37.9	38.5	38.7	39.5
9 Cross Francis Street	CF48 3SF	Dwelling	47.7	48.5	48.5	49.5	36.9	37.6	37.7	38.5
10 Cross Francis Street	CF48 3SF	Dwelling	50.8	51.6	51.5	52.4	39.7	40.4	40.3	41.2
11 Cross Francis Street	CF48 3SF	Dwelling	47.0	47.8	47.8	48.8	36.3	37.0	37.0	37.9
1 Glendower Street	CF48 3SG	Dwelling	50.8	51.5	51.5	52.5	39.7	40.3	40.3	41.2
2 Glendower Street	CF48 3SG	Dwelling	46.0	46.6	46.7	47.6	35.3	36.0	36.0	36.9
3 Glendower Street	CF48 3SG	Dwelling	45.6	46.4	46.4	47.3	35.0	35.7	35.7	36.6
4 Glendower Street	CF48 3SG	Dwelling	46.2	46.9	47.1	48.1	35.6	36.2	36.4	37.2
5 Glendower Street	CF48 3SG	Dwelling	47.1	47.8	47.9	48.9	36.3	37.0	37.1	37.9
6 Glendower Street	CF48 3SG	Dwelling	50.2	50.9	51.0	52.0	39.2	39.8	39.9	40.7
7 Glendower Street	CF48 3SG	Dwelling	50.4	51.1	51.2	52.2	39.4	40.0	40.1	40.9
8 Glendower Street	CF48 3SG	Dwelling	47.3	48.0	48.2	49.2	36.6	37.2	37.4	38.3
9 Glendower Street	CF48 3SG	Dwelling	46.9	47.6	47.8	48.8	36.2	36.9	37.0	37.9
10 Glendower Street	CF48 3SG	Dwelling	50.6	51.3	51.3	52.3	39.5	40.1	40.2	41.0
11 Glendower Street	CF48 3SG	Dwelling	47.5	48.2	48.3	49.3	36.7	37.4	37.5	38.4
12 Glendower Street	CF48 3SG	Dwelling	45.4	46.1	46.1	47.1	34.8	35.5	35.5	36.4
13 Glendower Street	CF48 3SG	Dwelling	46.6	47.3	47.3	48.3	35.9	36.6	36.6	37.5
14 Glendower Street	CF48 3SG	Dwelling	50.3	51.1	51.1	52.1	39.3	39.9	39.9	40.8
15 Glendower Street	CF48 3SG	Dwelling	48.4	49.1	49.2	50.2	37.5	38.2	38.2	39.1
16 Glendower Street	CF48 3SG	Dwelling	50.9	51.6	51.5	52.5	39.8	40.4	40.3	41.2
17 Glendower Street	CF48 3SG	Dwelling	47.7	48.4	48.4	49.4	36.9	37.6	37.5	38.4
18 Glendower Street	CF48 3SG	Dwelling	53.0	53.8	53.4	54.5	41.6	42.4	42.0	43.0
21 Glendower Street	CF48 3SG	Dwelling	48.4	49.2	49.1	50.2	37.6	38.3	38.2	39.1
22 Glendower Street	CF48 3SG	Dwelling	48.2	49.0	49.0	50.0	37.4	38.1	38.0	39.0
24 Glendower Street	CF48 3SG	Dwelling	47.9	48.6	48.6	49.6	37.1	37.8	37.8	38.7
25 Glendower Street	CF48 3SG	Dwelling	47.4	48.2	48.2	49.2	36.7	37.3	37.3	38.2
26 Glendower Street	CF48 3SG	Dwelling	47.6	48.3	48.4	49.4	36.8	37.5	37.5	38.4
27 Glendower Street	CF48 3SG	Dwelling	47.4	48.1	48.1	49.1	36.6	37.3	37.3	38.2
28 Glendower Street	CF48 3SG	Dwelling	47.2	48.0	47.9	48.9	36.5	37.1	37.1	38.0
29 Glendower Street	CF48 3SG	Dwelling	47.5	48.2	48.1	49.1	36.7	37.4	37.3	38.2
30 Glendower Street	CF48 3SG	Dwelling	47.2	47.9	47.9	48.9	36.5	37.1	37.1	38.0

Address	Postcode	Type	Daytime Noise Level $L_{A10,18\ hour}$				Night-time Noise Level $L_{Aeq,\ 8\ hour}$			
			DM2022	DM2037	DS2022	DS2037	DM2022	DM2037	DS2022	DS2037
31 Glendower Street	CF48 3SG	Dwelling	47.0	47.7	47.8	48.7	36.3	37.0	37.0	37.8
32 Glendower Street	CF48 3SG	Dwelling	46.8	47.6	47.6	48.5	36.1	36.8	36.8	37.7
33 Glendower Street	CF48 3SG	Dwelling	47.2	47.8	47.8	48.7	36.4	37.0	37.0	37.8
Flat 45A Pant Road	CF48 3SH	Dwelling	52.9	53.7	53.6	54.6	41.6	42.3	42.2	43.1
Pant Road	CF48 3SH	Dwelling	52.6	53.4	53.2	54.3	41.3	42.0	41.9	42.8
Pant Road	CF48 3SH	Dwelling	55.7	56.5	55.9	57.1	44.1	44.9	44.3	45.4
Prossers Shoe Repairers Pant Road	CF48 3SH	Dwelling	71.2	72.3	71.0	72.3	58.1	59.1	57.9	59.1
La Bodega Silver Slipper Pant Road	CF48 3SH	Dwelling	69.1	70.2	68.8	70.2	56.2	57.1	55.9	57.1
2 Pant Road	CF48 3SH	Dwelling	68.8	69.9	68.6	69.9	55.9	56.9	55.7	56.9
3 Pant Road	CF48 3SH	Dwelling	50.4	51.1	50.9	51.9	39.3	40.0	39.8	40.7
Flat 3 Flat Above Pant Road	CF48 3SH	Dwelling	50.4	51.1	50.9	51.9	39.3	40.0	39.8	40.7
4 Pant Road	CF48 3SH	Dwelling	50.5	51.2	51.1	52.1	39.4	40.1	40.0	40.9
5 Pant Road	CF48 3SH	Dwelling	54.4	55.1	55.0	56.0	42.9	43.6	43.4	44.4
10 Pant Road	CF48 3SH	Dwelling	53.4	54.1	54.1	55.1	42.0	42.7	42.7	43.6
11 Pant Road	CF48 3SH	Dwelling	54.3	55.0	54.9	56.0	42.8	43.5	43.4	44.3
12 Pant Road	CF48 3SH	Dwelling	52.8	53.6	53.6	54.6	41.5	42.2	42.2	43.1
13 Pant Road	CF48 3SH	Dwelling	52.2	53.0	52.8	53.9	41.0	41.7	41.5	42.5
22 Pant Road	CF48 3SH	Dwelling	57.6	58.3	58.3	59.2	45.8	46.5	46.4	47.3
23 Pant Road	CF48 3SH	Dwelling	55.4	56.3	55.6	56.8	43.8	44.6	44.0	45.1
24 Pant Road	CF48 3SH	Dwelling	58.2	59.0	58.7	59.8	46.4	47.0	46.9	47.8
25 Pant Road	CF48 3SH	Dwelling	57.2	58.2	57.4	58.6	45.5	46.3	45.7	46.7
26 Pant Road	CF48 3SH	Dwelling	69.6	70.6	69.3	70.7	56.6	57.6	56.4	57.6
27 Pant Road	CF48 3SH	Dwelling	49.3	50.1	50.0	51.1	38.4	39.1	39.0	39.9
29 Pant Road	CF48 3SH	Dwelling	51.3	52.1	51.9	53.0	40.2	40.9	40.7	41.7
30 Pant Road	CF48 3SH	Dwelling	51.3	52.1	52.0	53.0	40.2	40.9	40.8	41.7
31 Pant Road	CF48 3SH	Dwelling	49.5	50.3	50.2	51.3	38.5	39.2	39.2	40.1
32 Pant Road	CF48 3SH	Dwelling	55.2	56.0	55.7	56.8	43.7	44.4	44.1	45.1
33 Pant Road	CF48 3SH	Dwelling	50.8	51.7	51.2	52.4	39.7	40.5	40.1	41.1
Pant Terrace 1 Pant Road	CF48 3SL	Dwelling	52.1	52.9	52.8	53.8	40.9	41.6	41.5	42.4
Pant Terrace 2 Pant Road	CF48 3SL	Dwelling	53.6	54.3	54.4	55.4	42.2	42.8	42.9	43.8
Pant Terrace 3 Pant Road	CF48 3SL	Dwelling	53.9	54.6	54.8	55.8	42.5	43.1	43.3	44.2
Pant Terrace 4 Pant Road	CF48 3SL	Dwelling	54.6	55.4	55.5	56.5	43.2	43.8	43.9	44.8
Pant Terrace 5 Pant Road	CF48 3SL	Dwelling	52.6	53.3	53.2	54.3	41.3	41.9	41.9	42.8
Pant Terrace 6 Pant Road	CF48 3SL	Dwelling	54.3	55.0	55.1	56.1	42.9	43.5	43.6	44.5
Pant Terrace 7 Pant Road	CF48 3SL	Dwelling	53.5	54.2	54.5	55.5	42.1	42.7	43.1	43.9
Pant Terrace 8 Pant Road	CF48 3SL	Dwelling	55.6	56.3	56.5	57.5	44.0	44.6	44.8	45.7
Pant Terrace 9 Pant Road	CF48 3SL	Dwelling	55.6	56.3	56.5	57.5	44.0	44.6	44.8	45.7
Maelog House Maelog House Cross Ivor Terrace	CF48 3SN	Dwelling	53.6	54.3	54.8	55.8	42.2	42.8	43.3	44.2
1 Cross Ivor Terrace	CF48 3SN	Dwelling	55.1	55.8	56.1	57.1	43.6	44.2	44.5	45.3
2 Cross Ivor Terrace	CF48 3SN	Dwelling	59.7	60.4	61.0	62.0	47.8	48.3	48.9	49.7
3 Cross Ivor Terrace	CF48 3SN	Dwelling	57.3	58.0	58.4	59.4	45.6	46.2	46.6	47.4
4 Cross Ivor Terrace	CF48 3SN	Dwelling	58.8	59.5	59.9	60.8	46.9	47.5	47.9	48.7
5 Cross Ivor Terrace	CF48 3SN	Dwelling	49.2	49.9	50.2	51.2	38.3	38.9	39.1	40.0
6 Cross Ivor Terrace	CF48 3SN	Dwelling	52.4	53.1	53.3	54.3	41.2	41.8	41.9	42.8
Garden Cottages 1 Garden Cottages Llewelyn Street	CF48 3SP	Dwelling	54.6	55.2	56.0	57.0	43.1	43.7	44.4	45.2
Garden Cottages 2 Garden Cottages Llewelyn Street	CF48 3SP	Dwelling	56.2	56.9	57.3	58.2	44.6	45.2	45.5	46.4
20A Llewelyn Street	CF48 3SP	Dwelling	55.9	56.6	56.2	57.2	44.3	44.9	44.6	45.5
43A Llewelyn Street	CF48 3SP	Dwelling	58.9	59.6	59.8	60.8	47.0	47.6	47.8	48.7
Gwernllwyn Fach Gwernllwyn Llewelyn Street	CF48 3SP	Dwelling	54.7	55.4	55.4	56.4	43.3	43.9	43.9	44.7
Llewelyn Street	CF48 3SP	Dwelling	49.4	50.1	50.3	51.3	38.5	39.1	39.3	40.1
Rhosbren Fach Rhosbren Fach Llewelyn Street	CF48 3SP	Dwelling	52.9	53.6	53.8	54.8	41.6	42.2	42.4	43.3
Ty Newydd Ty Newydd Llewelyn Street	CF48 3SP	Dwelling	54.9	55.6	55.6	56.6	43.4	44.1	44.0	44.9
16 Llewelyn Street	CF48 3SP	Dwelling	56.1	56.9	56.5	57.6	44.4	45.2	44.9	45.8
17 Llewelyn Street	CF48 3SP	Dwelling	51.2	52.0	52.0	53.0	40.1	40.8	40.8	41.7
18 Llewelyn Street	CF48 3SP	Dwelling	54.4	55.1	54.8	55.8	42.9	43.6	43.3	44.2
19 Llewelyn Street	CF48 3SP	Dwelling	54.9	55.6	55.3	56.2	43.4	44.0	43.7	44.6
21 Llewelyn Street	CF48 3SP	Dwelling	58.6	59.3	59.2	60.3	46.8	47.4	47.3	48.2
22 Llewelyn Street	CF48 3SP	Dwelling	56.8	57.5	57.4	58.5	45.1	45.8	45.7	46.6
23 Llewelyn Street	CF48 3SP	Dwelling	60.7	61.4	61.3	62.3	48.7	49.3	49.2	50.0
43 Llewelyn Street	CF48 3SP	Dwelling	56.1	56.7	57.0	58.0	44.4	45.0	45.3	46.2
44 Llewelyn Street	CF48 3SP	Dwelling	47.7	48.4	48.8	49.7	36.9	37.5	37.9	38.7
45 Llewelyn Street	CF48 3SP	Dwelling	47.0	47.6	48.2	49.2	36.3	36.9	37.3	38.2
46 Llewelyn Street	CF48 3SP	Dwelling	53.1	53.8	54.4	55.4	41.8	42.4	43.0	43.8
Bryntirion Terrace 1 Bryntirion Street	CF48 3SQ	Dwelling	49.3	50.6	49.8	50.7	38.4	39.5	38.8	39.6
Bryntirion Terrace 2 Bryntirion Street	CF48 3SQ	Dwelling	46.7	47.5	47.4	48.4	36.0	36.7	36.7	37.5
Bryntirion Terrace 3 Bryntirion Street	CF48 3SQ	Dwelling	48.5	49.2	49.1	50.0	37.6	38.3	38.2	39.0
1 Y Graig	CF48 3SS	Dwelling	61.5	62.6	63.4	63.1	49.4	50.3	51.1	50.8
2 Y Graig	CF48 3SS	Dwelling	62.8	63.9	64.8	64.5	50.5	51.5	52.3	52.0
3 Y Graig	CF48 3SS	Dwelling	61.8	62.9	63.9	63.5	49.6	50.6	51.4	51.1
4 Y Graig	CF48 3SS	Dwelling	62.7	63.7	64.7	64.3	50.4	51.3	52.2	51.8
5 Y Graig	CF48 3SS	Dwelling	63.1	64.2	65.2	64.8	50.8	51.8	52.6	52.3
6 Y Graig	CF48 3SS	Dwelling	44.1	44.7	45.4	45.9	33.7	34.3	34.8	35.3
7 Y Graig	CF48 3SS	Dwelling	44.5	45.2	45.9	46.3	34.1	34.6	35.3	35.7
8 Y Graig	CF48 3SS	Dwelling	48.5	49.2	49.7	50.3	37.6	38.3	38.7	39.3
9 Y Graig	CF48 3SS	Dwelling	40.1	40.6	41.4	42.0	30.1	30.5	31.2	31.7
10 Y Graig	CF48 3SS	Dwelling	52.2	53.0	53.5	53.8	40.9	41.6	42.2	42.4
1 Ivor Terrace	CF48 3SW	Dwelling	53.3	54.0	54.1	55.0	41.9	42.6	42.7	43.5
2 Ivor Terrace	CF48 3SW	Dwelling	50.3	51.0	51.2	52.2	39.3	39.9	40.1	40.9
3 Ivor Terrace	CF48 3SW	Dwelling	52.1	52.7	53.0	54.0	40.8	41.4	41.7	42.5
4 Ivor Terrace	CF48 3SW	Dwelling	48.5	49.2	49.5	50.5	37.6	38.3	38.5	39.4
5 Ivor Terrace	CF48 3SW	Dwelling	54.2	54.8	55.0	56.0	42.7	43.3	43.5	44.4
6 Ivor Terrace	CF48 3SW	Dwelling	54.2	54.9	55.1	56.0	42.7	43.4	43.5	44.4
7 Ivor Terrace	CF48 3SW	Dwelling	53.1	53.8	54.0	55.0	41.8	42.4	42.6	43.5
8 Ivor Terrace	CF48 3SW	Dwelling	52.3	53.0	53.1	54.1	41.1	41.7	41.8	42.6
9 Ivor Terrace	CF48 3SW	Dwelling	54.0	54.7	54.9	55.9	42.6	43.2	43.4	44.3
10 Ivor Terrace	CF48 3SW	Dwelling	53.0	53.7	54.0	55.0	41.7	42.3	42.6	43.5
11 Ivor Terrace	CF48 3SW	Dwelling	54.2	54.9	55.2	56.1	42.8	43.4	43.6	44.5
12 Ivor Terrace	CF48 3SW	Dwelling	51.1	51.7	51.9	52.9	39.9	40.5	40.7	41.6
13 Ivor Terrace	CF48 3SW	Dwelling	54.9	55.6	55.9	56.8	43.4	44.0	44.3	45.1
14 Ivor Terrace	CF48 3SW	Dwelling	54.4	55.1	55.4	56.4	42.9	43.5	43.8	44.7
15 Ivor Terrace	CF48 3SW	Dwelling	54.5	55.2	55.5	56.5	43.1	43.7	44.0	44.8
16 Ivor Terrace	CF48 3SW	Dwelling	53.1	53.8	54.1	55.1	41.8	42.4	42.7	43.5
17 Ivor Terrace	CF48 3SW	Dwelling	53.4	54.1	54.4	55.4	42.1	42.7	43.0	43.8
Blaencarno Farm Blaen-Carno Farm Fochriw Road	CF48 4AB	Dwelling	56.9	54.3	54.8	55.4	45.2	42.9	43.3	43.9
Rose Cottage Fochriw Road	CF48 4AB	Dwelling	53.4	50.9	51.4	52.0	42.1	39.8	40.2	40.8
Trecatti House Trecatti House Fochriw Road	CF48 4AB	Dwelling	51.9	49.4	49.9	50.5	40.7	38.4	38.8	39.4
1 Gypsy Castle Gypsy Castle Lane	CF48 4AR	Dwelling	58.1	55.6	55.5	56.2	46.3	44.0	43.9	44.6
2 Gypsy Castle Gypsy Castle Lane	CF48 4AR	Dwelling	59.0	56.5	56.7	57.4	47.1	44.8	45.0	45.6

Page left intentionally blank.

Appendix 15A – Relevant Planning Policy for "All Travellers" Topic

Planning Policy Wales

The Welsh Government under Planning Policy Wales (PPW) (Edition 9) (Welsh Government, 2016a) supports a transport hierarchy in relation to new development that establishes priorities in such a way that, wherever possible, they are accessible in the first instance by walking and cycling, then by public transport and finally by private motor vehicles. Planning can help to achieve the Welsh Government's objectives through:

- reducing the need to travel, especially by private car, by locating development where there is good access by public transport, walking and cycling (Paragraph 8.1.5 of the PPW);
- improving accessibility by walking, cycling and public transport (Paragraph 8.1.5 of the PPW);
- promoting walking and cycling (Paragraph 8.1.5 of the PPW);
- supporting the provision of high quality public transport (Paragraph 8.1.5 of the PPW);
- supporting sustainable travel options in rural areas (Paragraph 8.1.5 of the PPW);
- promoting a more sustainable pattern of development, creating and maintaining networks of facilities and open spaces in places well served by sustainable means of travel, in particular within urban areas (Paragraph 11.1.3 of the PPW); and
- promoting improved health and well-being by ensuring that everyone has easy access to the natural environment and to good quality, well-designed facilities and open space (Paragraph 11.1.3 of the PPW).

Technical Advice Notes

Technical Advice Note (TAN) 18: Transport (Welsh Assembly Government, 2007) advises on how transport provision should be integrated with land use development and other policies. It sets out how routes for walking and cycling should be protected and promoted, and how careful land use planning can reduce the need to travel by private car. In addition, TAN 16: Sport, Recreation and Open Space (Welsh Assembly Government, 2009), encourages local planning authorities to ensure that new development makes adequate provision to meet the recreational needs arising, and opportunities for walking and cycling. TAN 16 also encourages local planning authorities to provide lighting on urban walkways and major cycle routes as this can improve the attractiveness of routes and encourage a modal shift in travel patterns.

National Transport Plan

Reflecting the Welsh Government's commitment to sustainable development, the National Transport Plan (Welsh Government, 2010) strives to make it easier for people to be less reliant on the private car and to use public transport, walking and cycling more frequently.

One Wales: Connecting the Nation

One Wales: Connecting the Nation (Welsh Assembly Government, 2008a) is the transport strategy adopted by the promoting sustainable transport networks in Wales. The strategy supports a greater use of more sustainable and healthy forms of travel in Wales, as well as minimising the demands on the transport system by incorporating walking, cycling and public transport links into new developments.

Road Safety Framework

In regards to safety on the road network, the Welsh Government has adopted the Road Safety Framework for Wales (Welsh Government, 2013a), which aims to reduce the number of incidents on Welsh roads by targeting high-risk road users, such as pedestrians, cyclists and equestrians, through education, engineering and enforcement.

Wales Spatial Plan

In line with the UK Governments drive to reduce greenhouse gas emissions, the Wales Spatial Strategy (Welsh Assembly Government, 2008b) aims to promote low-carbon regions in the country by encouraging more walking and cycling as part of people's daily lives.

Welsh Government Strategy for Sport and Physical Activity

In addition to the Wales Spatial Strategy, the Welsh Government Strategy for Sport and Physical Activity (Welsh Assembly Government, 2005), has a strategic plan to encourage the integration of walking and cycling into everyday life as a means of recreation and transport. One of the initiatives is to ensure 95% of people in Wales have a footpath or cycle-path within a ten-minute walk by 2025.

Active Travel (Wales) Act 2013

In order to improve the health of the nation and make Wales a walking and cycling nation, the Active Travel (Wales) Act 2013 (Welsh Government, 2013b) requires the Welsh Ministers and local authorities to make it easier for people to walk and cycle in Wales by taking reasonable steps to enhance the provision made for walkers and cyclists, as well as promoting active travel journeys and securing new and improved active travel routes and related facilities.

Active Travel Action Plan

The Active Travel Action Plan (Welsh Government, 2016b) complements the Active Travel (Wales) Act 2013 reiterates the Welsh Government vision that for people in Wales, walking and cycling will become the preferred ways of getting around over shorter distances. The plan contains the specific action to "consider and enhance provision for walkers and cyclists whenever we [the Welsh Government] make direct investments in transport infrastructure."

The Environment Strategy for Wales

The Environment Strategy for Wales (Welsh Assembly Government, 2006) endeavours to increase opportunities for access to the Welsh countryside in rural areas.

Well-being of Future Generations (Wales) Act 2015

The Well-being of Future Generations (Wales) Act (Welsh Government, 2015) aims to improve the social, economic, environmental and cultural well-being of Wales. In relation to this chapter, the act will encourage people to participate in recreation and maximise their physicals well-being, as well as live in well-connected and low carbon communities.

Environment (Wales) Act 2016

Improving the health and social equity of the Welsh population is a key driver for the Welsh Government. The Environmental (Wales) Act 2016 will help to achieve this by delivering, in part, improved access to good quality outdoor space (National Assembly for Wales, 2016).

Local Planning Policy

In pursuing the key national policies described in Section 15.3, a number of local strategies have been adopted by local authorities. The Turning Heads…A Strategy for the Heads of the Valleys 2020 (Welsh Government, 2006), promotes healthy living and active lifestyles for the Heads of the Valleys region, by ensuring that paths and cycle routes are accessible and pleasant.

The South East Wales Transport Alliance Regional Transport Plan (SEWTA, 2010) is a statutory plan covering the area, setting out an integrated and sustainable transport strategy for South East Wales. Its stated vision is to provide "a modern, accessible, integrated and sustainable transport system for South East Wales, which

increases opportunity, promotes prosperity for all and protects the environment; where walking, cycling, public transport, and sustainable freight provide real travel alternatives (Paragraph 3.1)."

A South East Wales Valleys Local Transport Plan (2015) is also in place, outlining the local authorities' objectives for the local transport in the area, with a particular emphasis on sustainable forms of transport.

Table 15A.1 sets out specific policies relating to the Effects on All Travellers assessment, set out by the local authorities of Merthyr Tydfil (MTCBC), Rhondda Cynon Taf (RCTCBC) and Caerphilly (CCBC), as well as the Brecon Beacons National Park Authority (BBNPA).

Table 15A.1 : Relevant local planning policy with regards 'Effects on All Travellers'

Planning document	Policy	Key points of policy	How has policy been addressed?
Rhondda Cynon Taf Local Development Plan up to 2021 (adopted March 2011)	CS1 Development in the North	RCTCBC will promote accessibility by securing investment in new roads, public transport improvements, walking and cycling, and reduce daily commuting by private car by promoting sustainable forms of travel.	Approximately 13 km of new NMU facilities would be provided as part of the proposed scheme, whilst bus stops would be maintained or moved to more suitable replacement locations.
	CS8 Transportation	Improvements to the strategic transportation network in RCT will be secured, with provision of additional improvements in the highway network, public transport improvements and walking and cycling provision will be sought.	
	AW5 New Development	Development proposals will be supported where the development would be accessible to the local and wider community by a range of sustainable modes of transport and the layout maximises opportunities to reduce dependence on cars.	
	NSA21 Park and Ride / Park and Share Provision	Provision for park and ride / park and share facilities will be provided within Strategic Site 5: Land South of Hirwaun.	The proposed scheme would enhance access to the strategic site via the offline section south of Hirwaun, whilst NMU provision would be provided through the new Hirwaun junction which could be used to access the site in future.
	NSA22 Rail Network and	Land will be safeguarded	The proposed scheme

Planning document	Policy	Key points of policy	How has policy been addressed?
	Station Improvements	for rail network improvements along the route of; 1. The former rail freight line between Aberdare and the former Tower Colliery, Hirwaun; and For the provision of station improvements at: 2. The former Railway Site, Hirwaun; 3. The former Freight Head, Hirwaun.	would improve access to Hirwaun and any future developments within the town.
	NSA23 Cycle Network Improvements	The existing network of cycle paths and community routes will be extended, improved and enhanced to include the following schemes: • The Heads of the Valley Cycleway and links to Hirwaun Industrial Estate; and • the Cynon Valley Cycle Route.	New cycling provision would be incorporated as part of the proposed scheme to tie in with the existing NCN Routes within the study area.
Out and About: The Rights of Way Improvement Plan for Rhondda Cynon Taf 2007	The strategy aims to protect the current access resource, improve provision for walkers, cyclists and horse riders, and promote walking and cycling as transport options.		The connectivity of PRoW has been maintained on the whole, as well as enhanced, with the provision of new NMU facilities.
Brecon Beacons National Park Authority Local Development Plan 2007-2022 (adopted December 2013)	SP2 Major Development in the National Park – Strategic Policy	The National Park Authority (NPA) will provide an assessment of any detrimental effect to recreational opportunities that a major development in the National Park may cause, and the extent to which these could be moderated.	The NPA have been consulted throughout the design period of the proposed scheme to ensure effects to the National Park are mitigated as far as possible.
	SP17 Sustainable Transport	Planning opportunities will be pursued to improve and promote accessibility and to reduce the need to travel by private car, by permitting facilities to improve public transport and ensuring new development is well	Approximately 13 km of new NMU facilities would be provided as part of the proposed scheme, whilst bus stops would be maintained or moved to more suitable replacement locations.

Planning document	Policy	Key points of policy	How has policy been addressed?
		designed by providing appropriate access for pedestrians, cyclists and encouraging the provision of new pedestrian and cycle infrastructure.	
	Policy 49 Rights of Way and Long Distance Routes	Development that would prevent or adversely affect the use of a public right of way, a route with potential to form a long-distance walking, riding or cycling path, or a promoted path, will only be permitted where an equivalent alternative route can be provided.	Approximately 13 km of new NMU facilities would be provided as part of the proposed scheme.
	Policy 60 Provision for Cycling and Walking	Development will be permitted where it involves the creation of new pedestrian and / or cycle routes, or will enable the implementation of specific measures to make walking and / or cycling safer and more attractive.	
Brecon Beacons National Park Authority Rights of Way Improvement Plan June 2007	The plan aims to promote healthy lifestyles by improving the condition of the existing rights of way network and access provision, and provide opportunities for and promotion of sustainable access to the countryside.		The connectivity of PRoW has been maintained on the whole, as well as enhanced, with the provision of new NMU facilities.
Merthyr Tydfil Local Development Plan 2006-2021 (adopted May 2011)	BW7 Sustainable design and place making	MTCBC will support good quality sustainable design and require new development to contribute to improving accessibility and connectivity to other green infrastructure, footpaths and cycleways.	Appropriate guidance followed by design team, whilst new NMU provision would tie in with the existing local footpath and NCN Route.
	BW11 Transport, cycling and pedestrian proposals	Proposals for new transport, cycling, and pedestrian facilities will be favourably considered where they: • ensure improvements to the frequency, speed and extent of bus and rail services; • improve the integration	Approximately 13 km of new NMU facilities would be provided as part of the proposed scheme, whilst bus stops would be maintained or moved to more suitable replacement locations.

Planning document	Policy	Key points of policy	How has policy been addressed?
		between transport modes; • improve access to the countryside; • ensure an increased amount of attractive, safe and easy-to-use routes; and • reduce traffic congestion.	
	BW12: Development proposals and transport	Where appropriate, MTCBC will expect all development proposals to demonstrate how they will help reduce the need to travel and encourage the use of transport other than the private car.	
	BW16 Protecting / enhancing the network of leisure facilities	MTCBC will protect and support the enhancement of the County Borough's network of PRoW in order to ensure their continued use for recreation and amenity.	Consultation has taken place with MTCBC to ensure alterations to the existing network of PRoW, as well as the provision of new NMU facilities, is adequate.
	AS12 Public transport - road	Development proposals that lead to the improvement of bus services in MTCBC will be supported.	Bus stops would be maintained or moved to more suitable replacement locations.
	TB11 Access, parking and accessibility of local facilities	Proposals should ensure that any new highways are designed and constructed in accordance with the Manual for Streets and the access needs and mobility requirements of all sections of the community, particularly those with special needs and disabilities, are met.	Appropriate guidance followed by design team.
Merthyr Tydfil Rights of Way Improvement Plan 2007	The plan aims to promote opportunities for social, health and economic benefits within the county.		The connectivity of PRoW has been maintained on the whole, as well as enhanced, with the provision of new NMU facilities.
Caerphilly County Borough Local Development Plan	SP6 Place Making	Proposals should contribute to creating sustainable places by	Approximately 13 km of new NMU facilities would be provided as part of the

Planning document	Policy	Key points of policy	How has policy been addressed?
up to 2021 (adopted November 2010)		utilising layouts that reflect sustainable transport and accessibility principles and provide full, easy and safe access for all.	proposed scheme, whilst bus stops would be maintained or moved to more suitable replacement locations.
	SP11 Countryside Recreation	Access to opportunities for enjoyment of the County Borough will be promoted and encouraged where the proposals are sustainable.	The majority of footpaths severed by the proposed scheme have been re-routed to maintain connectivity.
	SP19 Transport Infrastructure Improvement	CCBC will seek to implement improvements to the existing transport infrastructure that promote the most efficient use of the transport network.	The proposed scheme would upgrade the A465 to a road capable of carrying the associated traffic flow on the road, as well as improving opportunities for active travel with approximately 13 km of new NMU facilities.
	CW1 Sustainable Transport, Accessibility and Social Inclusion	Proposals will be supported where walking and cycling are modes of travel which have been actively encouraged for short trips, provision has been made for ease of cycling and the use of Green Travel Plans has been encouraged.	Approximately 13 km of new NMU facilities would be provided as part of the proposed scheme.
	CW3 Design Considerations - Highways	Development proposals must have regard for the safe, effective, and efficient use of the transportation network, as well as promoting the interests of pedestrians, cyclists and public transport before that of the private car.	The proposed scheme would upgrade the A465 to a road compliant with design standards, whilst also maintaining, and where appropriate, enhancing provision for pedestrians, cyclists and public transport opportunities.
Planning document	**Key points**		**How has this policy been addressed?**
Caerphilly County Borough Council - Rights of way improvement plan 2007	CCBC will aim to create and maintain a safe and sustainable network of Rights of Way to suit the needs of different user groups and create an open and accessible network for all users.		The connectivity of PRoW has been maintained on the whole, as well as enhanced, with the provision of new NMU facilities.

References

Brecon Beacons National Park Authority (2007) Rights of Way Improvement Plan. Available at: http://www.beacons-npa.gov.uk/www2/wp-content/uploads/ROWIP-adopted-for-Web-site.pdf. (Accessed December 2015)

Brecon Beacons National Park Authority (2013). Local Development Plan 2007-2022, adopted December 2013. Available at: http://www.beacons-npa.gov.uk/wp-content/uploads/Brecon-Written-Statement.pdf. (Accessed December 2015).

Caerphilly County Borough Council (2007) The Rights of Way Improvement Plan. Available at: http://www.caerphilly.gov.uk/CaerphillyDocs/Roads-and-pavements/Rights-of-way-improvement-plan.aspx. (Accessed December 2015).

Caerphilly County Borough Council (2010) Local Development Plan up to 2021, adopted November 2010. Available at: http://www.caerphilly.gov.uk/CaerphillyDocs/LDP/written-statement.aspx. (Accessed December 2015).

Merthyr Tydfil County Borough Council (2007). Rights of Way Improvement Plan. Available at: http://democracy.merthyr.gov.uk/documents/s2800/GWC%20Full%20Council%20RIGHTS%20OF%20WAY%20IMPROVEMENT%20PLAN%20ROWIP.pdf. (Accessed December 2015).

Merthyr Tydfil County Borough Council (2011). Local Development Plan 2006-2021, adopted May 2011. Available at: http://www.merthyr.gov.uk/media/1538/adopted-ldp-mtcbc-may-2011.pdf. (Accessed December 2015).

National Assembly for Wales (2016) *Environment (Wales) Act.* Available at: http://www.legislation.gov.uk/anaw/2016/3/pdfs/anaw_20160003_en.pdf. (Accessed April 2016).

Rhondda Cynon Taf County Borough Council (2007) Out & About. The Rights of Way Improvement Plan for Rhondda Cynon Taf. Available at: http://www.rctcbc.gov.uk/EN/Resident/PlanningandBuildingControl/LocalDevelopmentPlans/LDPEvidenceBaseLibraryandAnnualMonitoringRe/RelateddocumentsEvidenceBase/EB55.pdf. (Accessed December 2015).

Rhondda Cynon Taf County Borough Council (2011). Local Development Plan up to 2021, adopted March 2011. Available at: http://www.rctcbc.gov.uk/EN/Resident/PlanningandBuildingControl/LocalDevelopmentPlans/RelateddocumentsLDP20062021/AdoptedLocalDevelopmentPlan.pdf. (Accessed December 2015).

South East Wales Transport Alliance Regional Transport Plan (2010). Regional Transport Plan. Available at: http://www.sewta.gov.uk/uploads/documents/19/original/South_East_Wales_Transport_Alliance_Regional_Transport_Plan_March_2010-hard_copy.pdf?1308662297. (Accessed December 2015).

South East Wales Valleys Local Transport Plan (jointly produced by Blaenau Gwent County Borough Council, Caerphilly County Borough Council, Merthyr Tydfil County Borough Council, Rhondda Cynon Taf County Borough Council and Torfaen County Borough Council) (2015). Available at: http://www.merthyr.gov.uk/media/1490/south-east-wales-valleys-local-transport-plan.pdf. (Accessed December 2015).

Welsh Assembly Government (2005) Climbing Higher. The Welsh Assembly Government Strategy for Sport & Physical Activity. Available at: http://gov.wales/docs/drah/publications/150311-climbing-higher-en.pdf. (Accessed December 2015).

Welsh Assembly Government (2006) Turning heads. A Strategy for the Heads of the Valleys 2020. Available at: http://www.torfaen.gov.uk/en/Related-Documents/Forward-Planning/SD76-TurningHeadsAStrategyfortheHeadsoftheValleys2020.pdf. (Accessed December 2015).

Welsh Assembly Government (2007) Planning Policy Wales Technical Advice Note 18: Transport. Available at: http://gov.wales/docs/desh/publications/070301tan18en.pdf. (Accessed December 2015).

Welsh Assembly Government (2008a) One Wales: Connecting the Nation. The Wales Transport Strategy. Available at: http://gov.wales/docs/det/publications/140909-transport-strategy-en.pdf. (Accessed December 2015).

Welsh Assembly Government (2008b) People, Places, Futures. The Wales Spatial Plan Update 2008. Available at: http://gov.wales/docs/desh/publications/130701wales-spatial-plan-2008-update-en.pdf. (Accessed December 2015).

Welsh Assembly Government (2009). Planning Policy Wales Technical Advice Note 16: Sport, Recreation and Open Space. Available at: http://gov.wales/docs/desh/policy/090206tan16en.pdf. Accessed December 2015.

Welsh Assembly Government (2010) *National Transport Plan.* Available at: https://www.valeofglamorgan.gov.uk/Documents/Living/Planning/Policy/LDP/Examination-Documents-2015/Further-Submission-Documents/SD101%20-%20The%20National%20Transport%20Plan%20(2010).pdf. (Accessed December 2015).

Welsh Government (2013a). Road Safety framework for Wales. Available at: http://gov.wales/docs/det/publications/130719delplanen.pdf. (Accessed December 2015).

Welsh Government (2013b) The Active Travel (Wales) Act 2013. Available at: http://www.legislation.gov.uk/anaw/2013/7/contents/enacted. (Accessed December 2015).

Welsh Government (2015) Well-being of Futures Generations (Wales) Act 2015. Available at: http://www.legislation.gov.uk/anaw/2015/2/contents/enacted. (Accessed December 2015).

Welsh Government (2016a) *Planning Policy Wales, Edition 9*. Available at: http://gov.wales/topics/planning/policy/ppw/?lang=en. (Accessed November 2016).

Welsh Government (2016b) An Active Travel Action Plan for Wales. Available at: http://gov.wales/docs/det/publications/160229-active-travel-action-plan-wales-en.pdf. (Accessed December 2015).

Page left intentionally blank.

Appendix 15B – Non-motorised user survey metadata and results

Metadata for all non-motorised user surveys is described in Table 15B.1, with survey locations shown in Figure 15B.1. Survey report forms for those surveys where NMUs were recorded are shown below. Survey report forms for those surveys listed in Table 15B.1 where no NMUs were recorded have been omitted from this appendix.

Table 15B.1: Non-motorised user survey metadata

Survey location	Survey date	Survey start time	Survey end time	Weather
Footpath HIR/6/1 north of the A465 underpass	Tuesday 8 March 2016	08:00	18:00	Light drizzle throughout most of the day, with periodic dry spells, 11°C.
Footpath HIR/6/1 north of the A465 underpass	Saturday 14 May 2016	08:00	18:00	Cloudy but dry, 9°C.
Footpath HIR/4/2 where it meets the A465 at-grade	Thursday 10 March 2016	08:00	18:00	Dry and sunny, 9°C.
Footpath HIR/4/2 where it meets the A465 at-grade	Sunday 13 March 2016	08:00	18:00	Dry and sunny, 8°C.
NCN Route 46 south of Jah-Jireh Care Home	Tuesday 12 April 2016	08:00	18:00	Sunny spells, 7°C.
NCN Route 46 south of Jah-Jireh Care Home	Saturday 2 April 2016	08:00	18:00	Raining in the AM, sunny in the PM, 9°C.
Footpath 111/45 – south of Cefn Coed subway	Thursday 24 March 2016	08:00	18:00	Cloudy with a light wind, 8°C
Footpath 111/45 – south of Cefn Coed subway	Sunday 10 April 2016	08:00	18:00	Windy with sunny and cloudy spells, 10°C.
Cefn Coed High Street bridge	Monday 21 March 2016	08:00	18:00	Cloudy spells with a light wind throughout the day, no rain, 3-15°C.
Cefn Coed High Street bridge	Sunday 3 April 2016	08:00	18:00	Sunny with short spells of rain, 7°C.
NCN Route 8 (Taff Trail) on the old railway bridge over the A465	Wednesday 23 March 2016	08:00	18:00	Full cloud with a light wind, 7°C.
NCN Route 8 (Taff Trail) on the old	Saturday 9 April 2016	08:00	18:00	Snow in the AM, sunny in the PM, 4-

Survey location	Survey date	Survey start time	Survey end time	Weather
railway bridge over the A465				13°C.
Footpath 102/3 where it meets the A465 at-grade	Wednesday 9 March 2016	05:00	15:00	Snowing the AM, cloudy in the PM, 5-9°C.
Footpath 102/3 where it meets the A465 at-grade	Saturday 16 April 2016	05:00	15:00	Heavy rain from 09:00 – 10:00, mixture of clouds and sun for the rest, 8°C.
Footpath 102/10 where it meets the A465 at-grade	Thursday 31 March 2016	05:00	15:00	Light wind in the morning, cold through the day. Started cloudy but cleared by about 11, 8°C.
Footpath 102/10 where it meets the A465 at-grade	Saturday 23 April 2016	05:00	15:00	Sunny once light, 14°C.
Footpath 102/1 where it meets the A465 at-grade	Monday 14 March 2016	05:00	15:00	Rainy in the AM, sunny in the PM, 10°C.
Footpath 102/1 where it meets the A465 at-grade	Saturday 30 April 2016	05:00	15:00	Cloudy and sunny throughout, 13°C.
Footpath along the western edge of the existing Dowlais Top roundabout	Friday 11 March 2016	05:00	15:00	Dry with sunny spells, 10°C.
Footpath along the western edge of the existing Dowlais Top roundabout	Saturday 26 March 2016	05:00	15:00	Dry with sunny spells, 11°C.
Footpath along the western edge of the existing Dowlais Top roundabout	Wednesday 6 April 2016	05:00	15:00	Cloudy in the AM, sunny in the PM, 10°C.

Figure 15B.1

See following page.

Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Apprv'd
0	JULY17	FINAL	FL	AP	VC	WB

© Crown copyright and database rights 2016 Ordnance Survey 0100031673

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Legend

- Scheme design
- 2016 NMU survey locations

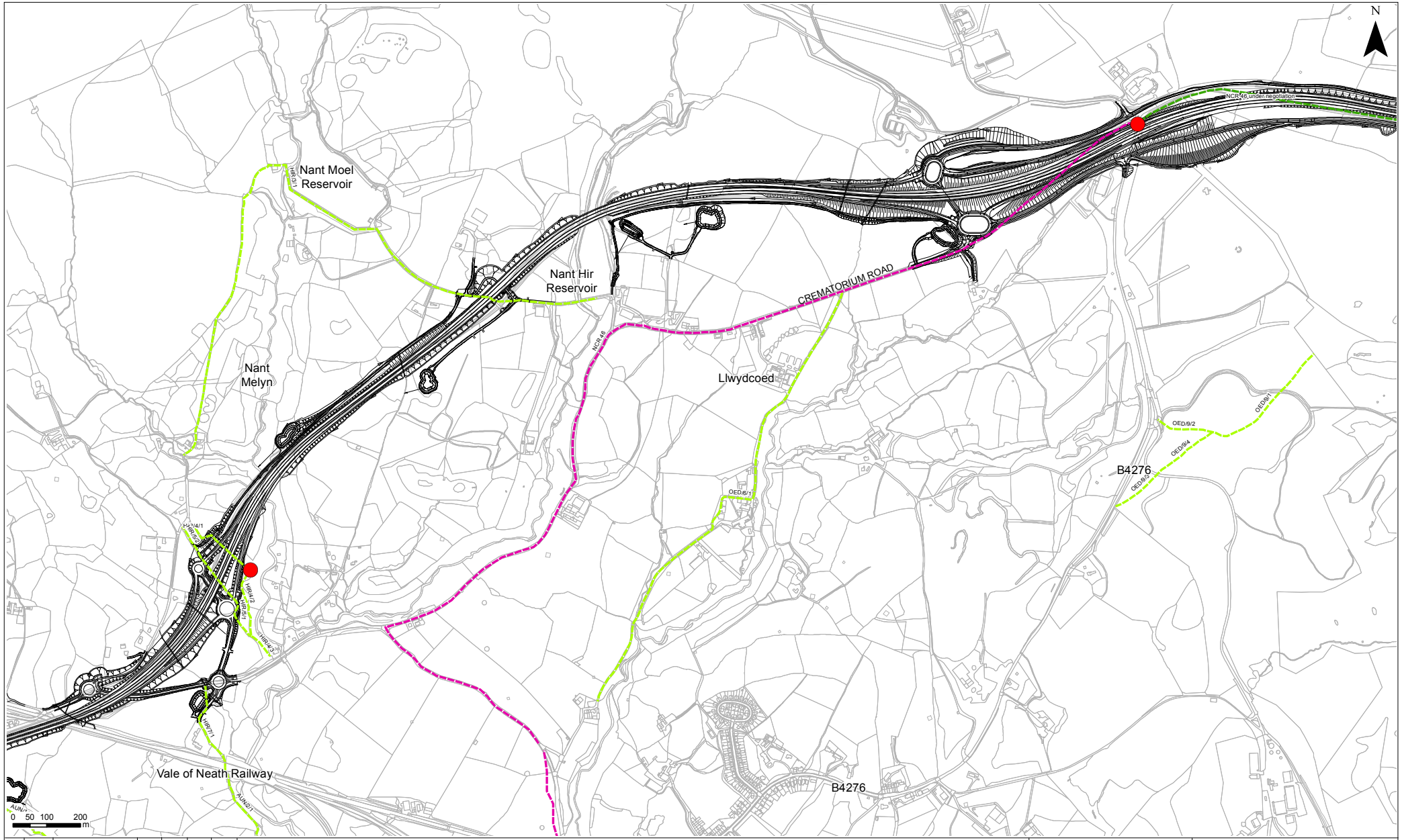
Existing public rights of way

- Footpath
- Bridleway
- Bridleway / byway
- Road used as public path
- National Cycle Network Route
- NCN Route 46 (under negotiation)
- Footpath - currently suspended
- Merthyr proposed claimed rights of way

Llywodraeth Cymru
Welsh Government

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FINAL	
Project	A465 HEADS OF THE VALLEYS SECTIONS 5 AND 6 DOWLAIS TOP TO HIRWAUN	
Title	Location of NMU surveys	
Scale	1:10,000 @A3	DO NOT SCALE
Drawing No.	Figure 15B.1 Sheet 1 of 5	Rev 0



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Apprv'd
0	JULY17	FINAL	FL	AP	VC	WB

© Crown copyright and database rights 2016 Ordnance Survey 0100031673

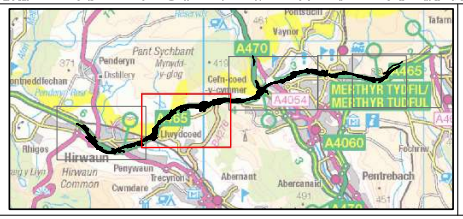
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Legend

- Scheme design
- 2016 NMU survey locations

Existing public rights of way

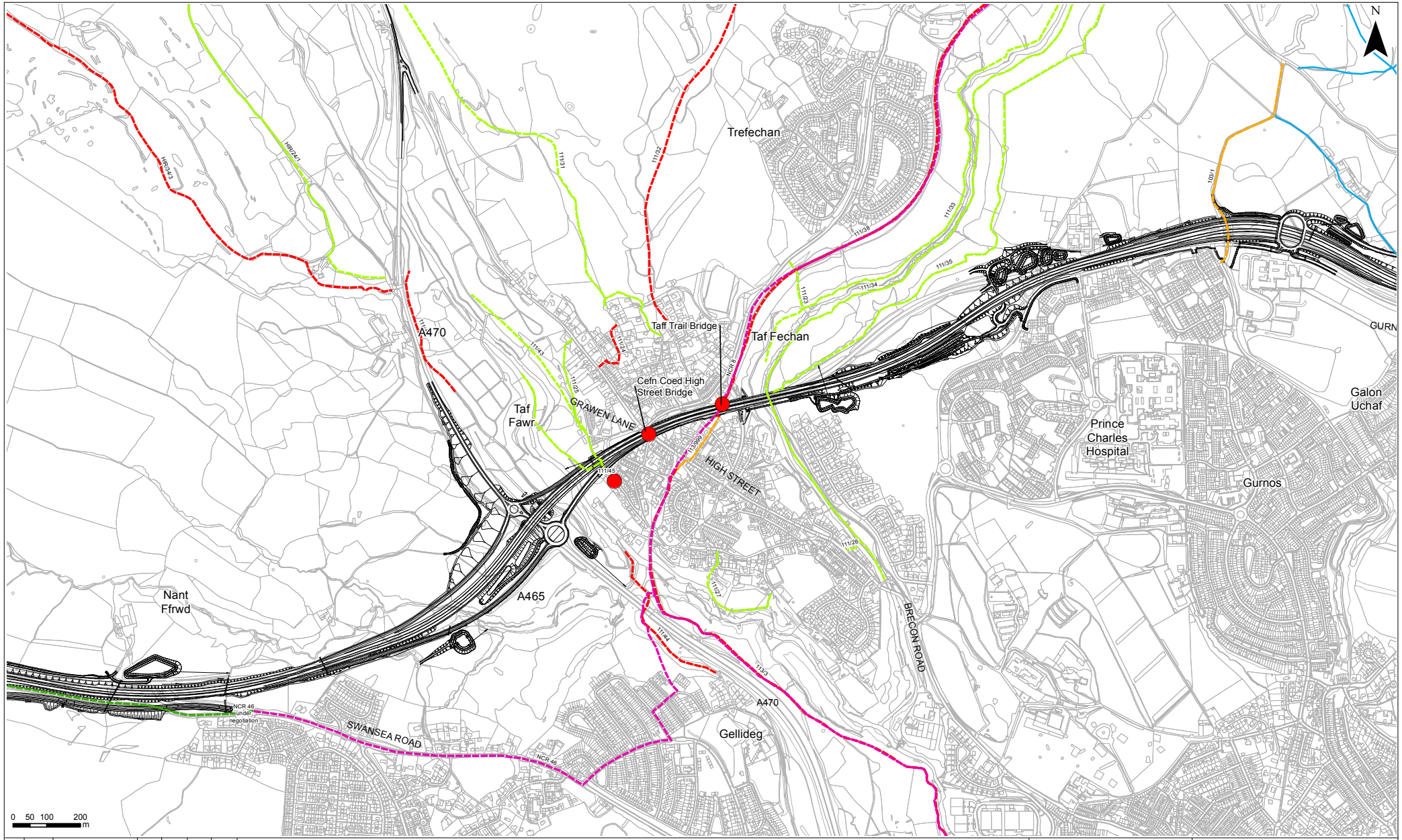
- Footpath
- Bridleway
- Bridleway / byway
- Road used as public path
- National Cycle Network Route
- NCN Route 46 (under negotiation)
- Footpath - currently suspended
- Merthyr proposed claimed rights of way



Llywodraeth Cymru
Welsh Government

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FINAL	
Project	A465 HEADS OF THE VALLEYS SECTIONS 5 AND 6 DOWLAIS TOP TO HIRWAUN	
Title	Location of NMU surveys	
Scale	1:10,000 @A3	DO NOT SCALE
Drawing No.	Figure 15B.1 Sheet 2 of 5	Rev 0



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Apprv'd
0	JULY17	FINAL	FL	AP	VC	WB

© Crown copyright and database rights 2016 Ordnance Survey 0100031673

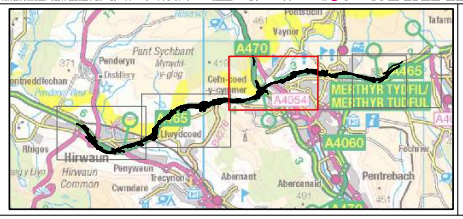
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Legend

- Scheme design
- 2016 NMU survey locations

Existing public rights of way

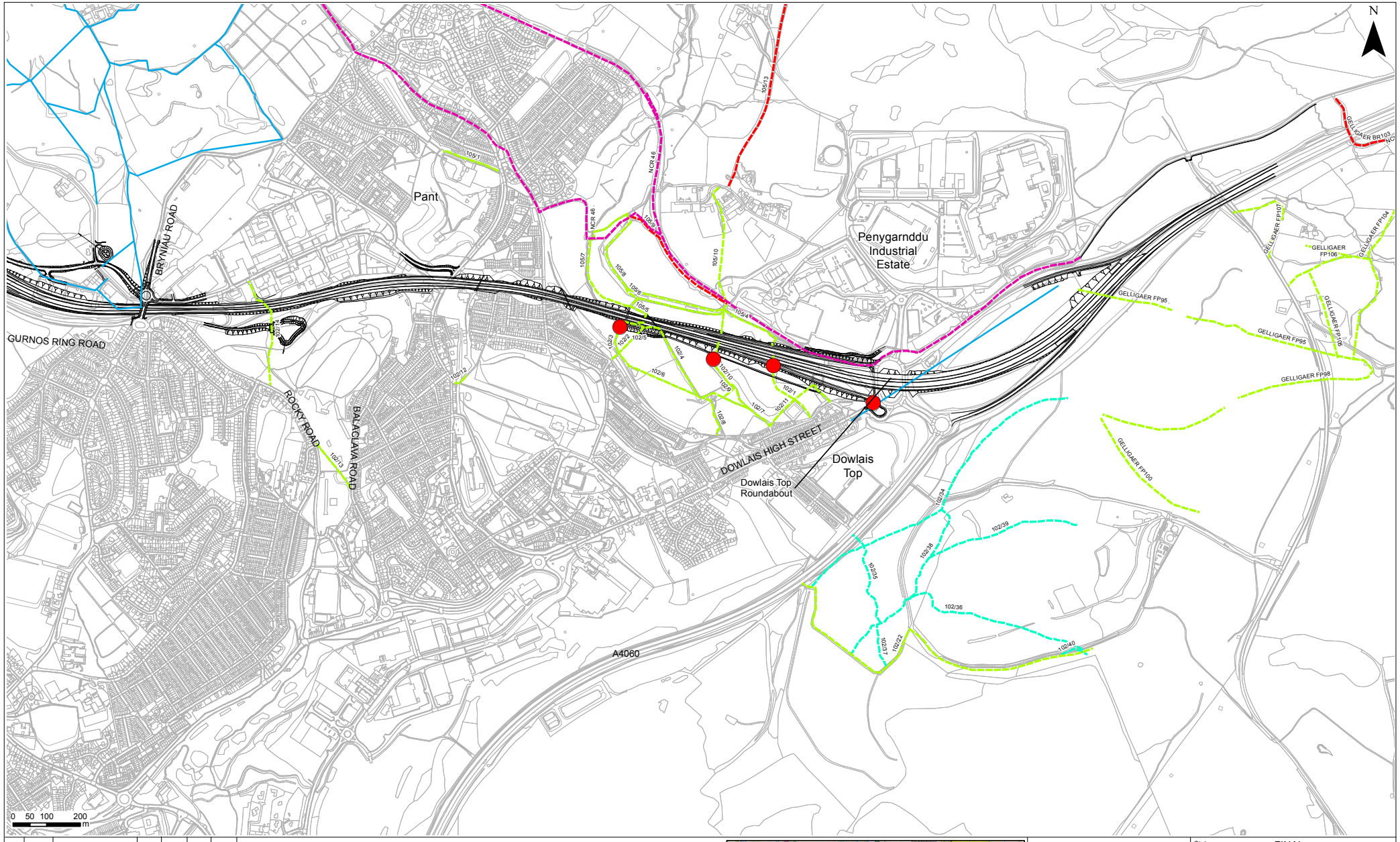
- Footpath
- Bridleway
- Bridleway / byway
- Road used as public path
- National Cycle Network Route
- NCN Route 46 (under negotiation)
- Footpath - currently suspended
- Merthyr proposed claimed rights of way



Llywodraeth Cymru
Welsh Government

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FINAL
Project	A465 HEADS OF THE VALLEYS SECTIONS 5 AND 6 DOWLAIS TOP TO HIRWAUN
Title	Location of NMU surveys
Scale	1:10,000 @A3 — DO NOT SCALE
Drawing No.	Figure 15B.1 Sheet 3 of 5 — Rev 0



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Apprv'd
0	JULY17	FINAL	FL	AP	VC	WB

© Crown copyright and database rights 2016 Ordnance Survey 0100031673

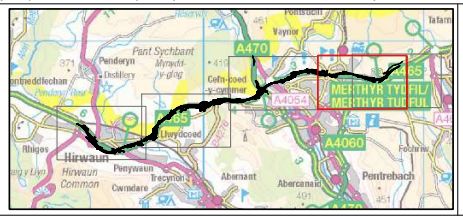
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Legend

- Scheme design
- 2016 NMU survey locations

Existing public rights of way

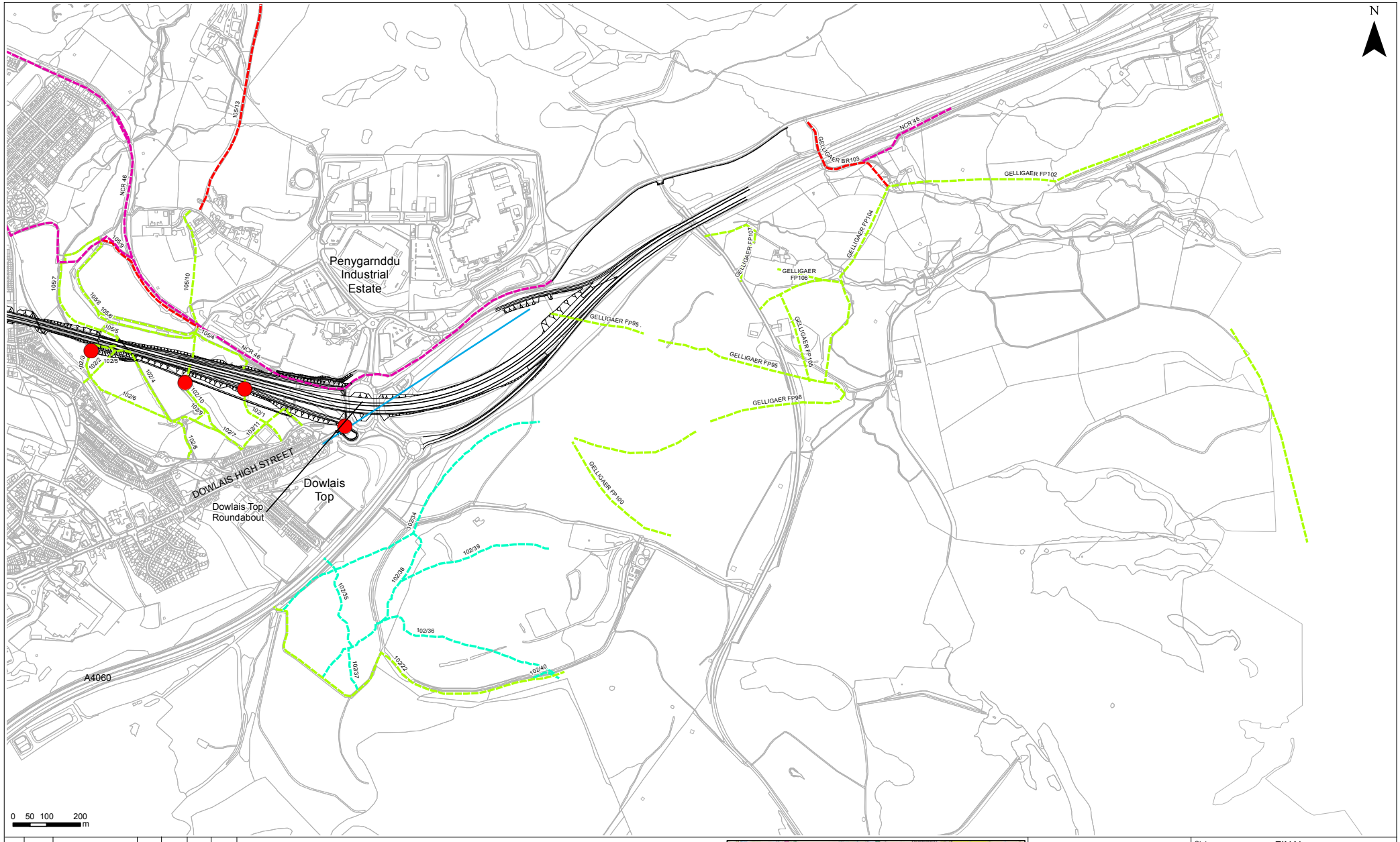
- Footpath
- Bridleway
- Bridleway / byway
- Road used as public path
- National Cycle Network Route
- NCN Route 46 (under negotiation)
- Footpath - currently suspended
- Merthyr proposed claimed rights of way



Llywodraeth Cymru
Welsh Government

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FINAL	
Project	A465 HEADS OF THE VALLEYS SECTIONS 5 AND 6 DOWLAIS TOP TO HIRWAUN	
Title	Location of NMU surveys	
Scale	1:10,000 @A3	DO NOT SCALE
Drawing No.	Figure 15B.1 Sheet 4 of 5	Rev 0



0	JULY17	FINAL	FL	AP	VC	WB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Apprv'd

© Crown copyright and database rights 2016 Ordnance Survey 0100031673

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Legend

- Scheme design
- 2016 NMU survey locations

Existing public rights of way

- Footpath
- Bridleway
- Bridleway / byway
- Road used as public path
- National Cycle Network Route
- NCN Route 46 (under negotiation)
- Footpath - currently suspended
- Merthyr proposed claimed rights of way

Llywodraeth Cymru
Welsh Government

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FINAL	
Project	A465 HEADS OF THE VALLEYS SECTIONS 5 AND 6 DOWLAIS TOP TO HIRWAUN	
Title	Location of NMU surveys	
Scale	1:10,000 @A3	DO NOT SCALE
Drawing No.	Figure 15B.1 Sheet 5 of 5	Rev 0

Page left intentionally blank

Non-motorised user survey results

Date: 08.03.2016

Footpath HIR/6/1 - Subway in Hirwaun leading to Denbeigh Court															
Direction of travel: Travelling from the main road towards the subway								Direction of travel: Travelling from the subway towards the main road							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
08:00								08:00							
08:15								08:15							
08:30							1	08:30							
08:45								08:45							
09:00								09:00							
09:15	I							09:15							
09:30	I							09:30	I						1
09:45								09:45	I						
10:00								10:00							
10:15								10:15							
10:30								10:30							
10:45								10:45							
11:00								11:00							
11:15								11:15							
11:30								11:30							
11:45								11:45							
12:00								12:00							
12:15								12:15							
12:30								12:30							
12:45								12:45							
13:00								13:00							
13:15								13:15							

13:30								13:30							
13:45								13:45							
14:00								14:00							
14:15								14:15							
14:30								14:30							
14:45								14:45							
15:00								15:00							
15:15								15:14							
15:30								15:30							
15:45								15:45							
16:00								16:00							
16:15								16:15							
16:30								16:30							
16:45								16:45							
17:00								17:00							
17:15								17:15							
17:30								17:30							
17:45								17:45							
18:00								18:00							

14.05.2016

Footpath HIR/6/1 - Subway in Hirwaun leading to Denbeigh Court															
Direction of travel: Travelling from the main road towards the subway								Direction of travel: Travelling from the subway towards the main road							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
08:00								08:00							
08:15								08:15							
08:30								08:30							
08:45	I							08:45							
09:00								09:00							
09:15								09:15							
09:30								09:30							
09:45								09:45	I						
10:00								10:00							
10:15								10:15							
10:30								10:30							
10:45								10:45							
11:00								11:00							
11:15								11:15							
11:30	I							11:30							
11:45	I							11:45	I						
12:00								12:00	I						
12:15								12:15							
12:30	II	I						12:30							
12:45	I							12:45	II	I					
13:00								13:00	I						
13:15								13:15							
13:30								13:30							
13:45	II							13:45							
14:00								14:00							

14:15								14:15	II					
14:30								14:30						
14:45								14:45						
15:00								15:00						
15:15	I							15:14						
15:30								15:30	I					
15:45								15:45						
16:00								16:00						
16:15								16:15						
16:30								16:30						
16:45								16:45						
17:00								17:00						
17:15								17:15						
17:30								17:30						
17:45								17:45						
18:00								18:00						

Date: 12.04.2016

NCN 46 at Baverstocks															
Direction of travel: Travelling east (away from car parking location)								Direction of travel: Travelling west (towards car parking location)							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
08:00								08:00							
08:15								08:15							
08:30								08:30							
08:45								08:45							
09:00								09:00							
09:15								09:15							
09:30								09:30							
09:45								09:45							
10:00								10:00			I				
10:15	I							10:15							
10:30								10:30							
10:45								10:45							
11:00								11:00							
11:15								11:15							
11:30								11:30							
11:45								11:45							
12:00								12:00							
12:15								12:15							
12:30			I					12:30	I						
12:45								12:45							
13:00								13:00							
13:15								13:15							
13:30								13:30							
13:45								13:45							
14:00								14:00			I				

14:15								14:15							
14:30			I					14:30							
14:45								14:45							
15:00								15:00							
15:15								15:14							
15:30								15:30							
15:45								15:45							
16:00								16:00							
16:15								16:15							
16:30								16:30							
16:45								16:45							
17:00								17:00							
17:15								17:15							
17:30								17:30							
17:45								17:45							
18:00								18:00							

Date: 02.04.2016.

NCN 46 at Baverstocks															
Direction of travel: Travelling east (away from car parking location)								Direction of travel: Travelling west (towards car parking location)							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
08:00								08:00							
08:15								08:15							
08:30								08:30							
08:45								08:45							
09:00								09:00							
09:15								09:15							
09:30								09:30							
09:45	II							09:45							
10:00								10:00			I				
10:15								10:15							
10:30								10:30							
10:45								10:45							
11:00								11:00							
11:15								11:15							
11:30								11:30							
11:45								11:45							
12:00								12:00							
12:15								12:15							
12:30								12:30		IIIII					
12:45								12:45							
13:00								13:00							
13:15								13:15							
13:30								13:30							
13:45								13:45		I					
14:00								14:00							

14:15								14:15							
14:30			I					14:30							
14:45								14:45							
15:00								15:00							
15:15			I					15:14							
15:30								15:30							
15:45								15:45							
16:00								16:00							
16:15								16:15							
16:30								16:30							
16:45								16:45							
17:00								17:00							
17:15								17:15							
17:30								17:30							
17:45								17:45							
18:00								18:00							

Date: 24.03.2016

Footpath 111/45															
Direction of travel: Travelling towards the subway								Direction of travel: Travelling from under the subway to cefn coed							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
08:00								08:00							
08:15								08:15							
08:30								08:30							
08:45								08:45							
09:00								09:00							
09:15								09:15							
09:30								09:30							
09:45	II							09:45							
10:00	I							10:00							
10:15								10:15							
10:30								10:30	III						
10:45								10:45							
11:00								11:00							
11:15								11:15							
11:30								11:30							
11:45								11:45							
12:00								12:00							
12:15								12:15							
12:30								12:30							
12:45								12:45							
13:00								13:00							
13:15								13:15							
13:30								13:30							
13:45								13:45							
14:00								14:00							

14:15								14:15							
14:30								14:30							
14:45								14:45							
15:00								15:00							
15:15								15:14							
15:30								15:30							
15:45								15:45							
16:00	I							16:00							
16:15								16:15							
16:30								16:30	I						
16:45								16:45							
17:00								17:00							
17:15								17:15							
17:30								17:30							
17:45	I							17:45							
18:00								18:00							

Date: 10.04.2016

Footpath 111/45															
Direction of travel: Travelling towards the subway								Direction of travel: Travelling from under the subway to cefn coed							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
08:00								08:00							
08:15								08:15							
08:30								08:30							
08:45								08:45							
09:00	I							09:00							
09:15								09:15							
09:30								09:30							
09:45								09:45	I						
10:00								10:00							
10:15								10:15							
10:30								10:30							
10:45								10:45							
11:00								11:00							
11:15								11:15							
11:30								11:30							
11:45								11:45							
12:00	I							12:00							
12:15								12:15	IIII						
12:30								12:30	I						
12:45								12:45							
13:00								13:00							
13:15								13:15							
13:30								13:30							
13:45								13:45				II			
14:00								14:00							

14:15								14:15							
14:30								14:30							
14:45								14:45							
15:00								15:00							
15:15								15:14							
15:30								15:30				III			
15:45								15:45							
16:00								16:00							
16:15								16:15							
16:30								16:30							
16:45								16:45							
17:00								17:00							
17:15								17:15							
17:30								17:30							
17:45								17:45							
18:00								18:00							

Date: 21.03.2016

Cefn Coed High Street Bridge															
Direction of travel: Travelling north (from High Street towards survey location)								Direction of travel: Travelling south (from church)							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
08:00		III						08:00		II	I				
08:15								08:15	II	I					
08:30	II							08:30	II	I					
08:45	I							08:45	II	I					
09:00	I							09:00							
09:15	II							09:15	III						
09:30								09:30	I		I				
09:45								09:45	II	I	I				
10:00			I					10:00	IIII	I					
10:15	III		I					10:15							
10:30	I							10:30	II						
10:45								10:45	III		I				
11:00	II							11:00			I				
11:15								11:15	I		IIII				
11:30	I							11:30	II		14				
11:45	I							11:45	III		IIIII				
12:00	IIIII		I					12:00	IIII						
12:15	I		II					12:15	III						
12:30	I							12:30	IIII	I					
12:45	III							12:45							
13:00	I							13:00	III		I				
13:15								13:15							
13:30			I					13:30			I				
13:45	IIII							13:45	IIIII						
14:00								14:00			I				

14:15	III							14:15	I						
14:30	II							14:30	III						
14:45								14:45	IIIII	II	I				
15:00		II						15:00	I	III					
15:15	II	15						15:15		IIIII					
15:30	III	III		I				15:30	III						
15:45	III							15:45			III				
16:00			I					16:00	IIII	I		I			
16:15								16:15	II						
16:30	IIIII							16:30	I						
16:45	I	II						16:45	I	I					
17:00	III	I	II					17:00	II						
17:15	III							17:15	III						
17:30			I					17:30	II	I					
17:45								17:45	I	I					
18:00								18:00							

Date: 03.04.2016

Cefn Coed High Street Bridge															
Direction of travel: Travelling north (from High Street towards survey location)								Direction of travel: Travelling south (from church)							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
08:00	I		II					08:00	III		II				
08:15	I							08:15	I		II				
08:30	II		IIIIIII					08:30	II						
08:45								08:45							
09:00			III					09:00							
09:15								09:15							
09:30	II							09:30	III						
09:45	II		II					09:45	II						
10:00								10:00	II						
10:15	I		I					10:15	III	I					
10:30	III							10:30	II						
10:45	IIIII		I					10:45	IIIII						
11:00	III							11:00	I						
11:15	I		II					11:15	II						
11:30	I							11:30	I		IIII				
11:45								11:45	III		III				
12:00	I							12:00	II						
12:15	II	I						12:15			II				
12:30	I							12:30	II						
12:45	I							12:45	I	IIII	IIIII				
13:00								13:00							
13:15	I			I				13:15							
13:30								13:30	III		I				
13:45		I						13:45	I						
14:00	IIII	I						14:00	IIIII	I	I				

14:15	II	I						14:15	III					
14:30	I							14:30						
14:45								14:45						
15:00	II	III						15:00	I					
15:15								15:14	I					
15:30	I							15:30	II					
15:45	I							15:45	II					
16:00	IIII	III						16:00						
16:15	IIII							16:15	I					
16:30								16:30	II					
16:45	II	I						16:45	IIIII					
17:00	II							17:00						
17:15								17:15	I					
17:30	I							17:30						
17:45								17:45						
18:00								18:00						

Date: 23.03.2016

Taff Trail overbridge															
Direction of travel: Travelling north-east (towards Vaynor Road – car parking location)								Direction of travel: Travelling south-west (away from Vaynor Road)							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
08:00								08:00	I						
08:15								08:15							
08:30	I		I					08:30							
08:45	I							08:45	I						
09:00	I							09:00	III	II					
09:15	I							09:15	I						
09:30								09:30	I						
09:45	I							09:45	I		I				
10:00			II					10:00	I						
10:15	II							10:15	III		I				
10:30	I							10:30	I						
10:45								10:45			I				
11:00	I							11:00	II						
11:15	I		II					11:15	I						
11:30	II							11:30	I						
11:45	IIIII		I	I		I		11:45	I						
12:00	IIII		II					12:00	I		I				
12:15	II							12:15			III				
12:30	II							12:30	I					I	
12:45			I					12:45	III		II				
13:00								13:00							
13:15	IIII		I					13:15	II						
13:30	II							13:30			I				
13:45								13:45	II		I				
14:00			I					14:00							

14:15	II							14:15							
14:30			I					14:30	III	I					
14:45			I					14:45	I		I				
15:00	III		I					15:00	II						
15:15								15:15	I						
15:30	I	I						15:30			II				
15:45	I		I					15:45	I						
16:00								16:00	II	I	I				
16:15	I	I						16:15	II						
16:30	I		II					16:30	II	II					
16:45			II					16:45							
17:00	III		IIII					17:00							
17:15	II		I					17:15			I				
17:30	I		I					17:30	II						
17:45	I							17:45	I						
18:00								18:00							

Date: 09.04.2016

Taff Trail overbridge															
Direction of travel: Travelling north-east (towards Vaynor Road – car parking location)								Direction of travel: Travelling south-west (away from Vaynor Road)							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
08:00								08:00	I						
08:15								08:15	IIIIIII						
08:30								08:30			I				
08:45			I					08:45	I						
09:00	I		I					09:00	II		I				
09:15								09:15							
09:30			II					09:30	I						
09:45	I		I					09:45	I						
10:00	I							10:00			III				
10:15			I					10:15							
10:30		I						10:30	I						
10:45	I		I					10:45	I						
11:00			IIIII					11:00			I				
11:15								11:15							
11:30	IIIII							11:30							
11:45	I							11:45	II						
12:00	I							12:00	I						
12:15			III					12:15	IIII		19				
12:30								12:30							
12:45	III							12:45		I					
13:00								13:00	II		I				
13:15								13:15	IIIIII						
13:30	IIII		I					13:30							
13:45	III							13:45	IIIII		IIII	IIII			
14:00								14:00	III		I	I			

14:15								14:15							
14:30								14:30	IIII		I				
14:45	II		IIII					14:45							
15:00	III	III						15:00			I	I			
15:15								15:14							
15:30	II							15:30	IIIIIII						
15:45	III		I					15:45	IIIIIII						
16:00								16:00	II						
16:15	IIIIII	I						16:15	I	I					
16:30	II		II	I				16:30			I				
16:45		IIIIII		III				16:45							
17:00								17:00	III		IIII				
17:15	II	I						17:15	I	I					
17:30	III		I					17:30	II		I				
17:45								17:45							
18:00								18:00							

Date: 09.03.2016

Footpath 102/3															
Direction of travel: Travelling south to north (from survey location side of carriageway)								Direction of travel: From north to south (crossing carriageway)							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
05:00								05:00							
05:15	II							05:15							
05:30	IIII							05:30							
05:45								05:45							
06:00								06:00	I						
06:15								06:15							
06:30	I							06:30							
06:45	II							06:45							
07:00								07:00							
07:15								07:15							
07:30								07:30							
07:45								07:45							
08:00								08:00							
08:15								08:15							
08:30								08:30							
08:45								08:45							
09:00								09:00							
09:15	II							09:15							
09:30								09:30							
09:45								09:45							
10:00								10:00	I						
10:15								10:15							
10:30								10:30							

10:45								10:45	I						
11:00								11:00							
11:15								11:15							
11:30								11:30							
11:45	I							11:45							
12:00								12:00	II						
12:15								12:15							
12:30								12:30							
12:45								12:45							
13:00	I							13:00							
13:15								13:15							
13:30								13:30							
13:45								13:45							
14:00								14:00							
14:15								14:15							
14:30								14:30							
14:45								14:45							
15:00								15:00							

Footpath 102/3															
Direction of travel: Travelling south to north (from survey location side of carriageway)								Direction of travel: From north to south (crossing carriageway)							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
05:00								05:00							
05:15	I							05:15							
05:30	II							05:30							
05:45								05:45	I						
06:00								06:00							
06:15								06:15							
06:30	I							06:30							
06:45								06:45							
07:00								07:00							
07:15	I							07:15							
07:30								07:30							
07:45	I							07:45	I						
08:00	I							08:00							
08:15								08:15							
08:30								08:30							
08:45								08:45	I						
09:00	I							09:00							
09:15								09:15							
09:30								09:30							
09:45								09:45							
10:00								10:00							
10:15								10:15							
10:30								10:30							
10:45								10:45	IIII						
11:00								11:00							
11:15	I							11:15							

11:30								11:30							
11:45	II							11:45	I						
12:00								12:00	II						
12:15								12:15							
12:30								12:30	I						
12:45								12:45							
13:00								13:00	II						
13:15								13:15							
13:30								13:30							
13:45								13:45	I						
14:00								14:00							
14:15								14:15							
14:30								14:30							
14:45								14:45							
15:00								15:00							

Date: 14.03.2016

Footpath 102/10															
Direction of travel: Travelling south to north (from survey location side of carriageway)								Direction of travel: From north to south (crossing carriageway)							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
05:00								05:00							
05:15								05:15							
05:30								05:30							
05:45	I							05:45							
06:00								06:00							
06:15								06:15							
06:30								06:30							
06:45								06:45							
07:00								07:00							
07:15								07:15							
07:30								07:30							
07:45								07:45							
08:00								08:00							
08:15								08:15							
08:30								08:30							
08:45								08:45							
09:00								09:00							
09:15								09:15							
09:30	I							09:30							
09:45								09:45							
10:00								10:00							
10:15								10:15							
10:30								10:30							
10:45								10:45							
11:00								11:00							

11:15								11:15							
11:30								11:30							
11:45								11:45							
12:00								12:00							
12:15								12:15							
12:30								12:30							
12:45								12:45							
13:00								13:00							
13:15								13:15							
13:30								13:30							
13:45								13:45							
14:00								14:00							
14:15								14:15							
14:30								14:30							
14:45								14:45							
15:00								15:00							

Date: 23.04.2016

Footpath 102/10															
Direction of travel: Travelling south to north (from survey location side of carriageway)								Direction of travel: From north to south (crossing carriageway)							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
05:00								05:00							
05:15								05:15							
05:30								05:30							
05:45								05:45							
06:00								06:00							
06:15								06:15							
06:30								06:30							
06:45								06:45							
07:00								07:00							
07:15								07:15							
07:30								07:30							
07:45								07:45							
08:00								08:00							
08:15								08:15							
08:30								08:30							
08:45	I							08:45							
09:00								09:00							
09:15								09:15							
09:30								09:30							
09:45								09:45							
10:00								10:00							
10:15								10:15							
10:30								10:30							
10:45								10:45							
11:00								11:00							

11:15								11:15							
11:30								11:30							
11:45								11:45							
12:00								12:00							
12:15								12:15							
12:30								12:30							
12:45								12:45							
13:00								13:00							
13:15								13:15							
13:30								13:30							
13:45								13:45							
14:00								14:00							
14:15								14:15							
14:30								14:30							
14:45								14:45							
15:00								15:00							

Date: 06.04.2016

Footpath along Dowlais Top roundabout															
Footpath 102/10															
Direction of travel: Travelling south to north (from survey location side of carriageway)								Direction of travel: From north to south (crossing carriageway)							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
05:00	III		I					05:00							
05:15	IIIII							05:15							
05:30	II							05:30							
05:45	II							05:45							
06:00	IIII							06:00							
06:15	II							06:15							
06:30								06:30							
06:45	II							06:45							
07:00								07:00							
07:15								07:15	I						
07:30								07:30							
07:45								07:45							
08:00								08:00							
08:15								08:15							
08:30								08:30							
08:45								08:45							
09:00								09:00							
09:15								09:15							
09:30								09:30	I						
09:45								09:45							
10:00								10:00							
10:15								10:15							
10:30	IIIII							10:30							
10:45								10:45	II						

11:00								11:00							
11:15	I							11:15	I						
11:30	II							11:30	I						
11:45								11:45							
12:00	II							12:00	II						
12:15								12:15							
12:30	I							12:30	I						
12:45								12:45	I						
13:00								13:00	I						
13:15								13:15	I						
13:30	I							13:30							
13:45								13:45	I						
14:00								14:00							
14:15								14:15	II						
14:30	II							14:30			I				
14:45								14:45							
15:00								15:00							

Date: 11.03.2016

Footpath along Dowlais Top roundabout															
Direction of travel: Travelling south to north (from survey location side of carriageway)								Direction of travel: From north to south (crossing carriageway)							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
05:00	II							05:00							
05:15	IIII							05:15							
05:30	IIIIIII							05:30							
05:45	I							05:45							
06:00	I							06:00	II						
06:15	II		I					06:15							
06:30								06:30	I						
06:45								06:45							
07:00	I							07:00							
07:15			I					07:15							
07:30								07:30		II					
07:45								07:45							
08:00								08:00							
08:15								08:15	I						
08:30	I							08:30							
08:45								08:45							
09:00	I							09:00							
09:15								09:15	I						
09:30								09:30							
09:45								09:45							
10:00								10:00							
10:15	I							10:15	I						
10:30	I							10:30							
10:45								10:45							
11:00	II	I						11:00	I						

11:15			I					11:15	I					
11:30								11:30						
11:45								11:45						
12:00								12:00	I	I				
12:15								12:15						
12:30								12:30						
12:45								12:45						
13:00	I							13:00						
13:15			I					13:15	III					
13:30								13:30						
13:45								13:45	III					
14:00								14:00	I					
14:15								14:15						
14:30								14:30						
14:45								14:45						
15:00								15:00						

Date: 26.03.2016

Footpath along Dowlais Top roundabout															
Direction of travel: Travelling south to north (from survey location side of carriageway)								Direction of travel: From north to south (crossing carriageway)							
Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other	Time	Adult	Child	Cyclists - adult	Cyclists - child	Horse	Disabled users	Other
05:00	I							05:00							
05:15	I							05:15							
05:30	II							05:30							
05:45	II							05:45							
06:00	I							06:00							
06:15								06:15							
06:30	II							06:30							
06:45	I							06:45							
07:00								07:00							
07:15								07:15							
07:30								07:30							
07:45								07:45							
08:00	I							08:00							
08:15								08:15							
08:30								08:30							
08:45								08:45							
09:00	II							09:00							
09:15								09:15	II						
09:30								09:30							
09:45								09:45							
10:00	I							10:00							
10:15	I							10:15							
10:30	I							10:30							
10:45	I							10:45							
11:00	IIIIIIIII							11:00	I						

11:15	III	I						11:15							
11:30								11:30	I						
11:45								11:45	II						
12:00								12:00	I						
12:15								12:15	II						
12:30	I		II		I			12:30	IIIII						
12:45	I							12:45							
13:00								13:00							
13:15	I							13:15	I						
13:30								13:30	I	II		I			
13:45								13:45	I						
14:00		II						14:00							
14:15	I							14:15							
14:30	II							14:30							
14:45	I							14:45	II						
15:00								15:00							

Table 15B.2: Summary table

Route	Weekday	Weekend
Footpath HIR/6/1 - Subway in Hirwaun leading to Denbeigh Court	6	20
Footpath HIR/4/2	0	0
NCN Route 46 at Baverstocks	6	11
Footpath 111/45	9	13
Cefn Coed High Street Bridge	224	170
Taff Trail overbridge	143	197
Footpath along Dowlais Top roundabout	49 and 51	64
Footpath 102/3	18	25
Footpath 102/10	2	1
Footpath 102/1	0	0

Please note no survey sheets have been included for Footpaths HIR/4/2 and 102/1, given no NMUs were recorded across two days.

Page left intentionally blank

Appendix 15C – Full Baseline Characterisation for Public Rights of Way and other Non-motorised Users (NMU) Routes

Table 15C.1 Baseline description of footpaths within the study area

Facility	Baseline summary	Sensitivity as NMU route
RHI= Rhigos, HIR= HIrwaun, AUN= Penywaun		
Footpath HIR/15/1	Footpath routed along the southern and eastern border of the Penderyn Reservoir, to the north of Hirwaun industrial estate. On the basis that the Penderyn Reservoir is utilised by fly fishermen, whilst the path may be a popular route for recreational use, a medium sensitivity value has been assigned.	Medium
Footpath RHI/25/2	Footpath RHI/25/2 is orientated south-west / north-east to the south of Hirwaun roundabout. The footpath is routed through the Tower Colliery Regeneration site before connecting with footpath RHI/25/1. On the basis the footpath is routed through the Tower Regeneration Colliery, the route is only likely to be used for a small stretch to the extreme east. Therefore a low sensitivity value has been deemed.	Low
Footpath RHI/25/1	Footpath RHI/25/1 orientates west off footpath RHI/24/1, RHI/24/2 and RHI/24/3, and connects to footpath RHI/25/2. On the basis the route is a popular footpath for dog walkers, a medium sensitivity to modification and / or disruption has been deemed.	Medium
Footpath RHI/24/1, RHI/24/2 and RHI/24/3	A combination of footpaths adjoining footpath HIR/43/1 which run along the southern perimeter of the Hirwaun Welfare Ground. Footpaths RHI/24/1, RHI/24/2 and RHI/24/3 are routed south-west of the Hirwaun Welfare Ground towards the Tower Regeneration Colliery. The area to the south of Hirwaun Welfare Ground is a popular spot for dog walkers. As a result, a medium sensitivity value to disruption has been assigned to the footpaths.	Medium
Footpath 3/11/1	Footpaths 3/11/1 connects Penderyn Road and Richmond Drive to the north-west of Hirwaun, through an area of shrub / scrub. The route is likely to be used to access Hirwaun from the residential properties along Garth Grove. In addition, the route is likely to be popular with dog walkers and individuals wishing to access the Afon Cynon. On this basis a medium sensitivity has been assigned.	Medium
Footpath 3/17/1	Footpath 3/17/1 connects Meadow Lane with Rhigos Road in Hirwaun, passing through a residential area and crossing Briar Way on-route. On the basis the footpath is used to move around Hirwaun, a medium sensitivity has been assigned.	Medium
Footpath HIR/43/1	Footpath HIR/43/1 traverses the southern border of the Hirwaun Welfare ground, connecting footpaths HIR/44/1 and HIR/42/3 with footpaths RHI/24/1, RHI/24/2 and RHI/24/3. The footpath is frequently used by dog walkers and has therefore been assigned a high sensitivity to disruption.	High
Footpath HIR/42/3	Footpath HIR/42/3 runs along the Hirwaun Welfare Ground access road, continuing through the car park before adjoining footpath HIR/43/1. Footpath HIR/42/3 connects with footpath HIR/42/2 along Caswell Close. The footpath is a key route used to access Hirwaun Welfare Ground and has therefore been assigned a high sensitivity to	High

Facility	Baseline summary	Sensitivity as NMU route
RHI= Rhigos, HIR= HIrwaun, AUN= Penywaun		
	modification and / or disturbance.	
Footpath HIR/42/2	Footpath HIR/42/2 connects footpaths HIR/42/1 and HIR/42/3 through housing to the north of the Hirwaun Welfare Ground. A high sensitivity value has been assigned to the footpath, on the basis it is the most direct route to access Hirwaun Welfare Ground.	High
Footpath HIR/42/1	Footpath HIR/42/1 connects footpath HIR/42/2 with Long Meadow Close in Hirwaun. Both footpaths are used to access Hirwaun Welfare Ground which is a popular recreational facility and the network of footpaths that surround the Welfare Ground, which are popular routes for dog walkers. The route is the most direct way to access the Hirwaun Welfare Ground. Therefore, a high sensitivity value has been assigned.	High
Footpath HIR/44/1	Footpath HIR/44/1 orientates directly south from the Hirwaun Welfare Ground car park, connecting footpaths HR/44/4 and HR/42/3. The area to the south of Hirwaun Welfare Ground is a popular area for dog walkers. On this basis, a high sensitivity value has been assigned.	High
Footpath HIR/44/4	Footpath HIR/44/4 is routed along the eastern boundary of the Tower Regeneration Colliery. The footpath adjoins footpath HIR/44/1. The area to the south of Hirwaun Welfare Ground is popular for dog walkers. For this reason, a high sensitivity value has been assigned.	High
Footpath HIR/39/1	Footpath HIR/39/1 is a short footpath, approximately 40 m in length, connecting the western end of Longfield Court with Glannant Street. The footpath is a key route in the community as it provides access to Hirwaun Primary School, with alternative routes providing significantly further distances. Therefore the route has been assigned as very high sensitivity to modification and / or disruption.	Very high
Footpath 3/19/1	Approximately 10 m in length, footpath 3/19/1 links National Cycle Network (NCN) Route 478 and NCN Route 46. The footpath is blocked by a gate and is therefore difficult to access by the public. As a result, a negligible value has been assigned.	Negligible
Footpath HIR/21/1	Footpath HIR/21/1 links Merthyr Road and Tramway in Hirwaun. The route is approximately 100 m in length. The route has been assigned a medium sensitivity value as although it is a popular shortcut for NMU, it does not lead to a key recreational area, whilst other alternative routes exist along pavements on the local road network.	Medium
Footpath HIR/40/4	Footpath HIR/40/4 connects the existing A465 with Johnson Park in Hirwaun. The footpath is approximately 65 m in length. The footpath provides no access to any key community areas and / or facilities and has therefore been assigned low sensitivity.	Low
Footpath HIR/40/1	Footpath HIR/40/1 is routed along the Mynydd Bwlfa Wind Farm access road. The footpath terminates where it meets the current A465 trunk road. On the basis that the footpath runs along an access road, with a significant amount of construction traffic likely, a low sensitivity value has been assigned.	Low
Footpath HIR/23/1	Footpath HIR/23/1 connects with footpath AUN/3/4 along the Trewaun Tramway. The route is likely to be used by school children accessing	Very high

Facility	Baseline summary	Sensitivity as NMU route
RHI= Rhigos, HIR= HIrwaun, AUN= Penywaun		
	Ysgol Gyfun Rhydywaun, as well as individuals moving between Hirwaun and Penywaun. On this basis, a very high value has been assigned.	
Footpath AUN/3/4	Footpath AUN/3/4 is routed alongside NCN Route 46 to the north of Penywaun. The footpath adjoins footpath AUN/3/3 to the east and footpath HIR/23/1 to the west, along the Trewaun Tramway. A very high sensitivity value has been assigned to the footpath on the basis it is likely to be used by school children to access Ysgol Gyfun Rhydywaun.	Very high
Footpath AUN/6/1	Footpath AUN/6/1 is routed south off the A4054, to the east of Roseville Bungalow. The footpath connects with footpaths AUN/7/1 and AUN/10/2. The route is likely to be used occasionally by dog walkers and equestrians wishing to access rural land to the south. On this basis the route has been assigned a low sensitivity.	Low
Footpath AUN/7/1	Footpath AUN/7/1 provides a link between footpaths AUN/6/1 and AUN/10/2 to the west of Fair View Bungalow. The route is likely to be used occasionally for recreational use by individuals wishing to access rural land to the south for. On this basis the route has been assigned a low sensitivity.	Low
Footpath AUN/10/2	Footpath AUN/10/2 connects footpaths AUN/6/1 and AUN/10/1, to the north of Fair View Bungalow. The route is blocked with stock proof fencing at the western extent. Therefore, a negligible value has been assigned.	Negligible
Footpath AUN/10/1	Footpath AUN/10/1 traverses land to the south of Penywaun Industrial Estate, adjoining footpaths AUN/10/2 and 3/35/1. The route is likely to be used occasionally by individuals wishing to access rural land to the south. As a result, a low sensitivity value has been assigned.	Low
Footpath 3/35/1	Footpath 3/35/1 runs to the west of Penywaun Industrial Estate, connecting the A4059 with footpath AUN/10/1. The route is likely to be used infrequently by pedestrians wishing to access rural land to the south. On this basis a low sensitivity value has been assigned.	Low
Footpath AUN/4/1	Footpath AUN/4/1 provides a link from the A4059 to NCN Route 46, through an area of shrub. The route is likely to be used by cyclists accessing NCN Route 46, however alternative routes exist, such as along the Trewaun Tramway and to the north of Penywaun. As a result the route is deemed to have a low sensitivity to disruption.	Low
Footpath AUN/3/3	Footpath AUN/3/3 runs along NCN Route 46, to the north of Penywaun, connecting with footpaths AUN/3/4 at its western extent and AUN/4/1 to the south. The route is likely to be used by individuals moving between the villages of Hirwaun and Penywaun, as well as school children accessing Ysgol Gyfun Rhydywaun, and therefore a very high value has been assigned.	Very high
Footpath HIR/6/1	Footpath HIR/6/1 connects Swansea Road (Hirwaun) to an underpass of the A465, where it adjoins footpath AUN/1/1. The footpath is routed between the residential area of Denbeigh Court and houses along Greenwood Drive, to the east of Hirwaun. NMU surveys revealed relatively little activity along the route, with only two dog walkers noted	Low

Facility	Baseline summary	Sensitivity as NMU route
RHI= Rhigos, HIR= HIrwaun, AUN= Penywaun		
	on a weekday survey and 20 on a weekend. As a result, a low sensitivity to disruption and / or modification has been assigned.	
Footpath AUN/1/1	Footpath AUN/1/1 runs along the northern bank of the Afon Cynon, to the north of Penywaun, connecting footpaths AUN/2/1 and HIR/6/1. The footpath joins footpath HIR/6/1 at an underbridge, to the south of Denbigh Court in Hirwaun. NMU surveys revealed very little activity on the route as it entered the underbridge, with the path used by two dog walkers on a weekday survey and 20 on a weekend. On this basis, a low sensitivity value has been deemed	Low
Footpath HIR/3/1	Footpath HIR/3/1 is routed along the southern end of the Nant Hir Reservoir, before continuing along the local road used to access Nant Moel Reservoir, and then along the southern end of Nant Moel Reservoir. From here the footpath orientates south and adjoins Nant-Y-Moel Lane. The route is a popular frequently used to access the two Reservoirs by anglers, as well as for equestrians. The route also has a high amenity value, offering long distance views down to Hirwaun. On this basis, a high sensitivity value has been deemed.	High
Footpath HIR/5/2	Footpath HIR/5/2 crosses the existing A465 at-grade, connecting footpath HIR/5/1 south of the westbound carriageway, with Nant-Y-Moel Lane. The footpath runs through woodland. NMU surveys on footpath HIR/4/2 observed no users using footpath HIR/5/2 to cross the A465 on both a midweek day and weekend day. The footpath appears to have been severed by the construction of the A465 and is therefore now rarely used. On the basis the footpath crosses the A465 at-grade, whilst NMU surveys recorded no use of the path to cross the trunk road, a negligible sensitivity value has been deemed.	Negligible
Footpath HIR/4/1	Footpath HIR/4/1 runs from the existing A465 where it adjoins at-grade, through woodland to the south of Valley View Bungalow, along Nant-Y-Moel Lane. NMU surveys on footpath HIR/4/2 observed no users utilising footpath HIR/4/1 to cross the trunk road on a weekday or weekend day. The footpath appears to have been severed by the construction of the A465 and is therefore now rarely used. On the basis the footpath crosses the A465 at-grade, whilst NMU surveys recorded no use of the footpath to cross the trunk road, a negligible sensitivity value has been deemed.	Negligible
Footpath HIR/4/2	Footpath HIR/4/2 is routed through agricultural land which borders woodland to the west of Llwydcoed. The footpath connects footpath HIR/4/3 with the westbound carriageway of the A465, where it then connects with footpath HIR/4/1 via an at-grade crossing of the existing A465. NMU surveys recorded no users on a weekday or weekend day. The footpath appears to have been severed by the construction of the A465 and is therefore now rarely used. On the basis the route is rarely used, a negligible sensitivity value has been deemed.	Negligible
Footpath HIR/7/1	Footpath HIR/7/1 runs from the disused mineral railway line to Crematorium Road through agricultural fields. The footpath is routed along the north-east boundary of Gellitarw Farm. The footpath adjoins footpath AUN/2/1 at the disused mineral railway line. A high sensitivity value has been assigned as the route may be used as a long-distance walk, providing a loop from Hirwaun utilising footpaths HIR/6/A,	High

Facility	Baseline summary	Sensitivity as NMU route
RHI= Rhigos, HIR= HIrwaun, AUN= Penywaun		
	AUN/1/1 and AUN/2/1.	
Footpath AUN/2/1	Footpath AUN/2/1 connects footpaths AUN/1/1 and HIR/7/1, through agricultural fields to the north of Penywaun. The footpath connects with HIR/7/1 at the disused mineral railway line. NMU surveys revealed a low number of users utilising footpath HIR/6/1 to access footpath AUN/1/1, whilst the lack of NMU provision along the Crematorium Road is likely to deter users from accessing footpath HIR/7/1. On this basis, a low sensitivity value has been assigned.	Low
Footpath HIR/5/1	Footpath HIR/5/1 connects footpaths HIR/5/2 and HIR/4/3 through agricultural fields, to the west of Llwydcoed. The footpath adjoins footpath HIR/5/2 via an at-grade crossing of the existing A465. NMU surveys on footpath HIR/4/2, observed no users along footpath HIR/5/1 on a weekday or weekend day. The footpath appears to have been severed by the construction of the A465 and is therefore now rarely used. On the basis the route is rarely used, a negligible sensitivity value has been deemed.	Negligible
Footpath HIR/4/3	Footpath HIR/4/3 is routed through woodland and links footpaths HIR/4/2 and HIR/5/1 with Crematorium Road. The route has a low amenity value as it travels through woodland for its duration. NMU surveys on footpath HIR/4/2, observed no users along footpath HIR/4/3 on a weekday or weekend day. As a result, a negligible sensitivity value has been assigned.	Negligible
Footpath OED/6/1	Footpath OED/6/1 is routed along the eastern border of Llwydcoed Crematorium, before terminating at Crematorium Road. This path was highlighted as a key route used by horse riders. On this basis, a high sensitivity value has been assigned.	High
Footpath OED/9/3	Footpath OED/9/3 connects Merthyr road with footpath OED/9/4, through woodland to the south of Baverstock junction. A low sensitivity value has been deemed given the route provides no real means of access and is located a significant distance from any residential areas.	Low
Footpath OED/9/4	Footpath OED/9/4 connects footpaths OED/9/2 and OED/9/3, through woodland to the south of Baverstock junction. A low sensitivity value has been deemed given the route provides no real means of access and is located a significant distance from any residential areas.	Low
Footpath OED/9/2	Footpath OED/9/2 connects Merthyr Road with footpath OED/9/1, through woodland to the south of Baverstock junction. A low sensitivity value has been deemed given the route provides no real means of access and is located a significant distance from any residential areas.	Low
Footpath OED/9/1	Footpath OED/9/1 runs from the Merthyr Tydfil / Rhondda Cynon Taf county boundary, through woodland to the south of Baverstock Junction. The footpath adjoins footpaths OED/9/2 and OED/9/4. A low sensitivity value has been deemed given the route provides no real means of access and is located a significant distance from any residential areas.	Low
Footpath HIR/24/1	HIR/24/1 is orientated through the Brecon Beacons National Park, to	Low

Facility	Baseline summary	Sensitivity as NMU route
RHI= Rhigos, HIR= HIrwaun, AUN= Penywaun		
	the west of the A470. The route is likely to be used occasionally for recreational use by equestrians. On this basis, a lows sensitivity value has been deemed.	
Footpath 111/43	Footpath 111/43 splits in two from footpath 111/45, navigating along the old Taff Trail to the west and along Grawen Lane to the east. NMU surveys of footpath 111/45 recorded nine adult pedestrians on a midweek day and 13 on a weekend day, all of which continued along the old Taff Trail section of the footpath. Given the low number of NMU, a low sensitivity value has been deemed.	Low
Footpath 111/25	Footpath 111/25 connects Grawen Lane with the A4054, approximately 350 m north of Brecon Road bridge. A negligible value has been assigned as the route appears to have fallen into disuse with the northern extent extremely overgrown with vegetation.	Negligible
Footpath 111/45	Footpath which crosses under the A465 in Cefn Coed, connecting Job's Lane to the south with footpath 111/43 to the north. The footpath is used to connect the community of Cefn Coed. NMU surveys recorded nine adult pedestrians on a midweek day and 13 on a weekend day. On the basis the route appears to be rarely used, a low sensitivity value has been deemed.	Low
Footpath 111/27	Footpath 111/27 routes through woodland to the south of Cefn Coed, connecting Cefn Coed Rugby Club with Pontycapel Road, via Wern Road. The route traverses the Afon Taf Fechan and is likely to be used occasionally by dog walkers. On this basis a low sensitivity value has been assigned.	Low
Footpath 111/31	Footpath 111/31 connects Cloth Hall, to the north of Cefn Coed Lane, with the A4054. The footpath passes through moorland to the west of Merthyr Tydfil Golf Club. The route has a high amenity value as it experiences long distance views through the Afon Taf Fawr valley to the north, as well as south over Merthyr Tydfil. As a result it is likely to popular for recreational use, for example with walkers and / or dog walkers, and therefore a high sensitivity value has been assigned.	High
Footpath 111/26	Footpath 111/26 is approximately 30 m in length and orientates eastwards from the A5054, south of Well Street, towards the Afon Taf Fechan. The route is likely to be used to access the Afon Taf Fechan for recreational purposes; however it does not tie in with any other ProW. On this basis, a low sensitivity value to modification has been assigned.	Low
Footpath 111/34	Footpath 111/34 runs alongside the Afon Taf Fechan, commencing to the north of where the river crosses under the A4054. The footpath continues under the Taf Fechan viaduct and north towards the local road that runs through Pontsarn, through an area of woodland. The footpath provides a long distance walk with high amenity value and provides a route into Merthyr Tydfil town centre. It is therefore likely to be popular for recreational use, with a high sensitivity value assigned.	High
Footpath 111/35	Footpath 111/35 routes along the southern bank of the Afon Taf Fechan, from the Taf Fechan viaduct to just south of the local road which runs through Pontsarn, where it adjoins footpath 111/34. The route provides no link into Merthyr Tydfil as it is stopped up by the	Low

Facility	Baseline summary	Sensitivity as NMU route
RHI= Rhigos, HIR= HIrwaun, AUN= Penywaun		
	A465 at the Taf Fechan viaduct, whilst alternative routes exist closer to the Afon Taf Fechan. For this reason, a low sensitivity value has been deemed.	
Footpath 111/23	Footpath 111/23 adjoins footpath 111/33 through woodland to the north of the Afon Taf Fechan. The footpath adjoins Vaynor Road at its most northern extent. Given the high amenity value of the route, it is likely to be popular for recreational use. A medium sensitivity value to disruption has therefore been assigned.	Medium
Footpath 111/33	Footpath 111/33 connects footpath 111/23 with a local road which runs through Pontsarn. The footpath runs north of footpath 111/34, to the north of the Afon Taf Fechan. A medium sensitivity value has been assigned as the route is likely to be used for recreational use, although alternative routes are available.	Medium
Claimed ProW	A network of claimed ProW can be found to the north of the existing A465 near Galon Uchaf and around Morlais Park, with a further claim routed through Dowlais Top. A medium sensitivity has been deemed as the routes are likely to be used infrequently, with alternative definitive routes existing.	Medium
Footpath 102/14	Footpath 102/14 connects Rocky road to Pant industrial estate, crossing the existing A465 at-grade. It would appear that the footpath was subject to historical severance when the existing A465 trunk road was built, however it still remains a definitive footpath. Footpath 102/14 crosses three lanes of carriageway, as well as two slip roads. As a result it has been assumed that usage of the footpath would be low, whilst an alternative route linking Pant Industrial Estate and Rocky Road exists across Bryniau Road. As a result an overall negligible value has been assigned.	Negligible
Footpath 102/13	Footpath 102/13 connects Rocky Road with Balaclava Road, through Ifor Park. A medium sensitivity value has been assigned as the route is likely to be used by NMUs moving between Pen-y-Darren and Dowlais.	Medium
Footpath 105/1	Footpath 105/1 traverses the northern boundary of Pantysgallog Primary School, connecting Heol-y-Bryniau and Pant Road. The footpath is a key route for school children living to the east of Pant Road wishing to access the primary school. On the basis it is a key route, a very high sensitivity value has been assigned.	Very High
Footpath 102/12	Footpath 102/12 is approximately 50 m in length and is routed east off Victoria Street along the southern boundary of Merthyr Motor Auctions. The footpath is used to access barren land on the site of the former British Steel Company Dowlais Works. As the route is still open, but links to an area of land that has fallen into disrepair, a low sensitivity value has been assigned.	Low
Footpath 105/7	Footpath 105/7 runs along the western edge of the northern Dowlais Top Reservoir north of the existing A465. The footpath connects with footpath 105/5 to the south, as well as footpath 105/8 and NCN Route 46 as it orientates north. The route is likely to be used occasionally for recreational use, with more popular routes located closer to the pond. As a result of the alternative, more attractive routes that exist, a low	Low

Facility	Baseline summary	Sensitivity as NMU route
RHI= Rhigos, HIR= HIrwaun, AUN= Penywaun		
	sensitivity value has been assigned.	
Footpath 105/8	Footpath 105/8 runs along the southern edge of the northern Pen-y-wern Pond. The route is likely to be popular for recreational purposes, including anglers, as well as shoppers and workers travelling to the Dowlais Top Retail Park and Pengarnddu Business Park. Therefore a medium sensitivity has been assigned.	Medium
Footpath 102/3	Footpath 102/3 links Upper Row in Dowlais, with the westbound carriageway of the A465, where it provides an at-grade crossing. The footpath links with footpaths 102/2 and 102/6 to the south. NMU surveys recorded 18 pedestrians using the footpath to cross the carriageway on a weekday, and 25 on a weekend, from 05:00 to 15:00. The route is used by shoppers and workers commuting to ASDA and the Pengarnddu Business Park. On this basis, a medium sensitivity value has been assigned.	Medium
Footpath 105/6	Footpath 105/6 is a short footpath, approximately 60 m in length, linking footpaths 105/8 and 105/5 to the north of the existing A465. This route is likely to be used occasionally by NMU for recreational purposes. The route does not provide direct access to the Pengarnddu Business Park or Dowlais Top Retail Park. On this basis a low value has been assigned.	Low
Footpath 102/2	Footpath 102/2 connects footpath 102/3 with footpaths 102/4 and 102/5, and is approximately 100 m in length. Footpath 102/5 also adjoins the footpath to the east. The footpath is located to west of the southern Pen-y-wern Pond. NMU surveys revealed the route is a popular route for dog walkers who loop around the pond. NMU surveys also revealed a small number of individuals who use the path to access Pengarnddu Business Park, and vice versa, with 18 recorded over a 10 hour period. As a result, a medium sensitivity value has been assigned.	Medium
Footpath 105/5	Footpath 105/5 runs from the south-east corner of the northern Pen-y-wern Pond to the existing A465, where it forms an at-grade crossing of the A465. The footpath connects with footpaths 105/4, 105/6, 105/7, 105/8, 105/10 along its extent. The route is predominantly used for recreational purposes around the pond, including by anglers, as well as shoppers and workers accessing the Pengarnddu Business Park and Dowlais Top Retail Park. NMU surveys recorded 18 users utilising the path to cross the trunk road during a midweek day and 25 on a weekend day, from 05:00 to 15:00. On this basis a medium sensitivity value has been assigned.	Medium
Footpath 102/5	Sections of footpath 102/5 can be found on either side of the existing A465. A 35 m section diverts off footpath 102/2 to the east, south of the A465. A longer stretch of the footpath traverses the southern border of the northern Pen-y-wern Pond, providing an at-grade crossing of the A465. The footpath links into the following footpaths to the north of the A465: • Footpath 105/4; • Footpath 105/6; • Footpath 105/7;	High

Facility	Baseline summary	Sensitivity as NMU route
RHI= Rhigos, HIR= HIrwaun, AUN= Penywaun		
	• Footpath 105/8; and • Footpath 105/10. The footpath is likely to be utilised for recreational use, as well as by individuals accessing Pengarnddu Business Park from the south, and has therefore been assigned a high sensitivity rating.	
Footpath 102/6	Footpath 102/6 runs to the south of the southern Penywern Pond, linking to footpaths 102/2 and 102/3 to the west and 102/4 and 102/7 to the east. The footpath is a popular spot for dog walkers. The footpath has therefore has been assigned a high sensitivity value.	High
Footpath 102/4	Footpath 102/4 is routed along the western edge of the southern Pen-y-wern Pond, connecting footpath 102/2 with footpaths 102/6 and 102/7. The footpath is a popular route amongst dog walkers. The route is also popular with anglers, as well as for general recreational use, and therefore has been assigned a high sensitivity value.	High
Footpath 105/10	Footpath 105/10 is orientated north from the existing A465 road to an access road to Merthyr Common, to the east of the northern Penywern Pond. NMU surveys recorded only two users utilising the footpath to cross the A465 on a weekday, and one on a weekend. The footpath is likely to be used occasionally to access bridleway 105/13. On this basis, an overall low sensitivity value has been assigned.	Low
Footpath 105/4	Footpath 105/4 runs from the south-east corner of the northern Penywern Pond, parallel with NCN Route 46, to the A465 where it forms an at-grade crossing of the existing trunk road. The footpaths links with the following footpaths at the south-east corner of the Penywern Pond: • Footpath 105/10; • Footpath 105/5; and • Footpath 105/8. Two NMU surveys, on a weekend and weekday, revealed no use of the path all day to cross the A465. On this basis a low sensitivity value has been deemed.	Low
Footpath 102/10	Footpath 102/10 travels along the eastern edge of the bottom Penywern Ponds, adjoining the existing trunk road through an at-grade crossing. NMU surveys recorded two users utilising the footpath to cross the A465 on a weekday, and one on a weekend, from 05:00 to 15:00. The surveys did however note a small amount of use by dog walkers who use the footpath as part of a loop around the pond. On the basis the footpath is infrequently used, a low sensitivity value has been deemed.	Low
Footpath 102/8	Footpath 102/7 runs from the south-west corner of the southern Pen-y-wern Pond, to Station Terrace in Dowlais. The footpath connects to a number of footpaths around the pond, creating a network of Public Rights of Way (PRoWs). On the basis the footpath is likely to be used by residents of Dowlais for recreational purposes, a medium value has been assigned.	Medium

Facility	Baseline summary	Sensitivity as NMU route
RHI= Rhigos, HIR= HIrwaun, AUN= Penywaun		
Footpath 102/9	Footpath 102/8 is routed north-south from Cross Blanche Street to the south-west corner of the southern Pen-y-wern Pond. A high sensitivity value has been assigned, as the route is likely to be used for recreational use from residents of Dowlais.	High
Footpath 102/7	Footpath 102/6 runs to the south of the southern Pen-y-wern Pond, linking to footpaths 102/2 and 102/3 to the west and 102/4 and 102/7 to the east. The footpath is a popular spot for dog walkers. The footpath has therefore been assigned a medium sensitivity value.	Medium
Footpath 102/1	Footpath 102/1 runs from Station Terrace to the existing A465, where it provides an at-grade crossing of the trunk road. Two NMU surveys, on a weekday and weekend, recorded no users all day using the footpath to cross the trunk road, from 05:00 to 15:00. On the basis the route appears to be rarely used, with more direct crossings across the A465 existing through the Dowlais Top junction and on footpath 102/3, a low sensitivity value has been deemed.	Low
Footpath 102/11	Footpath 102/11 connects footpath 102/7 with Coedcae Row. The footpath is routed along the access road to the stables and the small children's park to the north-west of Dowlais. The route is likely to be used by residents to the north of Dowlais who utilise the southern Pen-y-wern Pond for recreational use and for walking dogs. A safer and more direct route to ASDA supermarket and the Pengarnddu Business Park is located along the existing Dowlais Top roundabout. On this basis a medium sensitivity value has been assigned.	Medium
Footpath 102/22	Footpath 102/22 is routed through the Trecatti landfill site, from the A4060 in the west to the Caerphilly local authority boundary in the east. The footpath adjoins the A4060 via an at-grade stile. The route is likely to be seldom used given the path can only be accessed by an uncontrolled crossing of the A4060, whilst the presence of the landfill reduces the amenity value of the route. On this basis a negligible sensitivity value has been assigned.	Negligible
Footpath 102/34	Footpath 102/34 runs along the north-west boundary of the Trecatti landfill site, from footpath 102/22 to the Caerphilly County Borough boundary. The footpath is currently suspended under the "*Order for the suspension of Public Rights of Way The Opencast Coal Act 1958 The Acquisition of Land (Authorisation Procedure) Act 1946 The Trecatty Rights of Way Order 1975".* The public therefore have no right to walk on the footpath at present and as a result a negligible value has been assigned to the route.	Negligible
Footpath 102/35	Footpath 102/35 runs to the west of Trecatti landfill, before adjoining the A4060 at-grade opposite Dowlais Rugby Club playing fields. The footpath is currently suspended under the "*Order for the suspension of Public Rights of Way The Opencast Coal Act 1958 The Acquisition of Land (Authorisation Procedure) Act 1946 The Trecatty Rights of Way Order 1975".* The public therefore have no right to walk on the footpath at present and as a result a negligible value has been assigned to the route.	Negligible
Footpath 102/36	Footpath 102/36 navigates through the Trecatti landfill site, connecting footpath 102/22 in the west and east. The footpath is	Negligible

Facility	Baseline summary	Sensitivity as NMU route
RHI= Rhigos, HIR= HIrwaun, AUN= Penywaun		
	currently suspended under the "*Order for the suspension of Public Rights of Way The Opencast Coal Act 1958 The Acquisition of Land (Authorisation Procedure) Act 1946 The Trecatty Rights of Way Order 1975".* The public therefore have no right to walk on the footpath at present and as a result a negligible value has been assigned to the route.	
Footpath 102/37	Footpath 102/37 is located to the west of the Trecatti landfill site, connecting with footpath 102/35. The footpath is currently suspended under the *"Order for the suspension of Public Rights of Way The Opencast Coal Act 1958 The Acquisition of Land (Authorisation Procedure) Act 1946 The Trecatty Rights of Way Order 1975".* The public therefore have no right to walk on the footpath at present and as a result a negligible value has been assigned to the route.	Negligible
Footpath 102/38	Footpath 102/38 runs through the Trecatti landfill site, along the western perimeter. The footpath is currently suspended under the *"Order for the suspension of Public Rights of Way The Opencast Coal Act 1958 The Acquisition of Land (Authorisation Procedure) Act 1946 The Trecatty Rights of Way Order 1975".* The public therefore have no right to walk on the footpath at present and as a result a negligible value has been assigned to the route.	Negligible
Footpath 102/39	Footpath 102/39 runs through the north of the Trecatti landfill site up to the Merthyr Tydfil County Borough boundary. The footpath is currently suspended under the *"Order for the suspension of Public Rights of Way The Opencast Coal Act 1958 The Acquisition of Land (Authorisation Procedure) Act 1946 The Trecatty Rights of Way Order 1975".* The public therefore have no right to walk on the footpath at present and as a result a negligible value has been assigned to the route.	Negligible
Footpath 102/40	Footpath 102/40 is a short footpath to the south of the Trecatti landfill site. The footpath is currently suspended under the *"Order for the suspension of Public Rights of Way The Opencast Coal Act 1958 The Acquisition of Land (Authorisation Procedure) Act 1946 The Trecatty Rights of Way Order 1975".* The public therefore have no right to walk on the footpath at present and as a result a negligible value has been assigned to the route.	Negligible
Gelligaer FP95	Gelligaer FP95 is routed across land to the north of the Trecatti landfill site, from Ogilvie Terrace to the existing A465, where it crosses the carriageway at-grade. The route is unlikely to be used regularly given its distance from any areas of population and the lack of controlled crossing of the A465. On this basis a low sensitivity value has been assigned.	Low
Gelligaer FP100	Footpath which connects Gelligaer FP98 with Ogilvie Terrace, in a north-west – south-east orientation. A low sensitivity value has been assigned on the basis the footpath provides no real means of access.	Low
Gelligaer FP107	Gelligaer FP107 is routed off Ogilvie Terrace along an access track leading to Blaen-Carno Farm. Given the rural nature of the area, a low sensitivity value has been assigned.	Low

Facility	Baseline summary	Sensitivity as NMU route
RHI= Rhigos, HIR= HIrwaun, AUN= Penywaun		
Gelligaer FP98	Gelligaer FP98 which crosses Ogilvie Terrace, to the north of the Trecatti landfill site. The route provides no real means of access and has therefore been assigned a low sensitivity value.	Low
Gelligaer FP106	Footpath routed through Blaen-Carno Farm. The route connects to Gelligaer FP105 at its eastern extent. A low sensitivity value has been deemed, given the remote nature of the path.	Low
Gelligaer FP105	Footpath routed east off Ogilvie Terrace, connecting Gelligaer FP104 and Gelligaer FP95. A low sensitivity value has been deemed, on the basis the route is rarely used given the remote nature of the route.	Low
Gelligaer FP104	Gelligaer FP104 orientates through agricultural land to the east of Ogilvie Terrace, opposite Upper Cwm Carno Farm. Given the rural nature of the area, it is unlikely to be used regularly and has therefore been assigned a low sensitivity value.	Low
Gelligaer FP102	Gelligaer FP102 connects to the east of Gelligaer FP104. Given the rural nature of the area, it is unlikely to be used regularly and has therefore been assigned a low sensitivity value to disruption.	Low

Table 15C.2 Baseline description of cycle routes within the study area

Facility	Baseline summary	Sensitivity as NMU route
NCN Route 478	The cycle network enters Hirwaun along Penyard Road from the Brecon Beacons. From here, NCN Route 478 crosses the Afon Cynon, before continuing along Davies Row and Tramway where it adjoins NCN Route 46. Given the cycle route is a national trial, the route is considered to have a high sensitivity to disruption or modification.	High
NCN Route 46	NCN Route 46 traverses the study area in a number of places. In Section 6, the cycle route is routed along Rhigos Road and a 400 m stretch of the existing A465, before cutting through Hirwaun along Tower Road and Tramway and out to the north of Penywaun along the banks of the Afon Cynon. The cycle route then heads north along Cwmynysmintan Road and Crematorium Road and passes through Baverstock junction. A missing link in the route exists between Baverstock junction and Swansea Road (Gellideg), where the route travels along before adjoining NCN Route 8 just south of the Grade II* Cefn Coed Viaduct. From here NCN Route 46 runs along NCN Route 8, before re-entering the study area along Pant Road having branched off from NCN Route 46 to the north of the Brecon Mountain Railway. To the very east of Section 5, NCN Route 46 traverses the top of the northern Pen-y-wern pond and the south of the ASDA superstore, before heading east along a local road towards Gypsy Castle. The stretch of NCN Route 46 which runs along Old Rhymney Road between Dowlais and Gypsy Castle, Rhymney has no segregated provision for cyclists. NMU surveys recorded 10 users on a weekend day, of which six were cyclists, and six on a midweek day,	High

Facility	Baseline summary	Sensitivity as NMU route
	of which four were cyclists. As the cycle route is utilised by all types of NMU, a high sensitivity has been assigned.	
NCN Route 8 (Taff Trail)	NCN Route 8 heads north along the Afon Taf Fawr before crossing the Grade II* Cefn Coed Viaduct and the A465 via an old railway bridge. From here the route orientates north-east along the northern bank of the Afon Taf Fechan, heading towards Pontsticill Reservoir. The old Taff Trail also orientates through the study area, running along the A4054, before heading north-west along Grawen Lane and along the Afon Taf Fawr, where it crosses the existing A470 and heads north through the Brecon Beacons National Park (BBNP). NMU surveys along the old railway bridge, recorded 143 users (a combination of pedestrians and cyclists) on a weekday and 196 on a weekend day. A high sensitivity value has been prescribed, given the national nature of the route and the high user numbers recorded.	High

Table 15C.3 Baseline description of bridleways within the study area

Facility	Baseline summary	Sensitivity as NMU route
HIR/34/3	Bridleway HIR/34/3 runs parallel with the Nant Sych waterbody through the Brecon Beacons National Park, before connecting with Ffrwd Road where it adjoins the A470. The route is likely to be used occasionally for recreational use by equestrians. On this basis, a lows sensitivity value has been deemed.	Low
Bridleway 111/37	Bridleway 111/37 runs parallel to the A470 for approximately 400 m from Ffrwd Road. Ffrwd Road is utilised by equestrian groups who are likely to use the bridleway as an off-road route. On the basis the route is popular with equestrian users, a medium sensitivity value has been assigned.	Medium
Bridleway 111/44	Bridleway 111/44 orientates from Tai Mawr Road in Gellideg to Pontycapel Road in Cefn Coed, crossing under the A470 via an underpass. The route adjoins with NCN Route 46 as it passes under the A470, providing a link to NCN Route 8 and bridleway 113/3. The bridleway is likely to be used occasionally for recreational use and by residents of Gellideg wishing to access Cefn Coed and has therefore been deemed to have low sensitivity value to disruption or modification.	Low
Bridleway 113/3	Bridleway 113/3 follows the same route as NCN Route 8 along the Afon Taf and across the Grade II* Cefn Coed viaduct, from where it adjoins bridleway / byway 113/999 along Station Road. The bridleway commences to the north of Cyfarthfa Retail Park. Given the bridleway is routed along NCN Route 8 and the Grade II* Cefn Coed Viaduct, it is likely to be popular for recreational purposes. On this basis a high sensitivity value has been assigned.	High
Bridleway / byway 113/999	Part of the Taff Trail, bridleway / byway 113/999 is predominantly routed along Old Drill Hall Road. The route links bridleways 113/3 and 111/38. NMU surveys along the Taff Trail / A465 overbridge, recorded 143 users (a combination of pedestrians and cyclists) on a weekday	Very high

Facility	Baseline summary	Sensitivity as NMU route
	and 196 on a weekend day. On the basis the route is likely to be used by members of the community travelling around Cefn Coed, as well as the elderly and young wishing to access Saint John the Baptist Church and the Cefn Community Centre along Old Drill Hall Road respectively, a very high sensitivity value has been assigned.	
Bridleway 111/24	Bridleway 111/24 orientates along Cilsanws Lane through Cefn Coed, connecting Cefn Coed High Street with moorland to the north of Cefn Coed. The route is likely to be used to access footpaths 111/31 and 111/32 which navigate through moorland to the north of Merthyr Tydfil Golf Club and has therefore been assigned a high sensitivity value.	High
Bridleway 111/38	Bridleway 111/38 follows NCN Route 8 from the old railway bridge over the existing A465, to the south of Vaynor Road and Trefechan, and up to the Ponsticill Reservoir. NMU surveys along the Taff Trail / A465 overbridge, recorded 143 users (a combination of pedestrians and cyclists) on a weekday and 196 on a weekend day. Therefore, a high sensitivity to disruption and / or modification has been assigned.	Very high
Bridleway 111/32	Bridleway 111/32 links Somerset Lane with Merthyr Tydfil Golf Club, before orientating north through the grounds of the golf club. The route orientates through moorland through the grounds of the Golf Club. The route has vast long distance views south over Merthyr Tydfil as well as to the north over the Brecon Beacons National Park. On the basis the bridleway has a high amenity value, it is likely to be a popular route for recreational use. As a result, a high sensitivity value has been assigned.	High
Bridleway / byway 103/1	Bridleway / byway 103/1 connects Goitre Lane to the north of the Gurnos Estate, with a local road running to the west of Morlais Castle. This route is an important means of access to the Morlais Trail, an important trail referred to by the Merthyr Valley Ramblers. In addition, Merthyr Tydfil Ramblers confirmed that walkers travel from Gurnos to Morlais Castle and beyond along the Morlais Heritage Trail which follows the current alignment of Goitre Lane along bridleway / byway 103/1. On the basis it is a key connection route to a popular local trail, a high sensitivity value has been assigned.	High
Bridleway 105/9	Bridleway 105/9 traverses the top of the northern Pen-y-wern Pond, connecting NCN Route 46 with footpath 105/10. The bridleway is routed along NCN Route 46. The route is likely to be used frequently by anglers using the pond, dog walkers and / or for other recreational purposes. The route is also likely to be used by residents of Pant wishing to access ASDA, Pengarnddu Retail Park and Pengarnddu Business Park. On this basis a high sensitivity value has been assigned.	High
Bridleway 105/13	Bridleway 105/13 is routed north from a Travellers settlement to the west of Pengarnddu Business Park, past Blaen Morlais Farm. Although the bridleway has a high amenity value with long distance views north over the Brecon Beacons National Park and south over Merthyr Tydfil, it is only likely to be used to access Blaen Morlais Farm and has no other real means of access. On this basis, a low sensitivity value has been assigned.	Low
Gelligaer BR103	Bridleway Gelligaer BR103 connects NCN Route 46 road with Gelligaer FP102 and Gelligaer FP104. The bridleway passes under	Low

Facility	Baseline summary	Sensitivity as NMU route
	the existing A465 trunk road. A low sensitivity value has been assigned given its remote nature.	

Table 15C.4 Baseline description of local roads within the study area

Facility	Baseline summary	Sensitivity as NMU route
Rhigos Road	Rhigos Road is an A road which adjoins the trunk road at Hirwaun roundabout, providing access to Hirwaun Industrial Estate. NCN Route 46 runs along Rhigos Road before crossing Hirwaun roundabout and continuing along the A465. In addition to being used by cyclists, the road has pavements running along a large proportion of the road. On the basis the route is the most direct way to access Hirwaun Industrial Estate from the east and is also used by cyclists utilising NCN Route 46, a high sensitivity value to disruption has been assigned.	High
Hirwaun Road	Hirwaun road runs through Penywaun, connecting with the A465 at the Trewaun roundabout. A pavement running to the north of the road connects with an underpass which provides access under the A465. On the basis the route is a key route taking users into Hirwaun to access key facilities, as well for school children wishing to access Ysgol Gyfun Rhydywaun, the road is deemed to have very high sensitivity to disruption.	Very high
Tower Road	Tower Road is located off the westbound carriageway of the A465 as it approaches the Hirwaun roundabout. The road can be used to access Tower Regeneration Colliery site, however a gate blocks access suggesting alternative access exists. Where the road meets the A465, NCN Route 46 traverses the road for a small section before it orientates back over the trunk road via an overbridge and heads through Hirwaun. On the basis the road is used in part by NCN Route 46 and for other recreational use, a high sensitivity to change has been assigned.	High
Brecon Road	Brecon Road runs through Hirwaun from Trewaun roundabout. The road has pavements along both sides and crosses NCN Route 46 where it adjoins Manchester Place. On the basis the route is a key route through Hirwaun providing a link to community facilities along Hirwaun High Street, the route is deemed to have a very high sensitivity value to modification.	Very high
Crematorium Road	Crematorium Road is a minor road connecting the A465 from Baverstock junction to Court Lodge junction. The road provides direct access to Llwydcoed Crematorium and can be used to access the village of Llwydcoed. NCN Route 46 adjoins the road from Cwmynysminton Road and continues north towards the A465. The road is also a popular route for equestrians moving around the local area, with a number of horses located in the field to the north of the road near Llwydcoed Crematorium. On the basis the route is popular for both cyclist and pedestrians, a high sensitivity has been assigned.	High
Swansea Road	The road connects the A465 westbound carriageway to the east of	High

Facility	Baseline summary	Sensitivity as NMU route
(Gellideg)	Baverstock junction, with the A470 Cyfarthfa Retail Park junction. The road provides access to the villages of Clwydyfagwyr and Gellideg. NCN Route 46 is routed along the road, east of where it adjoins the A465. Pavements exist along both sides of the road on approach to Clwydyfagwyr and Gellideg. Given the route is used by cyclists on the NCN Route 46 as well as by residents moving around the community, a high sensitivity to disruption has been assigned.	
Grawen Lane	Grawen Lane provides on-slip and off-slip access to the eastbound carriageway at Cefn Coed. The lane has a footway to the north, providing NMU access to Fairview Houses. The road forms part of the Taff Trail walking route. On the basis the route is utilised by walkers using the Taff Trail walking route, as well as by pedestrians travelling from Fairview Houses to Cefn Coed High Street, a high sensitivity to disruption has been deemed.	High
Cefn Coed High Street	Cefn Coed High Street is the main road through Cefn Coed, linking the A470 to the north with Brecon Road which runs into Merthyr Tydfil town centre, crossing the A465 via the Brecon Road bridge. The route has pavements along the vast majority of the road and also forms the route of the Taff Trail walking route up to Grawen Lane. NMU surveys along the street recorded 226 users (pedestrians and cyclists) on a midweek day, and 170 on a weekend day, with the majority heading south across the trunk road. A number of school children were also recorded heading to Ysgol-graig and Cyfarthfa High School. The road is a popular route for cyclists heading south to join NCN Route 46, as well as north towards the BBNP. On the basis the route is a key route connecting residents to the north of the A465 with facilities on Cefn Coed High Street, a very high sensitivity value has been assigned.	Very high
Lower Vaynor Road	Lower Vaynor Road connects the westbound carriageway of the A465 with Cefn Coed High Street. The road has footways for the vast majority of its length. A route exists under the Taf Fechan Viaduct, connecting Lower Vaynor Road with NCN Route 8. The route provides a link between the communities of Cefn Coed and is also used by school children from Trefechan travelling to Pen-y-Dre High school. It is considered that this route would have medium sensitivity to NMU disruption or modification.	Medium
Goitre Lane	Goitre Lane links the Gurnos estate with the village of Pontsarn via an underpass. The route is used by bridleway / byway 103/1 to access the Morlais Trail. On the basis it is a key connection route to a popular local trail, the route has been deemed to have a high sensitivity to modification.	High
Bryniau Road	Bryniau Road connects Galon Uchaf with Pant Industrial Estate to the north. The road crosses the A465 trunk road via an overbridge, with footways along both sides. The route is likely to be a key route for commuters, as it provides the most direct access between Galon Uchaf and Pant industrial estate. The route is also likely to be used by school children from Pant travelling to Pen-y-Dre High school. For these reasons the route is recognised as a key NMU route and has therefore been assigned a very high sensitivity value.	Very high
Pant Road	Pant Road links Pant with Dowlais under the trunk road, whilst also providing a link to Pant Industrial Estate. A children's play area is	Very high

Facility	Baseline summary	Sensitivity as NMU route
	located directly south of the A465 where Pant Road crosses under. The route is a key means of access between the two communities and has therefore been judged to have a very high sensitivity to modification.	
Jones Street	Jones Street provides an alternative link between the residential areas of Dowlais and Pant, under the existing trunk road. The road predominantly provides direct access to housing areas with Pant and Dowlais, but can be used to access Pantysgallog Primary School by residents of Dowlais. Pant Road provides a more direct link to community facilities for residents of Pant. On this basis a medium sensitivity to disruption has been assigned.	Medium

Page left intentionally blank.

Appendix 15D – Full Assessment Results for Public Rights of Way and other Non-Motorised User (NMU) Routes

Table 15D.1 Impact assessment of all footpaths within the study area

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
RHI= Rhigos, HIR= Hirwaun, AUN= Penywaun				
Footpath HIR/15/1	**Construction:** No impact is predicted during construction.	Medium	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Medium	Negligible	Neutral
Footpath RHI/25/2	**Consultation:** There would be a loss of amenity associated with the construction of the off-line section south of Hirwaun.	Low	Minor adverse	Slight adverse
	Operation: A slight loss of amenity is anticipated with the new road alignment south of Hirwaun.	Low	Minor adverse	Slight adverse
Footpath RHI/25/1	**Construction:** There would be a loss of amenity associated with the construction of the off-line section south of Hirwaun.	Medium	Minor adverse	Slight adverse
	Operation: A slight loss of amenity is anticipated with the new road alignment south of Hirwaun.	Medium	Minor adverse	Slight adverse
Footpath RHI/24/1, RHI/24/2 and RHI/24/3	**Construction:** There would be a loss of amenity associated with the construction of the off-line section south of Hirwaun. In addition, access to the network of footpaths to the south of the Hirwaun Welfare Ground would be disrupted.	Medium	Moderate adverse	Slight adverse
	Operation: There would no direct physical impact to the footpaths; however the alignment of the new off-line section south of Hirwaun would prevent NMUs from accessing the network of footpaths to the south of the Hirwaun Welfare Ground.	Medium	Major adverse	Moderate adverse
Footpath 3/11/1	**Construction:** No impact is predicted during construction.	Medium	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Medium	Negligible	Neutral
Footpath 3/17/1	**Construction:** No impact is predicted during construction.	Medium	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Medium	Negligible	Neutral
Footpath HIR/43/1	**Construction:** Access would be disrupted by the construction of the off-line section to the south of Hirwaun, with temporary diversions put	High	Moderate adverse	Moderate adverse

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
RHI= Rhigos, HIR= Hirwaun, AUN= Penywaun				
	in place.			
	Operation: Footpath HIR/43/1 would be diverted by approximately 250 m to adjoin Tower Road. From here it would have access to the de-trunked section of the existing A465. There would no significant change for vulnerable users as the option to turn back on themselves would exist. The diversion is simply an extension of the existing footpath. A loss of amenity would be anticipated with the construction of the new off-line section to the south of Hirwaun.	High	Minor adverse	Slight adverse
Footpath HIR/42/3	**Construction:** There would be an adverse effect on the amenity value towards the southern extent of the footpath, as a result of construction traffic and construction activities to the south of the Hirwaun Welfare Ground.	High	Minor adverse	Slight adverse
	Operation: A slight loss in amenity is anticipated, as a result of new wide views over the off-line road section south of Hirwaun.	High	Minor adverse	Slight adverse
Footpath HIR/42/2	**Construction:** No impact is predicted during construction.	High	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	High	Negligible	Neutral
Footpath HIR/42/1	**Construction:** No impact is predicted during construction.	High	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	High	Negligible	Neutral
Footpath HIR/44/1	**Construction:** The footpath would be severed by construction of the off-line section at Hirwaun and by the temporary road provided to the south of the proposed scheme, with access temporarily lost.	High	Minor adverse	Slight adverse
	Operation: The route would be severed by the new road alignment south of the Hirwaun Welfare Ground, with NMUs re-routed around the newly aligned footpath HIR/44/4.	High	Moderate adverse	Moderate adverse
Footpath HIR/44/4	**Construction:** There would an adverse effect on the amenity of the footpath as a result of construction activities south of the Hirwaun Welfare Ground.	High	Minor adverse	Slight adverse
	Operation: There would a loss in amenity as a result of the new off-line road alignment south of Hirwaun. The footpath would re-routed by approximately 50 m to the south of the	High	Minor adverse	Slight adverse

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
RHI= Rhigos, HIR= Hirwaun, AUN= Penywaun				
	proposed scheme, where it would adjoin footpath HIR/40/1.			
Footpath HIR/39/1	**Construction:** No impact is predicted during construction.	Very high	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Very high	Negligible	Neutral
Footpath 3/19/1	**Construction:** No impact is predicted during construction.	Negligible	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Negligible	Negligible	Neutral
Footpath HIR/21/1	**Construction:** No impact is predicted during construction.	Medium	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Medium	Negligible	Neutral
Footpath HIR/40/4	**Construction:** No impact is predicted during construction.	Low	Negligible	Neutral
	No change in route alignment, with a slight loss of amenity anticipated.	Low	Negligible	Neutral
Footpath HIR/40/1	**Construction:** The footpath would be severed by the temporary road provided to the south of the off-line section at Hirwaun during construction, with access temporarily lost.	Low	Major adverse	Slight adverse
	Operation: A slight loss of amenity is anticipated; however the footpath is routed along the Mynydd Bwllfa Wind Farm access road at present, and as such has a relatively low amenity value.	Low	Negligible	Neutral
Footpath HIR/23/1	**Construction:** Access through the Trewaun Tramway would be maintained throughout construction.	Very high	Negligible	Neutral
	Operation: The footpath would be re-routed by approximately 30 m across the new Trewaun Tramway overbridge. Ramps would be provided for vulnerable users. The construction of an overbridge would remove the anti-social behaviour issues associated with the existing Trewaun Tramway underpass. The footpath would be suitable for use by pedestrians, cyclists and equestrians.	Very high	Moderate beneficial	Moderate beneficial
Footpath AUN/3/4	**Construction:** Access through the Trewaun Tramway would be maintained throughout construction.	Very high	Negligible	Neutral
	Operation: The footpath would be re-routed by	Very high	Moderate	Moderate

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
RHI= Rhigos, HIR= Hirwaun, AUN= Penywaun				
	approximately 30 m across the new Trewaun Tramway overbridge. Ramps would be provided for vulnerable users. The construction of an overbridge would remove the anti-social behaviour issues associated with the existing Trewaun Tramway underpass. The footpath would be suitable for use by pedestrians, cyclists and equestrians.		beneficial	beneficial
Footpath AUN/6/1	**Construction:** The footpath may experience slight views of the construction works through hedgerows at its southern extent; however, this is not anticipated to be significantly adverse.	Low	Negligible	Neutral
	Operation: Glimpsed views of the proposed scheme may be seen from the footpaths southern extent, however, this is not anticipated to be significantly adverse.	Low	Negligible	Neutral
Footpath AUN/7/1	**Construction:** There would be an adverse effect on the amenity value of the footpath, as a result of long distance views of the construction activities south of Hirwaun.	Low	Minor adverse	Slight adverse
	Operation: The footpath would experience long distance views over the proposed scheme south of Hirwaun.	Low	Minor adverse	Slight adverse
Footpath AUN/10/2	**Construction:** The footpath may experience glimpsed views of the construction of the off-line section south of Hirwaun; however this is not anticipated to be significant.	Negligible	Negligible	Neutral
	Operation: The footpath may experience glimpsed views of the proposed scheme; however, this is not anticipated to be significant.	Negligible	Negligible	Neutral
Footpath AUN/10/1	**Construction:** There would be an adverse effect on the amenity value of the footpath, as a result of long distance views of the construction activities south of Hirwaun.	Low	Minor adverse	Slight adverse
	Operation: The footpath would experience long distance views over the proposed scheme south of Hirwaun.	Low	Minor adverse	Slight adverse
Footpath 3/35/1	**Construction:** No impact is predicted during construction.	Low	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Low	Negligible	Neutral
Footpath AUN/4/1	**Construction:** This footpath would experience glimpsed, long distance views of construction activities around the Croesbychan junction.	Low	Major adverse	Moderate adverse

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
RHI= Rhigos, HIR= Hirwaun, AUN= Penywaun				
	Operation: The footpath is anticipated to experience glimpsed long distance views of the new Croesbychan junction.	Low	Minor adverse	Slight adverse
Footpath AUN/3/3	**Construction:** There would be an adverse effect on the amenity value of the route as a result of construction activities at Croesbychan junction.	Very high	Minor adverse	Slight adverse
	Operation: The footpath would experience glimpsed open views of the Croesbychan junction, with a slight loss of amenity expected.	Very high	Minor adverse	Slight adverse
Footpath HIR/6/1	**Construction:** Access to the southern part of the footpath would be temporarily disrupted during the demolition and reconstruction of the A465 underpass.	Low	Minor adverse	Neutral
	Operation: No impact is predicted during the operational phase.	Low	Negligible	Neutral
Footpath AUN/1/1	**Construction:** Access to the northern part of the footpath and the crossing would be temporarily disrupted during construction of the new drainage pond access road and demolition and reconstruction of the A465 underpass. There would be an adverse effect on the amenity value of the route as a result of construction activities at Croesbychan junction.	Low	Moderate adverse	Slight adverse
	Operation: The northern section of this footpath would be rerouted along the new drainage pond access road prior to crossing the A465. A slight loss of amenity is anticipated with long distance views over Croesbychan junction introduced.	Low	Minor adverse	Slight adverse
Footpath HIR/3/1	**Construction:** Access would be maintained throughout construction, with a slight loss of amenity anticipated.	High	Minor adverse	Slight adverse
	Operation: The footpath would be re-routed by approximately 50 m through the new Nant Moel Reservoir access road underpass. The route would be an improvement for vulnerable users as it would be an underpass rather than an overbridge. The footpath would experience glimpsed, long distant views over the Baverstock and Croesbychan junctions; however, this is not anticipated to be significant. The footpath would be suitable for use by pedestrians, cyclists and equestrians.	High	Negligible	Neutral
Footpath HIR/5/2	**Construction:** Access to the crossing of the	Negligible	Minor	Slight

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
RHI= Rhigos, HIR= Hirwaun, AUN= Penywaun				
	A465 is likely to be temporarily disrupted.		adverse	adverse
	Operation: The footpath would be rerouted onto the shared NMU facility provided through Croesbychan junction, providing a safe crossing across the junction and removing the need for NMUs to cross the trunk road at-grade.	Negligible	Major beneficial	Slight beneficial
Footpath HIR/4/1	**Construction:** Access to the crossing of the A465 is likely to be temporarily disrupted.	Negligible	Minor adverse	Slight adverse
	Operation: The northern 58 m of the footpath would be rerouted west onto the shared NMU facility provided through Croesbychan junction, providing a safe crossing across the junction and removing the need for NMUs to cross the trunk road at-grade.	Negligible	Major beneficial	Slight beneficial
Footpath HIR/4/2	**Construction:** Access to the crossing of the A465 is likely to be temporarily disrupted.	Negligible	Minor adverse	Slight adverse
	Operation: The footpath would be rerouted onto the shared NMU facility provided through Croesbychan junction, providing a safe crossing across the junction and removing the need for NMUs to cross the trunk road at-grade.	Negligible	Major beneficial	Slight beneficial
Footpath HIR/7/1	**Construction:** The footpath would be maintained throughout construction of the Croesbychan junction, however.an adverse effect on amenity is anticipated during the construction period.	High	Minor adverse	Slight adverse
	Operation: The footpath would be re-routed by approximately 20 m from where it adjoins Crematorium Road, along the new access road to Gellitarw Farm and a shared use facility provided through Croesbychan junction. As the length of change is so minimal, it is not anticipated that it would significantly affect vulnerable users. The footpath would experience a loss of amenity, with clear views of Croesbychan junction.	High	Minor adverse	Slight adverse
Footpath AUN/2/1	**Construction:** There would be an adverse effect on the amenity value of the route as a result of construction activities at Croesbychan junction.	Low	Minor adverse	Slight adverse
	Operation: A slight loss of amenity is anticipated with long distance views over Croesbychan junction introduced.	Low	Minor adverse	Slight adverse
Footpath HIR/5/1	**Construction:** Access to the crossing of the A465 is likely to be temporarily disrupted.	Negligible	Minor adverse	Slight adverse

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
RHI= Rhigos, HIR= Hirwaun, AUN= Penywaun				
	Operation: The footpath would be rerouted onto the shared NMU facility provided through Croesbychan junction, providing a safe crossing across the junction and removing the need for NMUs to cross the trunk road at-grade.	Negligible	Major beneficial	Slight beneficial
Footpath HIR/4/3	**Construction:** There is the potential for the footpath to experience glimpsed views through woodland of construction activities at the Croesbychan junction.	Negligible	Minor adverse	Slight adverse
	Operation: There would be no change in the physical condition of the route; however, the footpath may experience glimpsed views of the new Croesbychan junction through woodland.	Negligible	Minor adverse	Slight adverse
Footpath OED/6/1	**Construction:** An adverse effect on the amenity value of the footpath is anticipated towards the footpaths northern extent, as a result of construction activities at the Baverstock junction.	High	Minor adverse	Slight adverse
	Operation: The footpath would experience views over the Baverstock junction towards its northern extent.	High	Minor adverse	Slight adverse
Footpath OED/9/3	**Construction:** No impact is predicted during construction.	Low	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Low	Negligible	Neutral
Footpath OED/9/4	**Construction:** No impact is predicted during construction.	Low	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Low	Negligible	Neutral
Footpath OED/9/2	**Construction:** No impact is predicted during construction.	Low	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Low	Negligible	Neutral
Footpath OED/9/1	**Construction:** No impact is predicted during construction.	Low	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Low	Negligible	Neutral
HIR/24/1	**Construction:** No impact is predicted during construction.	Low	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Low	Negligible	Neutral
Footpath 111/43	**Construction:** The construction of the new	Low	Major	Slight

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
RHI= Rhigos, HIR= Hirwaun, AUN= Penywaun				
	A465 eastbound slip road would lead to a loss of amenity along the footpath. The construction footprint would directly impact the footpath, with potential for temporary disruption or loss of access.		adverse	adverse
	Operation: Footpath 111/43 would be re-routed to the north of the eastbound carriageway, reducing the length of the path by approximately 60 m. The footpath would also experience open views of the new A470 junction, creating a loss of amenity.	Low	Minor adverse	Slight adverse
Footpath 111/25	**Construction:** There would be a loss of amenity associated with the construction of the A470 junction.	Negligible	Minor adverse	Neutral
	Operation: The footpath would experience glimpsed views of the A470 junction.	Negligible	Minor adverse	Neutral
Footpath 111/45	**Construction:** The demolition of the Cefn Coed subway would result in the footpath being stopped up on either side of the carriageway, with a diversion provided across Cefn Coed High Street.	Low	Minor adverse	Slight adverse
	Operation: Footpath 111/45 would be re-routed across Cefn Coed High Street as the Cefn Coed subway is demolished, resulting in a diversion of approximately 380 m. Overall a slight adverse effect has been anticipated, as although NMUs journey length would increase, the current route is seldom used given the dark nature of the subway, with NMUs preferring to utilise the Cefn Coed High Street bridge to connect communities north and south of the trunk road.	Low	Minor adverse	Slight adverse
Footpath 111/27	**Construction:** There would be a loss of amenity associated with the construction of the A470 junction.	Low	Minor adverse	Neutral
	Operation: The footpath would experience long distance views over the A470 junction.	Low	Minor adverse	Neutral
Footpath 111/31	**Construction:** There would be a loss of amenity associated with the construction of the A470 junction.	High	Minor adverse	Slight adverse
	Operation: The footpath would experience long distance views over the proposed A470 junction.	High	Minor adverse	Slight adverse
Footpath 111/26	**Construction:** No impact is predicted during construction.	Low	Negligible	Neutral

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
RHI= Rhigos, HIR= Hirwaun, AUN= Penywaun				
	Operation: No impact is predicted during the operational phase.	Low	Negligible	Neutral
Footpath 111/34	**Construction:** NMUs along the footpath would experience views of the Taf Fechan viaduct construction. Slight loss of amenity would occur due to the presence of a construction compound immediately east of the footpath.	High	Minor adverse	Slight adverse
	Operation: The footpath would experience glimpsed views of the new Taf Fechan viaduct; however, this is not anticipated to significantly alter the existing amenity value of the footpath.	High	Negligible	Neutral
Footpath 111/35	**Construction:** Access to the 40 m of footpath immediately north of the proposed scheme would likely be disrupted or due to the presence of a construction compound. In addition, NMUs along the footpath would experience views of the Taf Fechan viaduct construction.	Low	Minor adverse	Slight adverse
	Operation: The footpath would experience glimpsed views of the new Taf Fechan viaduct and the new road through the Greenie Galon Uchaf Road; however, this is not anticipated to significantly alter the existing amenity value of the footpath.	Low	Negligible	Neutral
Footpath 111/23	**Construction:** NMUs along the footpath would experience views of the Taf Fechan viaduct construction.	Medium	Minor adverse	Slight adverse
	Operation: There would no direct change to the route. The route would experience views of the new Taf Fechan structure; however, this is not anticipated to be significantly different from the existing views experienced.	Medium	Negligible	Neutral
Footpath 111/33	**Construction:** There would be a slight loss of amenity from the footpaths southern extent with views of the Taf Fechan viaduct.	Medium	Minor adverse	Slight adverse
	Operation: The footpath would experience glimpsed views of the new Taf Fechan viaduct at its southern extent; however, this is not anticipated to significantly alter the existing amenity value of the footpath.	Medium	Negligible	Neutral
Claimed PRoW	**Construction:** There would be adverse effects on the amenity value of all claimed PRoW, with access halted on routes through Dowlais Top and the new Prince Charles Hospital junction.	Medium	Moderate adverse	Slight adverse
	Operation: The Prince Charles Hospital junction would sever two claimed PRoW.	Medium	Minor adverse	Slight adverse

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
RHI= Rhigos, HIR= Hirwaun, AUN= Penywaun				
	However, the shared use facility provided through the junction would provide an alternative route, with only minor diversion anticipated. The claimed PRoW at Dowlais Top would be permanently stopped up.			
Footpath 102/14	**Construction:** Access across the A465 would be lost. However, it is not anticipated that the footpath is well used and therefore this effect is not anticipated to be significant.	Negligible	Minor adverse	Neutral
	Operation: This footpath would be stopped up either side of the proposed scheme. The section of the footpath north of the proposed scheme would be diverted east into Pant Industrial Estate. Footpath 102/14 would experience clear views of the proposed scheme from its most northern extent; however, this is not anticipated to be significantly different to its current views of the A465.	Negligible	Minor adverse	Neutral
Footpath 102/13	**Construction:** There would be a loss of amenity with the widening of the A465 through Galon Uchaf.	Medium	Minor adverse	Slight adverse
	Operation: The footpath would have open views of the carriageway widening through Ifor Park, however this is not anticipated to significantly alter the amenity of the footpath.	Medium	Negligible	Neutral
Footpath 105/1	**Construction:** No impact is predicted during construction.	Very High	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Very High	Negligible	Neutral
Footpath 102/12	**Construction:** No impact is predicted during construction.	Low	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Low	Negligible	Neutral
Footpath 105/7	**Construction:** There would a loss of amenity as a result of significant construction activity around Dowlais Top.	Low	Minor adverse	Neutral
	Operation: There would be no direct impact to the footpath; however, a loss of amenity is anticipated with the widening of the A465 through the Pen-y-wern Ponds.	Low	Minor adverse	Neutral
Footpath 105/8	**Construction:** There would a loss of amenity as a result of significant construction activity around Dowlais Top.	Medium	Minor adverse	Slight adverse

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
RHI= Rhigos, HIR= Hirwaun, AUN= Penywaun				
	Operation: There would be no direct impact to the footpath; however, a slight loss of amenity is anticipated with the widening of the A465 through the Pen-y-wern Ponds.	Medium	Minor adverse	Neutral
Footpath 102/3	**Construction:** Access to the crossing of the A465 is likely to be temporarily disrupted.	Medium	Moderate adverse	Slight adverse
	Operation: The northernmost 40 m of the footpath would be stopped up. The footpath would then tie in with the new overbridge between the Pen-y-wern ponds, providing a safe crossing of the trunk road and removing the need for NMUs to cross at-grade. The overbridge would be suitable for pedestrians only and would represent a significant improvement for vulnerable users, for example providing a safe crossing for disabled users. However, the footpath would have a clear view of the proposed scheme as vegetation to the south of the existing carriageway would be removed.	Medium	Major beneficial	Large beneficial
Footpath 105/6	**Construction:** There would be a loss of amenity as a result of significant construction activity around Dowlais Top.	Low	Minor adverse	Neutral
	Operation: There would be no direct impact to the footpath; however, a loss of amenity is anticipated with clear views of the Dowlais Top flyover expected.	Low	Minor adverse	Neutral
Footpath 102/2	**Construction:** Access to the northern extent of the footpath would be temporarily lost.	Medium	Minor adverse	Slight adverse
	Operation: The northern 98 m of the footpath would be re-routed east to tie in with footpath 102/4 at the base of the new NMU crossing. The footpath would have clear views of the proposed scheme. The re-route would represent a slight increase for vulnerable users.	Medium	Minor adverse	Slight adverse
Footpath 105/5	**Construction:** Access to the crossing of the A465 is likely to be temporarily disrupted.	Medium	Moderate adverse	Slight adverse
	Operation: The southern 5 m of the footpath would be severed, with the footpath instead re-routed over the overbridge between the Pen-y-wern ponds. This would remove the need for pedestrians to cross the A465 via the current uncontrolled at-grade crossing.	Medium	Major beneficial	Large beneficial
Footpath 102/5	**Construction:** A loss of amenity is anticipated with construction activities around Dowlais Top.	High	Minor adverse	Slight adverse

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
RHI= Rhigos, HIR= Hirwaun, AUN= Penywaun				
	Operation: The footpath would be rerouted along the new shared use path linking footpath 102/4 to the new overbridge, with no significant change in length. This footpath would be exposed to views of the proposed scheme as vegetation is removed to the south of the carriageway.	High	Negligible	Neutral
Footpath 102/6	**Construction:** A loss of amenity is anticipated with construction activities around Dowlais Top.	High	Minor adverse	Slight adverse
	Operation: The footpath would be exposed to views of the proposed scheme as vegetation is removed to the south of the carriageway.	High	Minor adverse	Slight adverse
Footpath 102/4	**Construction:** A loss of amenity is anticipated with the widening of the road through the Pen-y-wern Ponds. The footpath would be temporarily diverted south of the proposed scheme.	High	Minor adverse	Slight adverse
	Operation: The footpath would be stopped up by approximately 75 m at its northernmost. The footpath would instead adjoin the shared use new NMU overbridge between the Pen-y-wern ponds. The footpath would have clear views of the new road as vegetation is removed.	High	Major beneficial	Large beneficial
Footpath 105/10	**Construction:** There would a loss of amenity as a result of significant construction activity around Dowlais Top. The at-grade crossing of the trunk road is also likely to be lost with diversions put in place.	Low	Moderate adverse	Neutral
	Operation: Footpath 105/10 would be stopped up by approximately 10 m from where it adjoins the existing trunk road. A designated NMU crossing would be provided approximately 280 m west. The footpath would experience open views of the proposed scheme, as vegetation currently surrounding the road is removed.	Low	Moderate adverse	Neutral
Footpath 105/4	**Construction:** Access to the crossing of the A465 is likely to be temporarily disrupted.	Low	Minor adverse	Slight adverse
	Operation: Approximately 10 m of the footpath would be stopped up where it adjoins the A465. A designated NMU crossing would be provided approximately 440 m west. The footpath would experience open views of the proposed scheme, as vegetation currently surrounding the road is removed.	Low	Moderate adverse	Neutral
Footpath 102/10	**Construction:** Access to the crossing of the A465 is likely to be temporarily disrupted.	Low	Minor adverse	Slight adverse

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
RHI= Rhigos, HIR= Hirwaun, AUN= Penywaun				
	Operation: The footpath would be severed by the proposed scheme and would be diverted east along the new NMU provision to the south of the proposed scheme to adjoin footpath 102/4, at the base of the new NMU crossing. The footpath would experience open views of the proposed scheme, as the vegetation currently surrounding the road is removed.	Low	Major beneficial	Moderate beneficial
Footpath 102/8	**Construction:** A loss of amenity is anticipated with construction activities around Dowlais Top.	Medium	Minor adverse	Slight adverse
	Operation: The footpath would be exposed to views of the proposed scheme as vegetation is removed to the south of the carriageway.	Medium	Minor adverse	Slight adverse
Footpath 102/9	**Construction:** A loss of amenity is anticipated with construction activities around Dowlais Top.	High	Minor adverse	Slight adverse
	Operation: The footpath would have clear views of the proposed scheme as vegetation is removed which currently acts as a screen.	High	Minor adverse	Slight adverse
Footpath 102/7	**Construction:** A loss of amenity is anticipated with construction activities around Dowlais Top.	Medium	Minor adverse	Slight adverse
	Operation: Footpath 102/7 would be exposed to views of the proposed scheme, particularly that of the proposed Dowlais Top flyover	Medium	Minor adverse	Slight adverse
Footpath 102/1	**Construction:** Access to the crossing of the A465 is likely to be temporarily disrupted.	Low	Minor adverse	Slight adverse
	Operation: The footpath would be stopped up by approximately 65 m at its most northern extent and would instead be diverted to the south of the proposed scheme to tie in with footpath 102/11. A new overbridge crossing would be constructed approximately 350 m west of the footpath, providing a safe crossing of the trunk road. The footpath would have a clear view of the proposed scheme as vegetation currently screening the A465 would be removed.	Low	Moderate adverse	Slight adverse
Footpath 102/11	**Construction:** A loss of amenity is anticipated with the construction of the Dowlais junction.	Medium	Minor adverse	Slight adverse
	Operation: The amenity of footpath 102/11 would be adversely affected, with clear views of the proposed Dowlais Top fly-over. The northern-most 55 m of the footpath would be diverted south of the embankments.	Medium	Minor adverse	Slight adverse
Footpath 102/22	**Construction:** The footpath may experience long distant views of the Dowlais Top flyover;	Negligible	Negligible	Neutral

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
RHI= Rhigos, HIR= Hirwaun, AUN= Penywaun				
	however, this is not anticipated to significantly alter the amenity of the path.			
	Operation: The footpath may experience long distant views of the Dowlais Top flyover; however, this is not anticipated to significantly alter the amenity of the path.	Negligible	Negligible	Neutral
Footpath 102/34	The footpath is currently suspended and has therefore not been considered further as part of this assessment.	Negligible	Negligible	Neutral
Footpath 102/35	The footpath is currently suspended and has therefore not been considered further as part of this assessment.	Negligible	Negligible	Neutral
Footpath 102/36	The footpath is currently suspended and has therefore not been considered further as part of this assessment.	Negligible	Negligible	Neutral
Footpath 102/37	The footpath is currently suspended and has therefore not been considered further as part of this assessment.	Negligible	Negligible	Neutral
Footpath 102/38	The footpath is currently suspended and has therefore not been considered further as part of this assessment.	Negligible	Negligible	Neutral
Footpath 102/39	The footpath is currently suspended and has therefore not been considered further as part of this assessment.	Negligible	Negligible	Neutral
Footpath 102/40	The footpath is currently suspended and has therefore not been considered further as part of this assessment.	Negligible	Negligible	Neutral
Gelligaer FP95	**Construction:** The footpath would be severed at its northern extent by the widening of the existing A465 at Dowlais Top, and by the proposed lapwing mitigation area located east of Galon Uchaf. Given the lack of use of the footpath, it is not anticipated that a diversion would be put in place.	Low	Major adverse	Slight adverse
	Operation: The footpath would stopped up either side of the proposed lapwing mitigation area, however given the lack of use of this path, the overall impact is deemed to be slight adverse.	Low	Major adverse	Slight adverse
Gelligaer FP100	**Construction:** No impact is predicted during construction.	Low	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Low	Negligible	Neutral
Gelligaer FP107	**Construction:** The footpath is anticipated to	Low	Minor	Neutral

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
RHI= Rhigos, HIR= Hirwaun, AUN= Penywaun				
	experience views of the construction of cuttings, with an effect on the amenity value of the footpath.		adverse	
	Operation: Gelligaer FP107 is only anticipated to see a small section of the proposed scheme to its western extent, as the road would be in cutting as, as well as the proposed Ogilvie Terrace overbridge. This would be a slight improvement to the current view seen from the western extent, which sees long distance views of the A465, as well as clear views of the Ogilvie Terrace overbridge.	Low	Minor beneficial	Neutral
Gelligaer FP98	**Construction:** No impact is predicted during construction.	Low	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Low	Negligible	Neutral
Gelligaer FP106	**Construction:** No impact is predicted during construction.	Low	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Low	Negligible	Neutral
Gelligaer FP105	**Construction:** No impact is predicted during construction.	Low	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Low	Negligible	Neutral
Gelligaer FP104	**Construction:** The footpath is anticipated to experience views of the construction of cuttings, with an effect on the amenity value of the footpath.	Low	Negligible	Neutral
	Operational: The proposed scheme would be in cutting towards the eastern end, meaning the footpath would experience no change in amenity. There would no change to the route of the bridleway either.	Low	Negligible	Neutral
Gelligaer FP102	**Construction:** The footpath is anticipated to experience views of the construction of cuttings, with an effect on the amenity value of the footpath.	Low	Negligible	Neutral
	Operation: The proposed scheme would in cutting towards the eastern end, meaning the footpath would experience no change in amenity. There would no change to the route of the bridleway either.	Low	Negligible	Neutral

Table 15D.2 Impact assessment of all cycle routes available within the study area

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
NCN Route 478	**Construction:** No change is anticipated during construction.	High	Negligible	Neutral
	Operation: No change is anticipated during operation.	High	Negligible	Neutral
NCN Route 46	**Construction:** Temporary diversions would be expected through the Hirwaun and Baverstock junctions, however, access would be maintained.	High	Moderate adverse	Slight adverse
	Operation: The cycle route would be incorporated into the proposed scheme as follows: • re-routing through Hirwaun junction of approximately 115 m, with traffic islands provided to ensure safe access; • provision of new overbridge along the Trewaun Tramway; • completion of the missing link between Baverstock junction and Swansea Road (Gellideg); and • shared use facility provision along Old Rhymney Road between Dowlais junction and Rhymney. The proposals would be a significant improvement for vulnerable users as they would provide much safer crossings of the A465.	High	Major beneficial	Very large beneficial
NCN Route 8 (Taff Trail)	**Construction:** Temporary diversions are anticipated whilst the existing A465 overbridge is demolished and a new bridge constructed, however access would be retained throughout construction.	High	Moderate adverse	Slight adverse
	Operation: The existing crossing of the A465 would be demolished and replaced with a new crossing from New Church Street, which would then run parallel with the eastbound A465 carriageway for approximately 80 m, before adjoining the existing NCN Route 8. The re-aligned overbridge would remove the need for cyclists to travel along the narrow access road adjacent to the St. John the Baptist Church.	High	Major beneficial	Very large beneficial

Table 15D.3 Impact assessment of all bridleways and bridleways / byways available within the study area

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
HIR/34/3	**Construction:** No impact is predicted during construction.	Low	Negligible	Neutral
	Operation: No impact is predicted during the operational phase.	Low	Negligible	Neutral
Bridleway 111/37	**Construction:** The construction activities associated with the A470 junction would affect the amenity of the bridleway.	Medium	Minor adverse	Slight adverse
	Operation: The bridleway would experience glimpsed views of the new A470 junction.	Medium	Minor adverse	Slight adverse
Bridleway 111/44	**Construction:** The presence of construction activities associated with the A470 junction would affect the amenity of the bridleway.	Low	Minor adverse	Neutral
	Operation: The bridleway would experience clear views of the A470 junction.	Low	Minor adverse	Neutral
Bridleway 113/3	**Construction:** The presence of construction activities associated with the A470 junction would affect the amenity of the bridleway as it traverses the Grade II* Cefn Coed viaduct.	High	Minor adverse	Slight adverse
	Operation: The bridleway would experience clear views of the A470 junction as it crosses the Grade II* Cefn Coed viaduct.	High	Minor adverse	Slight adverse
Bridleway / byway 113/999 (part of the Taff Trail)	**Construction:** Temporary delays are anticipated as the Taff Trail is overbridge is demolished and replaced, however access would be retained throughout construction.	Very high	Minor adverse	Slight adverse
	Operation: The stretch of bridleway / byway that runs alongside the St. John the Baptist Church would be re-routed west along New Church Street to access the new Taff Trail overbridge. Re-routing the bridleway / byway avoids the use of the narrow path alongside the St. John the Baptist Church. This would be particularly beneficial for disabled users, with the new route allowing sufficient space for wheelchairs and mobility scooters.	Very high	Moderate beneficial	Large beneficial
Bridleway 111/24	**Construction:** No change.	High	Negligible	Neutral
	Operation: No change.	High	Negligible	Neutral
Bridleway 111/38	**Construction:** Temporary disruption is anticipated with the construction of a new NMU overbridge, which would carry the bridleway and NCN Route 8 (Taff Trail) across the A465, however access would be retained throughout construction.	Very high	Minor adverse	Slight adverse
	Operation: The bridleway would be diverted by	Very high	Moderate	Large

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
	approximately 75 m west from where it currently crosses the A465. A new overbridge would be provided, creating a link to New Church Street. Re-routing the bridleway avoids the use of the narrow path alongside the St. John the Baptist Church. This would be particularly beneficial for disabled users, with the new route allowing sufficient space for wheelchairs and mobility scooters.		beneficial	beneficial
Bridleway 111/32	**Construction:** The construction activities associated with the A470 junction and the Taf Fechan viaduct would affect the amenity of the bridleway.	High	Minor adverse	Slight adverse
	Operation: The bridleway would experience long-distance views of the A470 junction.	High	Minor adverse	Slight adverse
Bridleway / byway 103/1	**Construction:** Goitre Lane underpass would be infilled, with access halted.	High	Major adverse	Large adverse
	Operation: The bridleway / byway would be re-routed east along the proposed shared use facility through Prince Charles Hospital junction, re-joining Goitre Lane to the south of the A465. The proposed new route involves a diversion of approximately 320 m. Equestrian facilities would be provided through the new Prince Charles Hospital junction. Crossing points would be provided to aid vulnerable users through the junction.	High	Moderate adverse	Moderate adverse
Bridleway 105/9	**Construction:** The bridleway is likely to experience views of the construction activities, with an adverse effect anticipated on the amenity value.	High	Minor adverse	Slight adverse
	Operation: The route would experience clear views of the new dualled section through the Pen-y-wern ponds as well as the new junction at Dowlais.	High	Minor adverse	Slight adverse
Bridleway 105/13	**Construction:** The bridleway is likely to experience views of the construction activities, with an adverse effect anticipated on the amenity value.	Low	Minor adverse	Neutral
	Operation: Bridleway 105/13 would see glimpsed views of the proposed Prince Charles Hospital junction at its highest extent, as the footpath experiences long distant views to the south.	Low	Minor adverse	Neutral
Gelligaer BR103	**Construction:** The footpath would experience views of construction activities and construction traffic.	Low	Minor adverse	neutral

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
	Operation: The proposed scheme would be in cutting towards the eastern end, meaning the bridleway would experience no change in amenity. There would no change to the route of the bridleway either.	Low	Negligible	Neutral

Table 15D.4 Impact assessment of all local roads available within the study area

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
Rhigos Road	**Construction:** There would be some disruption along NCN Route 46 through the Hirwaun roundabout with the construction of the new junction. Access would be maintained throughout the construction phase, however minor delays are anticipated and / or temporary diversions may be necessary.	High	Moderate adverse	Slight adverse
	Operation: NCN Route 46 would be re-routed along the newly aligned Rhigos Road, before crossing Hirwaun junction via a shared use facility. The shared facility would be suitable for use by pedestrians and cyclists. The cycle route would re-routed by approximately 115 m. The route would provide a much safer crossing of the junction, with traffic islands and a shared use facility provided.	High	Major beneficial	Very large beneficial
A4059	**Construction:** There would be temporary disruption in access from the A465 and Rhigos Road during the construction of the new Hirwaun roundabout.	Low	Minor adverse	Neutral
	Operation: No change is anticipated during operation.	Low	No change	Neutral
Hirwaun Road	**Construction:** Diversions would be put in place with the construction of the new Trewaun junction, however access would be retained throughout construction.	Very high	Negligible	Neutral
	Operation: A new shared use facility would be provided through the new Hirwaun Road overbridge, replacing the existing Trewaun underpass. The facility would be suitable for use by pedestrians and cyclists.	Very high	Moderate beneficial	Moderate beneficial
Tower Road	**Construction:** The road would be stopped up immediately to the north of the proposed scheme, preventing access to Tower Colliery. There would some loss of amenity with the construction of the proposed scheme south of Hirwaun Welfare	High	Minor adverse	Slight adverse

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
	Ground.			
	Operation: Footpath HIR/43/1 would be re-routed along Tower Road to the north of the proposed scheme. There would no access along the road for vehicle traffic. The route would be an extension of the existing footpath. If the route was deemed too long for vulnerable users, they would still have the opportunity to turn back on themselves and follow the existing footpath to the south-east of the Welfare Ground.	High	Minor beneficial	Slight beneficial
Brecon Road	**Construction:** Diversions would be put in place with the construction of the new Trewaun junction, however access would be retained throughout construction.	Very high	Negligible	Neutral
	Operation: A new shared use facility would be constructed through the new Brecon Road overbridge, replacing the existing Trewaun underpass.	Very high	Moderate beneficial	Moderate beneficial
Swansea Road (Hirwaun)	**Construction:** The construction of the new and Croesbychan junction would result in a significant number of construction vehicles utilising the road, as well as a significant amount of construction activity in the surrounding area, adversely affecting the amenity value. Access however would be maintained.	Low	Minor adverse	Slight adverse
	Operation: NMU provision would be provided through Croesbychan junction, providing a safe crossing of the A465 for NMUs at this location. The NMU provision would continue along a small stretch of Swansea Road and would be suitable for use by pedestrians, cyclists and equestrians.	Low	Major beneficial	Moderate beneficial
Crematorium Road	**Construction:** The amenity value of the road would be reduced with construction works associated with the new Croesbychan junction to the west and Baverstock junction to the east. Temporary diversions are anticipated for NCN Route 46 where it adjoins Baverstock junction.	High	Moderate adverse	Slight adverse
	Operation: A new shared use facility would be provided from Crematorium Road, through Baverstock junction and onto Swansea Road (Gellideg). This would complete the missing link in NCN Route 46, and encourage cyclists to use the new NMU provision along the A465.	High	Major beneficial	Very large beneficial
Merthyr Road	**Construction:** A loss of amenity would be anticipated with the construction of the Baverstock junction, with the potential for temporary diversions in access.	Low	Moderate adverse	Slight adverse
	Operation: Merthyr Road would be re-routed to	Low	No	Neutral

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
	the west to adjoin the new Baverstock junction layout, where it would connect into the NMU facility provided through the junction. A loss of amenity is anticipated with the with the new Baverstock junction.		change	
Access road to Jah-Jireh Care Home	**Construction:** Temporary disruption in access is likely with the construction of the new Baverstock junction.	Low	Moderate adverse	Slight adverse
	Operation: The access road would be re-located to the west, branching off from the new Baverstock junction. A shared use facility, suitable for pedestrians, cyclists and equestrians, would be located along the access road, providing a link to a key riding route for equestrians. The shared use facility would extend through the Baverstock junction, providing a safe means of crossing the A465 for equestrians.	Low	Major beneficial	Moderate beneficial
Swansea Road (Gellideg)	**Construction:** Access would be maintained throughout the construction phase; however a slight loss of amenity is anticipated.	High	Minor adverse	Slight adverse
	Operation: The existing missing link in NCN Route 46 between Swansea Road (Gellideg) and Baverstock junction would be completed through a shared use facility. The facility would be suitable for use by pedestrians, cyclists and equestrians.	High	Major beneficial	Large beneficial
Grawen Lane	**Construction:** No change as the pavement along the road would remain.	High	Negligible	Neutral
	Operation: No change as the pavement along the road would remain.	High	Negligible	Neutral
Cefn Coed High Street	**Construction:** Cefn Coed High Street overbridge would be demolished and replaced, with north to south access provided for NMUs through a diversion to the west, following the grassed land behind Cilsanws Houses.	Very high	Major adverse	Large adverse
	Operation: No impact is predicted during operation, with footways provided along the new Cefn Coed High Street overbridge.	Very high	Negligible	Neutral
Lower Vaynor Road	**Construction:** The pedestrian underpass which connects Lower Vaynor Road with Vaynor Road would remain open throughout construction. There would be a slight loss of amenity due to the placement of site compounds to the north and south of the underpass.	Medium	Negligible	Neutral
	Operation: There would be no change as the pedestrian underpass which connects Lower Vaynor Road with Vaynor Road would be	Medium	Negligible	Neutral

Facility	Description of change from baseline during the construction and operational phases	Sensitivity as NMU route	Magnitude of change	Significance of effect
	retained.			
Goitre Lane	**Construction:** Goitre Lane underpass would be infilled, with access halted.	High	Major adverse	Large adverse
	Operation: The bridleway / byway would be re-routed east along the proposed shared NMU facility through Prince Charles Hospital junction, re-joining Goitre Lane to the south of the A465. The proposed new route involves a diversion of approximately 320 m. The shared facility would be suitable for use by pedestrians, cyclists and equestrians. Equestrian facilities would be provided through the new Prince Charles Hospital junction. Crossing points would be provided to aid vulnerable users through the junction.	High	Moderate adverse	Moderate adverse
Bryniau Road	**Construction:** Bryniau Road bridge would be demolished and replaced, with temporary diversions anticipated through a temporary roundabout approximately 200 m east.	Very high	Moderate adverse	Moderate adverse
	Operation: A shared use facility would be provided along the new Bryniau Road bridge, suitable for use by pedestrians and cyclists.	Very high	Minor beneficial	Slight beneficial
Pant Road	**Construction:** Pant viaduct would be demolished and replaced, with the junction between Pant Road and Pontsarn Road realigned to the north of the proposed scheme. Access along Pant Road would be maintained throughout the construction phase, however there would be a loss of amenity due to the presence of a construction compound located immediately east of the road.	Very high	Negligible	Neutral
	Operation: The pavement along the road would be retained.	Very high	Negligible	Neutral
Jones Street	**Construction:** The overbridge at Jones Street would be demolished and replaced, with diversions put in place.	Medium	Negligible	Neutral
	Operation: The pavement along the road would be retained.	Medium	Negligible	Neutral

Appendix 15E – Effects on Public Transport

Table 15E.1 Assessment of effects on bus travellers

Current bus stops	Description of impacts	Residual significance of effect
Health Centre (north-west bound and south bound), Brecon Road, Hirwaun Health Centre, Hirwaun Stagecoach South Wales Service 7: Glynhafod – Penderyn, Stagecoach South Wales Service 8: Glynhafod - Morfa Glas via Aberdare,Stagecoach South Wales Service 9: Glynhafod – Merthyr Tydfil and New Adventure Travel Service 89 Merthyr Tydfil – Aberdare and Aberdare – Merthyr Tydfil.	**Construction:** There would be disruption in access due to the construction of the new Trewaun roundabout and the severance of the Trewaun subway. **Operation:** The bus stop would remain in the same location, with NMU provision through the new Trewaun junction maintaining access.	**Construction:** Moderate adverse **Operation:** Neutral
Trewaun (south-east bound), Hirwaun Road, Hirwaun Stagecoach South Wales Service 7: Penderyn – Glynhafod, Stagecoach South Wales Service 8: Morfa Glas – Glynhafod and South Wales Service 9: Merthyr Tydfil – Glynhafod.	**Construction:** There would be disruption in access due to the construction of the new Trewaun roundabout and the removal of the Trewaun subway. **Operation:** Bus stop would be reinstated in a similar location to at present, with NMU provision through the new Trewaun junction maintaining access.	**Construction:** Slight adverse **Operation:** Neutral
Heads of the Valleys Road (north-east bound), Swansea Road, Hirwaun Stagecoach South Wales Service 9: Glynhafod - Merthyr Tydfil and New Adventure Travel Service 89 Merthyr Tydfil - Aberdare	**Construction:** Disruption in access from north and south with the construction of the new Croesbychan junction. **Operation:** Bus stop would be reinstated in a similar location to the baseline. The construction of an NMU route through the new Croesbychan junction would improve access to the stop from the east.	**Construction:** Large adverse **Operation:** Slight beneficial
Heads of the Valleys Road (south-west bound), Swansea Road, Hirwaun Stagecoach South Wales Service 9: Merthyr Tydfil – Glynhafod and New Adventure Travel Service 89 Aberdare – Merthyr Tydfil.	**Construction:** Disruption in access from north and south and / or temporary loss of stop due to construction of the new Croesbychan junction and location of site compound adjacent to the bus stop. A temporary bus stop would be put in place during the construction phase if the bus stop was temporarily lost. **Operation:** The bus stop would be maintained during operation, with the construction of an NMU route through the new Croesbychan junction improving access to the stop from the east.	**Construction:** Slight adverse **Operation:** Slight beneficial
Baverstocks Hotel, Heads of the	**Construction:** Disruption in access and	**Construction:** Slight

Current bus stops	Description of impacts	Residual significance of effect
Valleys Road, Llwydcoed Stagecoach South Wales Service 6: Aberdare – Merthyr Tydfil and New Adventure Travel Service 89: Merthyr Tydfil – Aberdare.	/ or temporary loss of bus stop due to construction of new Baverstock junction and widening of existing carriageway. **Operation:** Bus stop would be permanently relocated to a safe location away from the dual carriageway. The construction of an NMU route through Baverstock junction would provide a safe access to and from the Jah-Jireh Care Home. Discussions would take place between the contractor, the local council and Stagecoach to find a suitable replacement location.	adverse **Operation:** Slight beneficial
Baverstocks Hotel, Head of The Valleys Road, Fairfield Place, Llwydcoed Stagecoach South Wales Service 6: Merthyr Tydfil – Aberdare, Stagecoach South Wales Service 9: Merthyr Tydfil – Glynhafod and First Call Travel Service X75: Merthyr Tydfil – Resolven	**Construction:** Disruption in access and / or temporary loss of bus stop due to construction of new Baverstock junction. **Operation:** Discussions would take place between the contractor, the local council and Stagecoach to find a suitable replacement location.	**Construction:** Slight adverse **Operation:** Neutral
Baverstocks Hotel, A465, Clwydfagwyr Stagecoach South Wales Service 6: Aberdare – Merthyr Tydfil, Stagecoach South Wales Service 9: Glynhafod - Merthyr Tydfil, New Adventure Travel Service 89: Aberdare – Merthyr Tydfil and First Call Travel Service X75: Resolven – Merthyr Tydfil	**Construction:** Disruption in access and / or temporary loss of bus stop due to construction of new Baverstock junction and widening of existing carriageway. **Operation:** Bus stop would be permanently relocated to a safe location away from the dual carriageway. The construction of an NMU route through Baverstock junction would provide a safe access to and from the Jah-Jireh Care Home. Discussions would take place between the contractor, the local council and Stagecoach to find a suitable replacement location.	**Construction:** Slight adverse **Operation:** Slight beneficial
School bus stop – Cefn Coed High Street bridge	**Construction:** Detours and disruption would be anticipated as the Cefn Coed High Street bridge was demolished and replaced. **Operation:** No significant difference as the stop would remain in the same location.	**Construction:** Slight adverse **Operation:** Neutral
Drovers Arms, Cefn Coed High Street (north-west bound and south-east bound) Stagecoach Service 25: Merthyr Tydfil – Merthyr Tydfil via Trefechan,	**Construction:** Detours and disruption would be anticipated for individuals wishing to access the stops from north of the A465, as the Cefn Coed High Street bridge was demolished and	**Construction:** Slight adverse **Operation:** Neutral

Current bus stops	Description of impacts	Residual significance of effect
Stagecoach Service 26: Merthyr Tydfil – Merthyr Tydfil via Trefechan and New Adventure Travel Service 89: Aberdare – Merthyr Tydfil.	replaced. **Operation:** No significant difference as the bus stop would remain in the same location.	
Cloth Hall Lane (south-west bound and north-east bound) Stagecoach Service 25: Merthyr Tydfil – Merthyr Tydfil via Trefechan, Stagecoach Service 26: Merthyr Tydfil – Merthyr Tydfil via Trefechan	**Construction:** Temporary detours and disruption would be anticipated for individuals wishing to access the bus stops from the south of the A465, as the Cefn Coed High Street bridge was demolished and replaced. **Operation:** No significant difference as the bus stops would remain in the same location.	**Construction:** Slight adverse **Operation:** Neutral
Lupin Close (south-west bound), Gurnos Circle, Gurnos Stagecoach South Wales Service 27	**Construction:** There would no effect on bus travellers during construction. **Operation:** The effect on bus travellers during operation would be neutral.	**Construction:** Neutral **Operation:** Neutral
Police Station (east bound and west bound), Gurnos Circle, Gurnos Stagecoach South Wales Service 3 Stagecoach South Wales Service 28	**Construction:** Slight disruption in access and / or temporary loss of stop due to the temporary diversion of A465 trunk road traffic along Gurnos Ring Road. **Operation:** The effect on bus travellers during operation would be neutral.	**Construction:** Slight adverse **Operation:** Neutral
Wellingtonia Close (west bound), Gurnos Circle, Gurnos Stagecoach South Wales Service 3 Stagecoach South Wales Service 27	**Construction:** The effect on bus travellers during construction would be neutral. **Operation:** Re-location of bus stop approximately 105 m west of the current location.	**Construction:** Slight adverse **Operation:** Neutral
Wellingtonia Close (south bound), Goitre Lane, Gurnos Stagecoach South Wales Service 27	**Construction:** Disruption in access and / or temporary loss of bus stop during construction of new shared use facility and temporary diversion of A465 trunk road traffic along Gurnos Ring Road. **Operation:** The effect on bus travellers during operation would be neutral.	**Construction:** Slight adverse **Operation:** Neutral
Crossroads (north bound), Twelfth Avenue, Galon Uchaf Crossroads, Galon Uchaf Crossroads (south bound), Twelfth Avenue, Galon Uchaf Crossroads, Galon Uchaf Stagecoach South Wales Service 33	**Construction:** The effect on bus travellers during construction would be neutral. **Operation:** The effect on bus travellers during operation would be neutral.	**Construction:** Neutral **Operation:** Neutral
ASDA superstore Stagecoach Service 1: Merthyr Tydfil – Bargoed via Rhymney / Bargoed – Merthyr Tydfil via Rhymney,	**Construction:** Temporary disruption and / or diversions anticipated for individuals wishing to access the bus stop from Dowlais, with the construction	**Construction:** Slight adverse **Operation:** Neutral

Current bus stops	Description of impacts	Residual significance of effect
Stagecoach Service 2: Merthyr Tydfil – Bargoed / Bargoed – Merthyr Tydfil and Stagecoach Service 3: Merthyr Tydfil – Bargoed / Bargoed – Merthyr Tydfil	of the new Dowlais flyover and shared use facility to the west of Dowlais junction. **Operation:** No significant effect as the footway through Dowlais junction would be replaced by shared use facility.	

Welsh Government

A465 Heads of the Valleys Dualling - Sections 5 and 6 – Dowlais Top to Hirwaun

17A - Water Framework Directive Compliance Assessment

Rev 0

July 2017

Final

Contents

Executive Summary **1**
1. Introduction **4**
2. Assessment Background **5**
3. Method **6**
3.1 Study Area and Baseline Environment 6
3.2 Watercourse Vulnerability 6
3.3 Impact Assessment 6
4. Baseline Summary **8**
4.1 WFD Status 8
4.2 Vulnerability 12
5. Impact Assessment **15**
5.1 Generic Impacts 15
5.2 Embedded Mitigation 17
5.3 Resultant Magnitude of Impact 28
5.4 Significance of Impact 29
6. Further Assessment **30**
7. Overall Compliance **31**
8. References **32**

Executive Summary

A Water Framework Directive (WFD) compliance assessment has been undertaken to support the Environmental Impact Assessment (EIA) for the 17.7 km dualling of Sections 5 and 6 of the A465 Heads of the Valleys road. Section 5 and 6 run from Dowlais Top to Hirwaun. The WFD (2000/60/EC) came into force in 2000 and was transposed into UK law under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 and amended under the Water Environment (Water Framework Directive) (England and Wales) (Amendment) Regulations 2015. The overarching objective of the WFD is to enable all waterbodies in Europe to attain good or high ecological status/potential. In addition, under the legislation any modification to a waterbody should not lead to deterioration in the status of a waterbody or any of the quality elements. Natural Resources Wales (NRW) is the competent authority in Wales for delivering the WFD. They take a holistic approach to managing the water environment and ensure that ecological, social and economic values are considered in decision-making.

There are three key WFD environmental objectives:

1) Protect the water environment from deterioration;

2) Achieve the wider objectives of other European Directives; and

3) Aim to achieve good overall status for surface and ground waters

The WFD compliance assessment baseline conditions were established and the potential impacts evaluated. Geomorphological and ecological constraints and opportunities were used to inform the engineering and emerging drainage design to ensure impacts of the proposed scheme were addressed through embedded mitigation to ensure WFD compliance. Additional mitigation measures were also identified to reduce impacts of the scheme.

Proposals that impact watercourses include: bridge expansions; new bridges; culvert extensions; new culverts; earthworks; additional volumes of road drainage; and proposed channel realignments.

Within the study area, 58 watercourses are crossed by the existing A465 or came within 50 m of the proposed new alignment. These fall within seven WFD waterbodies, across two River Basin Management Plans; Western Wales and River Severn. All the main watercourses that lend their name to the WFD waterbodies are crossed by the proposed scheme, with the tributaries that also form the WFD waterbodies also crossed. The Nant Morlais is extensively culverted under the existing road, with all the other main watercourses being open channels.

The Main Rivers potentially affected by the proposed scheme are the Afon Cynon, Taf Fechan and Taf Fawr. Significant tributaries of the Afon Cynon are Nant y Bwlch and Nant Melyn. Nant Ffrwd is a significant tributary of Afon Taf Fawr. Another significant watercourse potentially affected by the proposed scheme, that has its own waterbody status, is Nant Morlais.

The majority of the 58 watercourses within the study area were assigned a low vulnerability to change. This was primarily a result of the small or artificial nature of the watercourse or due to bedrock or valley sides confining the lateral and vertical movement of the watercourse. Eleven were assigned a medium or high vulnerability.

To mitigate the impact of channel and floodplain modification the following key principles were adhered to during the design development:

- bridges were provided where culverts are not considered appropriate for the vulnerability of the watercourse;
- the length of the culverts were reduced where possible, the upstream and downstream gradient was considered within the culvert design to enable appropriate energy dissipation, so that additional bank and bed protection was minimised;
- pipe culverts would be replaced with depressed invert culverts, where practicable, to ensure formation of a natural bed, more natural flow patterns and to enable passage of species;

- application of best practice design principles for the scheme design;
- realignments were designed to encourage natural fluvial processes and would not detrimentally change the sediment regime of the watercourse;
- outfalls were flush with the banks, set at an appropriate height and angle to the flow of the river so not to create scour of the bed or banks; and
- sustainable urban drainage systems (SuDS) were designed to reduce suspended sediments and pollutants from road runoff being transferred to the receiving watercourse and discharge from the ponds would not significantly change the flow hydrograph of the receiving watercourse.

Compliance with the WFD and a commitment to SuDS design principles have been central tenets of the design process. Improvements to the water quality, through the inclusion of a comprehensive sustainable road drainage system, were established at the start of the proposed scheme. Then through the EIA process, full understanding of the geomorphology, ecology, water quality (physico-chemical) and flood risk has been gained. In turn, this has been fed back to the structures and drainage design teams through several interactive workshops and an iterative design approach and incorporated into the proposed scheme design as embedded mitigation. Taking this integrated approach has enabled the proposed scheme design to be sensitive to the water environment. Adverse impacts have been avoided where possible, or otherwise minimised.

The proposed scheme has been designed to mitigate adverse water environment impacts. Thus it is considered neither to cause a deterioration in the status/potential of any of the seven WFD waterbodies within the study area, nor is the scheme assessed to prevent any of the waterbodies from achieving Good Ecological Status/Potential in future. Consequently there would be no impact on downstream waterbodies within the same River Basin District (RBD). Furthermore, the upgrade to existing culverts from pipe culverts to depressed invert culverts improves both the biological and hydromorphological conditions in comparison to the existing baseline. Improvements include: more naturalised quantity and dynamics of flow through the upgraded culverts; more naturalised substrate and structure of the channel bed; improved longitudinal connectivity and improved passage for fish and other species. These upgrades in culvert design and operation provide mitigation for the extension of the existing culvert.

Habitat enhancements also form part of the embedded design and mitigation strategy. Improvements include creation of fritillary habitat, riparian enhancements and wetlands.

The introduction of a sustainable drainage system is a significant benefit of the proposed scheme. The SuDS would result in an improvement in water quality both within the receiving waterbody and in downstream waterbodies. This would help to move the waterbodies towards achieving Good Ecological Status / Potential, by reducing the amount of pollutants entering the local watercourses and by improving water quality. This in turn would also deliver benefits to the biological and hydromorphological quality elements due to less pollution and reduction in fine sediments (silt).

Impacts of physical modifications have been mitigated through the following means:

- replacement of existing pipe culverts with depressed invert box culverts. These allow the formation of a natural bed and remove/alleviate barriers to fish migration;
- box culverts designed for otter, bat and amphibian passage;
- channel diversions to avoid the need for culverts, including the removal of some watercourses out of culverts into a diversion. Redundant culverts would be retained for mammal passage;
- culverts for mammal passage are designed to guide mammals through the culvert;
- culvert lengths are reduced where practicable and;
- energy dissipation is designed within culverts / culvert outlets, where required

Thus the proposed scheme contributes to the measures set out in the Western Wales RBMP and Severn RBMP to address the significant water management issues of physical modification and pollution from towns, cities and transport. The proposed box culverts to replace existing pipe culverts would deliver improvements to the

condition of the channel bed; deliver easement of barriers to fish migration; modification of existing culverts to incorporate current best practice design; removal of some structures; and improvement of the riparian zone.

These combined improvements, delivered through the scheme, thus do not cause deterioration in the WFD status or quality elements for either impacted waterbodies or downstream waterbodies. In addition, the improvements delivered by the proposed scheme remove some of the existing barriers and constraints that presently affect WFD status and the achievement of WFD objectives. Thus, these proposed improvements would assist in the future achievement of WFD objectives.

1. Introduction

This Water Framework Directive (WFD) compliance assessment has been undertaken to support the Environmental Impact Assessment for the 17.7 km dualling of Sections 5 and 6 of the A465 Heads of the Valleys road. Sections 5 and 6 run from Dowlais Top to Hirwaun. The Figure in Annex A shows the watercourses affected by the proposed scheme. Volume 1 of the ES provides a comprehensive description of the proposed scheme.

Natural Resources Wales (NRW) requires an assessment of the impact of any works/modification to water bodies in the United Kingdom under the European Union (EU) Water Framework Directive (WFD) 2000, which was transposed into UK law under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 and amended under the Water Environment (Water Framework Directive) (England and Wales) (Amendment) Regulations 2015.

Through the WFD compliance assessment, baseline conditions are established and potential impacts evaluated. Geomorphological and ecological constraints and opportunities were used to inform the emerging engineering and drainage design to ensure impacts of the proposed scheme were addressed through embedded mitigation to ensure WFD compliance. Additional mitigation measures were also identified to reduce the impacts of the proposed scheme.

Proposed work that could impact watercourses includes: bridge widening; new bridges; culvert extensions; new culverts; earthworks; additional volumes of road drainage and channel realignments.

2. Assessment Background

The WFD (2000/60/EC) is a significant piece of EU water legislation that came into force in 2000, which was transposed into UK law under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 and amended under the Water Environment (Water Framework Directive) (England and Wales) (Amendment) Regulations 2015. The WFD has the overarching objective of enabling all waterbodies in Europe to attain good or high ecological status/potential. In addition, under the legislation any modification to a waterbody should not lead to deterioration in the status of a waterbody or any of the quality elements that define waterbody status. Natural Resources Wales (NRW) is the competent authority in Wales for delivering the WFD. NRW takes a holistic approach to managing the water environment and ensure that ecological, social and economic values are considered in decision-making.

For surface waterbodies to achieve overall 'good ecological status' (GES) or 'good ecological potential' (GEP), ecological and chemical parameters must be judged to be at least 'good'. GES refers to situations where the ecological characteristics show only a slight deviation from natural / near natural conditions. Artificial and heavily modified waterbodies (A/HMWB) have a target to achieve GEP, recognising their important uses, whilst making sure the waterbody is protected as far as possible.

Good quality water is recognised as being essential for wildlife, agriculture and business to thrive and is one of the means for boosting regeneration, recreation and tourism. River Basin Management Plans (RBMPs) set out how organisations, stakeholders and communities would work together to improve the water environment across 11 river basin districts in England and Wales. In 2015, the second round of RBMPs were published. They set out how the water environment would be improved over the next six years and support the government's framework for the 25-year environment plan.

There are three key WFD environmental objectives:

1) Protect the water environment from deterioration;
2) Achieve the wider objectives of other European Directives; and
3) Aim to achieve good overall status for surface and ground waters.

Where a scheme is considered to cause deterioration, or where it could contribute to a failure of the waterbody to meet GES/GEP, then an Article 4.7 assessment is required. Should a modification or change meet all of the conditions set out in Article 4.7 then it is considered as being WFD compliant.

The RBMPs outline a programme of measures to protect and improve beneficial use of the water environment and prevent deterioration of a waterbody. Key to transport infrastructure projects are physical modifications to the water environment and managing pollution from towns, cities and transport.

Physical modifications such as widening, deepening and straightening rivers allow the water environment to be used and valued for many purposes, but can sometimes be at the expense of the water environment. While many modifications are, and would continue to be, important to society, their potential harmful impacts can be reduced and the resilience of aquatic communities improved. Management of physical modification for transport infrastructure is therefore required to prevent deterioration. This is achieved through the consideration of hydromorphology and the associated links to aquatic ecology within the impact assessment.

Ways to achieve GES or GEP include: reducing the extent of channel and floodplain modification; improving water quality of road drainage; and restoring the natural function of the river and development of associated habitats. When designing new road schemes, or upgrading existing ones, reducing the number watercourses impacted should be the first priority. Where watercourses need to be crossed, the design of crossings should minimise the length of channel and floodplain impacted to be in line and compliant with the WFD.

Rainwater draining from roads and pavements can carry many pollutants. These include metals, vehicle emissions residue, silt, grit, bacteria from animal faeces and oil. Dealing with pollution from towns, cities and transport is a complex task. Incorporating sustainable drainage systems into new and upgraded transport infrastructure is the main way in which pollution of waterbodies is managed.

3. Method

A high level review of the current WFD waterbody status from the relevant River Basin Management Plans, as well as a review of contemporary Ordnance Survey maps, aerial imagery and a site visit to the majority of watercourses potentially affected by the scheme, was undertaken to determine the baseline environment.

3.1 Study Area and Baseline Environment

The study area was defined by the western and eastern extent of the proposed A465 scheme between Hirwaun and Dowlais Top and 50 m either side of the new alignment.

A combined ecological and geomorphological description of the Main and Significant Rivers within the study area are provided in Section 4: Baseline Summary. Also provided with the Baseline Summary are the Cycle 2 WFD waterbody classifications. The description of the Main and Significant Rivers is based on a high-level desk study and short walkover surveys. The desk study comprised primarily a review of aerial imagery and ordnance survey mapping, which was supported by the walkover surveys. Data to characterise the baseline conditions for the wider river catchment area, impacted waterbodies and the downstream waterbodies was extrapolated from OS maps and aerial imagery to substitute the field data collected.

3.2 Watercourse Vulnerability

A vulnerability score was assigned to each watercourse depending on its susceptibility or potential to change following channel or flow modifications and the change to ecology (Annex B). The vulnerability of the watercourses to change is dependent on a number of factors, including gradient, size of channel, bank material and profile, vegetation cover, existing modifications and dominant geomorphological processes. The overall inherent stability of the channel is assessed. For example, clay-bed or bedrock river would be considered stable compared to a mobile gravel bed, alluvium river, that has a history of migrating across the floodplain. The latter is considered to be in dynamic equilibrium and would be assigned a high vulnerability whereas bedrock bound, boulder bed rivers would have a low vulnerability. Watercourse vulnerability is presented in Section 4: Baseline Summary.

3.3 Impact Assessment

The impact assessment has been split into four stages:

- generic impacts;
- embedded mitigation – built into the design;
- resultant magnitude of impact; and
- overall significance of impact.

Firstly, the generic impacts on the hydromorphological, biological and physico-chemical quality elements for each element of the proposed scheme were considered. Then site specific geomorphological, ecological, physico-chemical and flood risk constraints were identified. These were presented at several interactive design workshops, during which the alignment of the scheme and drainage design was modified to accommodate WFD requirements and to mitigate and reduce impacts on the water environment. The water environment constraints and design modifications (termed here as embedded mitigation) are presented in Section 5.2.

The resultant impacts to the channel were assigned a magnitude, depending on the type and extent of the new modification.

The magnitude of impact is considered at the local scale, typically in the same ‘reach’ of the modification. A reach is a length of channel that has similar characteristics, such as dominant process (such as erosion or deposition which would infer the dominant function as a sediment source or sink for sediment), land use and level of modification. In addition, the impacts of the scheme were also assessed on the waterbody scale and whether or not the impact has the potential to cause deterioration in either WFD status or of the quality

elements, or prevent the waterbody, and / or upstream or downstream waterbodies from achieving WFD objectives.

Long term and short term impacts from both the construction and operation of the proposed scheme were considered within the assessment. However, only long term permanent impacts were considered for overall compliance with the WFD. These are impacts that exist beyond the construction phase, such as hard river engineering. Short term impacts arise only during the construction of the scheme, such as fine sediment release, temporary diversions and vegetation removal. Where the proposed works include mitigation, such as planting, which requires time to mature but would in the short to medium term recover, the impact is considered to be short term.

The level of significance was then calculated using the vulnerability of the watercourse and the magnitude of impact (Table 3.1). The impact assessment is presented in Section 6: Impact Assessment.

Any watercourses with a residual significance greater than moderate were assessed further and the results presented in Section 7.

Table 3.1 Matrix for determination of impact significance

Magnitude / Vulnerability	Negligible	Minor	Moderate	Major
High	Neutral	Moderate	Large	Very large
Medium	Neutral	Slight	Moderate	Large
Low	Neutral	Neutral	Slight	Moderate

4. Baseline Summary

4.1 WFD Status

Within the study area, 58 watercourses were crossed or came within 50 m of the proposed new alignment (Annex A). These fell within seven WFD waterbodies (see Table 4.1), across two River Basin Management Plans (RBMPs); Western Wales and River Severn. All of the larger watercourses that lend their name to the WFD waterbodies are crossed by the scheme. It should be noted that Nant Morlais is extensively culverted under the existing road, whereas all the other larger watercourses are open channels.

Table 4.1 Affected WFD waterbodies, current waterbody status and number of watercourses potentially affected by the scheme

Waterbody ID	Waterbody name	Hydromorphological designation	WFD status	Elements causing less than Good	Number of watercourses potentially affected
GB110058032320	Sychryd - headwaters to confluence with Mellte	Not designated A/HMWB	Poor (2015)	Fish (Poor) Phosphate (Poor).	1
GB109057033110	Afon Cynon – source to confluence Aman River	Not designated A/HMWB	Poor	Fish (Poor) Hydrology (does not support good).	31
GB109057033170	Afon Taf Fawr – source to confluence Taf Fechan	Heavily modified	Moderate	Invertebrates (Moderate) Fish (Moderate) Mitigation Measures Assessment (Moderate/less than Good).	9
GB109057033160	Taf Fechan – source to confluence Afon Taf Fawr	Heavily modified	Moderate	Mitigation Measures (Moderate/less than Good).	6
GB109057033150	Nant Morlais – source to confluence Afon Taf	Heavily modified	Moderate	Mitigation Measures (Moderate/less than Good). Invertebrates (Bad).	3
GB109057033100	Taf – confluence Taf Fechan to confluence R Cynon	Heavily modified	Moderate	Mitigation Measures (Moderate/less than Good).	4
GB109057033130	Rhymney River – Source to	Not designated A/HMWB	Good	Not applicable.	4

Waterbody ID	Waterbody name	Hydromorphological designation	WFD status	Elements causing less than Good	Number of watercourses potentially affected
	confluence Nant Bargod Rhymni				

The Main Rivers potentially affected by the scheme are the Afon Cynon, Taf Fechan and Taf Fawr. Significant tributaries of the Afon Cynon are Nant y Bwlch and Nant Melyn. Nant Ffrwd is a significant tributary of Afon Taf Fawr. Another significant watercourse potentially affected by the scheme that has its own waterbody status is Nant Morlais. Section 4.1 below contains a description of the Main Rivers and Significant watercourses potentially impacted by the scheme. High level information of all 58 watercourses affected by the scheme is presented in Annex B, with accompanying photographs provided in Annex C. Those watercourses considered to have a medium or high vulnerability are listed in Section 4.2.

Significant water management issues stated within the Western Wales and River Severn RBMPs (NRW, 2015a and Environment Agency, 2015) include:

- physical modification; and
- pollution from towns, cities and transport.

In the Western Wales RBMP, 25% of waterbodies are impacted by physical modification as a significant water management issue. Within the Severn RBMP, 27% are impacted by physical modification. Pollution from towns, cities and transport impacts 12% within both Western Wales RBMP and the Severn RBMP (NRW, 2015 and Environment Agency, 2015).

Physical modifications may alter the natural flow condition, water levels and sediment regime; these impacts may also have an adverse effect on biological communities and physical habitat. Transport links, towns and villages have often been constructed in close proximity to the water environment, thus posing significant pressure on the water environment. Where these physical modifications may be contributing or causing a failure of WFD objectives, practical and reasonable mitigation measures are required to assist in the achievement of WFD objectives. Measures to mitigate physical modifications include ensuring that future modifications do not cause deterioration and to increase the extent of buffer zones and river side corridors alongside inland waters to increase resilience to other pressures, including climate change (NRW, 2015a). Improvements to fish habitat, invertebrates and aquatic flora are specified as mitigation to aid the achievement of WFD objectives (Environment Agency, 2015). For pollution from towns, cities and transport, NRW (2015a) state that SuDS should be used. This includes promoting and implementing SuDS in new and existing developments in both urban and rural areas to achieve environmental, water quality, social and flood risk benefits (NRW, 2015a).

Measures envisaged necessary to achieve the objectives for physical modifications include:

- improvement to the condition of channel bed;
- removal or easement of barriers to fish migration;
- removal or modification of engineering structures; and
- improvement to the condition of riparian zone and / or wetland habitats (Environment Agency, 2015).Baseline Conditions: Main Rivers and Significant Watercourse Descriptions.

4.1.1 Afon Cynon (Main River within 'Afon Cynon – source to confluence Aman River' WFD waterbody)

The Afon Cynon (chainage (ch.) 3882) is a large watercourse with a wide (approximately 8 m) channel, with varying depths. There was evidence of some erosion of the banks. The watercourse flows through a woodland and areas of rough pasture, which has the potential to provide inputs, such as detritus and large woody debris which can benefit macroinvertebrate communities. It had a meandering planform but little variation in flow type

was observed on site. Flow type was predominantly fast flowing rapids. However, at the time of survey, the catchment had recently received prolonged, heavy rainfall which would have impacted the flow of water and obscured the bed and marginal habitats.

Ecologically, within the stretch of watercourse surveyed, there was considered to be a lack of habitat and flow diversity is unlikely to provide species rich ecological communities within the sections of the watercourse surveyed. However, records from National Resource Wales indicate Atlantic salmon (*Salmo salar*), brown/sea trout (*Salmo trutta)* and European eel (*Anguilla anguilla*) are present within the Afon Cynon River. Atlantic salmon and brown/sea trout are Species of Principal Conservation Importance (as listed in Section 42 of the Natural Environment and Rural Communities (NERC) (Wales) Act 2006) and are migratory species, thus able to move through the watercourse which is crossed by the A465. It is likely that the stretches in proximity to the A465 crossing are transient stretches for these species due to lack of suitable habitat for spawning. European eel are a regionally important species (and protected under the European eel Regulations (England and Wales, 2009)) though are unlikely to be residing within the section crossed by the A465 due to lack of suitable habitat.

4.1.2 Nant y Bwlch (Significant watercourse within 'Afon Cynon – source to confluence Aman River' WFD waterbody)

Nant y Bwlch (ch. 2320) has been extensively realigned through open cast workings to the southwest. The river is consequently perched above the floodplain, has a low sinuosity, is embanked on either side and has a homogeneous profile with no variation in width.

Where the works are proposed the watercourse becomes steeper in gradient and far more natural and sinuous, creating areas of erosion and deposition. Substrate is diverse, predominantly cobbles, with boulders, pebbles, gravel and sand. The channel width is wide (between 3 and 5 m) and sits within a section of confined valley, up to 3 m deep. The river meanders between the valley sides with floodplain on alternate sides of the channel. Water depth was shallow (less than 25 cm). The natural, diverse habitat in this section of the Nant y Bwlch is likely to provide a rich environment for ecological communities; diversity of flow and substrate provides greater variation in aquatic habitats providing greater opportunity for species richness.

4.1.3 Nant Melyn (Significant watercourse within 'Afon Cynon – source to confluence Aman River' WFD waterbody)

Nant Melyn (ch. 5440) flows through a wooded area both upstream and downstream of the existing A465 crossing. The watercourse typically had a pool-riffle sequence, with sections of longer runs consisting of exposed cobbles. The downstream section had some steps in gradient with erosion of the banks. Mid-channel bars were observed at several locations. The habitat was varied with a substantial vegetated riparian zone. The channel's width varied but on average was approximately 3 m. Upstream of the existing cross the channel was shallow, with banks approximately 0.3 m deep. However the channel was confined by steep bedrock banks within a gorge under the existing A465.

The watercourse is provided with inputs including large woody debris and detritus from the surrounding woodland and is beneficial for macroinvertebrate communities. The variation in flow and substrate (cobbles, boulders, gravel) downstream of the A465 road crossing provides habitat which provides opportunity for species richness.

4.1.4 Taf Fawr (Main River within 'Afon Taf Fawr – source to confluence Taf Fechan' WFD water body)

The Taf Fawr (ch. 10850) is a large watercourse (approximately 15 m wide) cut into bedrock in a tree-lined gorge. Through the study reach the watercourse had a naturally straight course confined by geology. Banks (valley sides) are steep (up to 40 m high on the right bank) and there varied flows (torrents, rapids, runs) were observed. The channel typically had a pool-riffle sequence. The channel banks were natural, except for a short length downstream of the A465, beyond the gorge, where houses backed onto the river and banks were protected by brick and stone walls. The banks were tree-lined, with exposed tree roots, exposed earth and moss at the water's edge. The immediate land use is natural, wooded habitat with a small number of residential

houses further downstream. Due to the large expanse of the watercourse, overhanging trees provided marginal cover and inputs.

Records from National Resource Wales indicate Atlantic salmon (*Salmo salar*) and brown/sea trout (*Salmo trutta)* are present in the Taf Fawr River. Atlantic salmon and brown/sea trout are Species of Principal Conservation Importance (as listed in Section 42 of the NERC (Wales) Act 2006) and are migratory species, thus able to move through the watercourse which is crossed by the A465. It is likely that the stretches in proximity to the A465 crossing are transient stretches for these species.

4.1.5 Nant Ffrwd (Significant watercourse within 'Afon Taf Fawr – source to confluence Taf Fechan' WFD waterbody)

The Nant Ffrwd (ch. 10310) was observed to be a medium sized, sinuous and natural watercourse. Immediately upstream of the existing A465 was a waterfall approximately 15 m high, followed by a gorge which the existing road bridge spanned. The valley sides become incredibly steep (approximately 30 m high) downstream of the A465. The channel sides were composed of exposed bedrock.

Upstream of the waterfall, the river bed substrate was coarse compromising predominantly of boulders and cobbles and to a lesser extent pebbles and gravel, with areas of sand and silt in the margins. Flow type varied from fast flowing runs and riffles to some slower flowing areas in the margins. The watercourse flows through a steep, wooded valley, surrounded by rough and improved pasture, which acts as a source of large woody debris, detrital inputs and exposed tree roots in-stream. The diverse nature of the habitat is likely to support a diverse macroinvertebrate community here. Immediately upstream of the A465 road, the watercourse then proceeds to cascade over a large waterfall, approximately 20 m high. Macrophytes were not present within this upstream section of the river and although habitat could support fish species, the large waterfall would impede fish movement.

4.1.6 Taf Fechan (Main River within 'Taf Fechan – source to confluence Afon Taf Fawr' WFD waterbody)

The Taf Fechan (ch. 11482) is a large watercourse approximately 8 m-12 m wide and with a water depth at the time of survey greater than 0.5 m. The river has a sinuous planform confined by bedrock, as the river flows through a gorge (up to 40 m deep). The sinuosity of the river reduces downstream of the A465, and the river has a relatively straight course to the confluence with Taf Fawr. The left bank immediately upstream of the existing A465 has been historically quarried (Gyrnos Quarry).

The bed substrate consisted predominantly of exposed bedrock, boulders and cobbles, with some sand and gravel observed. The flow types were primarily dominated by rapids and runs. The watercourse banks consisted of sections of exposed bedrock and were continually tree lined on the right bank with a footpath located along sections of the left bank with a semi-continuous tree lining. The aquatic habitat upstream and downstream of the A465 was typical of a high velocity watercourse. There were a few habitat features, including some discrete areas of woody debris in the channel. The lack of sinuosity of the watercourse results in poor flow diversity and may provide little habitat diversity for a variety of aquatic species.

Records from National Resource Wales indicate Atlantic salmon (*Salmo salar*), brown/sea trout (*Salmo trutta)* and European eel (*Anguilla anguilla*) present in the Taf Fechan River. Atlantic salmon and brown/sea trout are Species of Principal Conservation Importance (as listed in Section 42 of the NERC (Wales) Act 2006) and are migratory species, thus able to move through the watercourse which is crossed by the A465. It is likely that the stretches in proximity to the A465 crossing are transient stretches for these species. European eel are a regionally important species (and protected under the European eel Regulations (England and Wales, 2009)) and are unlikely to be residing within the section crossed by the A465 due to lack of suitable habitat.

Historic records from the Biodiversity Records Centre (Welsh Invertebrate database) indicate the introduction of white clawed crayfish (*Austropotamobius pallipes*) into the Taf Fechan from Afon Llyni. The white clawed crayfish is the only species of crayfish native to the British Isles, is currently endangered (IUCN, 2016) and protected under several current legislations (EU Habitat Directive (Annex II), a Species of Principal Conservation Importance (NERC Section 42 (Wales, 2006)) and a UK Biodiversity Action Plan Priority Species).

4.1.7 Nant Morlais (Significant watercourse within 'Nant Morlais – source to confluence Afon Taf' WFD waterbody)

Nant Morlais (ch. 14550) and its valley are extensively modified. A significant amount of its valley has been filled in and built upon. Consequently Nant Morlais is extensively culverted, and north of the A465 drops down through a large cattle grid structure into a culvert. For a small length of channel the bed substrate typically consisted of coarse substrate and the flow type was dominated by cascades and runs suggesting a moderate gradient. A medial channel bar formed in a wider section of the channel, suggesting some material is transported through the upstream culvert.

The Upper Penywern Pond appeared to discharge into the Nant Morlais culvert rather than remaining within the 'Taf – confluence to Taf Fechan to Confluence Afon Cynon waterbody (Plate 4.1).

Plate 4.1 Discharge from Upper Penywern Pond.

The heterogeneous nature of the 'natural' channel suggests it would support a diverse macroinvertebrate community without the extensive modifications. However, the concrete lined channel and large barrier created by the significant drop in channel as the watercourse is being culverted under the road provides a large obstacle for fish and provides poor aquatic habitat.

4.2 Vulnerability

Vulnerability was assigned based upon the geomorphological and ecological character of the watercourse, as described in Section 4.2 and Annex B. The majority of the 58 watercourses within the study area were assigned a low vulnerability to change. This was primarily a result of the small or artificial nature of the watercourse or due to bedrock or valley sides confining the lateral and vertical movement of the watercourse. Those watercourses considered to have a medium or high vulnerability are listed in Table 4.2.

Table 4.2 Watercourses with a medium or high vulnerability

Chainage	Watercourse ID	Photograph	Watercourse name	Vulnerability	Principal reason for vulnerability
2224	6		Tributary of Nant y Bwlch	High vulnerability	Sinuous channel with evidence of erosion and deposition observed.
3882	14		Afon Cynon	Medium vulnerability	Large watercourse with diversity of flow types, natural channel substrate and bank material, and diversity of physical habitats.
5440	22		Nant Melyn	High vulnerability	Sinuous channel with a diversity of flow types and physical habitat, although under existing A465 channel is cut into bedrock reducing vulnerability.
7448	28		Tributary of Nant y Gwyddel	Medium vulnerability	Evidence of erosion and deposition processes operating.
7548	29		Tributary of Nant y Gwyddel	Medium vulnerability	Sinuous channel with erosion and deposition processes observed.

Chainage	Watercourse ID	Photograph	Watercourse name	Vulnerability	Principal reason for vulnerability
8760	32		Nant y Gwyddel	Medium vulnerability	Sinuous channel with erosion and deposition processes observed.
9303	34		Tributary of Nant Ffrwd	Medium vulnerability	A low sinuosity channel with some evidence of channel incision – erosion and deposition observed.
9640	35		Tributary of Nant Ffrwd	Medium vulnerability	Incising stream.
9933	36		Tributary of Nant Ffrwd	Medium vulnerability	Incising stream.
10310	38		Nant Ffrwd	Medium vulnerability	Channel stabilised by vegetation, but there are steep gradient valley sides and 20 m waterfall.
17210	56		Nant Carno	Medium vulnerability	Meandering channel with erosion and deposition observed; highly sinuous channel.

5. Impact Assessment

The impacts of the scheme are split into two tables: Table 5.1 and Table 5.3. Table 5.1 describes the generic impacts that are likely to occur for each aspect of the scheme for the three WFD quality elements; hydromorphological, biological and physico-chemical. Hydromorphological impacts are considered first as these modify the physical boundaries of the channel and / or the flow and sediment dynamics, from which biological and physico-chemical impacts arise. Table 5.3 then details the different aspects of the scheme that would impact watercourses, showing their magnitude and whether the impacts would be short term or long term.

In between these two tables is the list of embedded mitigation that was built into the design to reflect the geomorphological and ecological design constraints (Table 5.2)

5.1 Generic Impacts

Table 5.1 Potential generic effects of the proposed scheme on WFD quality elements – without mitigation

Proposed works	Hydromorphological quality elements	Physico-chemical quality elements	Biological quality elements
New Culvert and culvert extension	Impact on longitudinal connectivity altering the transfer of flow and sediment downstream. Change to sediment and flow dynamics due to impacts on longitudinal connectivity. Removal of natural bed and substrate leading to changes in exiting processes and flow dynamics. Removal of natural bank causing disconnection from the floodplain. Removal of natural bed and banks leading to changes in flow variation and patterns of erosion. Potential for blockage causing variations in sediment transportation and patterns of erosion. Alteration to both longitudinal and lateral connectivity of the watercourse with both upstream and downstream fluvial processes and the floodplain, including the potential for fragmentation of in-stream and bank-side habitats. Habitat fragmentation within the riparian zone, which may impact on species passage and habitat corridors. NB: Extension of culvert typically has a lesser impact than a new culvert, but it is dependent on the length of watercourse impacted.	Changes in flow variations could alter the dissolved oxygen levels. Changes in temperature as a result of changes in flow variation and channel shading.	Changes to habitat, flow, channel morphology, channel substrate composition and bank structure. Fragmentation and potential barrier to migration. Localised reduction in quality of aquatic environment.

Proposed works	Hydromorphological quality elements	Physico-chemical quality elements	Biological quality elements
New Bridge (clear span) or bridge expansion	Removal of riparian zone leading to potential for impact on lateral connectivity with the floodplain. Potential for flow alterations, particularly during high flow events, from removal of riparian zone. NB: Bridge expansion is considered to have a lesser impact than a new bridge, typically because there would less vegetation clearance required.	None anticipated.	Removal of riparian vegetation.
Drainage (new outfall structures and change to discharge)	Localised removal of river bank by outfall structure. Increased discharges leading to changes in composition of bed substrate. Increased discharges leading to changes in localised and downstream erosion of banks. Localised impacts to the cross-section altering width variations and the channel bed and banks.	Increased road surface, increases surface run-off and potential discharge into watercourses. Potential changes to flow patterns during and following periods of rainfall, potentially causing changes to dissolved oxygen levels and temperature.	Removal of riparian habitats around structures. Potential changes to flow and substrate may impact on biological quality elements.
Realignment	Creation of a new channel, potentially causing a change in planform, cross-section and lateral (floodplain) connectivity. Changes in the channel length could alter sediment and flow processes and fluvial dynamics, for example, bed/bank erosion occurring where channel gradient is steepened due to the realignment or sediment deposition with potential for low energy channels to become choked with vegetation where channel gradient is reduced due to the realignment. Removal of natural channel cross-section, bed substrate or banks could alter the morphological forms and processes.	None anticipated.	Temporary loss of habitat and a change from baseline environment could affect aquatic flora and fauna (such as changes in abundance and composition of benthic fauna if the bed is altered). Change in lengths of realigned channel could change flow regime and result in alterations to species assemblages.

Proposed works	Hydromorphological quality elements	Physico-chemical quality elements	Biological quality elements
Earthworks	Exacerbate fine sediment delivery (short-term) leading to changes in bed structure and substrate. Potential for erosion from runoff and surface flow processes.	Potential for changes in thermal conditions due to reduce sunlight caused by greater turbidity from fine sediment delivery. Short-term pathway for fine sediment delivery leading to changes in oxygenation, nutrient conditions and water quality parameters.	No long-term impacts during operational stage of structures.

5.2 Embedded Mitigation

To mitigate the impact of channel and floodplain modification the following key design principles were adhered to:

- bridges are chosen where culverts are not considered appropriate for the vulnerability of the watercourse;
- the length of the culverts would be reduced where possible, the upstream and downstream gradient would be considered within the culvert design, so that additional bank and bed protection is minimised;
- realignments are designed to encourage natural fluvial processes and would not detrimentally change the sediment regime of the watercourse;
- outfalls would be flush with the banks, set at an appropriate height and angle to the flow of the river so not to create scour of the bed or banks; and
- sustainable urban drainage systems would be designed to reduce suspended sediments and pollutants from road runoff being transferred to the receiving watercourse and discharge from the ponds would not significantly change the flow hydrograph of the receiving watercourse.

Design alterations in response to geomorphological and ecological constraints and opportunities are presented in Table 5.2.

Sustainable drainage system would reduce the release of pollutants (including sediments) into the watercourse, thus improving water quality and reducing the impact on ecological communities (fish, aquatic macroinvertebrates, macrophytes). Thus this provides an improvement on current baseline conditions.

Culverts and other structures would be designed following DMRB guidance (The Highways Agency, 2004, 2009a and b) and current best practice, including CIRIA guidance.

Table 5.2 Embedded mitigation

Watercourse ID	Chainage	Watercourse name	Online / offline impact	Type of long term impact	Embedded mitigation (water environment design constraints considered in the development of the detailed design)
Sychryd - headwaters to confluence with Mellte (GB110058032320)					
1	-50	Camnant	Online	Existing culvert retained.	None – no long term impact.
Afon Cynon - source to confluence Aman River (GB109057033110)					
2	950	Hirwaun ponds	Online	Bridge extension Discharge from SuDS pond.	Extension mirrors existing crossing structure to avoid flow impacts.
3	1612	Tributary of Nant y Cnapiau	Online	Existing culvert retained.	The Blaen Cynon SAC/Cors Bryn-y-gaer SSSI is downstream of this crossing and therefore any water quality impacts need to be avoided. This has been ensured through the drainage system design, which does not discharge to at this location. Stream currently flows through scrubland and with potentially boggy ground in the area of proposed culvert extension. Increased hard standing and new drainage system could see a larger point source of discharge, during wet conditions, compared to the likely diffuse source of water.
4	1750	Nant y Cnapiau	Online	Existing culvert retained. 12 m gap between culverts enclosed to connect culverts.	None – watercourse is concrete lined and extensively culverted.
5	1955	Tributary of Nant y Cnapiau	Offline	New box culvert (118 m). Channel realignment and incorporation into road drainage.	There is a change in gradient at the upstream side of the new offline section, the stream also sinks and becomes marshy ground. Realignment is required and stream would be incorporated into road drainage. Watercourse arises a short distance upstream of A465; the channel is small with no geomorphological diversity. Culvert design is suitable for bats and otters. Additional earthworks to ensure mammals are guided into depressed culvert.
6	2224	Tributary of	Offline	New box culvert (40 m).	Culvert design is suitable for bats and otters. Additional earthworks to

Watercourse ID	Chainage	Watercourse name	Online / offline impact	Type of long term impact	Embedded mitigation (water environment design constraints considered in the development of the detailed design)
		Nant y Bwlch			ensure mammals are guided into depressed culvert. This is a highly sinuous wooded stream with active erosion present on the downstream side of the proposed road alignment. Straightening the channel and increasing the gradient through a culvert could accelerate erosion. Culvert would have a depressed inverted bed to encourage a natural bed to develop and reduce the impact of the culvert. The use of step-pools would dissipate energy at the culvert outlet. Length of culvert has been reduced.
7	2280	Tributary of Nant y Bwlch	Offline	Watercourse realigned into Nant y Bwlch.	Short stream flows through a marshy area. Existing channel is more like a marshy depression leading to a pond, possibly of artificial origin. As a consequence there is no need to provide culvert. SuDS pond created to north of A465 to attenuate flows.
8	2320	Nant y Bwlch	Offline	New bridge Discharge from SuDS pond.	This is a significant watercourse (due to size, gradient and velocity of flow in spate) and should be a free span bridge to minimise geomorphological impact and impact on freshwater communities. Clear span bridge to be installed to retain meanders and reduce impact on an already heavily modified channel (recently watercourse has been realigned around open cast works). The dimension of the bridge should be set in relation to an assessment of potential flood flow rates and levels and with an aspiration to bridge 1 % AEP flood extent. Outfall for SuDS pond should be away from meander bends, and angled so flow is directed downstream and not perpendicular to river banks.
9	2330	Tributary of Nant y Bwlch	Offline	Road drainage discharged into watercourse.	None – watercourse is a minor field drain.
10	2770	Tributary of	Offline	Incorporated into drainage system – realigned to connect	None – watercourse is a marshy depression in the ground, possibly artificially deepened to improve field drainage. Culvert is not require as

Watercourse ID	Chainage	Watercourse name	Online / offline impact	Type of long term impact	Embedded mitigation (water environment design constraints considered in the development of the detailed design)
		Afon Cynon		up with watercourse 11.	insufficient flow to justify cost. Surface runoff to be captured in road drainage and directed to the east (watercourse 11).
11	3288	Tributary of Afon Cynon	Offline	Replace existing culvert (186 m). Road drainage discharged into watercourse.	None – watercourse has a concrete, stepped (steep) channel.
12	3594	Tributary of Afon Cynon	Online	Existing culvert retained. Road drainage discharged into watercourse.	Existing culvert to be retained, with no increase in length. Should culvert be replaced, a natural bed is recommended.
13	3830	Tributary of Afon Cynon	N/A	Surface water channel outfall.	Watercourse is very small and bank protection should be avoided where surface water channel connects to existing watercourse.
14	3882	Afon Cynon	Online	Bridge extension. Road drainage and SuDS pond discharged into watercourse.	New structure would not increase flood risk downstream. Impact on floodplain has been reduced.
15	3945	Tributary of Afon Cynon	Online	Watercourse realigned into Afon Cynon north of A465. Existing culvert is retained for mammals.	Existing culvert is retained for mammals. Very little flow through culvert, only at times of high rainfall, so culvert not required. Upstream of A465 channel is ephemeral and poorly defined. Suggest road drainage flows into this channel rather than a fourth outfall into the Cynon.
16	4131	Tributary of Afon Cynon	Online	Culvert extension (2 m). Road drainage discharged into watercourse.	None – extensively modified in vicinity of A465 (straightened, perched and embanked).
17	4224	Tributary of Afon Cynon	Online	New culvert. Road drainage discharged into watercourse.	New culvert should be designed in consultation with a geomorphologist with a depressed invert to allow a natural bed, appropriate energy dissipation and for appropriate gradient and sizing.
18	4491	Tributary of	Online	Existing culvert retained.	None – artificial watercourse that runs along the top of the railway

Watercourse ID	Chainage	Watercourse name	Online / offline impact	Type of long term impact	Embedded mitigation (water environment design constraints considered in the development of the detailed design)
		Nant Hir		Road drainage discharged into watercourse.	embankment.
19	4250	Tributary of Afon Cynon	Online	Road drainage and SuDS pond discharged into watercourse.	Steep valley just south of SuDS pond – exact location of SuDS pond outfall would need to take steep gradient into consideration at detailed design stage.
20	4824	Tributary of Nant Hir	Online	Existing pipe culvert replaced with box culvert and length of culvert extended (102 m), plus two additional box culverts (47 m and 42 m) under Croesbychan Junction. Road drainage discharged into watercourse.	Existing pipe culvert would be removed and replaced with box culvert for bat and otter mitigation. If technically feasible, a natural bed would help reduce the impact of the culverts – to be confirmed at detailed design.
21	5021	Tributary of Nant Hir	Online	Existing culvert retained. Road drainage discharged into watercourse.	Existing culvert to be retained, with no increase in length. Should culvert be replaced, a natural bed is recommended.
22	5440	Nant Melyn	Online	New bridge. Road drainage and SuDS pond discharged into Nant Melyn.	Existing structure is large but clear span bridge, with abutments set back from the channel, reduces the impact on flooding, morphology and ecology. Retaining walls would be used rather than embankments at Croesbychan Junction to prevent requirement to realign watercourse. Channel and bank of the river would be avoided.
23	5969	Tributary of Nant Hir	Online	Existing pipe culvert replaced with box culvert and length of culvert extended (15 m). Road drainage and SuDS pond discharged into watercourse.	Existing pipe culvert would be removed and replaced with a box culvert for bat and otter mitigation. Watercourse to be realigned to reduce angle entering culvert. Box culvert with depressed inverted bed would encourage a natural bed and reduce the adverse impact of the culvert.
24	6500	Tributary of	Online	None.	None - there is no existing culvert and the channel is dry on the

Watercourse ID	Chainage	Watercourse name	Online / offline impact	Type of long term impact	Embedded mitigation (water environment design constraints considered in the development of the detailed design)
		Nant Hir			downstream side (south) of the A465.
25	6690, 4800	Tributary of Nant Hir		Extension to Nant Hir Reservoir Viaduct. SuDS pond discharged into Nant Hir watercourse at Croesbychan Junction.	Methodology for construction needs to be mindful of the high sensitivity of the water feature below with respect to pollution. The timing of the construction works in this area should be agreed with Welsh Water to avoid periods when they expect it may use Nant Hir Reservoir as a resource. Recommend geomorphologist is involved in design of Nant Hir outfall at Croesbychan Junction.
26	6980	Tributary of Nant Hir	Online	Culvert extension (40 m).	None – minor watercourse. Pathway to reservoir does not appear to be active - overgrown channel, with no flow and not connected to main stream.
27	7080	Tributary of Nant Hir	Online	Culvert removed and watercourse realigned to ch. 6980 (watercourse 26) (incorporated into road drainage).	This area has been identified for creation/improvement of Marsh Fritillary habitat. There is an opportunity here to create marshy sward/flush habitat through creation of dispersed discharge. This is to be confirmed at detailed design.
28	7448	Tributary of Nant y Gwyddel	Online	Existing pipe culvert replaced with box culvert and length of culvert extended (45 m). Road drainage discharged into watercourse.	Existing pipe culvert would be removed and replaced with a box culvert for bat and otter mitigation. Box culvert with inverted bed would encourage development of a natural bed and reduce impact of culvert. Gradient of culvert would need energy dissipation at the outlet with a step-pool.
29	7548	Tributary of Nant y Gwyddel	Online	Culvert extension (60 m). Road drainage discharged into watercourse.	Box culvert with inverted bed would encourage development of a natural bed and reduce impact of culvert. Gradient of culvert would need energy dissipation at the outlet with a step-pool. Valley to north of A465 is dry and therefore major earthworks would not impact active watercourse.
30	7770	Tributary of Nant y	N/A	Realignment of watercourse in line with habitat creation.	This area has been identified for creation/improvement of Marsh Fritillary habitat. There is an opportunity here to create marshy

Watercourse ID	Chainage	Watercourse name	Online / offline impact	Type of long term impact	Embedded mitigation (water environment design constraints considered in the development of the detailed design)
		Gwyddel			sward/flush habitat through targeted works to realign the channel which is currently artificially straight. Channel should be slightly realigned to a more natural planform which would have a slight benefit to the watercourse. The new channel should be designed in consultation with a geomorphologist.
31	8038	Tributary of Nant y Gwyddel	Online	Culvert and channel removed (incorporated into drainage system).	None – most of flow likely to arise from road runoff.
32	8760	Nant y Gwyddel	Offline	New box culvert (40 m).	Culvert to be large and have natural bed to reduce the impact on the watercourse, which currently has a sinuous planform and natural bed and banks.
Afon Taf Fawr - source to confluence Taf Fechan (GB109057033170)					
33	9290	Tributary of Nant Ffrwd	Online	Existing culvert removed (not required).	None – watercourse is to the north of the works area.
34	9303	Tributary of Nant Ffrwd	Online	Existing pipe culvert replaced with box culvert and length of culvert extended (69 m). Road drainage and SuDS pond discharged into watercourse.	Existing pipe culvert would be removed and replaced with a box culvert for bat and otter mitigation. Gradient of culvert would need energy dissipation at the outlet with a step-pool. Mining spoil would need to be removed for construction of SuDS pond.
35	9640	Tributary of Nant Ffrwd	Online	Increase culvert capacity.	Erosion of track and artificial waterfall upstream of A465 needs to be considered in detailed design. Culvert has a very steep gradient and further consideration for energy dissipation would be required at detail design, such as a step-pool at the outlet. It is recommended that geomorphologist is included in design of culvert and outlet structure.
36	9933	Tributary of Nant Ffrwd	Online	Culvert extension (19 m).	Watercourse is steep and further consideration for energy dissipation required at detail design, such as a step-pool at the outlet. It is recommended that geomorphologist advise on culvert design and

Watercourse ID	Chainage	Watercourse name	Online / offline impact	Type of long term impact	Embedded mitigation (water environment design constraints considered in the development of the detailed design)
					outlet because of proximity to Nant Ffrwd.
37	10124	Tributary of Nant Ffrwd	Online	Culvert removed and watercourse realigned.	Given the steep gradient of the culvert extension and the possibility of erosion of Nant Ffrwd the decision has been taken to realign the watercourse on the south side of the new A465 alignment. Channel realignment should be sinuous and it is recommended that geomorphologists advise on the alignment at detailed design.
38	10310	Nant Ffrwd	Online	New bridge	Proposed alignment runs parallel to and very close to Nant Ffrwd and would extend down the steep flanks of this valley. Design has sought to minimise impact on Nant Ffrwd, avoiding realignment. Abutments to be set back from watercourse edge. Road alignment at this point need to ensure that it does not damage the waterfall which an important geomorphological feature. No part of the structure would be in the watercourse.
39	10290	Tributary of Nant Ffrwd	Online	Retain existing culvert.	Extension of culvert has been avoided, which is beneficial to the watercourse and stability of the culvert, given the very steep gradient downstream.
40	10670	Tributary of Nant Ffrwd	Online	Culvert removed. Ditch to be incorporated into drainage design.	None - existing channel is an artificial drainage channel with concrete bed and sides.
41	10850	Taf Fawr	Online	Bridge extension - two additional bridges for slip roads.	Viaduct piers would span the watercourse and there would be a buffer zone from the top of bank. Structures in floodplain have been avoided.
Taf Fechan - source to confluence Afon Taf Fawr (GB109057033160)					
42	11482	Taf Fechan	Online	Bridge extension.	Viaduct piers would span the watercourse and there would be a 15 m buffer zone from the top of bank (to be confirmed). Structures in floodplain have been avoided.
43	11510	Taf Fechan Mill Leat	Online	Bridge extension.	Viaduct piers would span the watercourse. Structures in floodplain have been avoided.

Watercourse ID	Chainage	Watercourse name	Online / offline impact	Type of long term impact	Embedded mitigation (water environment design constraints considered in the development of the detailed design)
44	12545	Tributary of Taf Fechan – culverted drainage channel	Online	Existing pipe culvert to be extended (25 m).	None – culverted outfall.
45	12545-12830	Tributary of Taf Fechan	Online	None.	None - no long term impact identified.
46	13200	Tributary of Taf Fechan	Online	Existing culvert retained. Road drainage and SuDs pond discharged into watercourse.	Watercourse has gravel bed and therefore greatest care needs to be taken during construction (short term impact).
47	13440	Tributary of Taf Fechan	Online	Culvert removed (not required).	None - existing watercourse is depression that has been severely trampled.
Nant Morlais - source to confluence Afon Taf (GB109057033150)					
48	14010	Tributary of Nant Morlais – Road drainage	Online	SUDs pond discharged into watercourse.	None - existing channel is a dry, large grass trapezoidal swale (road drainage channel).
49	14460	Tributary of Nant Morlais, road drainage	N/A	Incorporated into new drainage system, including SuDS pond.	None – existing channel is artificial and has concrete slab bed and banks.
50	14550	Nant Morlais	Online	Culvert extension and earthworks (and possible realignment).	None - Nant Morlais enters an extended culvert around 200 m upstream of the road alignment and passes beneath the road, surfacing around a kilometre downstream to the southwest. The alignment, depth and baring load for this culvert would need to be determined to ensure that the works do not damage it.

Watercourse ID	Chainage	Watercourse name	Online / offline impact	Type of long term impact	Embedded mitigation (water environment design constraints considered in the development of the detailed design)
Taf – confluence to Taf Fechan to confluence Afon Cynon (GB109057033100)					
51	15198	Relict channel – Tributary of Nant Morlais	Online	No culvert required.	None - this is a relict, perched channel, which is higher than the road and the land on the south side of the road. There is no hydraulic need for a culvert.
52	15400	Tributary of Afon Taf – culverted connecting two reservoirs	Online	None.	None – no long term impact identified.
53	15812	Relict channel – Tributary of Nant Morlais	Online	No culvert modification required. Incorporate surface runoff into drainage design.	An unofficial SuDS pond/wet woodland forms during heavy rainfall and needs to be taken into account in drainage design.
54	16000	Tributary of Afon Cynon	Online		None – minor watercourse.
Rhymney River - Source to confluence Nant Bargod Rhymni (GB109057033130)					
55	16800	Tributary of Afon Rhymney	Online	None.	None - new alignment away from watercourse and at grade.
56	17210	Nant Carno	Online	Existing culvert.	None - scheme makes use of an existing structure.
57	17210	Tributary of Nant Carno	N/A	None.	None - new alignment at grade with no extension of culvert.
58	17300	Tributary of	Online	Earthworks (culvert extension is	None - new alignment at grade with no extension of culvert.

Watercourse ID	Chainage	Watercourse name	Online / offline impact	Type of long term impact	Embedded mitigation (water environment design constraints considered in the development of the detailed design)
		Nant Carno		same as 48, no double count).	

5.3 Resultant Magnitude of Impact

Table 5.3 presents the duration of impact and the overall magnitude of impact for each design element of the scheme. The potential magnitude of impact primarily considers the localised impacts on the watercourses. An assessment at a WFD waterbody scale is then provided in Section 6 where impacts of Moderate or above have been identified. The magnitude presented below assumes that mitigation is embedded into the design of the proposed work aspect.

Table 5.3: Magnitude of impact for each aspect of the scheme (localised impacts, per watercourse)

Proposed work aspect	Channel modification and assumptions	Duration	Magnitude for each quality element	Overall magnitude (with embedded mitigation)
New Culvert or large culvert extension (over 10 m)	Replacement of natural bed and banks with culvert and associated scour protection.	Long term	Hydromorphology: **Moderate adverse**	**Minor adverse** **Moderate adverse if more than one large culvert**
			Physico-chemical: **Minor adverse**	
			Biology: **Minor adverse**	
Minor culvert Extension (up to 10 m)	Typically minor extension of existing culvert. In some places this would require wholescale replacement of existing culverts.	Long term	Hydromorphology: **Minor adverse**	**Negligible**
			Physico-chemical: **Negligible**	
			Biology: **Negligible**	
New Bridge (clear span)	Bridge structure is not considered to infringe on the bed or banks, however there would be a removal of tree cover. A new bridge is considered for only one watercourse (Nant Bwlch), and at the location of the bridge the watercourse is disconnected from its floodplain.	Long term	Hydromorphology: **Negligible**	**Negligible**
			Physico-chemical: **Negligible**	
			Biology: **Negligible**	
Bridge Expansion (clear span)	Existing bridge structure is extended. No adjustment to abutments or piers. Vegetation clearance would be only impact.	Long term	Hydromorphology: **Negligible**	**Negligible**
			Physico-chemical: **Negligible**	
			Biology: **Negligible**	
Realignment	Creation of new channel course.	Long term	Hydromorphology: **Negligible – Minor positive**	**Negligible – Minor positive**
			Physico-chemical: **Negligible – Minor positive**	

Proposed work aspect	Channel modification and assumptions	Duration	Magnitude for each quality element	Overall magnitude (with embedded mitigation)
			Biology: **Negligible – Minor positive**	
Drainage	Slight increase in runoff from increased hard standing because width of road has increased. No current drainage system is in place, therefore the scheme would deliver an improvement in water quality.	Long term	Hydromorphology: **Minor positive**	**Minor positive**
			Physico-chemical: **Minor positive**	
			Biology: **Minor positive**	
Earthworks	Earthworks along new alignment, from construct the road in cutting or on embankments, including removal of trees.	Short term	Hydromorphology: **Negligible – Minor adverse**	**Negligible – Minor adverse**
			Physico-chemical: **Negligible – Minor adverse**	
			Biology: Negligible – **Minor adverse**	

At an individual watercourse level the majority of the works were considered to have a negligible magnitude. The exceptions are new culverts and large culvert extensions (over 10 m), which are considered to have a minor impact with embedded mitigation. Whilst it is possible to reduce the likelihood of erosion or deposition as a result of the new structure, the structure itself replaces the natural bed and banks of the watercourse. However, in many instances, existing pipe culverts are being replaced with depressed invert box culverts, which allow the formation of natural bed through the structure. In addition, this allows for more natural flow conditions, removes/alleviates barriers to fish migration and have been designed for both bat and otter passage. Some watercourse have also been diverted and taken out of their existing culvert, delivering significant improvement to the water environment. In some instances, these redundant culverts for water conveyance would be retained for mammal passage. Bridges have a reduced impact however they are not considered financially feasible for all watercourses, particularly minor watercourses (high order streams).

5.4 Significance of Impact

The significance of impact was considered for all 58 watercourses identified within the study area. Fifty of the watercourses are considered to have a Neutral significance and seven have a Slight significance. Only one watercourse, a tributary of Nant y Bwlch (ch. 2224), had a resultant impact significance of Moderate.

As a consequence a more detailed assessment was undertaken of the tributary of Nant y Bwlch to determine whether the impact of the scheme could be reduced further or whether additional mitigation would be required.

6. Further Assessment

The impact on Tributary of Nant y Bwlch that arises from a new culvert has been assigned a Moderate significance. Consequently the impact of the works on the receiving WFD waterbody is considered as part of a detailed WFD assessment.

The tributary of the Nant y Bwlch was observed to be a small sinuous stream passing through areas of woodland, upstream of the A465 road. The gradient was steep in places, which provided a varied flow pattern and diverse habitat for aquatic fauna; riffle-run-pool complexes dominated the survey reach. The substrate was also diverse, ranging from finer particles such as sand and silt to coarser substrates such as pebbles and cobbles. Although the walkover was during the winter months, there was a lack of in-stream vegetation, which is likely due to the moderate shading of the channel, which would inhibit plant growth during the summer months. Bank features include exposed tree roots, providing cover for fish, whilst large wood accumulations were noted in-stream, providing habitat for macroinvertebrates. The diversity of the habitat, flow and inputs / characteristics from the surrounding land provides a heterogeneous habitat in which a diverse ecological community could thrive. This watercourse was assessed as being highly vulnerable; this is due to the nature of the natural, diverse aquatic environment which is easily susceptible to long-term change from the proposed new culvert.

The Tributary of the Nant y Bwlch has been assessed as highly vulnerable, with a minor adverse impact from the proposed new culvert, resulting in an overall Moderate significance of impact. Given the small size of watercourse it was not considered financially feasible to install a bridge rather than a culvert. However, the design of the culvert has been modified to incorporate a natural bed and as such reduce the impact of the culvert on the watercourse. Whilst the implementation of the proposed new culvert would affect the aquatic environment at a local scale, upstream and downstream of the culvert, the significance of this impact at a waterbody scale is likely to be negligible. At present the Afon Cynon waterbody is failing WFD status with Poor Ecological Potential but the proposed new culvert on Tributary of the Nant y Bwlch is not considered to cause further deterioration of the whole ‘Afon Cynon – source to confluence Aman River’ waterbody. Therefore further mitigation is not considered a requirement of the scheme to be compliant with the WFD.

7. Overall Compliance

As explained in Section 1.1.1, for WFD compliance the proposed scheme must compromise the following three key WFD environmental objectives:

1) Protect the water environment from deterioration

2) Achieve the wider objectives of other European Directives

3) Aim to achieve good overall status for surface and ground waters

Compliance with the WFD has been sought throughout the design process. Improvements to the water quality, through the inclusion of a comprehensive sustainable road drainage system, were established at the start of the scheme. Then, through this Environmental Impact Assessment, full understanding of the geomorphology, ecology, water quality (physico-chemical) and flood risk constraints and opportunities have been gained. This has been fed back to the structural and drainage design teams through several interactive workshops, design iteration and incorporated into the final scheme. Taking this integrated approach has enabled the scheme design to be sensitive to the water environment. Adverse impacts have been avoided where possible, or otherwise minimised.

The proposed scheme has been designed to mitigate water environment impacts, with embedded mitigation also delivering environmental improvements to the water environment and ecology, taking into consideration all quality elements of the WFD. Thus the scheme is neither considered to cause deterioration at a waterbody scale in the status/potential of any of the seven WFD waterbodies within the study area nor prevent any of the WFD waterbodies from achieving Good Ecological Status / Potential. Consequently there would be no impact on other WFD waterbodies within the same RBD.

The introduction of a sustainable drainage system would help to move the WFD waterbodies towards achieving Good Ecological Status/Potential, by improving the water quality (physico-chemical quality element) in reducing the amount of pollutant entering the local watercourses. This in turn would also deliver benefits to the biological and hydromorphological quality elements due to less pollution and reduction in fine sediments (silt).

Impacts of physical modifications have been mitigated through the following means:

- Replacement of existing pipe culverts with depressed invert box culverts. These allow the formation of a natural bed and remove/alleviate barriers to fish migration;
- Box culverts designed for otter and bat passage;
- Channel diversions to avoid the need for culverts, including the removal of some watercourses out of culverts into a diversion. Redundant culverts would be retained for mammal passage;
- Culverts for mammal passage are designed to guide mammals through the culvert;
- Culvert lengths are reduced where practicable and;
- Energy dissipation is designed within culverts/culvert outlets, where required.

Therefore, the scheme contributes to the measures set out in the Western Wales RBMP and Severn RBMP to address the significant water management issues of physical modification and pollution from towns, cities and transport. The proposed box culverts to replace existing pipe culverts would deliver improvements to the condition of the channel bed; deliver easement of barriers to fish migration; modification of existing culverts to incorporate current best practice design; removal of some structures; and improvement of the riparian zone.

8. References

Construction Industry Research and Information Association (1994). Control of pollution from highway drainage discharge, CIRIA R142.

Construction Industry Research and Information Association (2004). Sustainable drainage systems: Hydraulic, structural and water quality advice, CIRIA C609.

Construction Industry Research and Information Association (2006a). Control of water pollution from linear construction projects: Technical Guidance, CIRIA C648.

Construction Industry Research and Information Association (2006b). Control of water pollution from linear construction projects: Site guide, CIRIA C649.

Construction Industry Research and Information Association (2007). Site handbook for the construction of SuDS, CIRIA C698.

Construction Industry Research and Information Association (2010). Culvert Design and Operation Guide, CIRIA C689.

Construction Industry Research and Information Association (2015). The SuDS Manual, CIRIA C753.

Environment Agency (2015) Water for Life and Livelihoods: Part 1 Severn River Basin District – River Basin Management Plan. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/501290/Severn_RBD_Part_1_river_basin_management_plan.pdf

Natural Resources Wales (2015a) Western Wales River Basin Management Plan 2015-2021 Summary. Available at: https://naturalresources.wales/media/676165/wwrbdsummary.pdf

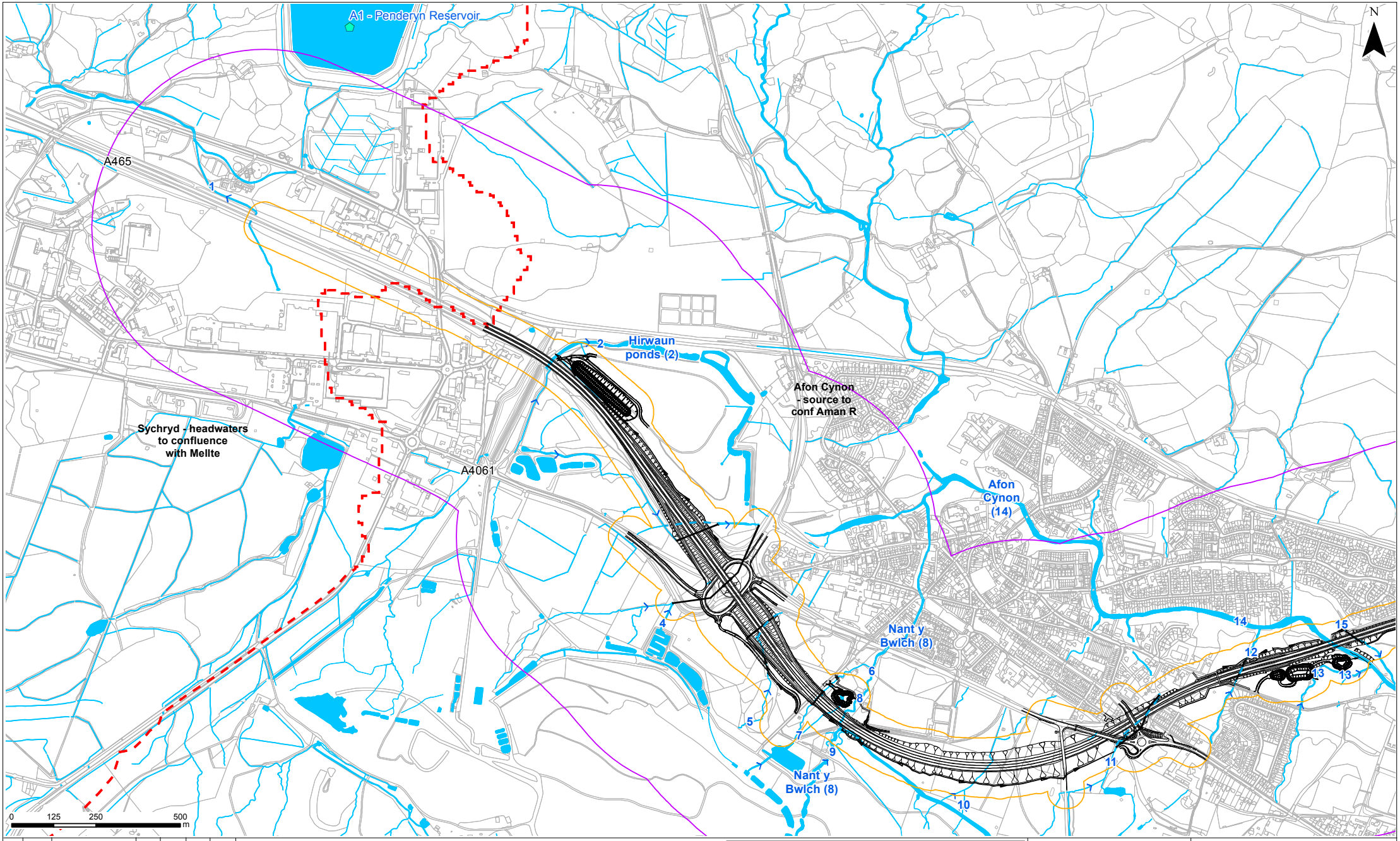
The Highways Agency et al. (2004) Design Manual for Roads and Bridges, Volume 4, Section 2, Part 7 (HA 107/04): Design of Outfall and Culvert Details. Available at: http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol4/section2/ha10704.pdf

The Highways Agency et al. (2009a) Design Manual for Roads and Bridges, Volume 11 Section 3, Part 10 (HD 45/09): Road Drainage and the Water environment. Available online at: http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section3.htm.

The Highways Agency et al. (2009b) Interim Advice Note (IAN) 125/09: Supplementary Guidance for Users of DMRB Volume 11 Environmental Assessment

Annex A. Watercourse and WFD Waterbody Plan

See following page.



0	JULY17	FINAL	FL	KL	KL	WB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Apprv'd

© Crown copyright and database rights 2016 Ordnance Survey 0100031673

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

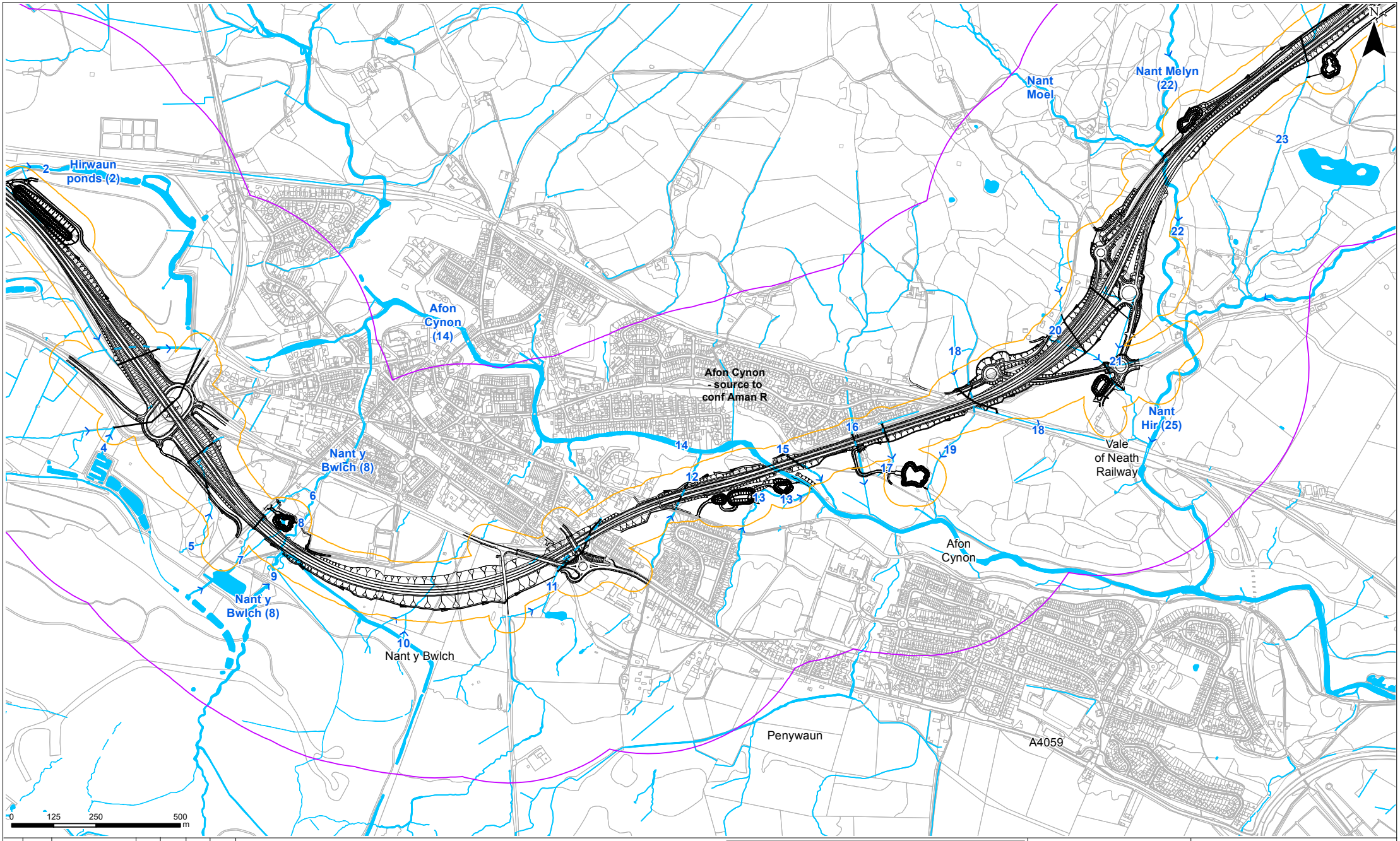
Legend

- Scheme design
- Geomorphology assessment extent
- Water quality assessment extent
- WFD catchments
- Watercourses and waterbodies
- Lakes and other waterbodies
- Dry channel
- Running water
- Approximate sections of existing culverted watercourses

Llywodraeth Cymru
Welsh Government

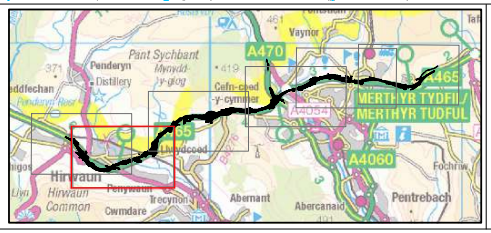
JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FINAL
Project	A465 HEADS OF THE VALLEYS SECTIONS 5 AND 6 DOWLAIS TOP TO HIRWAUN
Title	Surface water features
Scale	1:10,000 @A3 — DO NOT SCALE
Drawing No.	Figure 17.1 Sheet 1 of 6 — Rev 0



Legend

- Scheme design
- Geomorphology assessment extent
- Water quality assessment extent
- WFD catchments
- Watercourses and waterbodies
- Lakes and other waterbodies
- Dry channel
- Running water
- Approximate sections of existing culverted watercourses



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Apprv'd
0	JULY17	FINAL	FL	KL	KL	WB

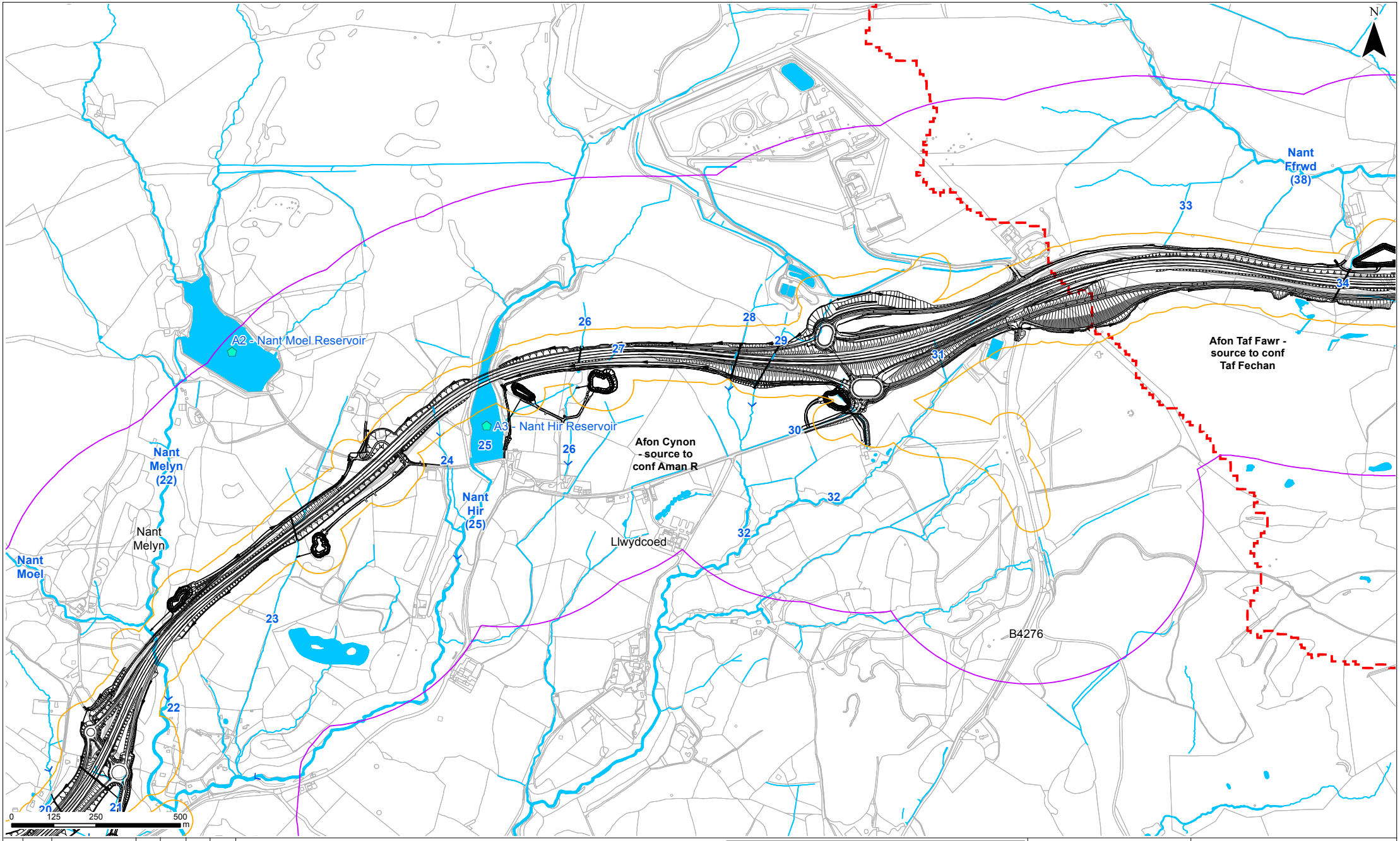
© Crown copyright and database rights 2016 Ordnance Survey 0100031673

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

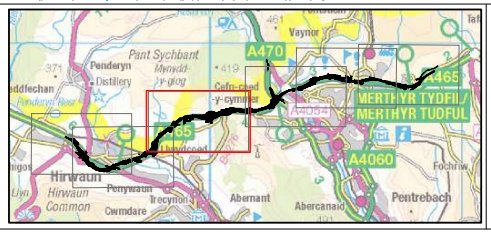
JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FINAL
Project	A465 HEADS OF THE VALLEYS SECTIONS 5 AND 6 DOWLAIS TOP TO HIRWAUN
Title	Surface water features
Scale	1:10,000 @A3 — DO NOT SCALE
Drawing No.	Figure 17.1 Sheet 2 of 6 — Rev 0



Legend

- Scheme design
- Geomorphology assessment extent
- Water quality assessment extent
- WFD catchments
- Watercourses and waterbodies
- Lakes and other waterbodies
- Dry channel
- Running water
- Approximate sections of existing culverted watercourses



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Apprv'd
0	JULY17	FINAL	FL	KL	KL	WB

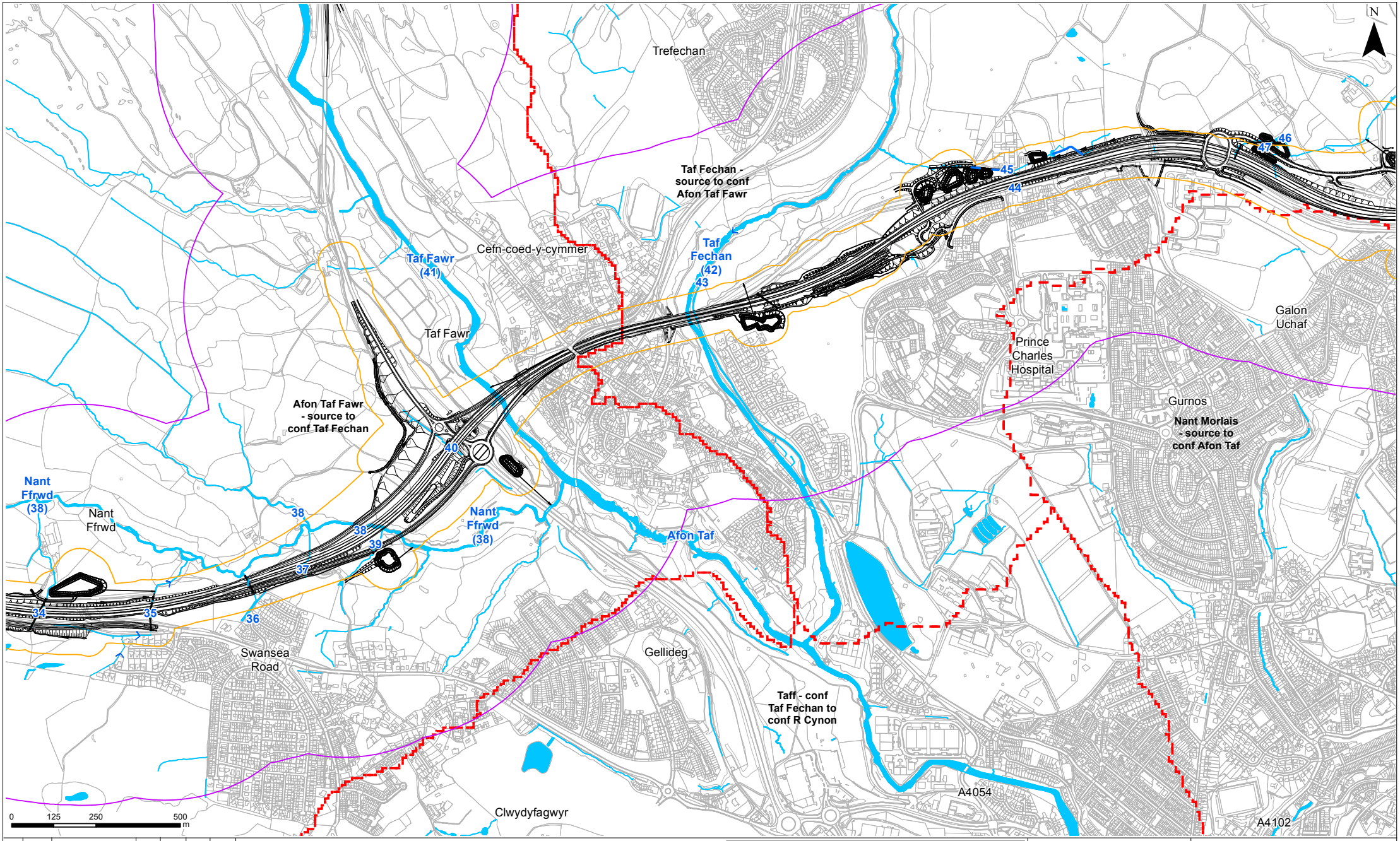
© Crown copyright and database rights 2016 Ordnance Survey 0100031673

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

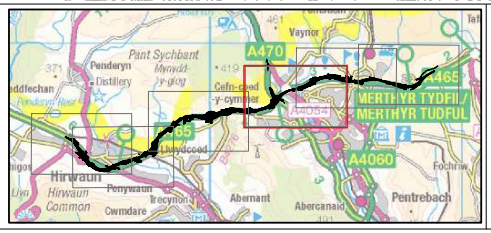
JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FINAL
Project	A465 HEADS OF THE VALLEYS SECTIONS 5 AND 6 DOWLAIS TOP TO HIRWAUN
Title	Surface water features
Scale	1:10,000 @A3 — DO NOT SCALE
Drawing No.	Figure 17.1 Sheet 3 of 6 — Rev 0



Legend

- Scheme design
- Geomorphology assessment extent
- Water quality assessment extent
- WFD catchments
- Watercourses and waterbodies
- Lakes and other waterbodies
- Dry channel
- Running water
- Approximate sections of existing culverted watercourses



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Apprv'd
0	JULY17	FINAL	FL	KL	KL	WB

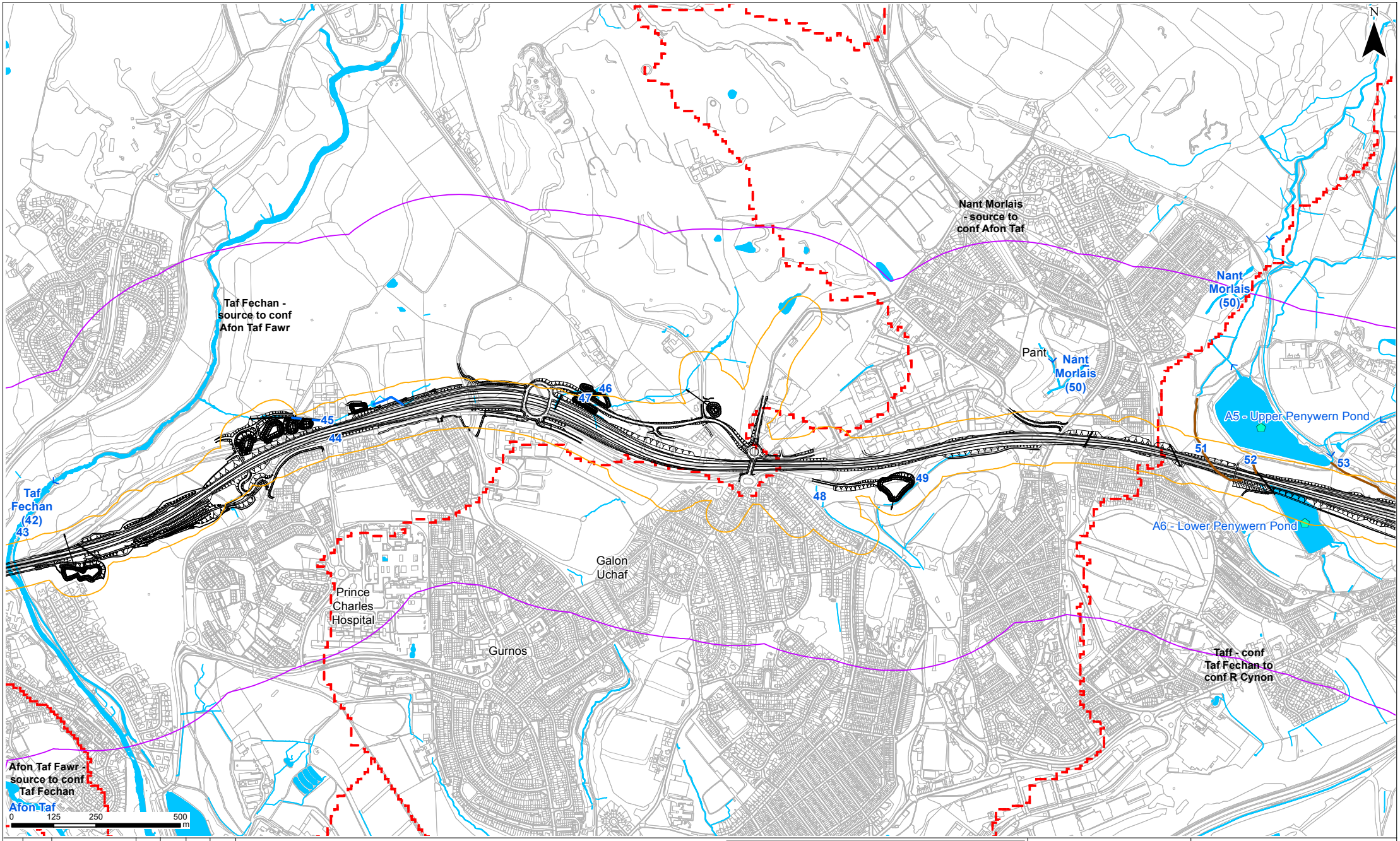
© Crown copyright and database rights 2016 Ordnance Survey 0100031673

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Llywodraeth Cymru
Welsh Government

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FINAL
Project	A465 HEADS OF THE VALLEYS SECTIONS 5 AND 6 DOWLAIS TOP TO HIRWAUN
Title	Surface water features
Scale	1:10,000 @A3 — DO NOT SCALE
Drawing No.	Figure 17.1 Sheet 4 of 6 — Rev 0



0	JULY17	FINAL	FL	KL	KL	WB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Apprv'd

© Crown copyright and database rights 2016 Ordnance Survey 0100031673

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

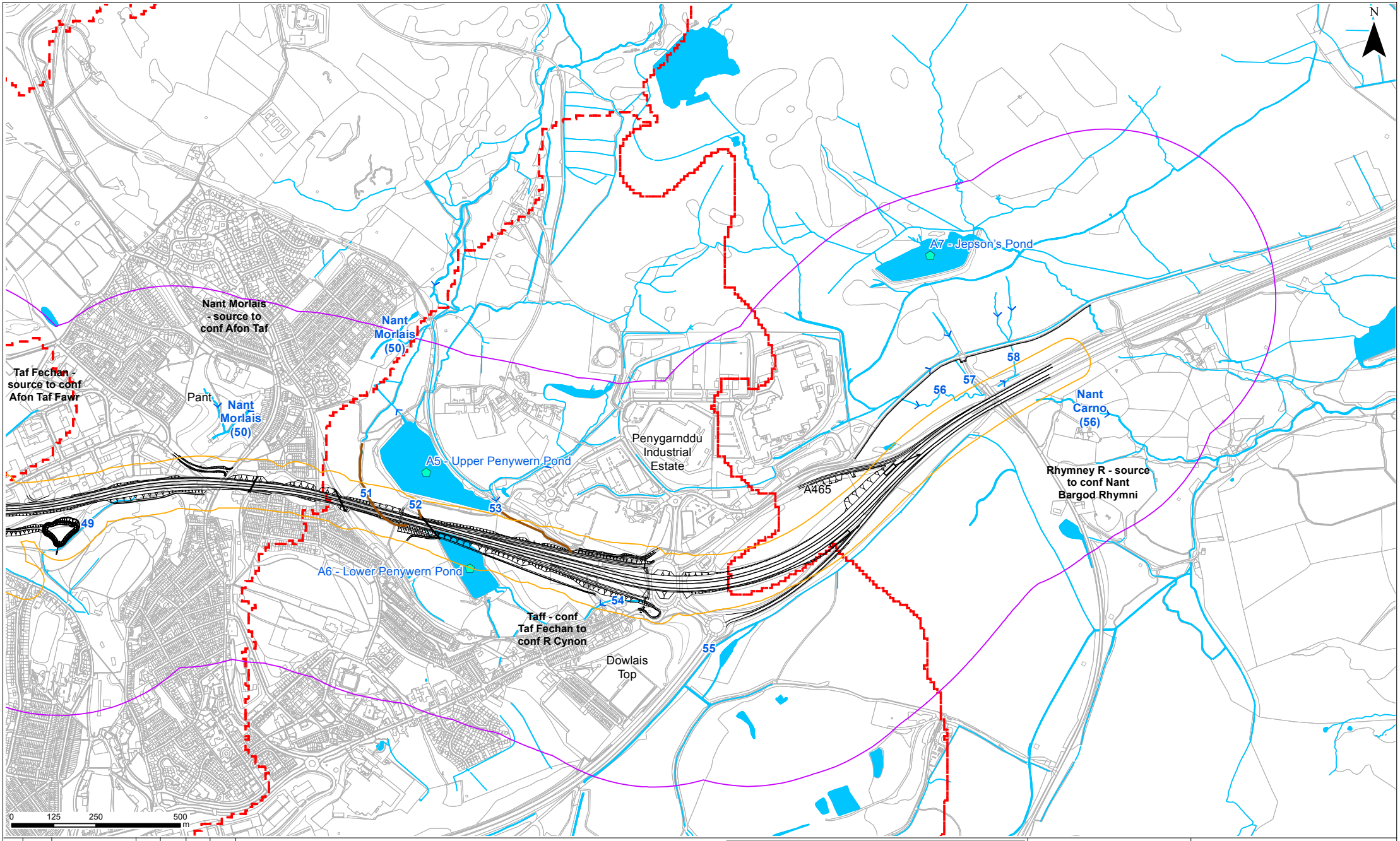
Legend

- Scheme design
- Geomorphology assessment extent
- Water quality assessment extent
- WFD catchments
- Watercourses and waterbodies
- Lakes and other waterbodies
- Dry channel
- Running water
- Approximate sections of existing culverted watercourses

Llywodraeth Cymru
Welsh Government

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FINAL
Project	A465 HEADS OF THE VALLEYS SECTIONS 5 AND 6 DOWLAIS TOP TO HIRWAUN
Title	Surface water features
Scale	1:10,000 @A3 — DO NOT SCALE
Drawing No.	Figure 17.1 Sheet 5 of 6 — Rev 0



0	JULY17	FINAL	FL	KL	KL	WB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Apprv'd

© Crown copyright and database rights 2016 Ordnance Survey 0100031673

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Legend

- Scheme design
- Geomorphology assessment extent
- Water quality assessment extent
- WFD catchments
- Watercourses and waterbodies
- Lakes and other waterbodies
- Dry channel
- Running water
- Approximate sections of existing culverted watercourses

Llywodraeth Cymru
Welsh Government

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FINAL	
Project	A465 HEADS OF THE VALLEYS SECTIONS 5 AND 6 DOWLAIS TOP TO HIRWAUN	
Title	Surface water features	
Scale	1:10,000 @A3	DO NOT SCALE
Drawing No.	Figure 17.1 Sheet 6 of 6	Rev 0

Annex B. Individual Watercourse Vulnerability

Chainage	Watercourse ID	Watercourse name	Size of watercourse	Gradient	Planform	Dominant process	Dominant function	Existing modifications (seen on site / within study reach)	Vegetation along bank top	Vulnerability
Sychryd - headwaters to confluence with Mellte (GB110058032320)										
-50	1	Camnant	Medium	Low	Straight	Stable	Transfer	Realigned, culverted, overdeep, straight	Tree lined	Low
Afon Cynon - source to confluence Aman River (GB109057033110)										
950	2	Hirwaun ponds	Small	Moderate	Straight	Aggrading	Sink	Mining settlement ponds, straightened, culverted, bridge piers, embanked	Tree lined	Low
1612	3	Tributary of Nant y Cnapiau	Small	Low	Low sinuosity (network of drains)	Stable	Transfer	Culverted	Marshy, tree lined, wet woodland in high flows	Low
1750	4	Nant y Cnapiau	Small	High	Straight (artificial)	Stable (artificial)	Transfer (sink upstream)	Artificial concrete lined channel from settlement pond, extensively culverted	Grass and shrubs	Low
1955	5	Tributary of Nant y Cnapiau	Small	High	Low sinuosity (sinks into ground)	Stable	Sink	Culverted, localised poaching	Grass and shrubs	Low
2224	6	Tributary of	Small	Moderate	Meandering	Laterally	Exchange	Culverted	Tree lined	High

Chainage	Watercourse ID	Watercourse name	Size of watercourse	Gradient	Planform	Dominant process	Dominant function	Existing modifications (seen on site / within study reach)	Vegetation along bank top	Vulnerability
		Nant y Bwlch				migrating				
2280	7	Tributary of Nant y Bwlch	Small	Low	Low sinuosity (undefined marshy channel)	Aggrading (assuming sediment carried to pond)	Sink (pond)	Pond	Marsh, isolated trees	Low
2320	8	Nant y Bwlch	Medium	Moderate	Meandering	Stable (geology)	Transfer	Realigned, perched and embanked through open mined area upstream. Culverted under existing road	Tree lined	Low (geology)
2330	9	Tributary of Nant y Bwlch	Small	Moderate	Straight	Stable	Transfer	Straightened, field ditch	Grass and shrubs	Low
2770	10	Tributary of Afon Cynon	Small	Low	Straight (large marshy channel)	Stable	Sink (marshy channel, little flow)	Culverted, realigned	Marsh	Low
3288	11	Tributary of Afon Cynon	Small	High	Sinuous	Stable	Transfer	Grazed, localised poaching, concrete steps leading to culvert	Shrubs and tree lining	Low
3594	12	Tributary of Afon Cynon	Small	Moderate	Sinuous	Stable (geology - gorge, bedrock outcrop)	Transfer	Culverted, urbanised	Tree lined	Low

Chainage	Watercourse ID	Watercourse name	Size of watercourse	Gradient	Planform	Dominant process	Dominant function	Existing modifications (seen on site / within study reach)	Vegetation along bank top	Vulnerability
3830	13	Tributary of Afon Cynon	Small	Low	Sinuous	Stable	Transfer	Culverted (not crossed by scheme)	Tree lined	Low
3882	14	Afon Cynon	Large	Low	Meandering	Stable	Transfer	Open span bridge, embankment on floodplain	Tree lined on right bank, grass on left	Medium
3945	15	Tributary of Afon Cynon	Small	Low	Low sinuosity	Stable	Transfer	Culverted	Left bank tree lined, right bank grass	Low
4131	16	Tributary of Afon Cynon	Small	High	Straight	Stable	Transfer	Straightened, perched and embanked, urbanised, culverted	Tree lined	Low
4224	17	Tributary of Afon Cynon	Small (ephemeral)	Moderate	Straight	Stable	Transfer	Overdeep, poached	Grass	Low
4491	18	Tributary of Nant Hir	Small	Low	Straight	Stable	Transfer	Straight, drainage channel along top of railway embankment	Marsh and grass	Low
4250	19	Tributary of Afon Cynon	Small	Moderate	Straight	Stable (dry)	None	Overdeep and embankment	Right bank scattered tree lining, left bank grass	Low
4824	20	Tributary of	Small	Low	Low	Stable	Transfer	Realigned	Tree lined	Low

Chainage	Watercourse ID	Watercourse name	Size of watercourse	Gradient	Planform	Dominant process	Dominant function	Existing modifications (seen on site / within study reach)	Vegetation along bank top	Vulnerability
		Nant Hir			sinuosity			alongside road (acts as road drainage), culverted		
5021	21	Tributary of Nant Hir	Small	Low	Straight (sinks into ground)	Stable	Sink	Realigned	Grass, scattered tree lining	Low
5440	22	Nant Melyn	Medium	Moderate	Meandering	Laterally migrating	Exchange	Open span bridge	Tree lined	High
5969	23	Tributary of Nant Hir	Small	Moderate	Straight	Stable (short term) / Incising (series of knick points downstream)	Transfer	Straightened, culverted	Grass and scattered tree lining upstream of A465, tree lined downstream	Low
6500	24	Tributary of Nant Hir	Small (watercourse starts south of road and is dry)	Low	Straight (artificial)	Stable (field/road drainage)	Transfer	Geotextile lined channel	Tree lined on left bank, grass and scrub on right bank	Low
6690, 4800	25	Nant Hir reservoir	Large (Reservoir)	Low	Reservoir	Aggrading (settlement of sediment along bed of reservoir)	Sink	Dammed	Tree lined	Low
6980	26	Tributary of Nant Hir	Small (dry)	Low	Straight	Stable (overgrown, dry)	Sink	Overdeep, embankment, drainage channel	Rough pasture (long grass)	Low

Chainage	Watercourse ID	Watercourse name	Size of watercourse	Gradient	Planform	Dominant process	Dominant function	Existing modifications (seen on site / within study reach)	Vegetation along bank top	Vulnerability
7080	27	Tributary of Nant Hir	Small	Low	Straight	Stable (overgrown, dry)	Sink	Disturbed ground, overdeep channel	Rough pasture (long grass)	Low
7448	28	Tributary of Nant y Gwyddel	Small	Moderate	Sinuous	Laterally migrating	Exchange	Forestry settlement pond, culverted	Tree lined upstream, grass downstream	Medium
7548	29	Tributary of Nant y Gwyddel	Small	Moderate	Sinuous	Laterally migrating	Exchange	Forestry settlement pond, culverted	Tree lined upstream, grass downstream	Medium
7770	30	Tributary of Nant y Gwyddel	Small	Moderate	Sinuous	Stable	Transfer	Culverted	Scrub	Low
8038	31	Tributary of Nant y Gwyddel	Small	Moderate	Sinuous	Stable	Transfer	Starts as road drainage (no channel marked upstream)	Scrub	Low
8760	32	Nant y Gwyddel	Small	Moderate	Meandering (within straight two stage channel)	Laterally migrating	Exchange	Embanked, overdeep	Scrub	Medium
Afon Taf Fawr - source to confluence Taf Fechan (GB109057033170)										
9290	33	Tributary of Nant Ffrwd	Small	Low	Straight	Stable	Transfer	Straightened (artificial drain?)	Scrub	Low
9303	34	Tributary of	Small	Moderate	Low	Laterally	Exchange	Mining spoil in	Grass	Medium

Chainage	Watercourse ID	Watercourse name	Size of watercourse	Gradient	Planform	Dominant process	Dominant function	Existing modifications (seen on site / within study reach)	Vegetation along bank top	Vulnerability
		Nant Ffrwd			sinuosity	migrating/incising (knick point downstream of road)		headwaters, disturbed ground, realigned, culverted		
9640	35	Tributary of Nant Ffrwd	Small	Moderate	Straight	Incising	Source	Mining spoil, realignment, urbanisation, ford, culverted	Grass	Medium
9933	36	Tributary of Nant Ffrwd	Small	High	Straight	Incising	Source	Overdeep, urbanised	Shrubs and tree lining	Medium
10124	37	Tributary of Nant Ffrwd	Small	High	Low sinuosity	Stable	Transfer	Culverted	Grass	Low
10310	38	Nant Ffrwd	Medium	High	Meandering	Stable (incising – 20 m waterfall)	Transfer	Open span bridge (over gorge)	Tree lined	Medium
10290	39	Tributary of Nant Ffrwd	Small	High	Straight	Stable	Transfer	Straightened, culverted	Grass, some tree lining downstream	Low
10670	40	Tributary of Nant Ffrwd	Small	High	Straight (artificial)	Stable (field/road drainage)	Transfer	Artificial concrete lined channel, extensively culverted	Tree lined	Low
10850	41	Taf Fawr	Large	Moderate	Straight (geology)	Stable (geology)	Transfer	Open span bridge (over gorge)	Tree lined	Low
Taf Fechan - source to confluence Afon Taf Fawr (GB109057033160)										
11482	42	Taf Fechan	Large	Low	Straight (geology)	Stable (geology)	Transfer	Open span bridge (over gorge),	Tree lined	Low

Chainage	Watercourse ID	Watercourse name	Size of watercourse	Gradient	Planform	Dominant process	Dominant function	Existing modifications (seen on site / within study reach)	Vegetation along bank top	Vulnerability
								historically quarried		
11510	43	Taf Fechan mill leat	Small	Low	Straight (artificial)	Stable (hard bank and bed)	Transfer	Mill leat	Grass	Low
12545	44	Piped outfall, road drainage	Small	Low	Outfall (piped)			Extensively culverted/road drainage	Culverted	Low
12545-12830	45	Tributary of Taf Fechan	Small	Low	Low sinuosity	Stable (dry)	None	Extensively poached	Grass	Low
13200	46	Tributary of Taf Fechan - it is unclear where culvert outlet is (i.e. which waterbody flow is discharged to)	Small	Low	Low sinuosity	Stable	Transfer (clean gravels)	Extensively poached	Grass, scattered trees	Low
13440	47	Tributary of Taf Fechan	Small	Low	Straight	Stable (dry)	Source	Extensively poached	Grass	Low
Nant Morlais - source to confluence Afon Taf (GB109057033150)										
14010	48	Tributary of Nant Morlais, road drainage	Small	High	Straight (artificial drainage channel)	Stable (dry)	None	Artificial, oversized, trapezoidal channel - road drainage	Grass	Low

Chainage	Watercourse ID	Watercourse name	Size of watercourse	Gradient	Planform	Dominant process	Dominant function	Existing modifications (seen on site / within study reach)	Vegetation along bank top	Vulnerability
		south of A465								
14460	49	Tributary of Nant Morlais, road drainage south of A465	Small	Moderate (increasing to high away from road)	Straight (artificial)	Stable (artificial)	Transfer	Concrete lined channel	Tree lined on right bank, grass on left	Low
14550	50	Nant Morlais	Large	Moderate	Culverted	Stable (artificial)	Transfer	Extensively culverted, concrete lined open channel	Tree lined	Low
Taf - confluence Taf Fechan to confluence Afon Cynon (GB109057033100)										
15198	51	No watercourse – relict channel	None	N/A						N/A
15400	52	No watercourse – possibly culverted channel connecting reservoirs	None	N/A						N/A
15812	53	Flows into reservoir, then into Nant Morlais	Small	Low	Straight (artificial, ASDA car park	Stable	Sink	Straightened, embanked, perched unofficial SuDS pond	Tree lined, wet woodland following	Low

Chainage	Watercourse ID	Watercourse name	Size of watercourse	Gradient	Planform	Dominant process	Dominant function	Existing modifications (seen on site / within study reach)	Vegetation along bank top	Vulnerability
		culvert			drainage)				high rainfall	
16000	54	Tributary of Afon Taf	Small	Low	Straight	Stable	Transfer	Straight, possibly road drainage, extensively culverted	Grass and shrub	Low
Rhymney River - Source to confluence Nant Bargod Rhymni (GB109057033130)										
16800	55	Tributary of Nant Carno	Small	Low	Straight	Stable (artificial)	Transfer	On side of hill slope, assume to be hard lined (like reservoir catchwater)		Low
17210	56	Nant Carno	Small	Moderate	Meandering	Laterally migrating	Exchange	Culverted	Grass and shrubs	Medium
17210	57	Tributary of Nant Carno	Small	Moderate	Straight (artificial drainage channel)	Stable	Transfer	Straightened, culverted, fly tipping	Grass and marsh	Low
17300	58	Tributary of Nant Carno	Small	Moderate	Low sinuosity	Stable	Transfer	Culverted, connects to road drainage	Grass and marsh	Low

Annex C. Photographic Register

See following page.

Annex C – Photographic Register
(Locations given in terms of the A465, i.e. upstream of A465)

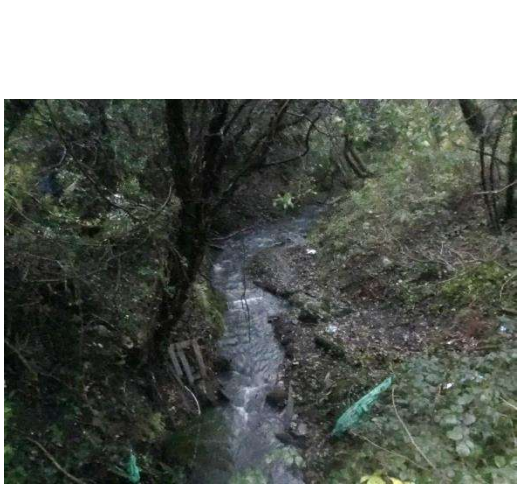
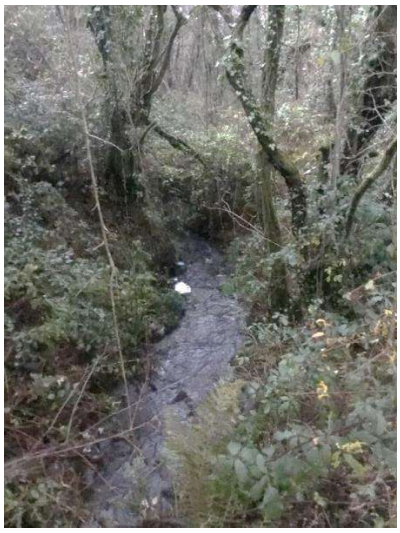
ID	Location	Upstream photo
1	Upstream	None available – no access.
	Downstream	
2	Upstream	
	Downstream	

ID	Location	Upstream photo
3	Upstream	
	Downstream	
4	Upstream	
	Downstream	None available.

ID	Location	Upstream photo
5	Upstream	
	Downstream	None available.
6	Upstream	
	Downstream	

ID	Location	Upstream photo
7	Upstream	
	Downstream	
8	Upstream	
	Downstream	
9	Upstream	None available – not surveyed
	Downstream	None available – not surveyed

ID	Location	Upstream photo
10	Upstream	
	Downstream	
11	Upstream	
	Downstream	

ID	Location	Upstream photo
12	Upstream	
	Downstream	
13	Upstream	
	Downstream	None available.

ID	Location	Upstream photo
14	Upstream	
	Downstream	
15	Upstream	
	Downstream	

ID	Location	Upstream photo
16	Upstream	
	Downstream	
17	Upstream	None available.
	Downstream	

ID	Location	Upstream photo
18	Upstream	None available – not surveyed
	Downstream	None available – not surveyed
19	Upstream	None available.
	Downstream	
20	Upstream	

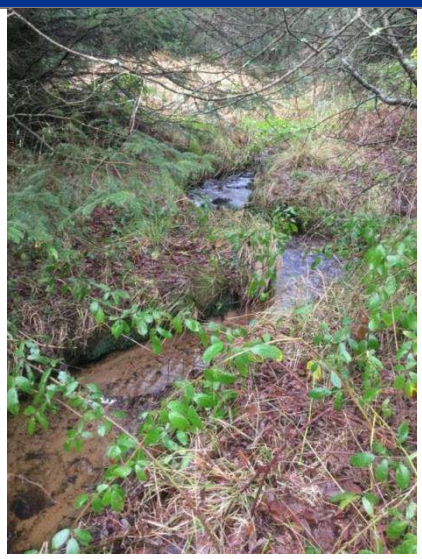
ID	Location	Upstream photo
	Downstream	
21	Upstream	
	Downstream	

ID	Location	Upstream photo
22	Upstream	Nant Moel – Trib of Nant Melyn Nant Melyn
	Downstream	Nant Melyn

ID	Location	Upstream photo
23	Upstream	
	Downstream	

ID	Location	Upstream photo
24	Upstream	
	Downstream	
25	Upstream	
	Downstream	None available.
26	Upstream	None available.

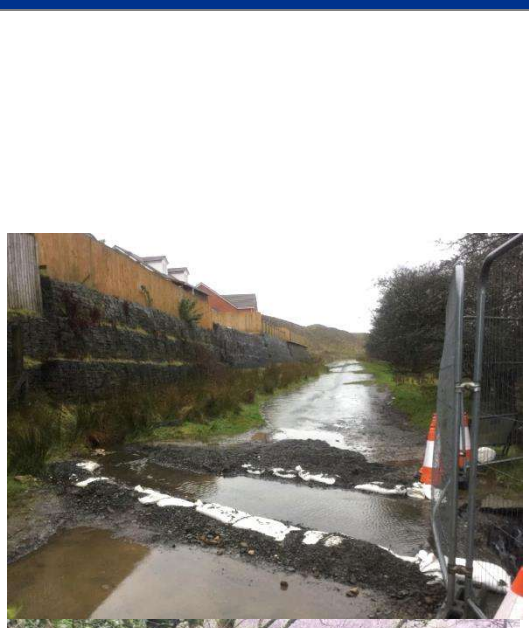
ID	Location	Upstream photo
	Downstream	
27	Upstream	None available.
	Downstream	
28	Upstream	

ID	Location	Upstream photo
		
	Downstream	
29	Upstream	

ID	Location	Upstream photo
	Downstream	
30	Upstream	
	Downstream	None available.
31	Upstream	None available.

ID	Location	Upstream photo
	Downstream	
32	Upstream	
	Downstream	
33	Upstream	None available – not surveyed
	Downstream	None available – not surveyed

ID	Location	Upstream photo
34	Upstream	
	Downstream	
35	Upstream	

ID	Location	Upstream photo
		
	Downstream	

ID	Location	Upstream photo
36	Upstream	
	Downstream	None available.
37	Upstream	None available.
	Downstream	

ID	Location	Upstream photo
38	Upstream	
	Downstream	
39	Upstream	

ID	Location	Upstream photo
	Downstream	
40	Upstream	
	Downstream	None available.
41	Upstream	

ID	Location	Upstream photo
	Downstream	
42	Upstream	
	Downstream	

ID	Location	Upstream photo
43	Upstream	
	Downstream	
44	Upstream	
	Downstream	None available – source is unknown.

ID	Location	Upstream photo
45	Upstream	
	Downstream	Not applicable – watercourse on one side of the road.
46	Upstream	

ID	Location	Upstream photo
	Downstream	None available – outfall unknown.
47	Upstream	Not applicable – watercourse is on one side of the road.
	Downstream	
48	Upstream	Not applicable – watercourse is on one side of the road.
	Downstream	
49	Upstream	Not applicable – watercourse is on one side of the road.
	Downstream	

ID	Location	Upstream photo
50	Upstream	
	Downstream	

ID	Location	Upstream photo
51	Upstream	
	Downstream	Not applicable – watercourse is on one side of the road.
52	Upstream	
	Downstream	

ID	Location	Upstream photo
53	Upstream	
	Downstream	
54	Upstream	None available – not surveyed
	Downstream	None available – not surveyed
55	Upstream	Not applicable – watercourse is on one side of the road.
	Downstream	

ID	Location	Upstream photo
56	Upstream	
	Downstream	Not applicable – watercourse is on one side of the road.
57	Upstream	

ID	Location	Upstream photo
	Downstream	

ID	Location	Upstream photo
58	Upstream	
	Downstream	Not applicable – watercourse is on one side of the road.

Annex D. Impact Table

Chainage	Watercourse ID	Watercourse name	Vulnerability	Magnitude	Significance
Sychryd - headwaters to confluence with Mellte (GB110058032320)					
-50	1	Camnant	Low	Negligible	Neutral
Afon Cynon - source to confluence Aman River (GB109057033110)					
950	2	Hirwaun ponds	Low	Negligible	Neutral
1612	3	Tributary of Nant y Cnapiau	Low	Negligible	Neutral
1750	4	Nant y Cnapiau	Low	Negligible	Neutral
1955	5	Tributary of Nant y Cnapiau	Low	Minor adverse	Neutral
2224	6	Tributary of Nant y Bwlch	High	Minor adverse	Moderate
2280	7	Tributary of Nant y Bwlch	Low	Minor	Neutral
2320	8	Nant y Bwlch	Low (geology)	Negligible	Neutral
2330	9	Tributary of Nant y Bwlch	Low	Negligible	Neutral
2770	10	Tributary of Afon Cynon	Low	Minor	Neutral
3288	11	Tributary of Afon Cynon	Low	Negligible	Neutral
3594	12	Tributary of Afon Cynon	Low	Negligible	Neutral
3830	13	Tributary of Afon Cynon	Low	Negligible	Neutral
3882	14	Afon Cynon	Medium	Negligible	Neutral
3945	15	Tributary of Afon Cynon	Low	Negligible	Neutral
4131	16	Tributary of Afon Cynon	Low	Negligible	Neutral
4224	17	Tributary of Afon Cynon	Low	Minor adverse	Neutral
4491	18	Tributary of Nant Hir	Low	Negligible	Neutral
4250	19	Tributary of Afon Cynon	Low	Negligible	Neutral
4824	20	Tributary of Nant Hir	Low	Moderate adverse	Slight
5021	21	Tributary of Nant Hir	Low	Negligible	Neutral
5440	22	Nant Melyn	High	Negligible	Neutral

Chainage	Watercourse ID	Watercourse name	Vulnerability	Magnitude	Significance
5969	23	Tributary of Nant Hir	Low	Negligible	Neutral
6500	24	Tributary of Nant Hir	Low	Negligible	Neutral
6690, 4800	25	Nant Hir reservoir	Low	Negligible	Neutral
6980	26	Tributary of Nant Hir	Low	Minor adverse	Neutral
7080	27	Tributary of Nant Hir	Low	Negligible	Neutral
7448	28	Tributary of Nant y Gwyddel	Medium	Minor adverse	Slight
7548	29	Tributary of Nant y Gwyddel	Medium	Minor adverse	Slight
7770	30	Tributary of Nant y Gwyddel	Low	Minor positive	Neutral
8038	31	Tributary of Nant y Gwyddel	Low	Negligible	Neutral
8760	32	Nant y Gwyddel	Medium	Minor adverse	Slight
Afon Taf Fawr - source to confluence Taf Fechan (GB109057033170)					
9290	33	Tributary of Nant Ffrwd	Low	Negligible	Neutral
9303	34	Tributary of Nant Ffrwd	Medium	Minor adverse	Slight
9640	35	Tributary of Nant Ffrwd	Medium	Negligible	Neutral
9933	36	Tributary of Nant Ffrwd	Medium	Minor adverse	Slight
10124	37	Tributary of Nant Ffrwd	Low	Minor positive	Neutral
10310	38	Nant Ffrwd	Medium	Negligible	Neutral
10290	39	Tributary of Nant Ffrwd	Low	Negligible	Neutral
10670	40	Tributary of Nant Ffrwd	Low	Negligible	Neutral
10850	41	Taf Fawr	Low	Negligible	Neutral
Taf Fechan - source to confluence Afon Taf Fawr (GB109057033160)					
11482	42	Taf Fechan	Low	Negligible	Neutral
11510	43	Artificial side channel of Taf Fechan (mill leat) - 'Taf Fechan Leat'	Low	Negligible	Neutral
12545	44	Piped outfall, road drainage	Low	Minor adverse	Neutral
12545-	45	Tributary of Taf	Low	Negligible	Neutral

Chainage	Watercourse ID	Watercourse name	Vulnerability	Magnitude	Significance
12830		Fechan			
13200	46	Tributary of Taf Fechan - it is unclear where culvert outlet is (i.e. which waterbody flow is discharged to)	Low	Negligible	Neutral
13440	47	Tributary of Taf Fechan - it is unclear where culvert outlet is	Low	Negligible	Neutral
Nant Morlais - source to confluence Afon Taf (GB109057033150)					
14010	48	Tributary of Nant Morlais, road drainage south of A465	Low	Negligible	Neutral
14460	49	Tributary of Nant Morlais, road drainage south of A465	Low	Negligible	Neutral
14550	50	Nant Morlais	Low	Minor adverse	Neutral
Taf - confluence Taf Fechan to confluence Afon Cynon (GB109057033100)					
15198	51	No watercourse – relict channel	N/A	Negligible	Neutral
15400	52	No watercourse – possibly culverted channel connecting reservoirs	N/A	Negligible	Neutral
15812	53	Flows into reservoir, then into Nant Morlais culvert	Low	Negligible	Neutral
16000	54	Tributary of Afon Taf	Low	Negligible	Neutral
Rhymney River - Source to confluence Nant Bargod Rhymni (GB109057033130)					
16800	55	Tributary of Nant Carno	Low	Negligible	Neutral
17210	56	Nant Carno	Medium	Negligible	Neutral
17210	57	Tributary of Nant Carno	Low	Negligible	Neutral
17300	58	Tributary of Nant Carno	Low	Negligible	Neutral

Appendix 17B – Detailed Description of Baseline Assessment

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
WF01, -50 Cammant <1 km^2	Hydrology and flood risk	This water feature rises in the Hirwaun industrial estate flowing south to north and is not modelled by NRW (Natural Resources Wales). Surface water flood maps indicate the industrial estate is at risk of flooding to a presumed unused grassy area to the north. The risk areas do not intersect with any residential properties or infrastructure.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD (Water Framework Directive) Status Poor. Surrounding land use: predominantly industrial and it is in close proximity to mining works. Potential pollution sources: unmanaged road drainage.	Low
	Dilution and removal of waste products	This water feature is of medium size and currently receives a maximum daily discharge of 2268 m^3 of sewage; however it is downstream of the scheme.	Medium
	Biodiversity	No designated fisheries.	Low
WF02, 950 Hirwaun Ponds 2.71 km^2	Hydrology and Flood Risk	This water feature flows south to north draining the Tower Colliery Mine discharging into Afon Cynon, it is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		heavily artificial in nature.	
	Water quality / supply	WFD Status Poor. Surrounding land use: predominantly industrial and received mine drainage from upstream. Potential pollution sources: unmanaged road and mine drainage.	Low
	Dilution and removal of waste products	This water feature is of medium size and currently receives a maximum daily discharge of 3.00 m^3 of mine waste; while upstream of the scheme the amounts of discharge are relatively low.	Low
	Biodiversity	Surrounding designated areas: Cors Bryn-y-Gaer SSSI (Site of Special Scientific Interest) / Blaen Cynon SSSI and SAC (Special Area of Conservation).	Very High
WF03, 1612 Tributary of Nant y Cnapiau <1 km^2	Hydrology and Flood Risk	This water feature flows south to north draining the Tower Colliery Mine, is culverted beneath the A465 and discharges into Afon Cynon, it is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: predominantly unused grassy area bordered by the A4059, A465 and Hirwaun Ponds mine drainage. Potential pollution sources: unmanaged road and mine drainage.	Low
	Dilution and removal of	This water feature does	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
	waste products	not currently receive any discharge or effluent.	
	Biodiversity	Surrounding designated areas: Cors Bryn-y-Gaer SSSI / Blaen Cynon SSSI and SAC.	Very High
WF04, 1750 Nant y Cnapiau 1 km^2	Hydrology and Flood Risk	This water feature flows south to north draining the Tower Colliery Mine discharging into Afon Cynon. This water feature is extensively culverted and it is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: predominantly unused grassy area between bordered by the A4059, A465 and Hirwaun Ponds mine drainage. Potential pollution sources: unmanaged road and mine drainage.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	Surrounding designated areas: Cors Bryn-y-Gaer SSSI / Blaen Cynon SSSI and SAC.	Very High
WF05, 1955 Tributary of Nant y Cnapiau <1 km^2	Hydrology and Flood Risk	This water feature flows south to north draining the Tower Colliery Mine discharging into Afon Cynon it is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		vertical migration and is heavily artificial in nature.	
	Water quality / supply	WFD Status Poor. Surrounding land use: predominantly industrial and mine drainage received from upstream. Potential pollution sources: unmanaged road and mine drainage.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	Surrounding designated areas: Cors Bryn-y-Gaer SSSI / Blaen Cynon SSSI and SAC.	Low
WF06, 2224 Tributary of Nant y Bwlch <1 km^2	Hydrology and Flood Risk	This water feature flows south to north and is assumed to drain the Tower Colliery Mine discharging into Nant y Bwlch south of the A465. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature was assessed as highly vulnerable due to significant active erosion and deposition as well as active migration of the channel.	Very High
	Water quality / supply	WFD Status Poor. Surrounding land use: predominantly industrial and mine drainage received from upstream. Potential pollution sources: unmanaged road and mine drainage.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF07, 2280 Tributary of	Hydrology and Flood Risk	This water feature flows	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
Nant y Bwlch <1 km^2		south to north and is assumed to drain the Tower Colliery Mine discharging into Nant y Bwlch currently it flows into Nant y Bwlch south of the A465. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: predominantly industrial and mine drainage received from upstream. Potential pollution sources: unmanaged road and mine drainage.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF08, 2320 Nant y Bwlch 1.86 km^2	Hydrology and Flood Risk	This water feature flows south to north and is currently culverted beneath the A465. The current culvert is undersized and poses flood risk to 195 properties.	Very High
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: predominantly industrial and mine drainage received from upstream. Potential pollution sources: unmanaged road and mine drainage.	Low
	Dilution and removal of	This water feature does	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
	waste products	not currently receive any discharge or effluent.	
	Biodiversity	No designated land.	Low
WF09, 2330 Tributary of Nant y Bwlch <1 km^2	Hydrology and Flood Risk	This water feature flows south to north and is assumed to drain the Tower Colliery Mine discharging into Nant y Bwlch it is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: predominantly industrial and mine drainage received from upstream. Potential pollution sources: unmanaged road and mine drainage.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF10, 2770 Tributary of Afon Cynon <1 km^2	Hydrology and Flood Risk	This water feature flows south to north and is culverted beneath the A465. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: Sparse residential and agricultural. Potential pollution sources: unmanaged road drainage, agricultural	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		pollution including pesticides, nutrients and fertilisers.	
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF11, 3288 Tributary of Afon Cynon <1 km^2	Hydrology and Flood Risk	This water feature is culverted beneath the A465 / A4059 junction flowing south to north. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: Sparse residential and agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF12, 3594 Tributary of Afon Cynon <1 km^2	Hydrology and Flood Risk	This water feature flows south to north and is culverted beneath the A465 befor discharging into Afon Cynon. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use:	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		Sparse residential and agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF13, 3830 Tributary of Afon Cynon <1 km^2	Hydrology and Flood Risk	This water feature is culverted beneath a minor road south of the A465 but does not cross the scheme. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: Sparse residential and agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF14, 3882 Afon Cynon 28.85 km^2	Hydrology and Flood Risk	This water feature is modelled by NRW and is considered to pose flood risk to approximately 100-150 properties upstream of the bridge. It acts as a flood throttle, possibly providing some alleviation to properties downstream of this point. Because of	Very High

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		this the water feature is considered extremely vulnerable to change with vulnerable receptors upstream and downstream of the crossing with the A465.	
	Fluvial geomorphology	This water feature is moderately vulnerable to change primarily due to its size and natural banks.	Medium
	Water quality / supply	WFD Status Poor. Surrounding land use: Sparse residential and agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF15, 3945 Tributary of Afon Cynon <1 km^2	Hydrology and Flood Risk	This water feature flows north to south and is culverted beneath the A465 before flowing into Afon Cynon. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: Sparse residential and agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF16, 4131 Tributary of Afon Cynon <1 km^2	Hydrology and Flood Risk	This water feature flows north to south and is culverted beneath the A465 before flowing into Afon Cynon. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: Sparse residential and agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF17, 4224 Tributary of Afon Cynon <1 km^2	Hydrology and Flood Risk	This water feature is an ordinary watercourse flowing north to south culverted under the A465 but is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk. This water feature is identified as ephemeral.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: Sparse residential and	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF18, 4491 Tributary of Nant Hir <1 km^2	Hydrology and Flood Risk	This water feature is culverted beneath the A465 and is not modelled by NRW there are no residential properties or infrastructure shown to be at risk. This water feature acts as a drainage channel, the current capacity of the culvert is a two year event, surface water maps reflect the likelihood of the culvert backing up, however there are no risk receptors upstream of the culvert.	Low
	Fluvial geomorphology	This water feature is a drainage channel with minimal variation in morphology and restricted vertical and lateral migration.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: Nearby residential and railway. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF19, 4250 Tributary of	Hydrology and Flood Risk	This water feature is flows north to south from the	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
Nant y Bwlch <1 km^2		railway away from the A465, it is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: Nearby residential and railway. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF20, 4824 Tributary of Nant Hir <1 km^2	Hydrology and Flood Risk	This water feature acts as a drainage channel and is culverted beneath the A465. It is not modelled by the EA no residential properties or infrastructure are considered to be at risk.	Low
	Fluvial geomorphology	This water feature is realigned alongside the road acting as drainage. Its lateral and vertical migration is restricted and is minimally vulnerable to change.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: Predominantly agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF21, 5021 Tributary of Nant Hir <1 km^2	Hydrology and Flood Risk	This water feature flows north to south away from the A465. it is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: Predominantly agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF22, 5440 Nant Melyn 3.91 km^2	Hydrology and Flood Risk	This water feature flows north to south from the Nant Moel Reservoir, it is considered to be at risk from reservoir flooding and 300 m south of the A465 there are approximately six residential properties at risk.	High
	Fluvial geomorphology	This water feature is considered vulnerable to change as it does exhibit some lateral migration across the floodplain, however it incises into bedrock lacking sediment and so is not considered “very high”	High

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
	Water quality / supply	WFD Status Poor. Surrounding land use: Predominantly agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF23, 5969 Tributary of Nant Hir <1 km^2	Hydrology and Flood Risk	This water feature flows north to south and is culverted beneath the A465 (5969CP). The current provision has the capacity to pass a ten to 25 year event. At this point the road is incised so overtopping is likely during any events of higher magnitude than a 25 year event. There are no residential or industrial properties at risk.	Very High
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: Predominantly agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature received maximum 1 m^3 of domestic effluent per day; however it is downstream of the scheme.	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
	Biodiversity	Surrounding designated areas: Tir Mawr a Dderi Hir SSSI and SAC.	Very High
WF24, 6500 Tributary of Nant Hir <1 km^2	Hydrology and Flood Risk	This water feature flows north to south into Nant Hir downstream of the reservoir and is geotextile lined. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: Predominantly agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF25, 6690 Nant Hir Reservoir 1.58 km^2	Hydrology and Flood Risk	This water feature is a reservoir that spans the A465, it is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk. However the area to the south of the reservoirs is at risk from reservoir flooding.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: Predominantly agricultural.	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF26, 6980 Tributary of Nant Hir <1 km^2	Hydrology and Flood Risk	This water feature flows north to south away from the A465. During the site visit it was dry and overgrown, it is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: Predominantly agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF27, 7080 Tributary of Nant Hir <1 km^2	Hydrology and Flood Risk	This water feature is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use:	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		Predominantly agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	
	Dilution and removal of waste products	This water feature receives 22.37 m^3 of Package Treatment Plant (PTP) effluent from a hospital per day and an additional 0.5 m^3 from an industrial estate, it is discharged upstream of the scheme.	Medium
	Biodiversity	No designated land.	Low
WF28, 7448 Tributary of Nant y Gwyddel <1 km^2	Hydrology and Flood Risk	This water course flows north to south and is culverted (7448CE) beneath the A465, the current provision is between a two and five year event. While the A465 is not at risk due to being raised, there is a crematorium downstream that should be considered during impact assessment.	Medium
	Fluvial geomorphology	This water feature is sinuous and exhibits some lateral migration and is moderately vulnerable to change.	Medium
	Water quality / supply	WFD Status Poor. Surrounding land use: Predominantly agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature receives 22.37 m^3 of PTP effluent from a hospital per day and an additional	Medium

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		0.5 m^3 from an industrial estate, it is discharged upstream of the scheme.	
	Biodiversity	No designated land.	Very High
WF29, 7548 Tributary of Nant y Gwyddel <1 km^2	Hydrology and Flood Risk	This water feature flows north to south and is culverted (7548CE) beneath the A465. The culvert is capable of conveying a 100 year event. Downstream of this water feature there is a crematorium in close proximity to the channel.	Medium
	Fluvial geomorphology	This water feature is sinuous and exhibits some lateral migration and is moderately vulnerable to change.	Medium
	Water quality / supply	WFD Status Poor. Surrounding land use: Predominantly agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	Surrounding designated areas: Bryncarnau Grasslands SSSI.	Very High
WF30, 7770 Tributary of Nant y Gwyddel <1 km^2	Hydrology and Flood Risk	This water feature flows North to south away from the A465. It is culverted beneath a minor road to the south of the A465. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
	Water quality / supply	WFD Status Poor. Surrounding land use: Predominantly agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	Surrounding designated areas: Bryncarnau Grasslands SSSI.	Very High
WF31, 8038 Tributary of Nant y Gwyddel <1 km^2	Hydrology and Flood Risk	This water feature flows North to south away from the A465. It is culverted beneath a minor road to the south of the A465. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Poor. Surrounding land use: Predominantly agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF32, 8760 Nant y Gwyddel 1.58 km^2	Hydrology and Flood Risk	This water feature flows North to south away from the A465. It is culverted beneath a minor road to the south of the A465. It is	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	
	Fluvial geomorphology	This water feature is meandering within a straight channel and is deemed moderately vulnerable to change.	Medium
	Water quality / supply	WFD Status Poor. Surrounding land use: Predominantly agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Low
	Dilution and removal of waste products	This water feature receives 4.6 m^3 of effluent per day from a manufacturing plant, the discharge point is significantly far downstream of the scheme.	Low
	Biodiversity	Surrounding designated areas: Bryncarnau Grasslands SSSI.	Very High
WF33, 9290 Tributary of Nant Ffrwd <1 km^2	Hydrology and Flood Risk	This water feature flows south to north away from the A465, a desk based survey suggests that this water feature is a field drain. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Moderate. Surrounding land use: Predominantly agricultural. Potential pollution	Medium

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF34, 9303 Tributary of Nant Ffrwd <1 km^2	Hydrology and Flood Risk	This water feature flows south to north away from the A465, it is culverted (9303CP) beneath the highway with capacity to carry a 100y CC flow. There is a farm property (Ty'n-y-Coedcae) to the north of the A465 crossing shown to be at surface water flood risk.	High
	Fluvial geomorphology	This water feature is laterally migrating / incising and exhibits some sinuosity, it is deemed moderately vulnerable to change.	Medium
	Water quality / supply	WFD Status Moderate. Surrounding land use: Predominantly agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Medium
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF35, 9640 Tributary of Nant Ffrwd <1 km^2	Hydrology and Flood Risk	This water feature flows south to north and is culverted beneath the A465. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
	Fluvial geomorphology	This water feature is laterally migrating / incising and exhibits some sinuosity, it is deemed moderately vulnerable to change.	Medium
	Water quality / supply	WFD Status Moderate. Surrounding land use: Predominantly agricultural, some sparse residential. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Medium
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF36, 9933 Tributary of Nant Ffrwd <1 km^2	Hydrology and Flood Risk	This water feature flows south to north and is culverted beneath the A465. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature is highly urbanised, however exhibits some incising behaviour and so is deemed moderately vulnerable to change.	Medium
	Water quality / supply	WFD Status Moderate. Surrounding land use: Predominantly agricultural, some sparse residential. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Medium
	Dilution and removal of waste products	This water feature does not currently receive any	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		discharge or effluent.	
	Biodiversity	No designated land.	Low
WF37, 10124 Tributary of Nant Ffrwd <1 km^2	Hydrology and Flood Risk	This water feature flows south to north and is culverted beneath the A465. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Moderate. Surrounding land use: Predominantly agricultural, some sparse residential. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Medium
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF38, 10310 Nant Ffrwd 4 km^2	Hydrology and Flood Risk	This water feature flows north to south crossing the A465 under a bridge. The EA flood modelling does not consider any properties or infrastructure to be at risk.	Low
	Fluvial geomorphology	This water feature meanders and is incising, deemed moderately vulnerable to change.	Medium
	Water quality / supply	WFD Status Moderate. Surrounding land use: Predominantly agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including	Medium

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		pesticides, nutrients and fertilisers.	
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF39, 10290 Tributary of Nant Ffrwd <1 km^2	Hydrology and Flood Risk	This water feature flows south to north and is culverted beneath the current A465. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Moderate. Surrounding land use: Predominantly agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Medium
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF40, 10670 Tributary of Nant Ffrwd <1 km^2	Hydrology and Flood Risk	This water feature is culverted beneath the current A465. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Moderate. Surrounding land use: Town of Cefn-coed-y-cymmer.	Medium

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		Potential pollution sources: unmanaged road drainage.	
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Medium
	Biodiversity	No designated land.	Low
WF41, 10850 Taf Fawr 60.62 km^2	Hydrology and Flood Risk	This water feature flows north to south crossing the A465 under the Afon Taf Fawr Viaduct. NRW flood maps do not consider any property or infrastructure to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Moderate. Surrounding land use: Town of Cefn-coed-y-cymmer. Potential pollution sources: unmanaged road drainage.	Medium
	Dilution and removal of waste products	This water feature receives a maximum of 1.2 m^3 of effluent from a domestic property per day, the discharge point is downstream of the scheme.	Low
	Biodiversity	No designated land.	High
WF42, 11482 Taf Fechan 48.71 km^2	Hydrology and Flood Risk	This water feature flows north to south crossing the A465 under the Cwm Taf Fechan Viaduct. NRW flood maps do not consider any property or infrastructure to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Moderate. Surrounding land use: Town of Cefn-coed-y-	Medium

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		cymmer. Potential pollution sources: unmanaged road drainage.	
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	Surrounding designated areas: Cwm Taf Fechan Woodlands SSSI.	Very High
WF43, 11510 Taf Fechan mill leat <1 km^2	Hydrology and Flood Risk	This water feature flows north to south crossing the A465 under the Cwm Taf Fechan Viaduct. NRW flood maps do not consider any property or infrastructure to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Moderate. Surrounding land use: Town of Cefn-coed-y-cymmer. Potential pollution sources: unmanaged road drainage.	Medium
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	Surrounding designated areas: Cwm Taf Fechan Woodlands SSSI.	Very High
WF44, 12550 Piped outfall, road drainage <1 km^2	Hydrology and Flood Risk	This water feature is a piped outfall from the A465 and as such is not subject to fluvial flood risk. There are no properties or infrastructure considered to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Moderate. Surrounding land use:	Medium

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		Sparse residential and agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF45, 12545 – 12830 Tributary of Taf Fechan <1 km^2	Hydrology and Flood Risk	This water feature flows east to west and does not cross the A465. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Moderate. Surrounding land use: Sparse residential and agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Medium
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF46, 13200 Tributary of Taf Fechan <1 km^2	Hydrology and Flood Risk	This water feature flows north to south crossing the A465 via a culvert. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
	Water quality / supply	WFD Status Moderate. Surrounding land use: Agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Medium
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF47, 13340 Tributary of Taf Fechan <1 km^2	Hydrology and Flood Risk	This water feature flows south to north away from the A46, it is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Moderate. Surrounding land use: Agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	Medium
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF48, 14010 Tributary of Nant Morlais <1 km^2	Hydrology and Flood Risk	This water feature flows alongside Rocky Road to the north of the A465 as road drainage. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		heavily artificial in nature.	
	Water quality / supply	WFD Status Moderate. Surrounding land use: Forest and Rocky Road. Potential pollution sources: unmanaged road drainage.	Medium
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF49, 14460 Tributary of Nant Morlais <1 km^2	Hydrology and Flood Risk	This water feature flows alongside Rocky Road to the north of the A465 as road drainage. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Moderate. Surrounding land use: Forest and Rocky Road. Potential pollution sources: unmanaged road drainage.	Medium
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF50, 14550 Nant Morlais 2.62 km^2	Hydrology and Flood Risk	This water feature flows north to south on the north side of the A465. NRW modelling suggests that less than ten residential properties are shown to be at low risk and significant out of bank flow is likely during storm events.	High
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
	Water quality / supply	WFD Status Moderate. Surrounding land use: Public Park. Potential pollution sources: unmanaged road drainage.	Medium
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF51, 15198 No watercourse <1 km^2	Hydrology and Flood Risk	This water feature is a relict channel and is not modelled by NRW therefore there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Moderate. Surrounding land use: Reservoir. Potential pollution sources: unmanaged road drainage.	Medium
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF52, 15332 No watercourse <1 km^2	Hydrology and Flood Risk	This water feature is a culverted connection between two reservoirs, it is not modelled by NRW therefore there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Moderate. Surrounding land use: Reservoir. Potential pollution	Medium

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		sources: unmanaged road drainage.	
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF53, 15812 Inflow to Upper Penywern Pond <1 km^2	Hydrology and Flood Risk	This water feature flows in the Upper Pennywern Pond and then into the Nant Morlais culvert. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Moderate. Surrounding land use: Roads. Potential pollution sources: unmanaged road drainage.	Medium
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF54, 16100 Tributary of Taff <1 km^2	Hydrology and Flood Risk	This water feature flows from north to south away from the A465. It is not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Moderate. Surrounding land use: Sparse residential. Potential pollution sources: unmanaged road drainage.	Medium
	Dilution and removal of waste products	This water feature does not currently receive any	Low

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		discharge or effluent.	
	Biodiversity	No designated land.	Low
WF55, 16800 Tributary of Nant Carno <1 km^2	Hydrology and Flood Risk	This water feature flows predominantly parallel to the A465, It is artificial and not modelled by NRW and there are no residential properties or infrastructure shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Good. Surrounding land use: Agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	High
	Dilution and removal of waste products	This water feature receives a maximum of 0.5 m^3 of effluent from a domestic property per day at a point upstream of the scheme.	Low
	Biodiversity	No designated land.	Low
WF56, 17210A Nant Carno <1 km^2	Hydrology and Flood Risk	This water feature flows in a southerly direction before meeting water feature 57 and being culverted beneath the A465. The A465 at this point is significantly raised and no properties are considered to be at risk.	Low
	Fluvial geomorphology	This water feature is laterally migrating and meandering and is deemed moderately vulnerable to change.	Medium
	Water quality / supply	WFD Status Good. Surrounding land use: Agricultural. Potential pollution sources: unmanaged road	High

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		drainage, agricultural pollution including pesticides, nutrients and fertilisers.	
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF57, 17210B Tributary of Nant Carno <1 km^2	Hydrology and Flood Risk	This water feature flows in a southerly direction before meeting water feature 56 and being culverted beneath the A465. The A465 at this point is significantly raised and no properties are considered to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Good. Surrounding land use: Agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	High
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
WF58, 17300 Tributary of Nant Carno <1 km^2	Hydrology and Flood Risk	This water feature flows north to south away from the A465 on the south side. It is not modelled by NRW and no properties or infrastructure is shown to be at risk.	Low
	Fluvial geomorphology	This water feature has restricted lateral and vertical migration and is heavily artificial in nature.	Low
	Water quality / supply	WFD Status Good. Surrounding land use:	High

Water feature (WF) chainage / name / area	Attribute	Indicator of quality	Importance
		Agricultural. Potential pollution sources: unmanaged road drainage, agricultural pollution including pesticides, nutrients and fertilisers.	
	Dilution and removal of waste products	This water feature does not currently receive any discharge or effluent.	Low
	Biodiversity	No designated land.	Low
Nant Hir Reservoir	Biodiversity	Good ecological potential	High
	Water Quality	Emergency resource for public water extraction.	Very high
Penywern Ponds	Recreation	Ponds used for recreational angling.	Medium
Groundwater Aquifers	Water Supply / Quality	There are no source protection zones beneath or within 500 m of the proposed scheme. The sections that pass over the Principal Aquifer are classed as ‘Major Aquifer High’.	Very High

Appendix 17C – Surface Water Quality Monitoring Report

See following page

Page left intentionally blank.

Welsh Government

A465 Heads of the Valleys Dualling - Sections 5 and 6 Dowlais Top to Hirwaun

Surface Water Quality Monitoring Report

| Final

7 October 2015

Contents

Executive Summary **2**
1. Introduction **3**
2. Methodology **4**
2.1 Surface water monitoring locations 4
2.2 Surface water monitoring parameters 6
2.3 Field survey method 6
3. Results **8**
3.1 In-situ monitoring 8
3.2 Channel observations 9
3.3 Sampling results 10
4. Discussion **15**
4.1 In-situ parameters and general inorganics 15
4.1.1 Temperature 15
4.1.2 pH 15
4.1.3 Dissolved Oxygen 15
4.1.4 Electrical conductivity 16
4.1.5 Redox Potential 16
4.1.6 Turbidity and suspended solids 16
4.1.7 Sulphide 17
4.1.8 Chloride 17
4.1.9 Dissolved Organic Carbon 17
4.1.10 Hardness ($CaCO_3$) 17
4.2 Polycyclic Aromatic Hydrocarbons (PAHs) 18
4.3 Metals 18
4.3.1 Copper 19
4.3.2 Mercury 19
4.3.3 Nickel 20
4.3.4 Zinc 20
4.3.5 Calcium & Magnesium 20
4.4 Petroleum Hydrocarbons 21
5. Conclusions **22**
5.1 Impacts of mining activities 22
5.2 Impact of the A465 22

Annex A. Mapped monitoring locations
Annex B. In-situ monitoring data
Annex C. Full laboratory results
Annex D. Relevant environmental standards

Executive Summary

Jacobs have been commissioned to undertake baseline water quality monitoring to inform the Environmental Impact Assessment (EIA) of the proposed improvements to the A465 Heads of the Valleys Road (Sections 5 and 6). The aim of the monitoring was to gain a greater understanding of the physiochemical quality of surface watercourses that have the potential to be impacted by the proposed scheme. The study area is focussed on the sections of the proposed scheme between Hirwaun in the west through to the junction of the A465 and A4060 just north east of Merthyr Tydfil as shown in Annex A.

This report records the methodology used for the baseline water quality monitoring programme and presents the results of the four monitoring rounds.

A total of 44 locations across the area of proposed works were monitored for water quality using in-situ field measurements and observations. Of these, 25 locations were also subject to water sampling and laboratory analysis. Sampling locations were located on watercourses that were assessed to be significant in terms of size; the location of sensitive downstream receptors (such as abstractions or Sites of Special Scientific Interest; or were downstream of potential contamination from historic land uses.

No grossly contaminated watercourses have been identified as a result of the monitoring undertaken to date, however the results do suggest that both the existing A465 and historical mining activities are having an adverse impact on water quality.

It should be noted that further monitoring will probably be required to prior to, during and following the proposed road widening scheme to further establish the baseline conditions and to ensure that the road widening works are not impacting significantly upon water quality in the study area. Increased monitoring should be undertaken at locations downstream of historic and current mining activities and any existing or proposed drainage outfall. This monitoring should be informed by the conclusions of the Environmental Statement that will need to be prepared in support of the proposals.

1. Introduction

Jacobs were commissioned to undertake baseline water quality monitoring to inform the environmental impact assessment of proposed improvements to the A465 Heads of the Valleys Road (Sections 5 and 6). The aim of the monitoring was to gain a greater understanding of the physiochemical quality of surface watercourses that have the potential to be impacted by the proposed development. The study area is focussed on the section of the proposed scheme between Hirwaun in the west through to the junction of the A465 and A4060 just north east of Merthyr Tydfil as shown in Annex A.

The route of the A465, as its local name suggests, cuts across the heads of the numerous valleys which drain the Brecon Beacons National Park to the north. As such, there are a significant number of surface watercourses that have the potential to be impacted by the proposed development including the Afon Cynon, Afon Taf Fawr, Taf Fechan, Nant Morlais and their tributaries. The convergence of these watercourses downstream, to form the Afon Taf, means that there is potential for significant cumulative impacts to occur downstream resulting from relatively minor impacts along the length of the development. Therefore, an understanding of the baseline situation is considered essential to assessing the sensitivity of these watercourses and the potential significance of any impacts resulting from the development both to individual watercourses and to the wider Taf catchment.

This report records the methodology used for the baseline water quality monitoring programme and presents the results of the four monitoring rounds. The first two monitoring rounds were carried out in February and March 2015 (winter monitoring round); the 3rd and 4th monitoring rounds (summer monitoring) were carried out in July and September 2015.

2. Methodology

2.1 Surface water monitoring locations

With a large number of watercourses within the vicinity of the proposed works, the need to gather as much data as possible on the quality of watercourses across the study area had to be balanced against the need for a pragmatic and economical approach. Therefore, the monitoring methodology was developed following a desk based study to identify all watercourses along the route and to identify their relative importance, sensitivity and level of potential risk from the proposals. This desk based study used the following sources of information:

- Design proposals of A465 widening Sections 5 and 6;
- Ordnance Survey Mapping;
- A465 Abergavenny to Hirwaun Dualling (Heads of the Valleys Road) Environmental Statement, 1997[1];
- Mapping of geological features and contaminated land[2];
- Natural Resources Wales (NRW) River Basin Management Plans - Rivers[3];
- Countryside Council for Wales (CCW) Protected Sites and Landscapes map[4]; and
- Consultation with Rhondda Cynon Taf and Merthyr Tydfil County Borough Councils.

Site access permission across the entire study area had not been achieved at the beginning of the study, and therefore the desk study also considered the access agreements as well as health and safety considerations.

Following the desk study, monitoring locations identified were then visited during a site walkover study (24th February 2015) to confirm the findings of the desk study. As a result of the site walkover visit, some proposed locations were deemed to be un-necessary whilst some additional locations were considered to offer useful information. Therefore, the location ID numbers do not always run sequentially and start at -1 rather than 1. Following the desk study and walkover, a total of 25 primary monitoring locations were identified at which samples for laboratory analysis was retrieved in addition to in-situ field testing for key physiochemical water quality parameters. Sampling locations were determined as those with the following characteristics:

- Larger named watercourses and reservoirs, including those assessed for Water Framework Directive (WFD) classification;
- Locations downstream of mining areas that may be disturbed by road scheme earthworks, or other potentially contaminating land uses such as industrial estates;
- Locations upstream of, or within, a Site of Special Scientific Interest (SSSI); and
- Locations upstream of private or public water supplies.

In addition to these sampling locations, a further nineteen locations were identified that would be subject to in-situ field testing for key physiochemical water quality parameters only. These locations typically had the following characteristics:

- Minor and potentially ephemeral watercourses;
- Tributaries of larger watercourses that were targeted by primary monitoring locations.

All monitoring locations are listed in Table 1 below, including the National Grid Reference (NGR), watercourse description, and whether sampling was undertaken. These monitoring locations are shown in Annex A.

1 Welsh Office Highways Directorate, A465 Abergavenny to Hirwaun Dualling (Heads of the Valleys Road), Environmental Statement, 1997
2 Jacobs, A465 Heads of the Valleys Dualling Section 5 and 6, Figure 10.3a: Geological Features and Contaminated Land, 2014
3 Natural Resources Wales (hosted by Environment Agency), Water framework Directive – 2009 – River Basin management plans –Rivers Map, "What's in your backyard", Available online at <http://maps.environment-agency.gov.uk/wiyby/> Accessed February 2015
4 Countryside Council for Wales, Landscape & Wildlife, Protected Sites and Landscapes Map; Available online at <http://www.ccw.gov.uk/landscape--wildlife/protecting-our-landscape/protected-sites-map.aspx?lang=en> Accessed February 2015

Table 1 Surface Water monitoring locations

ID	NGR	Watercourse	In-situ	Sample	Note
SW-1	SN9339806840	Unnamed trib. of Sychryd (DS of confluence)	Yes	Yes	-
SW0	SN9505605677	Assumed outfall of Hirwaun Ponds through SSSI	Yes	Yes	Mining & SSSI
SW1	SN9505605724	Assumed outfall of Hirwaun Ponds through SSSI	Yes	Yes	Mining & SSSI
SW2	SN9514205914	Small watercourse originating from spring on SSSI	Yes	No	SSSI
SW3	SN9481005439	Nant y Cnapiau	Yes	Yes	Mining
SW4	SN9536205258	Unnamed trib. of Nant y Bwlch	Yes	Yes	Mining
SW5	SN9539805224	Nant y Bwlch (upstream of confluence)	Yes	Yes	Mining
SW7	SN9586005110	Unnamed trib. (at school)	Yes	No	-
SW8	SN9625005160	Unnamed trib. (beneath roundabout)	Yes	Yes	-
SW9	SN9650305270	Unnamed trib. (beneath A4059)	Yes	No	-
SW9.1	SN9672705249	Unnamed trib. Of Afon Cynon	Yes	No	-
SW9.2	SN9672305260	Small ditch through field parallel to A465	Yes	No	-
SW10	SN9687205262	Afon Cynon	Yes	Yes	Main river
SW11	SN9708605313	Very small trib of Afon Cynon, flows through baths	Yes	No	-
SW12	SN9702905304	Unnamed Trib. @ confluence	Yes	Yes	-
SW13	SN9723005291	Unnamed Trib. of Afon Cynon. South of A465.	Yes	No	-
SW14	SN9776305599	Unnamed trib of Nant Moel	Yes	Yes	-
SW14.1	SN9774905627	Larger upstream inflow to tributary	Yes	No	-
SW14.2	SN9776005630	Smaller upstream inflow to tributary	Yes	No	-
SW15	SN9792605758	Nant Melyn / Moel	Yes	Yes	-
SW16	SN9834106546	Unnamed field drain through SSSI	Yes	Yes	SSSI
SW17	SN9887806827	Nant-hir Reservoir	Yes	Yes	Reservoir
SW18	SN9914106666	Unnamed trib. Of Nant-Hit	Yes	Yes	-
SW19	SN9965306835	Field drain from Factory	Yes	No	-
SW20	SN9966706836	Field drain from Factory	Yes	No	-
SW21	SN9966006815	Confluence of field drains from factory	Yes	Yes	SSSI
SW21.1	SN9961906790	Small ditch originating at spring near A465	Yes	No	-
SW22	SN9999006913	Unnamed trib. Of Nant y Gwyddel	Yes	No	SSSI
SW23	SO0024007103	Nant y Gwyddel (upper reaches)	Yes	Yes	SSSI
SW25	SO0145407308	Very small trib. of Nant Ffwd	Yes	Yes	PWS
SW26	SO0177407313	Very small trib. of Nant Ffwd	Yes	No	-
SW27	SO0224207454	Very small trib. of Nant Ffwd	Yes	Yes	-
SW27.1	SO0245407518	Very small trib. of Nant Ffwd	Yes	No	-
SW30	SO0299107672	Nant Ffwd (DS of slip road crossing)	Yes	Yes	-
SW32	SO0298007702	Afon Taf Fawr	Yes	Yes	Main river
SW33	SO0347407965	Cwm Taf Fechan (DS of A465)	Yes	Yes	Main river & SSSI
SW34	SO0358007848	Cwm Taf Fechan Leat - feeding lake	Yes	No	-
SW35	SO0412608611	Very small trib. of Taf Fechan, runs parallel	Yes	Yes	-
SW35.1	SO0413108612	Small field drain from Gurnos Farm	Yes	No	-
SW35.2	SO0413108610	Culvert inflow from road - likely road drainage	Yes	No	-
SW36	SO0498408637	Small trib. of Afon Taf origin at Bryniau Quarries	Yes	Yes	Mining
SW39	SO0605408190	Nant Morlais (western branch at confluence)	Yes	No	-
SW40	SO0726908484	Dowlais Top Northern Reservoir	Yes	Yes	Reservoir
SW41	SO0724808222	Dowlais Top Reservoir (southern)	Yes	Yes	Reservoir

2.2 Surface water monitoring parameters

The water quality parameters that were determined at each location were those considered likely to be associated with the impacts of road drainage as set out in the Design Manual for Roads and Bridges (DMRB)[5] and pollutants associated with the identified potentially contaminating land uses within the study area. The physiochemical parameters include metals, Polycyclic Aromatic Hydrocarbons (PAHs) and other non-metal analytes. A full list of the determinants is provided in Table 2.

Table 2 Surface Water quality parameters recorded

Physiochemical parameters determined by field measurement in-situ	Physiochemical parameters and specific pollutants to be identified by laboratory analysis		
	Metals (dissolved & total)	PAH Suite	Other
Temperature	Copper	Total Fluoranthene	Hardness ($CaCO_3$)
pH	Zinc	Total Pyrene	Suspended solids
Conductivity	Cadmium	Total Anthracene	Dissolved Organic Carbon (DOC)
Dissolved oxygen	Lead	Total Phenanthrene	pH
Turbidity	Nickel	Benzo(a)pyrene	Chloride (Cl^-)
Visual sheen check	Mercury	Total PAHs (total)	Total Petroleum Hydrocarbon (TPH)
	Chromium (+ hexavalent)		Sulphide (S^{2-})
	Arsenic		
	Selenium		

2.3 Field survey method

Four monitoring visits have been undertaken, the first two were undertaken during the winter months and the second two undertaken in the summer. The water quality monitoring was undertaken on these dates to check for any seasonable variation in physiochemical parameters due to flow and temperature fluctuations. The dates of the water quality monitoring, the sampling locations visited, and weather conditions on each day of monitoring are summarised in Table 3.

During the first two rounds, monitoring locations were visited from west to east. For the second and third rounds monitoring began at SW23 and moving west to SW-1, before doubling back to SW25 and going east. The monitoring pattern was switched so that Nant Hir Reservoir could be monitored, which required the presence of a Welsh Water representative for access.

Samples were collected in containers provided by the laboratory (I2 Analytical) direct from the watercourse or, where access was restricted, by a plastic bucket. Field measurements were recorded using the following equipment:

- Hanna HI991300 pH/EC/temperature meter;
- Hanna HI93703 Portable Microprocessor Turbidity meter;
- Hanna Oxidation Reduction Potential HI98120 meter;
- Hanna, HI9146 Microprocessor Dissolved Oxygen Meter.

Observations were made of:

- Visual/olfactory evidence of contamination;

5 Design manual for roads and bridges HD 45/09 Volume 11 section 3 part 10 (2009)

- Channel dimensions based on approximate width and depth; and
- Estimated velocity.

Table 3 Summary of monitoring visits

Round	Date	Locations monitored	Weather and flow conditions	Notes
1	25/02/15	SW-1 to SW26	Dry but overcast with light wind. Temperature 5 - 10 °C. Previous week was wet resulting in relatively high flows.	No access to Nant Hir Reservoir, sample taken at SW17.2[6] on river below outfall
	26/02/15	SW27 to SW41	Heavy and persistent rain falling throughout the morning clearing towards the afternoon. Temperature between 5 and 10 °C. Previous week was wet with relatively high flows.	
2	10/03/15	SW-1 to SW27.1	Dry and bright with light winds. Early frost before warming to approx. 15°C during the day. Dry previous week resulting in relatively low flows.	Access to Nant Hir reservoir obtained (SW17.1)
	11/03/15	SW30 to SW41	Dry but overcast with light wind. Temperature between 5 and 10 °C. Dry previous week with light shower previous night. Relatively low flows.	
3	28/07/15	SW-1 to SW27.1	Warm and overcast, with a light shower in the afternoon around 4 pm. Temperature between 15 and 20°C. Previous two weeks were wet, with showers the previous events. Moderately low flows.	No access to SW9, SW11 or SW13 as unable to contact landowners.
	29/07/15	SW30 to SW41	Dry for the majority of the day, with some very light showers through the morning. Heavy rain the previous night, and wet over the previous fortnight. Moderately low flows.	
4	10/09/15	SW-1 to SW 27.1	Dry all day with mostly clear skies, hot in the afternoon with temperatures reaching 25°C. Dry previous week resulting in low flows.	Unable to access SW9. SW16 was not monitored due to H&S concerns.
	11/09/15	SW30 to SW41	Overcast and colder, with temperatures of between 15 – 20°C. No rain, however humid. Dry previous week resulting in low flows.	

6 SW17.2 on Nant Hir outfall, monitoring undertaken at approximately NGR SN98770 06312

3. Results

3.1 In-situ monitoring

The results of the in-situ field measurements from round one to four are presented in full in Annex B and are summarised in Table 4 to Table 7 below.

Results that are considered to be potentially anomalous are highlighted in orange on the collated results in Annex B whilst known errors with field equipment are highlighted in yellow.

Table 4 In-situ field results from round one

Parameter	Min	Max	Mean	Notes
pH	6.05	7.95	7.10	
EC (µS)	51	1164	303.7	
Temperature (°C)	5.3	19	9.1	SW30 – SW41 recorded temperatures more than twice as warm as in other locations indicating potentially anomalous results
Turbidity (NTU)	0.0	265	15.8	SW0 and SW2 recorded results an order of magnitude greater than other results but weren't observed to be unusually turbid indicating a potentially anomalous result. Damage to sample containers in transit meant that a Suspended solids result was not available for SW0 and no sampling was undertaken for SW2.
Redox (mV)	1.2	621	156.8	Lowest values at SW5 and SW9.1, no negative values.
Dissolved Oxygen (%)	84.5	107.1	98.1	Very high values; correspond to observed white water conditions.

Table 5 In-situ field results from round two

Parameter	Min	Max	Mean	Notes
pH	6.81	8.84	7.82	
EC (µS)	49	1106	293.9	Highest value at SW4.
Temperature (°C)	4.1	11.2	6.9	
Turbidity (NTU)	0.0	25.0	5.2	Problems were encountered with the turbidity meter therefore results could not be collected from SW0 – SW5 and SW8 – SW10 this round.
Redox (mV)	-4	146	94.6	Negative value at SW5, all others positive.
Dissolved Oxygen (%)	76.5	110.6	94.9	

Table 6 In-situ field results from round three

Parameter	Min	Max	Mean	Notes
pH	5.80	8.67	7.90	
EC (µS)	81	1924	336.4	Highest value at SW4, SW1 conductivity was 1024.
Temperature (°C)	10.9	15.7	13.1	
Turbidity (NTU)	0.0	7.25	0.58	Problems were encountered with the turbidity meter; results could not be collected from SW30 – SW41.
Redox (mV)	88	193	121.4	All values positive, however no value was recorded at SW5 due to user error.
Dissolved Oxygen (%)	3.5	90.5	12.9	Very low values including for large watercourses which were observed to be free flowing, potentially an issue with the equipment.

Table 7 In-situ field results from round four

Parameter	Min	Max	Mean	Notes
pH	5.83	8.58	7.82	
EC (µS)	67	1878	394.9	Highest value at SW4, exceeded 1000 at SW1 and SW3
Temperature (°C)	11.1	17.8	13.7	
Turbidity (NTU)	0.0	172.0	40.5	Exceeded 100 NTU at SW35.1, SW35.2 and SW26. SW35.1 and SW35.2 were observed to be dark and cloudy, while SW26 was observed to have a lot of little and soil within the pools of water measured. Considered to be accurate results.
Redox (mV)	-12	162	125.0	Negative value at SW22, all other results positive.
Dissolved Oxygen (%)	64.2	64.2	64.2	Problems encountered with the Dissolved Oxygen meter resulting in no results for all sites except SW22, which gave a reading of 64.2%.

3.2 Channel observations

Channel observations from the four rounds are presented alongside the field parameter measurements in **Annex B**. Channels were typically semi-natural or slightly modified at monitoring locations. However, significantly modified reaches were observed including at SW3, SW8 and SW25 with concrete channels and SW14 with a cobbled culvert construction. Multiple channels had large boulders within the stream causing monitoring of dimensions and flow to be challenging.

The approximate flows for each location across the monitoring rounds are shown in Table 8; these have been estimated by multiplying the observed channel width by the estimated depth and 0.8 of the estimated surface velocity. Values are presented to one significant figure only to demonstrate the very approximate nature of the estimation process and are only contained as a quantitative indicator of the prevailing hydrological conditions during each round.

Table 8 Approximate estimated flow

Site ID	Indicative estimated flow (l/s)				Notes
	Feb-15	Mar-15	Jul-15	Sep-15	
SW-1	1000	200	200	100	Dimensions estimated from bank
SW0	-	-	-	20	Channel flooded due to grate the first three rounds, unable to measure the flow during these rounds.
SW1	300	30	20	0.6	
SW2	20	10	0	0	Channel viewed from other side of a fence
SW3	100	30	10	6	
SW4	20	7	7	3	
SW5	1000	100	200	20	
SW7	8	2	0	0	Dry the last two monitoring rounds, no water
SW8	60	30	3	2	
SW9	40	10	-	-	Unable to access this location during 3rd and 4th round
SW9.1	50	30	6	1	
SW9.2	7	2	0	0	No flow / practically dry during the 3rd and 4th monitoring round
SW10	4000	1000	1000	200	
SW11	10	0.4	-	0	No access for 3rd round. No flow for 4th round.
SW12	300	200	6	10	

SW13	20	3	-	0	No access for 3rd round. Dry during 4th monitoring round.
SW14	300	800	3	3	
SW14.1	40	8	1	1	
SW14.2	9	4	0	0	Practically no flow during 3rd and 4th monitoring round.
SW15	1000	800	60	20	
SW16	30	20	3	-	No access during 4th monitoring round due to H&S
SW17	700	-	-	-	Measured downstream of outfall the 1st monitoring round, then from within the reservoir (no observed flow within reservoir).
SW18	30	40	7	0	Very low flows, not able to measure.
SW19	40	40	20	2	
SW20	80	10	10	0.8	
SW21	200	40	60	15	
SW21.1	0	0	0	0	Ponded spring, no measurable flow. Completely dry 4th round.
SW22	3	2	0.1	0.0	No measurable flow 4th monitoring round.
SW23	20	8	10	0.0	Dry with no flow during 4th monitoring round.
SW25	40	10	20	8	
SW26	60	1	8	0.2	
SW27	40	10	10	0	No measurable velocity during 4th monitoring round
SW27.1	100	0.5	0.1	0	Completely dry 4th monitoring round.
SW30	2000	200	200	100	Estimated from bank due to H&S 1st & 2nd rounds.
SW32	3000	3000	1000	1000	Estimated from bank due to H&S.
SW33	10000	4000	2000	500	Estimated from bank due to H&S
SW34	100	100	100	100	
SW35	300	20	5	2	
SW35.1	200	10	1	1	
SW35.2	-	6	2	0.5	Outflow from pipe, measured with bucket method.
SW36	90	30	2	0	No observed flow during 4th monitoring round.
SW39	50	0	0	0	No measurable flow during 2nd and 3rd round, completely dry during 4th.
SW40	-	-	-	-	Reservoir – no observed flow
SW41	-	-	-	-	Reservoir – no observed flow

Litter and fly tipped waste were observed at a number of locations including SW-1, SW8, SW10 and SW14. The only evidence of hydrocarbon pollution was visible sheens observed at SW16 during round 2 and at SW22 during round 4. There is potential that the sheen observed at SW22 was due to peat, given the soil in the region. No odour was observed at either location.

3.3 Sampling results

The results of the laboratory analysis of samples collected during the all four rounds of monitoring are presented in full in **Annex C** and are summarised in Table 9.

The screen threshold values applied for the analysis are outlined in detail in **Annex D**. Exceedances of these screening thresholds have been highlighted in red on the collated results in **Annex C**.

Table 9 Chemical analysis results for samples from round one

Analyte	Min	Max	Threshold standard*	Number of exceedances	Notes
pH	7	8.6	6-9	0	
Sulphide (µg/l)	<5.0	<5.0	N/A		None detected.
Chloride (mg/l)	7.6	130	250	0	SW41 nearly twice as high as other values, however doesn't exceed drinking water standard.
Dissolved Organic Carbon (mg/l)	0.36	6.33	N/A		
Total Suspended Solids (mg/l)	<2	160	25	3	SW35 has maximum value with SW 30 and SW 27 also exceeding the threshold.
Hardness – $CaCO_3$ (mg/l)	16.7	279	N/A		Highest values (above 200) at SW1, SW3 and SW4.
Total EPA-16 PAHs	<0.2	0.36	Varies	1	SW35 has a minor exceedance for Benzo(b)fluoranthene and total PAHs, along with detectable levels of other PAH compounds. SW40 exceeds the total PAHs with detectable levels of other compounds. No result available from SW0 due to broken sample containers.
Arsenic (dissolved) (µg/l)	<0.15	1.9	50	0	
Cadmium (dissolved) (µg/l)	<0.02	0.15	0.45–1.5	2	SW15 and SW18 exceed the annual average threshold limit, however both well within the maximum allowance concentration exceedance.
Copper (dissolved) (µg/l)	6.7	17	1 - 28	23	Majority of samples fail to meet the requirement for 'Good' quality with respect to this analyte.
Lead (dissolved) (µg/l)	0.3	1.3	7.2	0	No exceedances but lead detected at all sites.
Mercury (dissolved) (µg/l)	<0.05	0.36	0.07	4	Minor exceedances of the maximum allowable concentration threshold at SW3 & SW30, with major exceedances at SW35 and SW41. SW1 and SW5 both exceed the average annual threshold level, however are less than the maximum allowable concentration.
Nickel (dissolved) (µg/l)	0.5	100	20	2	Major exceedances at SW0 (five times limit) and SW3 (two times limit).
Selenium (dissolved) (µg/l)	<0.6	2.8	10	0	No exceedances. All except SW1, SW3 and SW4 were below the limit of detection.
Zinc (total) (µg/l)	6.8	57	8 - 125	9	Exceedances generally occurring in samples with low hardness values SW5, SW14, SW15, SW17, SW18, SW27, SW30, SW32 and SW40.
Calcium (dissolved) (mg/l)	5.47	54.9	N/A		
Magnesium (dissolved) (mg/l)	0.73	47	N/A		Highest at SW1, SW3 and SW4, order of magnitude greater than other sites.
TPH1 (C10 - C40) (µg/l)	<10	<10	N/A		None detected.

*See Annex D for relevant screening threshold values applied

Table 10 Chemical analysis results for samples from round two

Analyte	Min	Max	Threshold standard*	Number of exceedances	Notes
pH	7.6	8.1	6-9	0	
Sulphide (µg/l)	<5.0	<5.0	N/A		
Chloride (mg/l)	6.4	130	250	0	SW41 nearly twice as high as other values, however doesn't exceed drinking water standard.
Dissolved Organic Carbon (mg/l)	1.25	5.87	N/A		
Total Suspended Solids (mg/l)	<2	21	25	0	Highest value at SW1, however no exceedances of standards.
Hardness – $CaCO_3$ (mg/l)	17.3	414	N/A		Highest values (over 300) at SW1, SW3 and SW4.
Total EPA-16 PAHs	<0.2	<0.2	Varies	0	No PAH compounds above limit of detection
Arsenic (dissolved) (µg/l)	<0.15	1.11	50	0	
Cadmium (dissolved) (µg/l)	<0.02	0.06	0.45–1.5	0	All below the annual average value threshold.
Copper (dissolved) (µg/l)	2.4	22	1 - 28	14	Majority of samples fail to meet the requirement for 'Good' quality with respect to this analyte
Lead (dissolved) (µg/l)	<0.2	2.1	7.2	0	No exceedances, many samples below level of detection.
Mercury (dissolved) (µg/l)	<0.05	<0.05	0.07	0	All samples below limit of detection
Nickel (dissolved) (µg/l)	<0.5	200	20	2	Major exceedances at SW1 (ten times threshold value) and SW3 (two times threshold value).
Selenium (dissolved) (µg/l)	<0.6	2.7	10	0	No exceedances. All except SW1, SW3 and SW4 were below the limit of detection
Zinc (dissolved) (µg/l)	2.2	23	8 - 125	1	Minor exceedance in SW17, due to a low hardness value. Highest value at SW40, but due to hardness well within the screening threshold.
Calcium (dissolved) (mg/l)	5.4	76.7	N/A		
Magnesium (dissolved) (mg/l)	0.93	67	N/A		Highest at SW1, SW3 and SW4, order of magnitude greater than other sites.
TPH1 (C10 - C40) (µg/l)	<10	<10	N/A		None detected at any location, including at SW16 which had a visible sheen.

*See Annex D for relevant screening threshold values applied

Table 11 Chemical analysis results for samples from round three

Analyte	Min	Max	Threshold standard*	Number of exceedances	Notes
pH	7.5	8.2	6-9	0	
Sulphide (µg/l)	<5	<5	N/A		None detected
Chloride (mg/l)	3.3	55	250	0	SW41 highest followed by SW35. None exceed drinking water standards.
Dissolved Organic Carbon (mg/l)	1.66	10.4	N/A		
Total Suspended Solids (mg/l)	<2	67	25	2	Major exceedance at SW1, minor exceedance at SW0
Hardness – $CaCO_3$ (mg/l)	21.8	521	N/A		Highest values (over 300) at SW1, SW3 and SW4.
Total EPA-16 PAHs	<0.2	<0.2	Varies	0	No PAH compounds above limit of detection
Arsenic (dissolved) (µg/l)	0.26	2.53	50	0	
Cadmium (dissolved) (µg/l)	<0.02	0.18	0.45–1.5	0	All values below the annual average threshold and maximum allowable threshold.
Copper (dissolved) (µg/l)	4.6	18	1 - 28	15	Majority of samples fail to meet the requirement for 'Good' quality with respect to this analyte.
Lead (dissolved) (µg/l)	<0.2	2.5	7.2	0	No exceedances, all samples detected lead except SW4.
Mercury (dissolved) (µg/l)	<0.05	0.14	0.07	2	Major exceedance at SW35 of twice the maximum allowable concentration. Minor exceedance of the maximum allowable concentration at SW17. All other locations below the limit of detection.
Nickel (dissolved) (µg/l)	<0.5	200	20	1	Significant exceedance at SW1 at ten times the threshold value.
Selenium (dissolved) (µg/l)	<0.6	3.6	10	0	No exceedances. All except SW1, SW3, SW4, SW21, SW23 and SW27 below the limit of detection
Zinc (dissolved) (µg/l)	4.8	34	8 - 125	2	Minor exceedances at SW17 and SW25 due to low hardness values. Highest value at SW1, however due to hardness within screening threshold.
Calcium (dissolved) (mg/l)	7.1	88	N/a		
Magnesium (dissolved) (mg/l)	0.99	73	N/a		Highest at SW1, SW3 and SW4.
TPH1 (C10 - C40) (µg/l)	<10	<10	N/a		None detected

*See Annex D for relevant screening threshold values applied

Table 12 Chemical analysis results for samples from round four

Analyte	Min	Max	Threshold standard*	Number of exceedances	Notes
pH	7.3	8.3	6-9	0	
Sulphide (µg/l)	<5.0	<5.0	N/A		
Chloride (mg/l)	5.0	46.0	250	0	SW41 highest value, however does not exceed threshold.
Dissolved Organic Carbon (mg/l)	1.47	11.8	N/A		
Total Suspended Solids (mg/l)	<2	100	25	2	Major exceedance at SW14, SW27 and SW36, minor exceedances at SW35 and SW40. These exceedances may be partially due to shallow water within the channels resulting in some bed disturbance while collecting samples.
Hardness – $CaCO_3$ (mg/l)	18.2	637	N/A		Highest values (above 500) at SW1, SW3 and SW4
Total EPA-16 PAHs	<0.2	<0.2	Varies	0	No PAH compounds above limit of detection
Arsenic (dissolved) (µg/l)	<0.15	1.62	50	0	
Cadmium (dissolved) (µg/l)	<0.02	0.11	0.45–1.5	0	All samples below the maximum allowable concentration screening threshold value. SW17 exceeds the annual average value but not the maximum allowable concentration.
Copper (dissolved) (µg/l)	4.4	9.6	1 - 28	5	Most samples achieve 'Good' within threshold value, SW14, SW15, SW17, SW25 and SW32 exceeded screening threshold.
Lead (dissolved) (µg/l)	<0.2	1.5	7.2	0	No exceedances, many samples below level of detection.
Mercury (dissolved) (µg/l)	<0.05	<0.05	0.07	0	All samples below limit of detection
Nickel (dissolved) (µg/l)	<0.05	160	20	2	Significant exceedance at SW1 at eight times the threshold value. Many sites below the level of detection.
Selenium (dissolved) (µg/l)	<0.6	3.0	10	0	No exceedances. All except SW1, SW3, SW4, SW21 and SW27 below the limit of detection
Zinc (dissolved) (µg/l)	<0.5	61	8 - 125	1	Significant exceedance at SW17, due to high value (61 µg/l) and low hardness.
Calcium (dissolved) (mg/l)	6	110	N/A		
Magnesium (dissolved) (mg/l)	0.75	91	N/A		Highest at SW1, SW3 and SW4.
TPH1 (C10 - C40) (µg/l)	<10	<10	N/A		None detected at all locations, including SW22 where a sheen was observed.

*See Annex D for relevant screening threshold values applied

4. Discussion

The results of the physiochemical parameters are discussed below; this includes all in-situ recorded measurements and analytes tested in the laboratory. Annex D contains details of the screening threshold values applied to each physiochemical parameter within the report.

Additionally many of these parameters are considered within the Water Framework Directive [7] (WFD) assessments undertaken by Natural Resources Wales who apply standards specified by the United Kingdom Technical Advisory Group (UKTAG). The classification system detailed within these standards is a five point system with High indicating the highest quality ranging to Good, Moderate, Poor and Bad.

4.1 In-situ parameters and general inorganics

4.1.1 Temperature

Water temperatures were higher during the summer monitoring rounds and lower during the winter as expected. There are no water quality standards for water temperature.

4.1.2 pH

pH was recorded in-situ and also tested in the laboratory. All of the laboratory results from each monitoring rounds were recorded to be between six and nine. The pH recorded in-situ was also almost always within this same range with the exception of two locations:

- SW21.1 recorded a pH of 5.80 during the 3rd monitoring round; and
- SW22 recorded a pH of 5.83 during the 4th monitoring round.

These locations were not sampled and therefore the results cannot be verified, however these are both minor watercourses / springs which were not flowing at the time of monitoring (i.e. testing occurred in an isolated pool of water remaining within the channel). Therefore all flowing surface water locations met the screening thresholds applies which are indicative of meeting the 'High' pH classification as detailed in the WFD (between 6 and 9).

4.1.3 Dissolved Oxygen

Dissolved Oxygen (DO) was recorded in-situ:

- For the first two monitoring rounds DO was consistently greater than 75% and indicative of a 'Good' if not 'High' standard. This is in line with observed flows within the watercourses.
- The DO probe registered values of between 3.5 to 15.2% for the majority of sites for the 3rd round, however this is not in line with observations, which included white water within the Cwm Taf Fechan (recorded 11.4% DO). Therefore these results are considered to be anomalous and are discounted.
- The DO probe was broken for the 4th monitoring round, and therefore no values could be obtained.

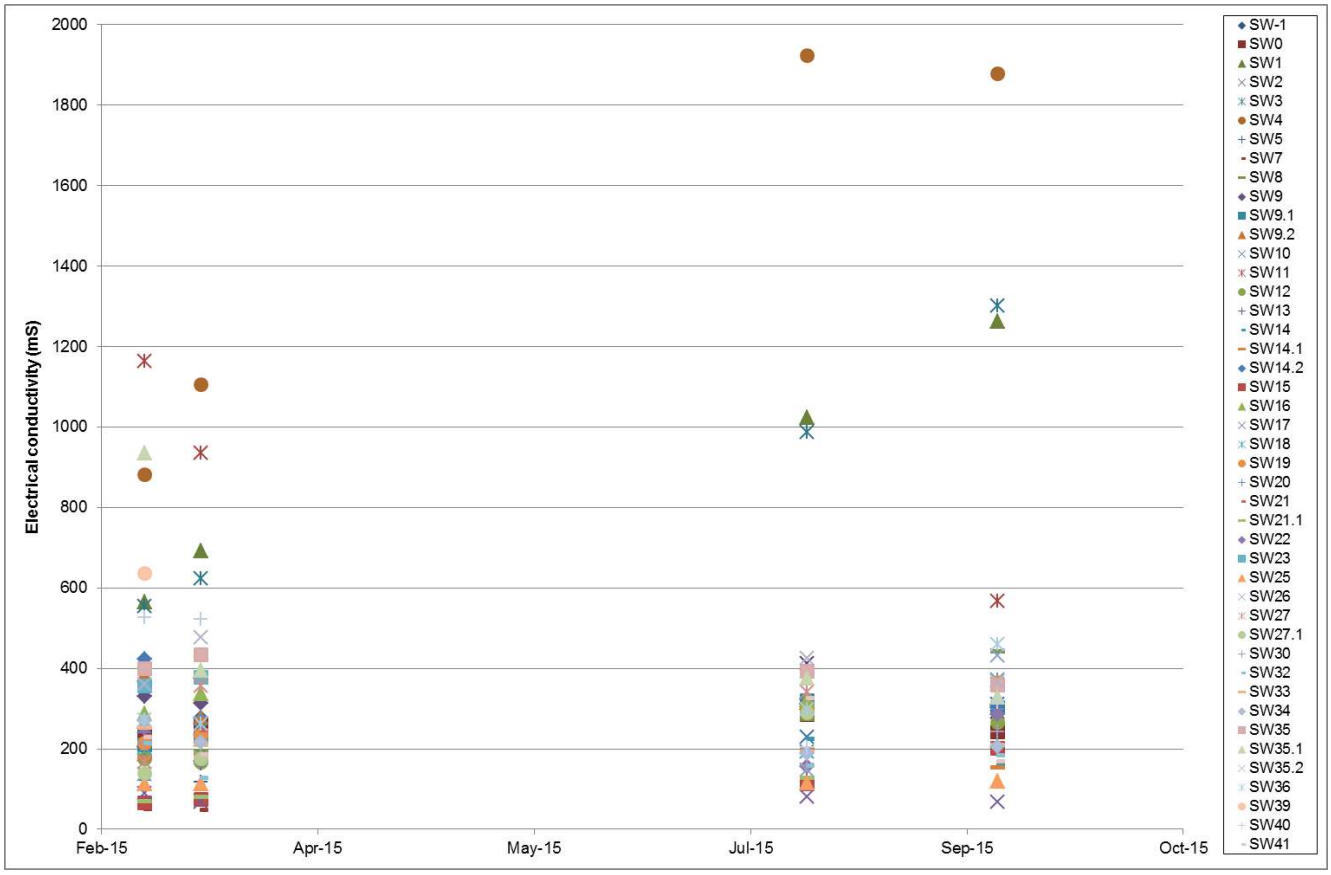
Given the DO probe recording anomalous results during the 3rd monitoring round, and the probe not working for the 4th, there is no reliable data for DO during the summer monitoring period. Observations of watercourses during the summer monitoring round suggested that the larger watercourses remained well aerated due to white water / turbulence created by the steep channel gradients.

7 UK Technical Advisory Group, Water Framework Directive, 2008

4.1.4 Electrical conductivity

There are no standards for electrical conductivity; however as shown on Figure 1 compared to the majority of the data set anomalously high values were consistently recorded at a number of. The majority of recorded values were between 50 and 750 µS/cm. However higher values were found at SW1, SW3 and SW4, which are all downstream of mining activity.

Figure 1 Recorded electrical conductivity



4.1.5 Redox Potential

There are no environmental standards for Redox Potential. Generally Redox values were within a range of -12 to 240 mV. There is one significant outlier during the first monitoring round; SW3 recorded a very high value of 621 UNITS.

4.1.6 Turbidity and suspended solids

There is no environmental standard for turbidity; however observed values are within the range of 0 to 265 mg/l.

Turbidity is typically used as a proxy for suspended sediment concentration that can be readily measured in the field. Recorded turbidity does not however correlate well with the laboratory suspended solids, indicating either that the suspended solid encountered across the catchments is very different from one place to the next or faults with the turbidity meter. Given the number of issues with the turbidity probe throughout the monitoring, equipment error is considered to be more likely, therefore in this instance the turbidity readings haven't been discussed, however the suspended solids are discussed below.

Suspended solids are highest during the first monitoring round and the forth monitoring around. The first occurred during a rainfall event (SW27 – SW41), which is likely to be associated with runoff from surrounding

fields. High values were also found for the 4th monitoring round, during a period of very low flows. This is probably due to disturbance of the stream / river bed during sampling which is more likely when water depths are shallow.

4.1.7 Sulphide

Sulphide was not detected at any location during the entire monitoring period and therefore is not of a concern in relation to the WFD quality of the watercourses.

Generally sulphide within water indicates pollution from industrial processes. Only four monitoring rounds were undertaken, and as such the presence of sulphide downstream of industrial processes cannot be ruled out, however given that none was detected it is likely that there is no significant source of sulphide pollution within, or upstream of, the areas monitored.

4.1.8 Chloride

Chloride was detected at all sites throughout the monitoring period, with the highest values experienced during winter (130 mg/l). At no time during monitoring did the Chloride concentration exceed the threshold value of 250 mg/l. This is the UK Standard for drinking water abstractions. Therefore Chloride does not pose a risk to the WFD status of any watercourse in the study area.

The higher values during the winter months are located downstream of the A465 (SW14, SW16, SW18, SW23, SW27, SW35 and SW41) and therefore may be related to factors such as salt from road grit. The highest chloride concentrations were experienced at SW41 which is Dowlais Top reservoir located down-gradient of the A465.

4.1.9 Dissolved Organic Carbon

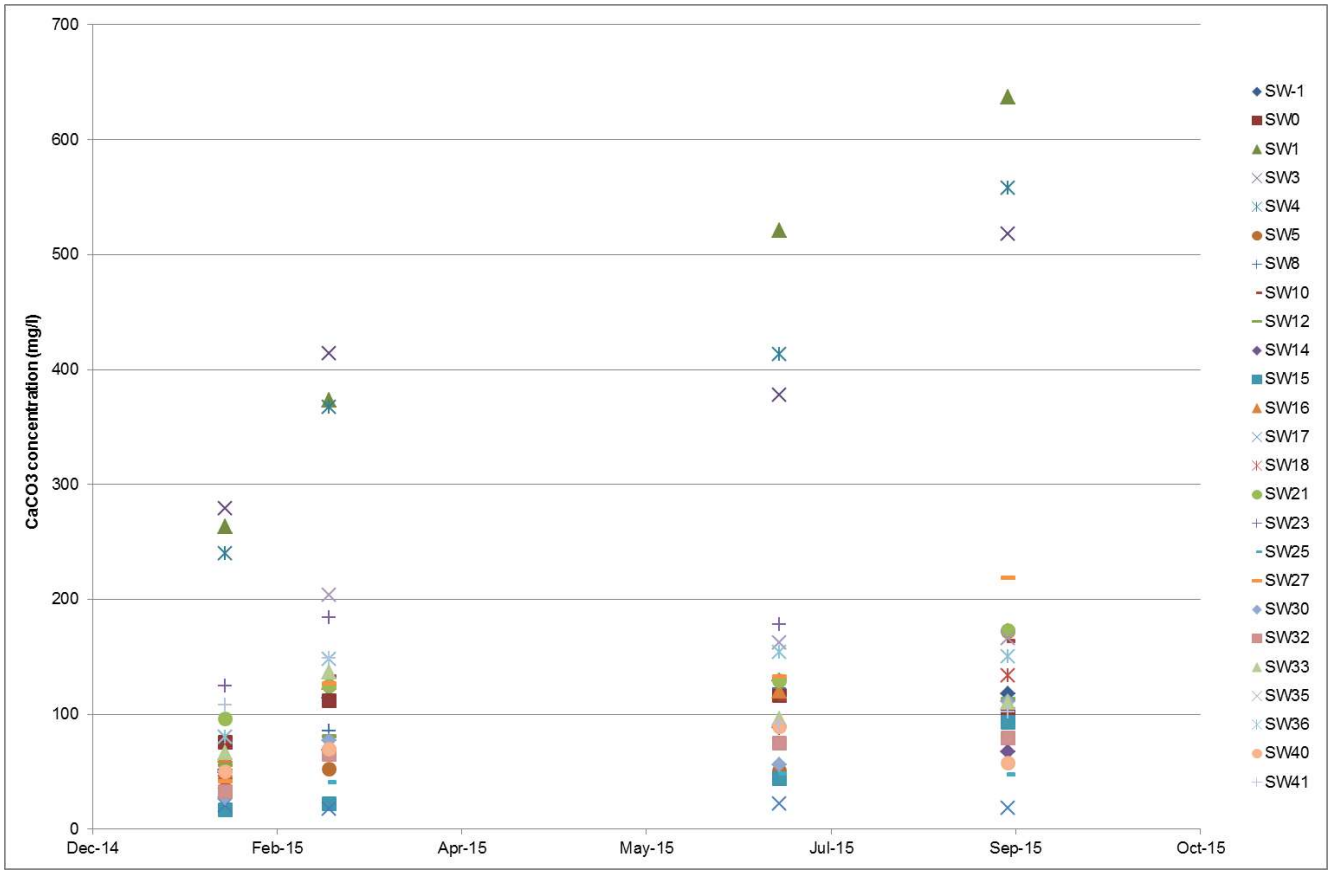
There is no environmental standard for Dissolved Organic Carbon (DOC). Generally the values are low without any major trends across the area. The values are slightly higher in the summer, which is likely due to increased plant material.

4.1.10 Hardness ($CaCO_3$)

There is no environmental standard for Hardness. The recorded hardness is however generally within the typical range for UK upland watercourses in non-calcareous areas and values were approximately similar throughout the monitoring period.

As shown in Figure 2 some very high values of $CaCO_3$ were however recorded at SW1, SW3 & SW4 for all monitoring rounds. The hardness of the water at these three locations becomes higher throughout the drier summer months indicating that the input is probably groundwater based. These locations are all downstream of historic mining activities.

Figure 2 Hardness values for all sites across monitoring period



4.2 Polycyclic Aromatic Hydrocarbons (PAHs)

During round one, the levels of PAH compounds were below the level of detection in most of the samples analysed with the following exceptions:

- SW 35 recorded detectable levels of several PAH compounds including an exceedance of the threshold value (**Annex D**) for Benzo(b)fluoranthene and an exceedance for total PAHs.
- SW40 recorded detectable levels of several PAH compounds and exceeded the threshold value (**Annex D**) for total PAHs.
- SW 36 and SW27 all had detectable levels for Floranthene and Pyrene. No EQS values are available for these compounds.
- SW12 had a detectable concentration of Napthalene but this was below the threshold value (**Annex D**).

No PAH compounds were detected during the 2nd, 3rd or 4th monitoring rounds, indicating that these were probably source inputs associated with a significant rainfall event prior to the monitoring. All of the locations where PAH compounds were detected are located either downstream of, or immediately adjacent to, the A465. This is consistent with rainfall event causing pollution from the A465 to be washed into adjacent watercourses.

4.3 Metals

Concentrations of Arsenic, Cadmium, Lead and Selenium were all consistently below the threshold values (**Annex D**) across all four rounds:

- Arsenic appeared in low concentrations at all monitoring points throughout the four rounds, suggesting that there is a natural diffuse source of arsenic within the study area.
- Cadmium concentrations were generally very low, and always significantly below the screening threshold value for the maximum allowable concentration. During the 1st monitoring round SW15 and SW18 had values greater than the annual average threshold value, however given that during the other monitoring rounds Cadmium was not detected, the average value is assessed to be within the annual average value.
- Lead appeared in low concentrations at all monitoring points during the first monitoring round, with concentrations of lead below detection levels at many sites during the second, third and fourth monitoring rounds.
- Selenium was below the level of detection at most locations, and was only detected consistently across all monitor rounds at locations downstream of mining activities (SW1, SW3 and SW4).

4.3.1 Copper

The latest UK Standard for copper only relates to the WFD standard of "Good" (Annex D). There is no banding and therefore waters which do not achieve good standard are identified as 'not good'.

Copper concentrations exceeded the level required for a "Good" WFD classification at numerous locations in all monitoring rounds, with more values failing to achieve "Good" in the winter months. This is at odds with the findings of the WFD assessment for the main rivers in these catchments which recorded that water quality with respect to this specific pollutant was 'High'.

Generally the values recorded were similar at all locations for all monitoring rounds. Given the fact that the Copper threshold value is based upon the hardness of the water, the monitoring locations that failed to attain "Good" status tended to be associated with lower hardness concentrations.

Given that copper concentration is generally similar across the entire study area it is considered that there is no point source of Copper pollution. Coal mining was carried out historically in the area of Merthyr Tydfil, therefore there is potential of historic mining activities causing elevated Copper concentrations across the entire study area. Additionally the higher Copper concentration could be from a natural occurrence of copper in soils or bedrock.

4.3.2 Mercury

Mercury concentrations were generally below the screening threshold value for the protection for surface water quality (**Annex D**). Mercury concentrations exceeded the screening threshold value for some locations during the 1st and 3rd monitoring rounds. There were no exceedances of the screening threshold values during the 2nd or 4th monitoring rounds.

Mercury has two threshold values, the first is for the maximum allowable concentration and the second for the annual average value as discussed below.

- SW1 and SW5 both exceeded the annual average threshold value, but not the maximum allowable concentration during the first monitoring round. Mercury was not detected at these locations during the other monitoring rounds, therefore the average value was below the threshold value.
- SW3 and SW30 both slightly exceed the maximum allowable concentration during the 1st monitoring round. Mercury is not detected at either of these locations the other three monitoring rounds.
- SW17 slightly exceeds the maximum allowable concentration during the 3rd monitoring round, but is not detected during the other monitoring rounds.
- SW41 significantly exceeds the maximum allowable concentration for the 1st monitoring round, but it not detected during the other three monitoring rounds.

- SW35 significantly exceeded the maximum allowable concentration for both the 1st and 3rd monitoring round. Mercury was not detected at this location during the 2nd or 4th monitoring rounds.

Mercury exceedances occurred during the monitoring rounds which were following or during heavy rain; Mercury was not detected during the two monitoring rounds which occurred in dryer conditions. This suggests that Mercury contamination is mobilised by rainfall. SW35 includes flows from what appears to be a drainage outfall of the A465, while SW41 is a reservoir adjacent to the A465.

Conclusions cannot be drawn based upon two monitoring rounds, however it appears that there is potential that Mercury contamination, derived from the road, is impacting upon these watercourses during rainfall events.

4.3.3 Nickel

Nickel was recorded to be below the threshold screening value (**Annex D**) on all occasions at the majority of locations. Exceedances of the threshold value were however observed at two locations:

- SW1 recorded the highest concentration of Nickel, with high values (five to ten times the screening threshold value) across all monitoring rounds.
- SW3 displayed high values for the winter monitoring rounds (approximately two times the screening threshold value), however in the summer months this reduced to below the threshold.

Both SW1 and SW3 are downstream of mining activities, suggesting that there is a source of Nickel contamination within the mining areas.

4.3.4 Zinc

The latest UK Standard for Zinc only relates to the WFD standard of "Good" (**Annex D**). There is no banding and therefore waters which do not achieve good standard are identified as 'not good'.

Zinc concentrations exceeded the screening threshold value (**Annex D**) required for a 'Good' WFD classification during the first monitoring round for nine locations; however all locations except SW17 achieved a 'Good' classification for the 2nd, 3rd and 4th monitoring rounds.

SW17, the Nant Hir Reservoir, failed to achieve a 'Good' classification for all four monitoring rounds. The Zinc threshold value is related to the hardness, and given that SW17 has a low concentration of $CaCO_3$ the failure to meet the standard is partially explained by this. However for the 4th monitoring round the recorded concentration of Zinc is notably higher than on other occasions. This suggests that there is a source of Zinc contamination feeding into the reservoir.

The WFD assessment for the main rivers in these catchments recorded that water quality with respect to Zinc was 'High'. The results suggest that this is not necessarily true during rainfall events (1st monitoring round) however may be achieved for the majority of the year.

4.3.5 Calcium & Magnesium

There is no EQS for Magnesium or Calcium. Both Calcium and Magnesium concentrations are however within the natural ranges for surface watercourses[8]:

- Calcium generally displays a range from 5 – 100 mg/l, with higher values experienced in the summer months. Calcium concentrations are highest downstream of mining activities (SW1, SW3 and SW4).

8 World Health Organisation, "*Hardness in Drinking-water*", Background document for development of WHO *Guidelines for Drinking-water Quality*. 2011, Available online < http://www.who.int/water_sanitation_health/dwq/chemicals/hardness.pdf>

- Magnesium concentrations are generally below 20 mg/l except for sites downstream of mining activities (SW1, SW3 and SW4) which displayed values of up to 91 mg/l.

4.4 Petroleum Hydrocarbons

Petroleum hydrocarbons were not detected at any location during any monitoring round.

At two locations (SW16 during 2nd round and SW22 during 4th round) sheens were visually observed during a monitoring round; however given that petroleum hydrocarbons were not detected, the sheen may have been due to another source such as peat or algae.

5. Conclusions

Given that only four rounds of monitoring were carried out it is difficult to confirm typical baseline water quality parameters due to a variety of factors including variability in flow and temperature and the potential discrete pollution events. This section draw some initial conclusions based upon the available information.

It should be noted that further monitoring will probably be required to prior to, during and following the proposed road widening scheme to further establish the baseline conditions and to ensure that the road widening works are not impacting significantly upon water quality in the study area. Increased monitoring should be undertaken at locations downstream of historic and current mining activities and any existing or proposed drainage outfall. This monitoring should be informed by the conclusions of the Environmental Statement that will need to be prepared in support of the proposals.

5.1 Impacts of mining activities

As a summary of the discussion above, it has been found that the historic mining activities and ongoing restoration works which are occurring upstream of SW1, SW3 and SW4, has some impact upon water quality. The impacts upon water quality include:

- High electrical conductivity at SW1, SW3 and SW4;
- Increased hardness ($CaCO_3$) at SW1, SW3 and SW4;
- Very high Nickel concentrations at SW1 and SW3;
- Elevated Mercury concentrations at SW1 and SW3 during the 1st monitoring round.
- Selenium detected at SW1, SW3 and SW4;
- Magnesium and Calcium concentrations are high at SW1, SW3 and SW4.
- Copper and Zinc concentrations are elevated at SW1, SW3 and SW4, the concentrations are similar to other locations within the study area; however given the hardness of the water the screening threshold values were not exceeded.

This indicates some sources of contamination exist within the mining areas to the west of Hirwaun. This has only lead to exceedances of the screening threshold value in respect to Nickel; however has also led to very high hardness and conductivity. It should be noted however, that sulphide was not detected at any of these locations.

It should also be noted that the hardness of the water discharging from this area reduces the bio-availability of certain metals. This is reflected in the screening thresholds that are applied and as a result apparently elevated concentrations for some metals are not considered to be of concern. Consequently any activities that result in a future reduction in hardness, that do not also address the source of metal contamination would be of potential concern.

In addition to these three locations, historic mining activities are known to have occurred in other parts of the study area and that this may be a contributory source for elevated levels of metals such as copper and zinc, which are prevalent across the entire study area.

5.2 Impact of the A465

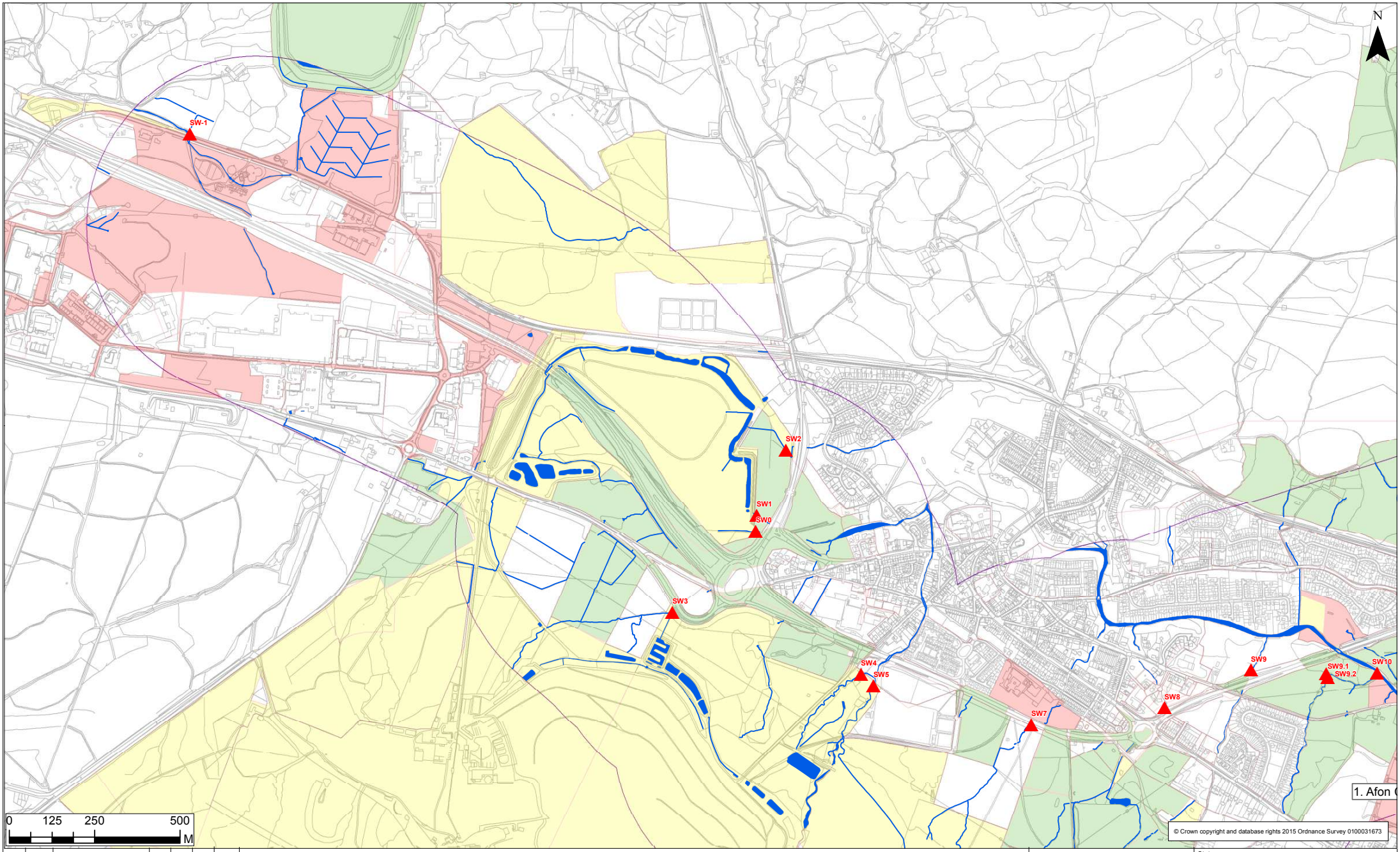
Based on the results available from the four monitoring rounds, it appears that the A465 may potentially be impacting upon the water quality of some of the watercourses in the vicinity of the site. The results are not conclusive, however based upon the results some potential impacts have been identified:

- Chloride is high in locations adjacent to the road, especially during winter months when road grit is potentially in use;
- PAHs were detected in some locations adjacent to the road following high rainfall events, with some exceedances of the screening threshold values. This is potentially due to PAHs along the road becoming mobilised by the rainfall.
- Mercury was observed to be high at four locations downstream of the road following rainfall events. During the first monitoring round the threshold value was exceed at SW30, SW35 and SW40; during the fourth monitoring round the threshold value was exceeded at SW17 and SW35.
- Zinc concentrations during the first monitoring round failed to achieve a 'High' status for Zinc for a number of locations, during a high rainfall event. The Zinc concentrations across the study area may be due to historic mining activity across the region or due in part to runoff from the A465.

Although there appears to be some contamination associated with the A465 no location had detectable levels of petroleum hydrocarbons, although only four spot monitoring rounds were undertaken.

Annex A. Mapped monitoring locations

See following page



Legend

- Water Sampling Locations
- Waterbodies
- 500m survey area
- No Information
- Access Granted - no need to contact
- Access Granted - contact ahead
- Access Denied

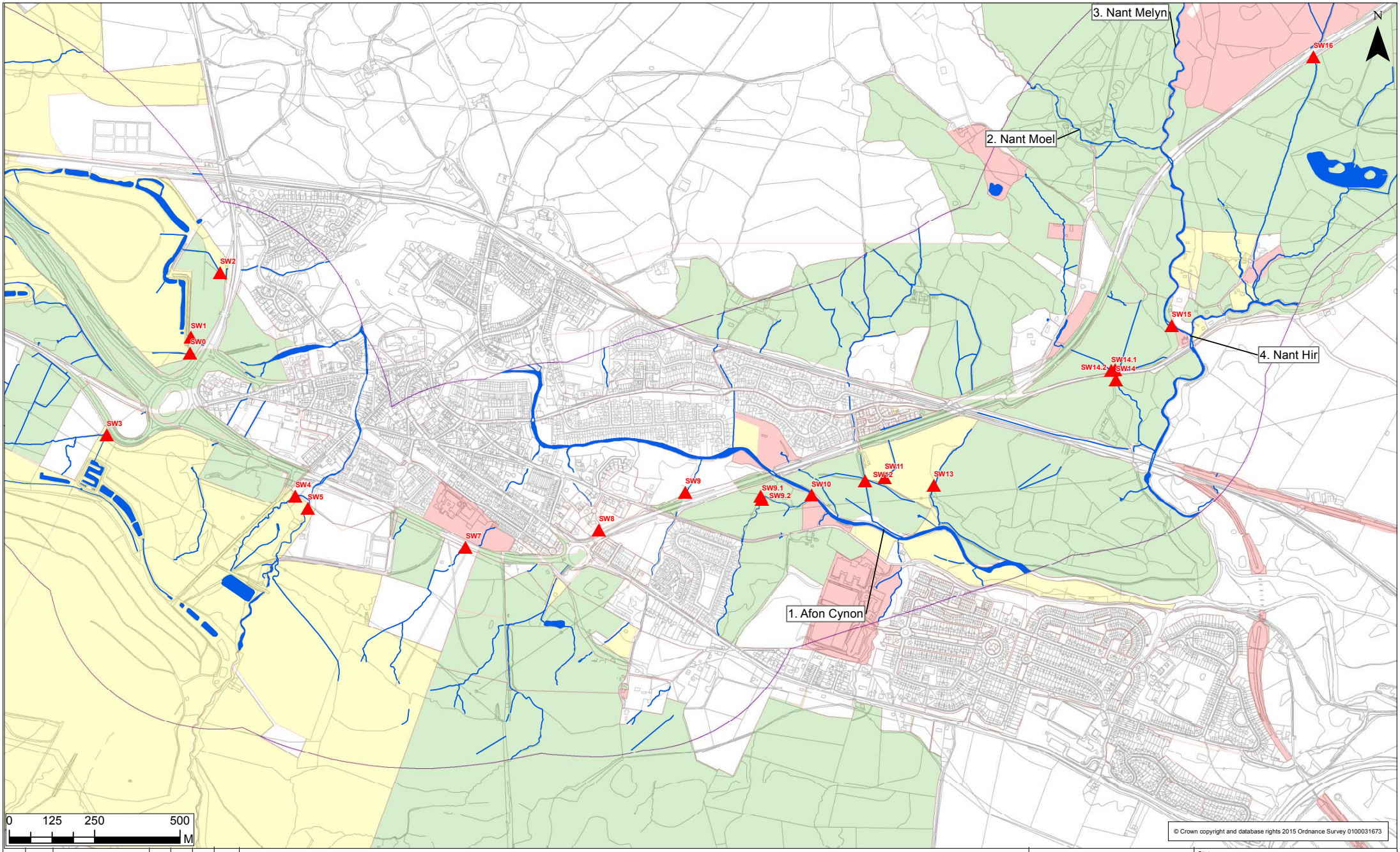
Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	SEPT15	FOR INFORMATION	FL	XX	XX	XX

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Yn gweithio ar ran Llywodraeth Cymru
Working on behalf of the Welsh Government

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FOR INFORMATION
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	Water Sampling Locations (Sheet 1 of 7)
Scale	1:10,000 @A3 / DO NOT SCALE
Drawing No.	Figure 1
Revision	R0



© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Legend

- Water Sampling Locations
- Waterbodies
- 500m survey area
- No Information
- Access Granted - no need to contact
- Access Granted - contact ahead
- Access Denied

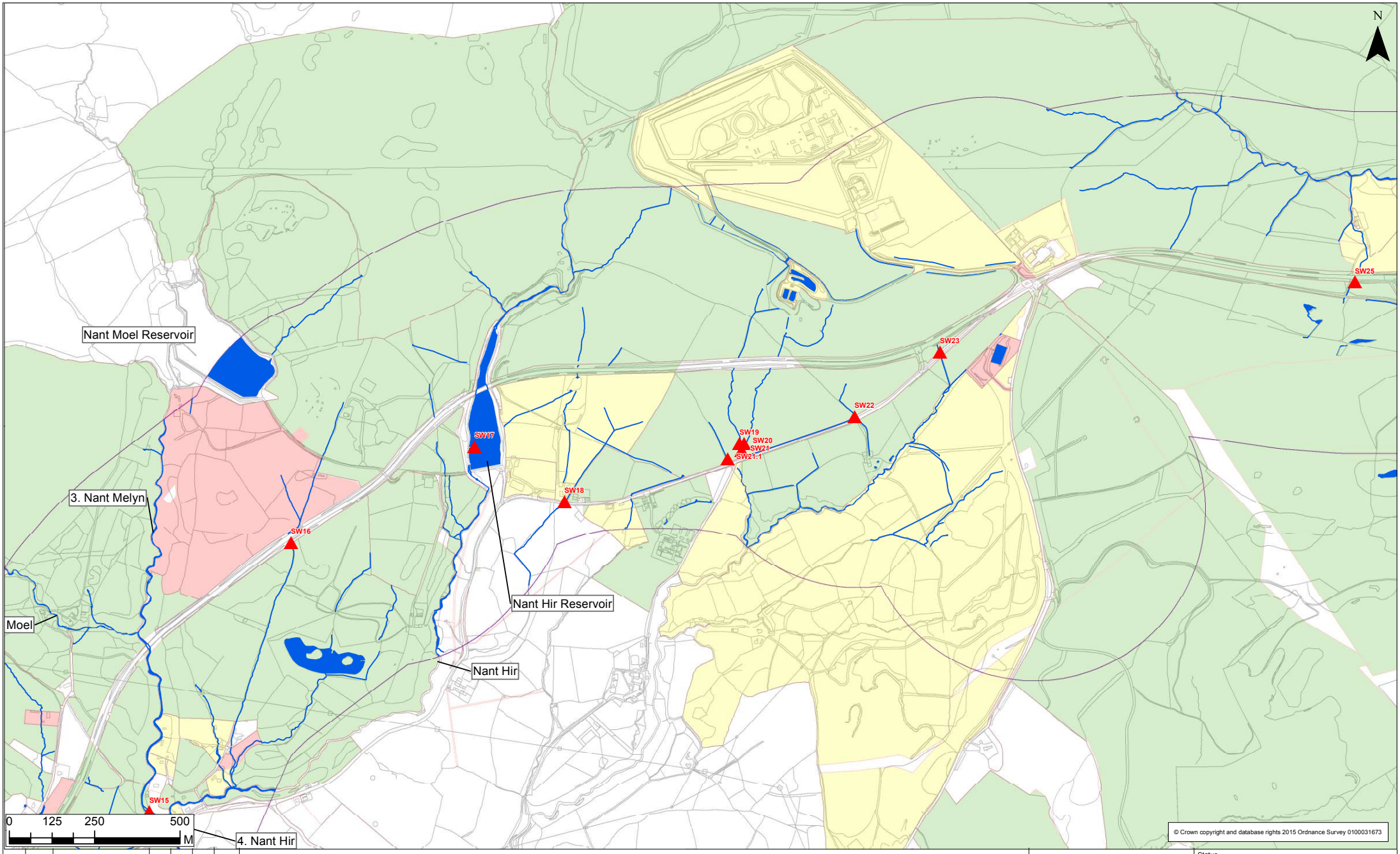
Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	SEPT15	FOR INFORMATION	FL	XX	XX	XX

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Yn gweithio ar ran Llywodraeth Cymru
Working on behalf of the Welsh Government

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FOR INFORMATION
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	Water Sampling Locations (Sheet 2 of 7)
Scale	1:10,000 @A3
	DO NOT SCALE
Drawing No.	Figure 1
Revision	R0



© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Legend

- Water Sampling Locations
- Waterbodies
- 500m survey area
- No Information
- Access Granted - no need to contact
- Access Granted - contact ahead
- Access Denied

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	SEPT15	FOR INFORMATION	FL	XX	XX	XX

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Yn gweithio ar ran Llywodraeth Cymru
Working on behalf of the Welsh Government

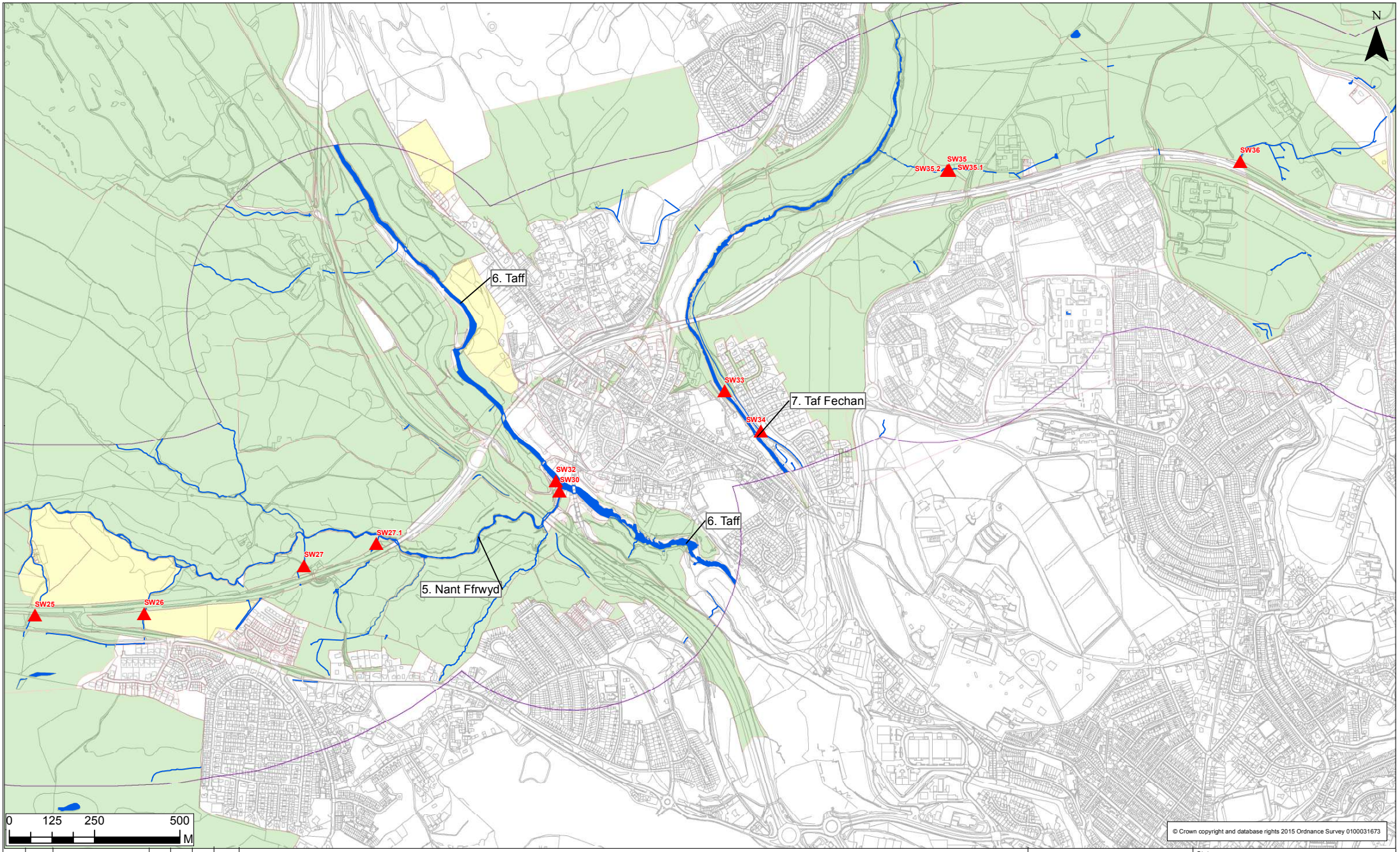
JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status: FOR INFORMATION

Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: Water Sampling Locations — Sheet 3 of 7

Scale	1:10,000 @A3	DO NOT SCALE
Drawing No.	Figure 1	Revision R0



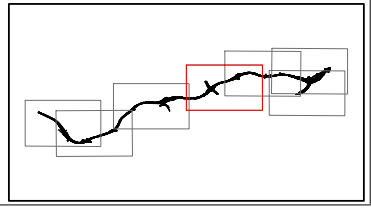
© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	SEPT15	FOR INFORMATION	FL	XX	XX	XX

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Legend

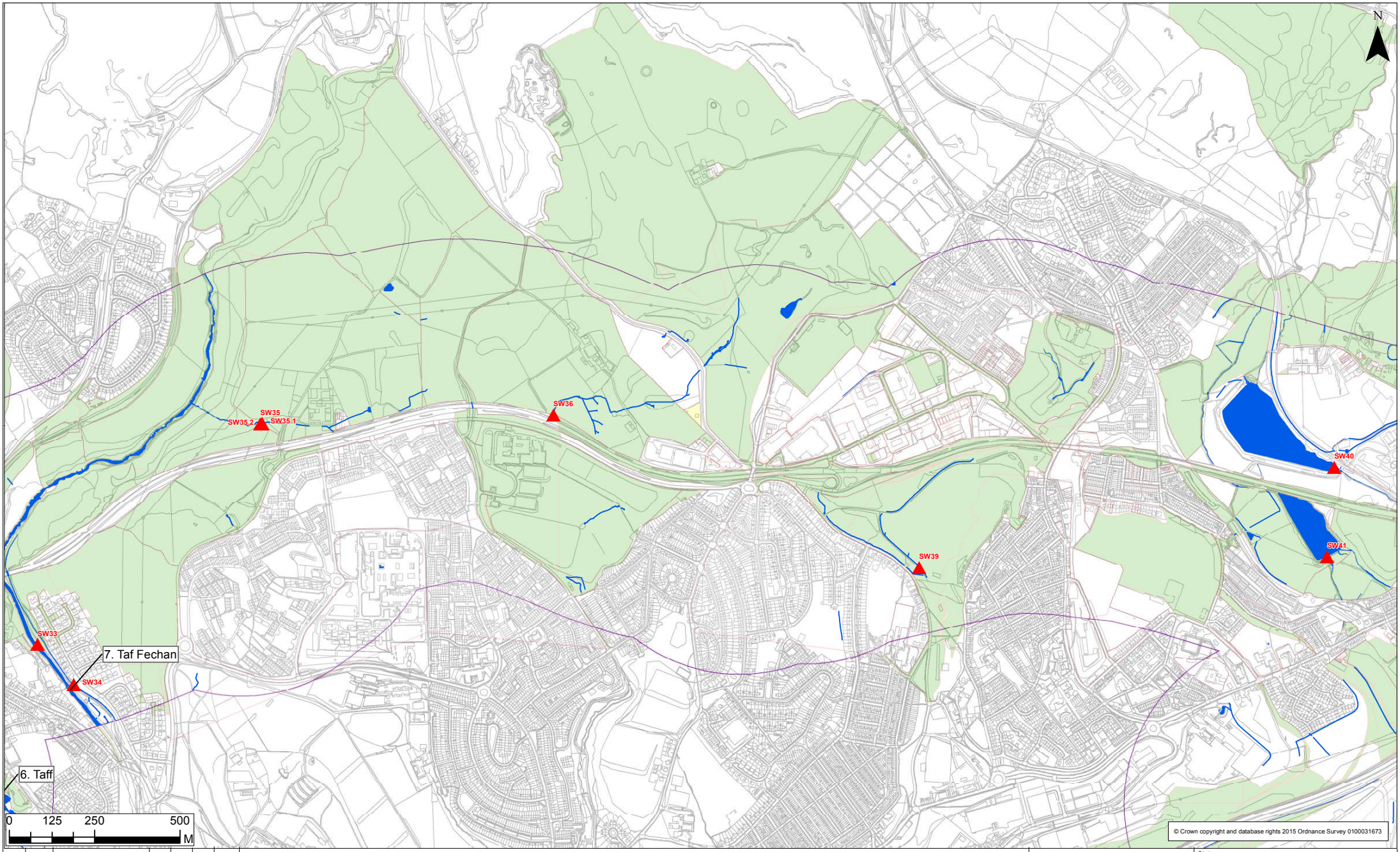
- Water Sampling Locations
- Waterbodies
- 500m survey area
- No Information
- Access Granted - no need to contact
- Access Granted - contact ahead
- Access Denied



Yn gweithio ar ran Llywodraeth Cymru
Working on behalf of the Welsh Government

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FOR INFORMATION
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	Water Sampling Locations (Sheet 4 of 7)
Scale	1:10,000 @A3 / DO NOT SCALE
Drawing No.	Figure 1
Revision	R0



Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	SEPT15	FOR INFORMATION	FL	XX	XX	XX

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

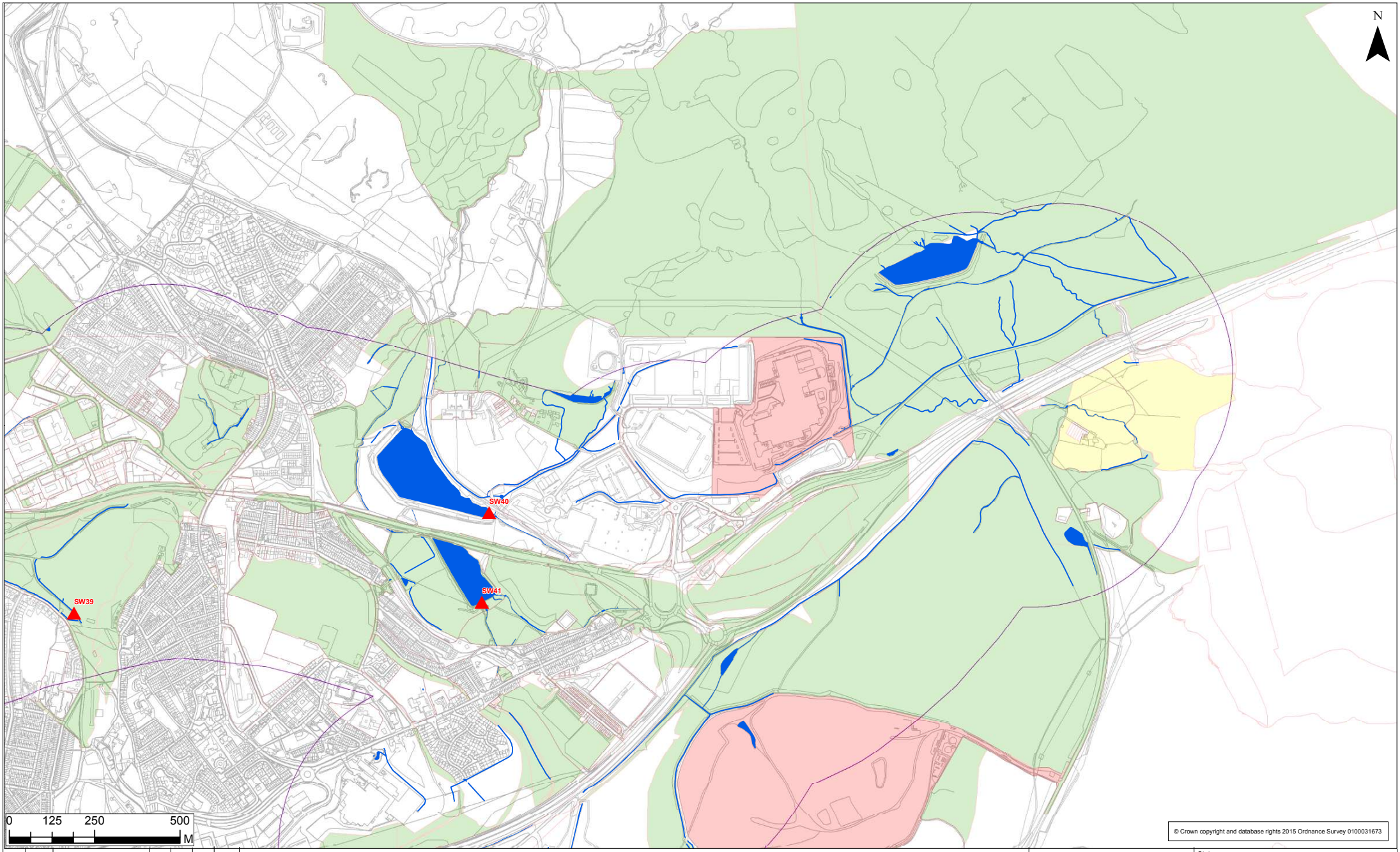
Legend

- Water Sampling Locations
- Waterbodies
- 500m survey area
- No Information
- Access Granted - no need to contact
- Access Granted - contact ahead
- Access Denied

Yn gweithio ar ran Llywodraeth Cymru
Working on behalf of the Welsh Government

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status	FOR INFORMATION
Project	A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6
Title	Water Sampling Locations (Sheet 5 of 7)
Scale	1:10,000 @A3 / DO NOT SCALE
Drawing No.	Figure 1
Revision	R0



© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Legend

- Water Sampling Locations
- Waterbodies
- 500m survey area
- No Information
- Access Granted - no need to contact
- Access Granted - contact ahead
- Access Denied

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	SEPT15	FOR INFORMATION	FL	XX	XX	XX

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Yn gweithio ar ran Llywodraeth Cymru
Working on behalf of the Welsh Government

JACOBS

Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status: FOR INFORMATION

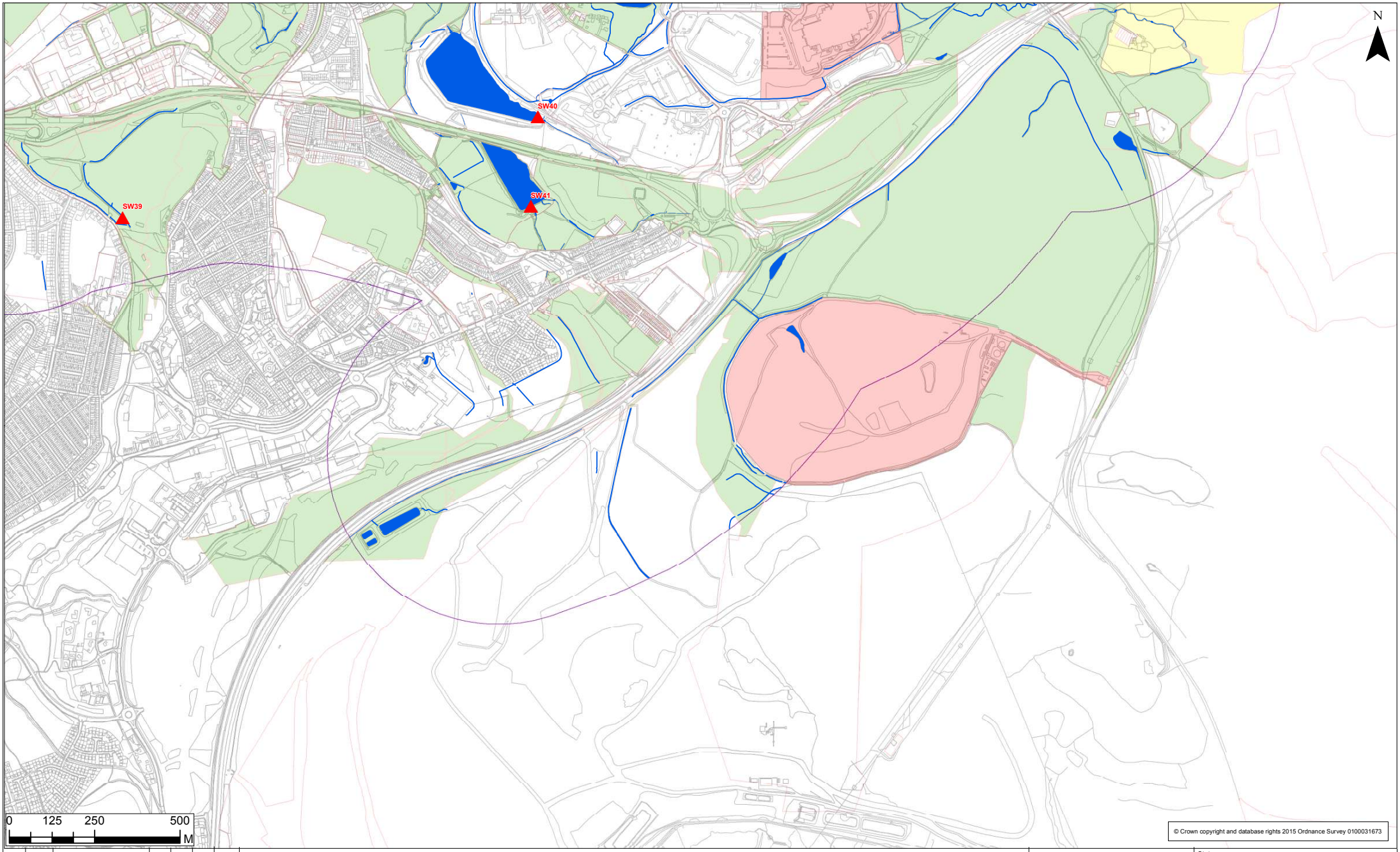
Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: Water Sampling Locations

Sheet 6 of 7

Scale	Drawing No.	Revision
1:10,000 @A3	Figure 1	R0

DO NOT SCALE



© Crown copyright and database rights 2015 Ordnance Survey 0100031673

Legend

- Water Sampling Locations
- Waterbodies
- 500m survey area
- No Information
- Access Granted - no need to contact
- Access Granted - contact ahead
- Access Denied

Rev.	Rev. Date	Purpose of revision	Drawn	Check	Review	Approve
0	SEPT15	FOR INFORMATION	FL	XX	XX	XX

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Yn gweithio ar ran Llywodraeth Cymru
Working on behalf of the Welsh Government

JACOBS
Churchill House, Churchill Way, Cardiff, CF10 2HH
Tel: +44(0)29 2035 3200 Fax: +44(0)29 2035 3222

Status: FOR INFORMATION

Project: A465 HEADS OF THE VALLEYS DUALLING SECTION 5 AND 6

Title: Water Sampling Locations

Sheet 7 of 7

Scale	Drawing No.	Revision
1:10,000 @A3	Figure 1	R0

DO NOT SCALE

Annex B. In-situ monitoring data

See following page

	Date	Time	pH	EC	Temp.	Turbidity	Redox	DO	Visual	Estimated channel dimensions					Estimated flow (L/s)
			pH	mS	*C	NTU		%		width (m)	depth (m)	V (m/s)	Slope (m:m)	Notes	
SW-1	25/02/2015	08:30	6.05	205	5.70	2.18	20	95.7	No signs of pollution	5	0.5	0.5	1:40		1000
SW0	25/02/2015	09:20	6.91	234	6.91	39.75	49	94.7	Appears turbid, no sheen or smell	3	0.7	0	1:40	Flooded	0
SW1	25/02/2015	09:15	6.80	564	5.80	265.00	54	90.1	White water, high turbidity, no visible contamination	0.92	0.37	1	1:30		272.32
SW2	25/02/2015	08:50	6.54	255	6.30	247.00	25	100.0	Ocra staining, potentially algal	1.5	0.1	0.2	1:40		24
SW3	25/02/2015	09:45	7.38	554	5.40	6.04	621	103.3	Clear and fast, concrete slipway	4.02	0.03	1	1:10		96.48
SW4	25/02/2015	11:00	7.50	882	7.90	0.00	150	94.0	Foamy scum, generally clean	1.1	0.12	0.2	1:30		21.12
SW5	25/02/2015	11:15	7.29	121	7.40	1.61	1.22	101.9	No signs of pollution	3	0.5	1	1:20	Estimates from bank	1200
SW7	25/02/2015	10:30	6.99	51	7.20	1.85	179	93.3	No signs of pollution	0.6	0.05	0.33	1:20	Pool & riffle, US of fall	7.92
SW8	25/02/2015	11:30	7.18	181	7.00	0.76	114	98.1	Leaf debris & foamy scum with some brown streaks. No sheen on water. BUCKET	1.5	0.4	0.12	1:15	concrete channel with 3 weirs	57.6
SW9	25/02/2015	12:50	7.35	331	8.40	0.25	126	102.0	Lots of rubbish & debris, no signs of oil pollution	1	0.1	0.5	1:20	Lots of boulders	40
SW9.1	25/02/2015	12:00	7.28	210	7.00	0.00	1.37	103.5	No signs of pollution	1.2	0.11	0.5	1:30		52.8
SW9.2	25/02/2015	12:05	7.17	384	7.20	0.00	135	90.6	Some foamy scum, no signs of pollution	0.44	0.04	0.5	1:20		7.04
SW10	25/02/2015	12:10	7.30	186	7.10	2.79	100	107.1	Some debris in water but no sheen or other contamination	7	0.4	2	1:40	White water, low slope	4480
SW11	25/02/2015	13:20	7.30	1164	7.10	0.00	105	105.7	No pollution, in stream habitat	0.35	0.045	1	1:10	Series of falls, routed through bathtub	12.6
SW12	25/02/2015	13:00	7.59	176	7.50	0.00	112	103.9	No signs of pollution, some debris	1.8	0.44	0.4	1:20		253.44
SW13	25/02/2015	13:30	7.18	171	9.70	7.19	93	93.8	Some foam, no signs of contamination	0.6	0.07	0.5	1:20		16.8
SW14	25/02/2015	14:00	6.95	223	7.40	0.00	130	100.1	No signs of contamination	1.65	0.13	2	1:10	within brick channel	343.2
SW14.1	25/02/2015	14:15	6.73	175	7.20	0.00	139	98.0	No signs of pollution	0.63	0.07	1	1:8	within brick channel	35.28
SW14.2	25/02/2015	14:10	6.72	422	8.20	0.00	143	100.2	No signs of pollution	0.85	0.055	0.25	1:5	within brick channel	9.35
SW15	25/02/2015	14:30	6.72	66	6.10	0.00	172	97.2	No signs of pollution	3	0.5	1	1:40	Estimated, cannot reach channel	1200
SW16	25/02/2015	16:45	7.45	288	7.50	2.26	205	95.0	No sheen, some soft sediment, rubbish debris	1.12	0.115	0.3	1:40	DS of confluence	30.912
SW17	25/02/2015	15:00	6.71	90	5.30	0.00	186	104.1	No visual pollution	3.35	0.25	1	1:20	dimensions from bridge	670
SW18	25/02/2015	15:20	6.76	204	6.70	0.00	202	97.6	No visual pollution, smells of drains	0.8	0.1	0.5	1:40	No access DS, estimated	32
SW19	25/02/2015	15:45	7.52	215	6.70	0.00	174	100.1	No pollution, in stream habitat	0.8	0.11	0.5	-	Rocks & boulders, falls and pools	35.2
SW20	25/02/2015	15:40	6.70	239	6.10	0.00	177	99.1	No pollutions	0.6	0.17	1	1:10	fast & loud, estimated at pool location	81.6
SW21	25/02/2015	15:35	7.39	232	6.50	0.00	174	96.6	Clear, some bubbles and leaf debris	1.08	0.33	0.7	1:10	Area of rifffles, falls & glides	199.584
SW21.1	25/02/2015	15:55	7.16	70	7.50	0.00	165	84.5	No pollution	-	-	-	-	spring into pond	
SW22	25/02/2015	16:05	6.70	250	5.90	0.00	180	87.0	No pollution	0.43	0.04	0.2	1:15	small flow	2.752
SW23	25/02/2015	16:20	7.39	356	5.50	0.00	145	93.9	No sheen, some rubbish debris	0.85	0.06	0.5	1:20	Some rocks in stream	20.4
SW25	25/02/2015	17:05	7.07	112	7.00	0.00	190	98.1	No pollution	0.75	0.08	0.8	1:10	Upstream of culvert	38.4
SW26	25/02/2015	17:10	7.08	137	7.80	0.00	198	100.1	No pollution	0.7	0.2	0.5	1:6	Series of rocky falls & steep	56
SW27	26/02/2015	08:30	6.55	166	7.10	12.71	131	101.7	No pollution	0.5	0.1	1	1:15		40
SW27.1	26/02/2015	08:45	6.54	139	7.30	8.04	160	99.6	No pollution	0.5	0.3	1	1:4	River has pools & falls	120
SW30	26/02/2015	09:40	6.92	213	14.50	5.57	210	99.7	Looks turbid but no pollution	5	0.6	1	1:30	Estimated from bank	2400
SW32	26/02/2015	09:30	6.79	214	13.50	0.00	200	97.6	No signs of pollution	10	0.5	0.75	1:40	Estimated from bank	3000
SW33	26/02/2015	10:10	7.28	253	14.70	0.07	221	98.4	No evidence of pollution	10	1	1.5	1:25	Estimated from bank	12000
SW34	26/02/2015	10:25	7.07	270	15.70	0.00	150	97.0	No evidence of pollution	2	0.55	0.15	1:100	Nearly flat	132
SW35	26/02/2015	10:40	7.34	400	7.34	18.90	239	102.0	No evidence of pollution, BUCKET	4	0.1	1	1:4	Estimated from bank	320
SW35.1	26/02/2015	10:50	7.42	935	16.90	18.27	230	99.2	No evidence of pollution, BUCKET	2.5	0.1	0.75	1:5	US of culvert, rocky w falls	150
SW35.2	26/02/2015	10:55	7.38	360	18.50	8.60	230	95.7	Dark water, no sheen observed, BUCKET	-	-	-	-	Culvert - no dimensions	
SW36	26/02/2015	11:20	6.90	273	16.80	7.77	193	90.5	No signs of pollution, BUCKET	1.7	0.13	0.5	1:40	US of culvert	88.4
SW39	26/02/2015	11:40	7.74	636	17.80	30.12	166	104.6	Rubbish and visible scum, turbid, bit of film on water, BUCKET	0.8	0.04	2	1:10	series of stone steps	51.2
SW40	26/02/2015	12:00	7.95	526	16.80	2.24	150	102.1	No visible pollution, BUCKET	-	-	-	-	No dimensions, reservoir	
SW41	26/02/2015	12:20	7.50	229	19.00	4.47	153	100.7	Some rubbish and foam, no sheen, BUCKET	-	-	-	-	No dimensions, reservoir	

Weather	
25/02/2015	Mist, overcast & dizzle in the morning, sunny in the afternoon. rain previous week.
26/02/2015	Rain previous night, heavy rain until 11 am, then sunny and windy

	Date	Time	pH	EC	Temp.	Turbidity	Redox	DO	Visual	Estimated channel dimensions					Estimated flow (L/s)
			pH	mS	*C	NTU		%		width (m)	depth (m)	V (m/s)	Slope (m:m)	Notes	
SW-1	10/03/2015	08:30	6.81	276	6.60	0.58	23	88.2	Lots of rubbish, no sheen	2	0.7	0.2	1:40		224
SW0	10/03/2015	09:30	7.86	261	4.90	CAP	31	100.3	turbid, no visible pollution	2.5	2	0	1:40	flooded	0
SW1	10/03/2015	09:20	7.88	691	4.20	CAP	36	102.4	turbid and white	0.52	0.31	0.25	1:30		32.24
SW2	10/03/2015	09:02	6.83	251	4.10	CAP	24	90.1	ocha deposit colouring, no sheen	2.5	0.1	0.05	1:50	much lower flows	10
SW3	10/03/2015	10:10	8.24	624	7.20	CAP	86	109.4	No visible pollution	2.02	0.02	1	1:10		32.32
SW4	10/03/2015	10:40	8.42	1106	6.90	CAP	66	88.7	foamy scum, no pollution sheen	1.1	0.085	0.1	1:20		7.48
SW5	10/03/2015	10:50	6.92	118	6.40	CAP	-4	95.6	No visible pollution	2.1	0.2	0.33	1:20		110.88
SW7	10/03/2015	10:25	8.25	49	5.80	19.97	81	90.9	No visible pollution	1	0.05	0.05	1:20	Pool & riffle, US of fall	2
SW8	10/03/2015	11:10	7.75	194	6.30	CAP	70	102.9	leaf litter and rubbish, no sheen	2	0.3	0.0625	1:15	Weir formation, concrete channel	30
SW9	10/03/2015	11:30	7.90	312	6.70	CAP	87	100.3	litter in channel, no sheen	1	0.08	0.2	1:15	Lots of boulders	12.8
SW9.1	10/03/2015	11:50	7.81	230	6.20	CAP	96	84.6	no visible pollution	2	0.18	0.1	1:20		28.8
SW9.2	10/03/2015	11:45	7.42	279	7.00	CAP	97	94.8	no visible pollution, foam	0.5	0.02	0.25	1:15		2
SW10	10/03/2015	11:55	8.51	223	6.90	CAP	91	104.3	no visible pollution, rubbish	5	0.3	1	1:30	Estimated from bank	1200
SW11	10/03/2015	15:35	7.87	936	11.20	0.27	123	87.0	No visible pollution, very dry	0.3	0.015	0.1	1:5	Series of falls, routed through bathtub	0.36
SW12	10/03/2015	15:30	7.79	166	7.30	0.00	121	82.7	No visible pollution	1.9	0.23	0.5	1:20		174.8
SW13	10/03/2015	15:45	7.72	163	11.20	0.00	92	90.1	no visible pollution	0.39	0.045	0.2	1:15		2.808
SW14	10/03/2015	15:00	7.35	226	8.20	0.00	122	95.0	No oil sheen but lots of rubbish	0.41	2.5	1	1:10	within brick channel	820
SW14.1	10/03/2015	15:15	7.23	187	8.00	0.00	124	93.9	No visible pollution	0.47	0.02	1	1:10	within brick channel	7.52
SW14.2	10/03/2015	15:10	7.22	376	9.80	9.03	121	93.3	No visible pollution some rubbish	1.08	0.02	0.25	1:5	within brick channel	4.32
SW15	10/03/2015	14:45	7.65	74	7.20	0.00	97	96.4	No visible pollution	3.5	0.3	1	1:30	Estimated, cannot reach channel	840
SW16	10/03/2015	16:05	8.25	336	8.00	0.00	126	93.6	visible sheen along road drainage ditch, brown sediment in culverted watercourse	1	0.045	0.5	1:30	DS of confluence	18
SW17	10/03/2015	13:15	7.61	68	8.00	0.22	119	98.1	no visible pollution	-	-	-	-	reservoir	
SW18	10/03/2015	14:30	7.85	246	8.50	0.00	87	96.7	No visible pollution	1.2	0.25	0.2	1:20	No access DS, estimated	48
SW19	10/03/2015	14:05	8.28	234	8.40	0.00	77	100.3	No visible pollution	0.65	0.08	1	1:10		41.6
SW20	10/03/2015	14:10	8.37	279	8.60	0.00	64	80.2	No visible pollution	0.33	0.075	0.5	1:20		9.9
SW21	10/03/2015	14:15	8.45	247	8.30	0.00	73	97.5	No visible pollution	1.7	0.1	0.33	1:15		44.88
SW21.1	10/03/2015	14:00	7.16	80	10.30	0 / 145	45	76.5	No visible pollution, very muddy in some holes (145 NTU in hoof hole)	1.5	0.02	0	1:10		0
SW22	10/03/2015	13:50	7.50	168	6.20	0.00	46	89.1	No visible pollution	0.4	0.03	0.25	1:30	small flow	2.4
SW23	10/03/2015	13:35	8.38	378	7.20	0.00	35	102.0	No visible oil pollution	0.85	0.035	0.33	1:20	Some rocks in stream	7.854
SW25	10/03/2015	16:30	7.89	112	6.20	0.00	115	99.4	No visislbe pollution	0.5	0.09	0.3	1:8	No flow from road culvert	10.8
SW26	10/03/2015	16:45	7.93	177	6.00	0.00	129	86.5	No visible pollution / sheen	0.45	0.06	0.05	1:10	Series of rocky falls & steep	1.08
SW27	10/03/2015	17:05	8.20	356	6.20	0.66	146	99.7	No visible pollution	0.25	0.1	0.5	1:15		10
SW27.1	10/03/2015	17:15	6.97	175	6.50	0.00	145	94.6	No visible pollution	0.2	0.03	0.1	1:5		0.48
SW30	11/03/2015	08:30	7.10	210	4.30	2.71	131	94.9	No visible sheen, some rubbish	2.52	0.12	0.75	1:30		181.44
SW32	11/03/2015	08:20	6.85	128	5.50	3.98	114	99.3	No visible pollution	10	0.3	1.25	1:40	Estimated from bank	3000
SW33	11/03/2015	08:55	7.99	209	5.70	9.26	139	103.1	No visible pollution	8	0.6	1	1:20	Estimated from bank	3840
SW34	11/03/2015	09:10	8.14	217	5.50	13.80	140	93.8	No visible pollution	2	0.4	0.15	1:100	Nearly flat	96
SW35	11/03/2015	09:25	8.13	433	6.20	15.78	139	91.0	No visible pollution	1.4	0.07	0.25	1:4	Erosion down to geotextile	19.6
SW35.1	11/03/2015	09:35	8.40	395	5.70	13.56	123	100.5	No visible sheen, erosion	0.88	0.02	1	1:5		14.08
SW35.2	11/03/2015	09:40	8.20	477	7.20	13.27	125	91.8	No visible sheen	0.2	0.02	2	-	Culvert - no dimensions	6.4
SW36	11/03/2015	10:00	7.74	262	5.50	25.03	113	89.4	No visible pollution but very turbid	1.7	0.1	0.2	1:40	US of culvert	27.2
SW39	11/03/2015	10:22	-	-	-	-	-	-	Low flow - too dry to sample	-	-	-	-	-	
SW40	11/03/2015	10:35	8.53	522	6.10	13.84	129	102.4	No visible pollution - looks turbid	-	-	-	-	No dimensions, reservoir	
SW41	11/03/2015	10:55	8.84	185	5.30	19.81	122	110.6	No visible pollution - algi sheen	-	-	-	-	No dimensions, reservoir	

Weather	
10/03/2015	In the morning icy and sunny, clear skys throughout the day and warm in the afternoon. Dry previous week.
11/03/2015	Cloudy and cold, dry all day with threats of showers. Small shower previous night.

	Date	Time	pH	EC	Temp.	Turbidity	Redox	DO	Visual	Estimated channel dimensions					Estimated flow (L/s)
			pH	mS	*C	NTU		%		width (m)	depth (m)	V (m/s)	Slope (m:m)	Notes	
SW-1	28/07/2015	14:55	7.69	311	14.40	0.00	122	8.0	No signs of pollution	3	0.55	0.15	1:20		198
SW0	28/07/2015	15:45	8.18	284	13.40	0.00	111	12.3	No visible pollution, significant in channel habitat / algal blooms & a small dead fish.	3	0.2	0	1:40	Grate still blocked, very slow flow	0
SW1	28/07/2015	15:41	8.06	1024	15.10	0.00	125	12.3	No visible pollution	0.4	0.25	0.2	1:30		16
SW2	28/07/2015	15:30	7.98	412	15.70	0.00	125	9.6	No pollution in channel, sheen in field bog	2	0.02	0	1:50	Practically no flow	0
SW3	28/07/2015	16:00	8.26	987	15.30	0.00	118	13.1	Tested from bottom of steps	0.6	0.04	0.5	1:20		9.6
SW4	28/07/2015	14:25	8.55	1924	12.20	0.00	98	11.7	No visible pollution	1	0.06	0.15	1:30		7.2
SW5	28/07/2015	14:40	7.63	120	14.50	0.00	-	12.3	No visible pollution	3.5	0.12	0.5	1:20		168
SW7	28/07/2015	14:15	-	-	-	-	-	-	-	0	0	0	1:20	Completely dry	0
SW8	28/07/2015	14:00	8.18	274	12.60	0.00	127	11.8	No visible pollution	1.3	0.01	0.25	1:15	Flow pipes not over weirs	2.6
SW9	-	-	-	-	-	-	-	-	-	-	-	-	-	NO ACCESS - NOT MONITORED	
SW9.1	28/07/2015	13:10	8.11	319	12.50	0.00	103	11.2	No signs of pollution - some rubbish	1.3	0.12	0.05	1:30		6.24
SW9.2	28/07/2015	13:05	6.08	316	12.60	0.00	90	5.0	No visible pollution	0.2	0.01	0	1:20	No flow	0
SW10	28/07/2015	13:20	8.46	228	11.80	7.25	104	15.2	No sheen, lots of scrap metal & litter	6.5	0.4	0.5	1:40		1040
SW11	-	-	-	-	-	-	-	-	-	-	-	-	-	NO ACCESS - NOT MONITORED	
SW12	28/07/2015	12:10	7.69	309	12.90	0.00	95	6.6	No visible pollution	2.2	0.11	0.03	1:20		5.808
SW13	-	-	-	-	-	-	-	-	-	-	-	-	-	NO ACCESS - NOT MONITORED	
SW14	28/07/2015	11:50	7.35	224	12.70	0.00	120	11.8	No visible pollution	0.38	0.01	1	1:10		3.04
SW14.1	28/07/2015	11:45	7.30	198	12.70	0.00	115	11.0	No signs of pollution	0.28	0.02	0.25	1:10		1.12
SW14.2	28/07/2015	11:40	6.60	324	14.00	0.00	120	7.4	No signs of pollution	0.32	0.01	0	1:5	Very low flow, almost none	0
SW15	28/07/2015	11:20	8.44	113	12.50	0.00	110	10.5	No signs of pollution	4.5	0.06	0.3	1:40		64.8
SW16	28/07/2015	16:30	8.14	321	13.20	0.00	115	12.9	No visible pollution, some rubbish	1	0.07	0.05	1:40	DS of confluence	2.8
SW17	28/07/2015	10:50	7.61	81	15.60	5.41	122	8.6	No visual pollution	-	-	-	-	Reservoir, used bucket	
SW18	28/07/2015	11:00	7.68	192	12.50	0.00	100	12.1	No visible pollution	0.9	0.03	0.3	1:10		6.48
SW19	28/07/2015	10:17	8.37	291	12.30	0.00	147	12.0	No pollution	0.72	0.09	0.3	1:5	Boulders, variable depth & width	15.552
SW20	28/07/2015	10:20	8.40	290	12.70	2.79	137	12.2	No pollutions	0.68	0.07	0.25	1:10		9.52
SW21	28/07/2015	10:25	8.41	290	12.50	0.00	129	12.3	No visible pollution, some bubbles	1.92	0.12	0.3	1:10		55.296
SW21.1	28/07/2015	10:14	5.80	128	12.20	0.00	116	3.5	No pollution	0.35	0.02	0	1:15		0
SW22	28/07/2015	10:00	7.20	156	11.90	0.00	105	8.5	No pollution, orange tint	0.4	0.02	0.01	1:15	very slow flow	0.064
SW23	28/07/2015	09:47	8.03	392	11.60	1.25	92	11.9	No sheen, some rubbish debris	0.7	0.04	0.5	1:20	Some rocks in stream	11.2
SW25	28/07/2015	17:00	7.99	116	13.20	0.00	94	13.4	No pollution	0.4	0.07	1	1:10	Upstream of culvert	22.4
SW26	28/07/2015	17:20	7.87	147	14.00	0.00	92	13.1	Monitored at the top of field for safe access	0.4	0.05	0.5	1:5		8
SW27	28/07/2015	18:00	8.10	341	13.10	0.00	104	9.9	No pollution	0.4	0.2	0.2	1:15		12.8
SW27.1	28/07/2015	18:10	7.36	289	12.30	0.00	100	13.7	No pollution	0.1	0.02	0.05	1:2	Steep slope, very low flow	0.08
SW30	29/07/2015	08:30	7.69	158	10.90	-	163	9.8	Very clear water. Some litter, no pollution.	3.5	0.25	0.25	1:30	Estimated from bank	175
SW32	29/07/2015	08:41	8.51	157	11.80	-	183	12.4	Very clear water. No pollution.	10	0.3	0.5	1:40	Estimated from bank	1200
SW33	29/07/2015	09:10	8.24	193	12.10	-	169	11.4	Very clear water. No pollution.	8	0.3	1	1:25	Estimated from bank	1920
SW34	29/07/2015	09:20	8.67	189	12.00	-	166	9.6	No pollution, slight red tint	2	0.5	0.1	1:100		80
SW35	29/07/2015	09:45	8.59	393	13.30	-	134	11.1	Very clear. No visible pollution some litter	2	0.05	0.06	1:5	Flow approx 2.5 l/s from bucket	4.8
SW35.1	29/07/2015	09:38	8.64	375	12.70	-	148	12.4	Looks clear, no pollution.	0.15	0.01	0.75	1:15	Bucket flow from culvert 0.3l/s	0.9
SW35.2	29/07/2015	09:40	8.31	426	14.00	-	142	12.5	Looks clear, no pollution.	-	-	-	-	Culvert - bucket flow 2l/s	
SW36	29/07/2015	10:10	7.40	298	12.50	-	193	90.5	Quite clear. No visible pollution	0.75	0.05	0.05	1:50	US of culvert	1.5
SW39	29/07/2015	10:40	-	-	-	-	-	-	Flow too low to monitor (trickle)	0	0	0	1:10	Negligible flow	0
SW40	29/07/2015	11:10	8.35	203	14.60	-	88	12.7	Clear water. No visible pollution	0	0	0	0	No dimensions, reservoir	
SW41	29/07/2015	10:55	8.23	327	13.90	-	91	8.5	Clear water. No visible pollution. BUCKET	0	0	0	0	No dimensions, reservoir	

Weather	
28/07/2015	Showers the previous evening and wet previous two weeks. Cloudy with rain around 4 pm.
29/07/2015	Heavy rain previous night, dry for the majority of the day with some very light showers.

	Date	Time	pH	EC	Temp.	Turbidity	Redox	DO**	Visual	Estimated channel dimensions					Estimated flow (L/s)
			pH	mS	*C	NTU		%		width (m)	depth (m)	V (m/s)	Slope (m:m)	Notes	
SW-1	10/09/2015	12:10	7.52	302	14.60	5.24	105	-	No signs of pollution, slightly cloudy water	4	0.08	0.5	1:20		128
SW0	10/09/2015	13:20	8.08	243	13.60	67.00	113	-	No visible pollution	2.5	0.8	0.01	1:40	Grate unblocked, lower water with flow	16
SW1	10/09/2015	13:05	8.16	1262	14.40	37.22	131	-	No visible pollution	0.33	0.21	0.01	1:30		0.5544
SW2	10/09/2015	12:55	7.21	291	14.50	96.00	114	-	No pollution, orange colouration	1	0.02	0	1:50	Practically no flow	0
SW3	10/09/2015	12:30	8.17	1301	15.50	6.03	118	-	Tested from bottom of steps, no visible pollution	0.39	0.04	0.5	1:20	Very little flow along slipway, most of flow from pipe	6.24
SW4	10/09/2015	14:25	8.47	1878	14.30	26.27	137	-	No visible pollution	0.88	0.07	0.05	1:30		2.464
SW5	10/09/2015	14:35	8.02	347	17.80	76.00	122	-	No visible pollution	1.6	0.06	0.3	1:20		23.04
SW7	10/09/2015	14:15	-	-	-	-	-	-	Dry, insufficient water to monitor	0	0	0	1:20	No flow	0
SW8	10/09/2015	15:05	8.18	443	14.70	-	137	-	Some foamy pollution, no sheen, some rubbish	2	0.01	0.1	1:15	Very low flow	1.6
SW9	10/09/2015	15:30	-	-	-	-	-	-	-	-	-	-	-	NO ACCESS - NOT MONITORED	
SW9.1	10/09/2015	15:40	8.05	302	13.60	29.74	143	-	No visible pollution	0.5	0.03	0.1	1:30		1.2
SW9.2	10/09/2015	15:45	-	-	-	-	-	-	Dry, insufficient water to monitor	-	-	-	1:20	No flow	
SW10	10/09/2015	15:55	8.52	311	15.10	32.88	146	-	No sheen, some rubbish.	5	0.1	0.5	1:40		200
SW11	10/09/2015	11:45	7.90	568	16.50	2.24	114	-	No visible pollution, very low flow, measured from puddle	-	-	-	-	No measurable flow	
SW12	10/09/2015	11:30	7.44	265	13.30	0.00	122	-	No visible pollution	1.9	0.16	0.05	1:20		12.16
SW13	10/09/2015	11:50	-	-	-	-	-	-	Completely dry, no water available	0	0	0	-	No flow	0
SW14	10/09/2015	11:05	7.38	161	12.30	0.00	120	-	No sheen, some algae. Hay cutting upstream.	0.34	0.01	1	1:10		2.72
SW14.1	10/09/2015	11:10	7.20	153	12.20	2.49	118	-	No signs of pollution, hay cutting upstream	0.27	0.01	0.5	1:10		1.08
SW14.2	10/09/2015	11:20	6.90	308	13.50	2.38	122	-	No signs of pollution, hay cutting upstream	-	-	-	1:5	Practically no flow, measured from puddle	
SW15	10/09/2015	10:55	7.66	201	12.00	0.00	107	-	No signs of pollution	3.4	0.03	0.2	1:40	Very low water	16.32
SW16	-	-	-	-	-	-	-	-	-	-	-	-	-	NOT MEASURED DUE TO H&S	
SW17	10/09/2015	10:30	6.84	67	16.00	0.00	105	-	No visual pollution	-	-	-	-	Reservoir, used bucket	
SW18	10/09/2015	09:25	7.98	371	12.90	9.55		-	No visible pollution	-	-	-	1:10	Very low flows, not able to measure and monitored from puddle.	
SW19	10/09/2015	08:55	8.27	364	11.30	0.00	85	-	No visible pollution	0.75	0.035	0.1	1:5	Boulders, variable depth & width	2.1
SW20	10/09/2015	09:00	8.19	299	11.70	0.00	85	-	No visible pollution	0.8	0.025	0.05	1:10	Very low water	0.8
SW21	10/09/2015	09:06	8.44	349	11.80	0.00	86	-	No visible pollution	1.65	0.075	0.15	1:10		14.85
SW21.1	10/09/2015	08:50	-	-	-	-	-	-	Dry, no water	-	-	-	1:15	Dry, no water at all	
SW22	10/09/2015	08:40	5.83	284	11.90	88.00	-12	64.2	Sheen on water, potentially peat. No odor	0	0	0	1:15	No flow, measurements taken from a pool of standing water.	0
SW23	10/09/2015	08:30	-	-	-	-	-	-	Insufficient depth to take a sample	0	0	0	1:20	No flow	0
SW25	10/09/2015	16:30	7.76	120	15.00	75.00	133	-	No pollution	0.5	0.07	0.3	1:10	Upstream of culvert	8.4
SW26	10/09/2015	16:45	7.80	431	13.20	31.14	144	-	Monitored at the top of field for safe access, no sheen pollution	0.1	0.05	0.05	1:5		0.2
SW27	10/09/2015	17:10	7.83	360	13.40	43.55	137	-	No pollution	0.4	0.2	0	1:15		0
SW27.1	10/09/2015	17:20	-	-	-	-	-	-	Dry, no water	-	-	-	1:2	No flow	
SW30	11/09/2015	08:50	7.21	243	11.10	34.64	143	-	No visible pollution, some rubbish	3.5	0.08	0.5	1:20	Estimated from bank	112
SW32	11/09/2015	09:00	7.46	183	12.60	39.07	161	-	No visible pollution	8	0.4	0.5	1:40	Estimated from bank	1280
SW33	11/09/2015	09:30	7.79	210	12.30	24.36	161	-	No visible pollution	6.5	0.1	1	1:25	Estimated from bank	520
SW34	11/09/2015	09:50	8.00	206	12.30	27.78	162	-	No visible pollution	2.15	0.54	0.1	1:100		92.88
SW35	11/09/2015	10:20	8.19	359	14.60	88.00	161	-	No visible pollution, not clear, sampled from a puddle with combined in flows	-	-	-	1:5	No flow measured, estimated 1.5 l/s	1.5
SW35.1	11/09/2015	10:25	8.58	329	13.50	112.00	158	-	From pipe, no visible pollution but cloudy	-	-	-	1:15	1 l/s from bucket	1
SW35.2	11/09/2015	10:15	8.18	366	14.50	145.00	156	-	Looks dark and cloudy	-	-	-	-	From pipe, estimated 0.5 l/s	0.5
SW36	11/09/2015	10:25	7.67	460	13.60	172.00	147	-	No flow, puddles of water & vegetation	-	-	-	1:50	No flow	
SW39	11/09/2015	11:00	-	-	-	-	-	-	No flowing water, insufficient to monitor	-	-	0	1:10	No flow	
SW40	11/09/2015	11:10	8.40	316	15.30	-	136	-	No visible pollution	-	-	-	-	No dimensions, reservoir	
SW41	11/09/2015	11:30	8.56	169	15.20	64.00	134	-	No pollution, algal blooms	-	-	-	-	No dimensions, reservoir	

Weather	
10/09/2015	Dry all day and hot in the afternoon (25*C), reportedly dry the previous week.
11/09/2015	Overcast and cold, no rain but humidity with almost drizzle.

**Dissolved oxygen probe not working throughout the majority of the monitoring period, equipment continued to turn off immediately after starting, and therefore unable to take any readings.

Annex C. Full laboratory results

See following page

Analytical Report Number: 15-67759

Project / Site name: A465

Lab Sample Number				421510	421512	421520	421515	421511	421513	421516	421517	421519	421514	421518	421527	421523	421530	421528	421529	421525	421524	421531	421526	421533	421532	421521	421522	421534
Sample Reference				SW-1	SW0	SW1	SW3	SW4	SW5	SW8	SW10	SW12	SW14	SW15	SW16	SW17	SW18	SW21	SW23	SW25	SW27	SW30	SW32	SW33	SW35	SW36	SW40	SW41
Sample Number				N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Depth (m)				N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Date Sampled				25/02/15	25/02/15	25/02/15	25/02/15	25/02/15	25/02/15	25/02/15	25/02/15	25/02/15	25/02/15	25/02/15	25/02/15	25/02/15	25/02/15	25/02/15	25/02/15	25/02/15	26/02/15	26/02/15	26/02/15	26/02/15	26/02/15	26/02/15	26/02/15	26/02/15
Time Taken				0830	0930	0910	1000	1100	1115	1130	1210	1315	1355	1430	1640	1500	1520	1535	1610	1705	0845	0930	0940	1010	1040	1105	1230	1205
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**																									
General Inorganics																												
pH	pH Units	N/A	ISO 17025	8.3	8.5	7.7	8.0	8.3	8.6	8.2	8.1	7.9	8.3	8.3	7.2	7.3	7.4	7.2	7.2	7.3	7.0	7.5	7.3	7.4	7.3	7.2	7.2	7.2
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloride	mg/l	0.15	ISO 17025	32	25	19	8.6	11	7.6	19	14	19	44	13	56	17	48	19	58	13	26	19	12	13	74	17	16	130
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	4.08	2.82	0.60	0.36	2.52	1.72	2.70	3.81	4.05	5.77	4.21	6.02	5.38	4.95	4.51	6.33	2.18	4.38	5.80	4.02	3.71	4.98	5.29	5.21	3.15
Total Suspended Solids	mg/l	2	NONE	6.0	25	-	8.0	2.0	5.0	4.0	7.0	3.0	4.0	4.0	9.0	10	< 2.0	3.0	3.0	< 2.0	110	50	6.0	8.0	160	19	25	6.0
Hardness - Total	mgCaCO3/l	1	ISO 17025	51.3	75.9	263	279	240	44.0	60.6	76.5	55.8	49.0	16.7	64.3	20.9	41.2	96.0	125	36.4	41.8	27.5	33.0	66.6	80.2	80.3	49.9	108
Speciated PAHs																												
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.18	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.23	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.05	< 0.01	< 0.01	< 0.01	0.06	0.05	0.07	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.05	< 0.01	< 0.01	< 0.01	0.06	0.06	0.06	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.05	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.03	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH																												
Total EPA-16 PAHs	µg/l	0.2	ISO 17025	< 0.20	< 0.20	-	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.22	< 0.20	0.36	< 0.20
Heavy Metals / Metalloids																												
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.65	0.17	1.90	< 0.15	0.36	0.17	0.30	0.87	0.63	0.64	0.72	0.25	0.83	0.60	0.89	1.02	0.49	0.71	0.54	0.87	0.71	1.45	0.84	0.60	0.56
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.08	0.06	0.06	0.03	0.04	< 0.02	0.03	0.03	0.03	0.06	0.08	0.07	0.03	0.15	0.03	0.07	0.03	< 0.02	0.03	0.04	0.04	0.06	0.08	0.03	0.02
Copper (dissolved)	µg/l	0.5	ISO 17025	14	11	12	6.7	17	9.3	9.2	8.8	13	11	7.2	14	9.8	13	15	11	11	11	14	12	14	17	11	14	15
Lead (dissolved)	µg/l	0.2	ISO 17025	0.6	0.6	0.3	0.3	0.5	0.4	0.5	0.4	0.4	0.9	0.6	0.8	0.6	0.7	0.4	0.6	0.5	1.2	0.6	0.4	0.4	1.1	1.3	1.3	0.6
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	0.07	0.09	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.09	< 0.05	< 0.05	0.36	< 0.05	< 0.05	0.29
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.5	2.5	100	39	5.5	2.4	2.4	4.0	1.3	1.4	1.6	1.1	1.4	1.8	0.9	1.3	1.2	1.2	1.3	0.5	1.1	1.0	1.4	1.1	0.5
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6	2.8	2.6	2.3	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	13	6.6	8.0	4.0	7.5	6.5	7.3	4.9	6.8	9.5	9.0	6.2	8.7	16	6.8	6.7	6.1	18	8.7	10	4.5	12	32	16	6.0
Calcium (dissolved)	mg/l	0.005	ISO 17025	15.6	20.1	54.9	33.3	45.6	7.43	14.1	25.3	19.2	17.4	5.47	21.4	6.81	14.2	35.2	46.7	9.99	13.9	9.36	11.6	23.9	29.8	30.2	17.7	36.4
Magnesium (dissolved)	mg/l	0.002	ISO 17025	3.0	6.3	30	47	31	6.2	6.2	3.2	1.9	1.3	0.73	2.6	0.95	1.4	2.0	2.0	2.8	1.7	1.0	0.97	1.7	1.4	1.2	1.4	4.1
Arsenic (total)	µg/l	0.15	ISO 17025	0.66	0.61	4.33	< 0.15	0.42	< 0.15	0.32	1.02	0.67	1.18	0.73	1.68	1.15	0.68	0.90	1.45	0.54	0.76	1.14	1.31	1.89	2.14	1.23	1.64	0.70
Cadmium (total)	µg/l	0.02	ISO 17025	0.08	0.06	0.06	0.08	0.04	0.03	0.04	< 0.02	0.04	0.07	0.05	0.07	0.07	0.16	0.03	0.08	0.04	< 0.02	0.06	0.04	0.04	0.16	0.04	0.04	0.03
Copper (total)	µg/l	0.5	ISO 17025	22	17	27	23	18	22	23	25	19	24	25	26	24	22	27	27	11	27	24	20	25	26	20	27	25
Lead (total)	µg/l	0.2	ISO 17025	1.5	1.9	4.9	0.5	1.2	1.4	0.8	1.2	1.0	1.3	0.8	1.6	1.4	1.5	1.4	1.2	0.5	4.0	3.8	1.2	2.6	18	2.4	8.7	3.1
Mercury (total)	µg/l	0.05	ISO 17025	0.66	0.56	0.08	0.10	0.39	0.17	0.16	< 0.05	< 0.05	0.28	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.10	< 0.05	< 0.05	0.86	< 0.05	< 0.05	0.32
Nickel (total)	µg/l	0.5	ISO 17025	1.3	2.6	90	37	5.4	2.2	1.6	3.5	0.7	1.0	1.0	1.7	1.7	1.7	0.6	1.2	0.8	1.0	0.9	< 0.5	1.2	1.5	1.4	5.1	1.2
Selenium (total)	µg/l	0.6	ISO 17025	< 0.6	< 0.6	2.9	2.8	2.3	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	0.9	0.8	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Zinc (total)	µg/l	0.5	ISO 17025	17	12	23	7.9	9.0	19	9.8	20	11	13	11	12	16	18	9.6	12	6.8	46	20	11	13	57	36	29	24
Petroleum Hydrocarbons																												
TPH1 (C10 - C40)	µg/l	10	NONE	< 10	< 10	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample N/S = None supplied

Analytical Report Number: 15-68345

Project / Site name: A465

Lab Sample Number				424955	424956	424957	424958	424959	424960	424961	424962	424968	424967	424966	424969	424963	424965	424964	424970	424971	424972	424973	424974	424975	424976	424978	424977
Sample Reference				SW-1	SW0	SW1	SW3	SW4	SW5	SW8	SW10	SW12	SW14	SW15	SW16	SW17	SW21	SW23	SW25	SW27	SW30	SW32	SW33	SW35	SW36	SW40	SW41
Sample Number				N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Depth (m)				N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Date Sampled				10/03/15	10/03/15	10/03/15	10/03/15	10/03/15	10/03/15	10/03/15	10/03/15	10/03/15	10/03/15	10/03/15	10/03/15	10/03/15	10/03/15	10/03/15	10/03/15	10/03/15	11/03/15	11/03/15	11/03/15	11/03/15	11/03/15	11/03/15	11/03/15
Time Taken				0830	0930	0920	1010	1040	1050	1110	1155	1530	1500	1445	1605	1315	1415	1335	1630	1705	0830	0820	0855	0925	1000	1055	1035
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**																								
General Inorganics																											
pH	pH Units	N/A	ISO 17025	7.7	7.6	7.7	7.8	8.1	7.9	7.8	7.9	7.7	7.7	7.9	7.7	7.9	8.0	7.7	7.7	7.7	7.8	7.8	7.9	7.8	7.7	7.9	7.7
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloride	mg/l	0.15	ISO 17025	41	22	23	7.3	11	6.4	24	12	17	47	14	90	13	23	64	10	69	31	12	12	70	22	22	130
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	4.76	2.85	1.91	1.25	1.77	1.79	2.66	2.54	3.94	5.87	4.48	4.65	5.54	3.61	5.59	2.08	3.67	3.33	3.20	2.75	2.28	2.42	4.98	3.45
Total Suspended Solids	mg/l	2	NONE	2.0	3.0	21	< 2.0	< 2.0	< 2.0	< 2.0	8.0	< 2.0	6.0	< 2.0	6.0	2.0	< 2.0	3.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	15	4.0	5.0
Hardness - Total	mgCaCO3/l	1	ISO 17025	114	112	373	414	367	52.6	85.4	133	81.2	69.0	22.0	128	17.3	125	184	40.8	127	76.8	64.8	137	204	148	69.8	149
Speciated PAHs																											
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH																											
Total EPA-16 PAHs	µg/l	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Heavy Metals / Metalloids																											
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.53	0.43	0.91	< 0.15	0.28	0.28	0.33	0.59	0.76	0.73	0.89	0.76	1.10	0.73	1.11	0.58	0.99	0.90	0.58	0.49	1.03	0.81	0.64	0.84
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	0.05	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02	< 0.02	< 0.02	0.06	< 0.02	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.03	< 0.02	< 0.02
Copper (dissolved)	µg/l	0.5	ISO 17025	19	11	15	15	11	2.4	13	12	2.8	3.9	3.4	22	12	2.4	11	3.1	3.3	3.1	10	19	11	20	16	3.9
Lead (dissolved)	µg/l	0.2	ISO 17025	0.3	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.3	0.2	0.5	0.4	0.6	0.5	0.2	0.3	< 0.2	0.4	0.2	< 0.2	0.5	0.2	0.5	0.7	2.1
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.8	2.7	200	44	6.9	2.2	1.6	4.0	1.1	1.5	0.7	1.5	1.8	0.9	1.1	1.1	1.5	1.2	0.5	< 0.5	0.9	1.2	1.6	1.3
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6	2.6	1.9	2.7	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	8.4	5.6	12	6.5	2.1	2.9	4.8	2.3	6.4	6.8	3.9	3.7	12	4.2	2.0	3.0	3.3	5.6	3.5	5.3	3.4	7.7	6.9	7.3
Calcium (dissolved)	mg/l	0.005	ISO 17025	34.8	28.0	72.8	55.1	67.2	8.87	20.4	44.7	28.4	25.0	7.19	42.7	5.41	45.1	69.1	11.7	42.2	26.8	23.6	50.0	76.7	56.6	24.5	52.2
Magnesium (dissolved)	mg/l	0.002	ISO 17025	6.4	10	46	67	48	7.4	8.3	5.1	2.5	1.6	0.98	5.2	0.93	3.0	2.7	2.8	5.2	2.4	1.5	3.0	3.0	1.6	2.1	4.5
Arsenic (total)	µg/l	0.15	ISO 17025	1.99	2.64	2.50	2.01	3.66	1.89	1.97	4.00	2.04	1.08	0.92	2.45	2.96	1.00	2.63	2.25	1.06	3.31	1.42	4.08	2.89	2.87	2.18	3.37
Cadmium (total)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	0.12	0.03	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02	< 0.02	0.02	0.07	0.03	0.03	0.04	0.03	< 0.02	< 0.02	< 0.02	0.11	0.08	< 0.02	< 0.02
Copper (total)	µg/l	0.5	ISO 17025	20	16	21	22	12	3.1	19	15	2.9	4.5	5.1	22	22	3.1	18	5.0	4.9	3.8	18	26	21	23	23	4.1
Lead (total)	µg/l	0.2	ISO 17025	3.9	2.5	1.4	2.2	3.3	0.9	1.0	1.6	2.7	1.6	1.4	2.4	4.8	2.4	2.5	0.8	1.1	1.4	2.8	1.1	1.5	1.6	2.7	4.6
Mercury (total)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.12	< 0.05	< 0.05	< 0.05	< 0.05	0.47	< 0.05	0.10	< 0.05	< 0.05	< 0.05	0.21	0.06	0.50	0.26	< 0.05	< 0.05	< 0.05	0.18
Nickel (total)	µg/l	0.5	ISO 17025	2.1	3.1	200	47	7.4	2.9	1.6	4.5	1.2	1.5	0.8	2.3	1.9	0.9	1.5	1.4	3.3	1.2	0.8	0.5	1.1	1.5	1.8	1.4
Selenium (total)	µg/l	0.6	ISO 17025	2.6	< 0.6	2.6	2.3	3.1	< 0.6	< 0.6	0.7	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	0.8	< 0.6	0.8	< 0.6	< 0.6	< 0.6	0.7	0.6	3.8	0.8
Zinc (total)	µg/l	0.5	ISO 17025	9.9	9.4	12	7.4	2.2	3.3	9.0	2.5	6.5	7.8	4.7	4.3	13	4.4	2.7	6.4	3.5	6.0	5.1	10	19	18	23	9.6
Petroleum Hydrocarbons																											
TPH1 (C10 - C40)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample N/S = None supplied

Analytical Report Number: 15-76292
Project / Site name: A465
Your Order No: 00000016

Lab Sample Number				471083	471085	471084	471086	471081	471082	471080	471079	471077	471078	471076	471087	471075	471074	471073	471088	471089	471090	471091	471092	471093	471094	471095	471096
Sample Reference				SW-1	SW0	SW1	SW3	SW4	SW5	SW8	SW10	SW12	SW14	SW15	SW16	SW17	SW21	SW23	SW25	SW27	SW30	SW32	SW33	SW35	SW36	SW40	SW41
Sample Number				N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Depth (m)				N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Date Sampled				28/07/15	28/07/15	28/07/15	28/07/15	28/07/15	28/07/15	28/07/15	28/07/15	28/07/15	28/07/15	28/07/15	28/07/15	28/07/15	28/07/15	28/07/15	28/07/15	28/07/15	29/07/15	29/07/15	29/07/15	29/07/15	29/07/15	29/07/15	29/07/15
Time Taken				1500	1550	1540	1615	1425	1440	1400	1320	1210	1150	1120	1640	1050	1025	0945	1700	1730	0830	0840	0910	0940	1010	1100	1055
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**																								
General Inorganics																											
pH	pH Units	N/A	ISO 17025	7.7	7.8	7.6	7.8	8.1	8.2	7.6	7.6	7.5	7.5	7.8	7.8	8.1	7.9	7.9	7.8	7.6	7.7	7.6	7.6	7.6	7.5	7.6	7.5
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloride	mg/l	0.15	ISO 17025	23	12	21	7.4	16	3.3	32	8.2	20	21	10	34	11	11	38	7.5	32	18	11	9.4	45	19	15	55
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	5.95	7.81	1.78	1.66	2.15	3.34	4.47	7.40	5.79	7.15	9.48	6.58	6.28	7.34	8.20	4.00	7.35	10.4	5.05	4.71	3.69	4.34	6.49	5.36
Total Suspended Solids	mg/l	2	NONE	3.0	31	67	15	5.0	3.0	3.0	5.0	2.0	4.0	3.0	12	4.0	5.0	4.0	< 2.0	15	5.0	3.0	3.0	< 2.0	6.0	8.0	14
Hardness - Total	mgCaCO3/l	1	ISO 17025	129	116	521	378	413	51.1	122	113	130	88.2	43.8	120	21.8	129	178	48.9	133	56.4	75.0	96.1	162	154	89.2	91.3
Speciated PAHs																											
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH																											
Total EPA-16 PAHs	µg/l	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Heavy Metals / Metalloids																											
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.82	0.37	0.88	0.26	0.28	0.29	0.54	1.57	1.01	1.52	1.35	0.99	1.22	1.07	1.04	0.59	1.18	2.53	1.09	1.16	0.97	1.19	0.90	0.90
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.03	< 0.02	0.18	0.03	< 0.02	0.03	0.03	0.05	< 0.02	0.03	< 0.02	0.02	0.03	0.04	< 0.02	0.03	< 0.02	0.03	0.03	0.02	0.02	0.03	0.02	< 0.02
Copper (dissolved)	µg/l	0.5	ISO 17025	11	9.6	11	12	4.6	9.2	8.4	9.9	12	8.8	8.7	10	14	12	11	11	12	9.5	11	12	7.6	9.7	18	11
Lead (dissolved)	µg/l	0.2	ISO 17025	0.4	0.3	0.3	0.3	< 0.2	0.4	0.4	0.5	0.5	0.5	0.7	0.5	1.1	0.4	0.7	0.3	0.6	2.5	0.4	1.4	0.9	0.5	0.6	0.9
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.14	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	2.5	2.5	200	13	5.4	2.4	1.5	1.9	1.3	1.0	1.2	1.3	1.8	1.7	1.1	1.2	1.4	1.9	< 0.5	0.6	0.6	0.9	1.6	1.4
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6	3.6	2.7	0.9	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	1.3	1.2	< 0.6	0.8	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	15	3.3	24	4.6	1.2	2.6	3.5	3.8	5.0	4.7	3.8	4.0	10	4.3	2.1	4.0	3.6	5.7	2.3	3.5	2.5	2.3	3.6	5.7
Calcium (dissolved)	mg/l	0.012	ISO 17025	41	29	88	68	67	8.4	33	38	46	32	15	38	7.1	46	66	14	42	19	27	34	60	59	32	31
Magnesium (dissolved)	mg/l	0.005	ISO 17025	6.7	11	73	51	59	7.3	9.5	4.8	3.4	1.9	1.8	6.3	0.99	3.2	3.0	3.1	6.7	2.4	1.7	2.7	3.2	1.7	2.3	3.3
Arsenic (total)	µg/l	0.15	ISO 17025	0.84	0.38	1.07	0.33	0.44	0.55	0.61	1.58	1.32	1.63	1.41	1.08	1.39	1.43	1.18	0.84	1.22	2.79	1.23	1.32	1.27	1.53	1.17	1.06
Cadmium (total)	µg/l	0.02	ISO 17025	0.04	< 0.02	0.21	0.04	0.04	0.03	0.03	0.06	0.04	0.04	0.02	0.03	0.04	0.06	0.03	0.05	0.04	0.05	0.04	0.03	0.02	0.06	0.05	0.03
Copper (total)	µg/l	0.5	ISO 17025	13	16	22	12	24	25	20	17	14	21	18	23	16	15	29	22	28	39	21	22	28	21	30	20
Lead (total)	µg/l	0.2	ISO 17025	0.8	1.3	1.0	1.1	1.6	1.0	1.1	1.6	1.6	1.6	1.4	1.8	1.4	2.3	9.6	1.6	2.3	3.8	1.3	1.5	1.3	1.8	2.4	5.0
Mercury (total)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	0.10	< 0.05	< 0.05	< 0.05	0.10	0.08	0.07	< 0.05	0.16	0.28	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.25	0.18	0.07	0.15
Nickel (total)	µg/l	0.5	ISO 17025	5.3	3.3	210	13	6.2	2.9	2.0	2.5	1.6	1.2	1.9	2.7	2.6	2.3	9.0	1.4	1.6	2.0	0.7	0.7	1.8	1.2	2.6	2.1
Selenium (total)	µg/l	0.6	ISO 17025	< 0.6	< 0.6	4.3	3.2	1.1	< 0.6	0.7	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	1.5	1.2	< 0.6	0.8	< 0.6	< 0.6	< 0.6	0.8	< 0.6	< 0.6	< 0.6
Zinc (total)	µg/l	0.5	ISO 17025	19	7.7	34	7.4	5.5	6.0	9.9	6.6	6.9	8.1	6.2	7.4	14	5.5	12	8.8	11	8.5	5.8	4.8	15	5.8	6.9	14
Petroleum Hydrocarbons																											
TPH1 (C10 - C40)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample N/S = None supplied

Analytical Report Number: 15-78734
Project / Site name: A465
Your Order No: B1855100/00000017

Lab Sample Number				485236	485239	485238	485237	485240	485241	485242	485243	485235	485234	485233	485232	485231	485230	485244	485245	485246	485247	485248	485249	485250	485251	485252
Sample Reference				SW-1	SW0	SW1	SW3	SW4	SW5	SW8	SW10	SW12	SW14	SW15	SW17	SW18	SW21	SW25	SW27	SW30	SW32	SW33	SW35	SW36	SW40	SW41
Sample Number				N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Depth (m)				N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Date Sampled				10/09/15	10/09/15	10/09/15	10/09/15	10/09/15	10/09/15	10/09/15	10/09/15	10/09/15	10/09/15	10/09/15	10/09/15	10/09/15	10/09/15	10/09/15	10/09/15	11/09/15	11/09/15	11/09/15	11/09/15	11/09/15	11/09/15	11/09/15
Time Taken				1210	1320	1305	1230	1425	1435	1505	1555	1130	1005	1055	1000	0925	0905	1630	1710	0850	0900	0930	0950	1025	1130	1110
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**																							
General Inorganics																										
pH	pH Units	N/A	ISO 17025	7.3	8.0	8.0	8.0	8.3	8.0	8.0	8.0	7.4	7.4	7.4	7.6	7.6	8.2	7.8	7.6	7.7	7.6	7.7	7.9	7.7	7.7	7.7
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloride	mg/l	0.15	ISO 17025	19	12	15	7.7	14	5.0	31	11	13	13	12	10	39	20	7.6	39	18	9.8	9.4	22	17	19	46
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	6.55	1.64	1.47	1.56	1.74	1.99	3.07	2.76	5.08	6.51	3.66	11.8	6.52	2.27	2.28	3.81	4.42	4.64	3.74	2.48	2.81	6.24	5.34
Total Suspended Solids	mg/l	2	NONE	10	< 2.0	20	4.0	22	< 2.0	< 2.0	< 2.0	< 2.0	100	< 2.0	5.0	20	< 2.0	< 2.0	66	< 2.0	< 2.0	6.0	40	86	31	9.0
Hardness - Total	mgCaCO3/l	1	ISO 17025	118	100	637	518	558	172	173	164	113	67.0	93.3	18.2	134	173	48.0	219	111	79.6	110	166	150	57.9	102
Speciated PAHs																										
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH																										
Total EPA-16 PAHs	µg/l	0.2	ISO 17025	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Heavy Metals / Metalloids																										
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.76	0.25	0.91	< 0.15	< 0.15	0.17	0.30	0.91	1.32	1.41	0.52	1.62	1.02	1.09	0.90	0.85	1.35	1.05	0.90	0.79	0.91	0.95	0.84
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.03	< 0.02	0.08	< 0.02	< 0.02	< 0.02	< 0.02	0.03	< 0.02	0.05	< 0.02	0.11	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.03	< 0.02	< 0.02
Copper (dissolved)	µg/l	0.5	ISO 17025	6.2	5.8	4.7	4.5	5.3	6.3	6.5	5.6	8.6	7.3	6.5	7.7	5.7	5.5	7.2	7.4	9.6	6.8	7.9	4.4	4.9	5.7	6.9
Lead (dissolved)	µg/l	0.2	ISO 17025	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.2	0.4	1.1	< 0.2	1.5	0.3	< 0.2	0.2	0.2	0.4	0.3	0.5	< 0.2	0.5	0.5	0.9
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	0.9	< 0.5	160	8.5	5.8	2.3	< 0.5	1.3	4.6	< 0.5	< 0.5	1.1	1.7	< 0.5	< 0.5	0.8	4.0	< 0.5	< 0.5	2.0	< 0.5	< 0.5	< 0.5
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6	2.7	1.6	3.0	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	1.0	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	8.8	2.0	5.3	< 0.5	1.3	2.0	2.1	1.4	5.4	6.7	2.9	50	4.1	0.9	0.6	3.6	3.9	4.4	2.8	2.1	3.1	5.8	3.0
Calcium (dissolved)	mg/l	0.012	ISO 17025	38	21	110	100	84	31	49	55	40	24	31	6.0	46	61	15	75	39	29	39	62	58	20	35
Magnesium (dissolved)	mg/l	0.005	ISO 17025	5.6	12	91	63	85	23	13	6.6	3.0	1.7	3.8	0.75	4.6	5.1	2.3	7.8	3.4	1.7	2.9	2.5	1.5	1.9	3.6
Arsenic (total)	µg/l	0.15	ISO 17025	1.03	0.41	1.06	0.41	0.28	0.25	0.56	1.03	1.53	1.69	0.84	1.77	1.28	1.13	0.96	1.06	1.37	1.32	0.98	1.01	0.92	1.02	1.05
Cadmium (total)	µg/l	0.02	ISO 17025	0.03	< 0.02	0.10	< 0.02	0.03	< 0.02	0.03	0.03	0.04	0.08	0.02	0.11	0.04	0.02	0.02	0.02	0.05	0.02	< 0.02	< 0.02	0.03	0.03	< 0.02
Copper (total)	µg/l	0.5	ISO 17025	9.1	12	12	8.9	19	17	16	16	9.8	9.0	8.4	11	11	10	13	17	13	17	15	11	11	15	14
Lead (total)	µg/l	0.2	ISO 17025	0.8	2.2	1.0	0.9	8.1	1.2	12	1.3	0.7	2.5	0.6	2.1	1.0	0.6	1.0	1.6	1.2	1.3	2.6	1.1	2.3	2.3	3.2
Mercury (total)	µg/l	0.05	ISO 17025	0.15	< 0.05	0.08	0.11	0.08	< 0.05	0.07	< 0.05	0.16	0.19	< 0.05	< 0.05	0.06	0.10	< 0.05	0.16	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (total)	µg/l	0.5	ISO 17025	4.9	3.7	200	9.9	7.6	4.9	3.7	4.2	4.8	3.7	3.1	4.7	3.5	2.8	2.6	4.6	5.5	4.0	4.4	3.0	2.5	2.7	2.9
Selenium (total)	µg/l	0.6	ISO 17025	< 0.6	< 0.6	2.9	1.7	3.1	0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	1.1	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Zinc (total)	µg/l	0.5	ISO 17025	12	4.8	5.5	< 0.5	5.6	3.8	4.5	7.1	7.1	13	3.5	61	8.7	2.0	2.7	11	7.8	6.3	3.7	7.1	4.7	27	11
Petroleum Hydrocarbons																										
TPH1 (C10 - C40)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample

Appendix 17D – Natural Resources Wales Water Framework Directive Information

See following page

Page left intentionally blank.

WATERBODY NAME	WATER BODY ID	TYPE & DESIGNATION	ALKALINITY	Classifications							
				CYCLE	YEAR	OVERALL	ECOLOGICAL	CHEMICAL	MMA	INVERTS	FISH
Nant hir Reservoir	GB30941017	Lake, Heavily Modified	-	1	2009 - 2014	Good	Good	DNRA	Good	Not assessed	
				2	2013 - 2014	Moderate	Moderate	Good	Good	Not assessed	
R Taff - conf Taf Fechan to conf R Cynon	GB109057033100	River, Heavily Modified	HighAlkalinity	1	2009 - 2014	Moderate	Moderate	DNRA	Mod/less	Good	Poor
				2	2013 - 2014	Moderate	Moderate	Good	Mod/less	High	
Afon Cynon - source to conf Aman R	GB109057033110	River, Not Designated A/HMWB	HighAlkalinity	1	2009 - 2012	Poor	Poor	Good		Good	Poor
					2013	Poor	Poor	Good		High	Poor
					2014	Poor	Poor	DNRA		Good	Poor
				2	2013 - 2014	Poor	Poor	Good		Good	Poor
Rhymney R - source to conf Nant Bargod Rhymni	GB109057033130	River, Not Designated A/HMWB	HighAlkalinity	1	2009	Moderate	Moderate	DNRA		Good	Moderate
					2010	Good	Good	DNRA		Good	Good
					2011 - 2012	Moderate	Moderate	DNRA		Good	Moderate
					2013	Moderate	Moderate	DNRA		Moderate	Moderate
					2014	Moderate	Moderate	Good		Good	Moderate
				2	2013	Moderate	Moderate	Good		Moderate	Good
					2014	Moderate	Moderate	Good		Good	Moderate
Nant Morlais - source to conf R Taff	GB109057033150	River, Heavily Modified	HighAlkalinity	1	2009 - 2010	Moderate		DNRA		Moderate	
					2011-2012	Bad		DNRA		Bad	
					2013	Poor		DNRA		Poor	
					2014	Bad		DNRA		Bad	
				2	2013 - 2014	Good	Good	Good	Not assessed	Bad	
Taf Fechan - source to conf Afon Taf Fawr	GB109057033160	River, Heavily Modified	HighAlkalinity	1	2009	Moderate	Moderate	Good	Mod/less	High	Good
					2010	Moderate	Moderate	Good	Mod/less	High	Moderate
					2011 - 2013	Moderate	Moderate	Good	Mod/less	Good	Good
					2014	Moderate	Moderate	DNRA	Mod/less	Good	Good
				2	2013 - 2014	Moderate	Moderate	Good	Mod/less	Good	Good
Afon Taf Fawr - source to conf Taf Fechan	GB109057033170	River, Heavily Modified	HighAlkalinity	1	2009	Moderate	Moderate	DNRA	Mod/less	Good	Moderate
					2010	Moderate	Moderate	DNRA	Mod/less	Good	Poor
					2011	Moderate	Moderate	DNRA	Mod/less	Good	Moderate
					2012	Poor	Poor	DNRA	Mod/less	Good	Poor

					2013 - 2014	Moderate	Moderate	DNRA	Mod/less	Good	Moderate
				2	2013	Moderate	Moderate	Good	Mod/less	Good	Moderate
					2014	Moderate	Moderate	Good	Mod/less	Moderate	Moderate
Sychryd - headwaters to confluence with Mellte	GB110058032320	River, Not Designated A/HMWB	HighAlkalinity	1	2009	Moderate	Moderate	DNRA		Good	Moderate
					2010	Moderate	Moderate	DNRA		Good	Good
					2011	Good	Good	DNRA		Good	Good
					2012	Good	Good	DNRA		Good	Good
					2013 - 2014	Moderate	Moderate	DNRA		Good	Moderate
				2	2013	Poor	Poor	Good		Good	Poor
					2014	Moderate	Moderate	Good		Good	Moderate

WATERBODY NAME	Classifications				Cycle 1 - reasons for not achieving good		Phase 1 Actions required
	PHOSPHATE	AMMONIA	DO	PH	CLASS ITEM	ACTIVITY	ACTIONS
Nant hir Reservoir	Not assessed						
	Not assessed				Expert Judgement	Impoundments	Review requirements for GEP
R Taff - conf Taf Fechan to conf R Cynon	High	High	High	High	Fish	Impoundment - water storage	Mitigation Measures for HMWB Flood defence
	High	High	High	High		Barriers to fish migration	DCWW Mitigation Measures for HMWB Water Resources
					Mitigation Measures Assessment	Flood protection - structures	Fish easements
Afon Cynon - source to conf Aman R	High	High	High	High	Fish	Sewage discharge (diffuse and intermittent)	Easements to fish passage X2
	High	High	High	High		Barriers to fish migration	Work on CSO /Misconnections
	High	High	High	High		Abandoned mine	Industrial Estates pollution prevention
						Industrial discharge (EPR)	Industrial Sites pollution prevention
	High	High	High	High	Hydrological Regime	Surface water abstraction	DCWW Water Resources
Rhymney R - source to conf Nant Bargod Rhymni	High	High	High	High	Fish	Trading/industrial estates	Minewater Remediation?
	High	High	High	High		Sewage discharge (diffuse)	CSO / Misconnections?
	High	High	High	High		Sewage discharge (intermittent)	Industrial Estates?
	High	High	High	High	Invertebrates	Trading/industrial estates	
	High	High	High	High		Sewage discharge (diffuse)	
	High	High	High	High		Abandoned mine	
	High	High	High	High		Sewage discharge (intermittent)	
Nant Morlais - source to conf R Taff	High	Moderate	High	High	Ammonia	Sewage discharge (diffuse and intermittent)	Work on Misconnections
	High	Good	High	High	Invertebrates		Scoping of mitigation measures for HMWB urban
	High	Good	High	High			
	High	High	High	High			
	High	Good	High	High			
Taf Fechan - source to conf Afon Taf Fawr	High	High	High	High	Mitigation Measures Assessment	Impoundment - water storage	Fish easements
	High	High	High	High			DCWW Water Resources
	High	High	High	High			
	High	High	High	High			
	High	High	High	High			
Afon Taf Fawr - source to conf Taf Fechan	High	High	High	High	Fish	Impoundment - water storage	Fish Easements
	High	High	High	High		Barriers to fish migration	DCWW Water Resources
	High	High	High	High	Mitigation Measures Assessment	Impoundment - water storage	
	High	High	High	High			

	High	High	High	High			
	High	High	High	High			
	High	High	High	High			
Sychryd - headwaters to confluence with Mellte	Good	High	High	High	Phosphate	Trading/industrial estates	Mitigate/Remediate point source impacts on receptor
	Moderate	High	High	High		Sewage discharge (continuous and intermitten	
	Good	High	High	High			
	High	High	High	High			
	Good	High	High	High			
	High	High	High	High			
	High	High	High	High			

Water Framework Directive Cycle 2 (2015)

Waterbody ID	Waterbody Name	Type	Year	Overall	Chemical	Quantitative	Trend	Supporting Elements
GB20901G203600	SE Valleys Carboniferous Limestone	Aquifer	2013	Good	Good	Good	No trend	-
			2014	Good	Good	Good	No trend	-
			2015	Good	Good	Good	No trend	-
GB40902G201900	SE Valleys Carboniferous Coal Measures	Aquifer	2013	Poor	Poor	Good	Upward	-
			2014	Poor	Poor	Good	Upward	-
			2015	Poor	Poor	Good	No trend	-
GB41002G201000	Swansea Carboniferous Coal Measures	Aquifer	2013	Poor	Poor	Good	Upward	-
			2014	Poor	Poor	Good	Upward	-
			2015	Poor	Poor	Good	Upward	-

Waterbody ID	Waterbody Name	Type	Year	Overall	Chemical	Ecological	MMA	Inverts	Fish	Phytobenthos	Macrophytes
GB30941017	Nant Hir Reservoir	Reservoir	2013	Moderate	Good	Moderate	Good	-	-	-	-
			2014	Moderate	Good	Moderate	Good	-	-	-	-
			2015	Moderate	Good	Moderate	Mod/less	-	-	-	-
GB109057033100	Taff	Watercourse	2013	Moderate	Good	Moderate	Mod/less	-	-	-	-
			2014	Moderate	Good	Moderate	Mod/less	High		-	-
			2015	Moderate	Good	Moderate	Mod/less	High		-	-
GB109057033110	Afon Cynon	Watercourse	2013	Poor	Good	Poor	-	Good	Poor	-	-
			2014	Poor	Good	Poor	-	Good	Poor	-	-
			2015	Poor	Good	Poor	-	Good	Poor	-	-
GB109057033130	River Rhymney	Watercourse	2013	Moderate	Good	Moderate	-	Moderate	Good	-	-
			2014	Moderate	Good	Moderate	-	Good	Moderate	-	-
			2015	Good	Good	Good	-	Good	Good	-	-
GB109057033150	Nant Morlais	Watercourse	2013	Good	Good	Good	-	Bad	-	-	-
			2014	Good	Good	Good	-	Bad	-	-	-
			2015	Moderate	Good	Moderate	Mod/less	Bad	-	-	-
GB109057033160	Taf Fechan	Watercourse	2013	Moderate	Good	Moderate	Mod/less	Good	Good	-	-
			2014	Moderate	Good	Moderate	Mod/less	Good	Good	-	-
			2015	Moderate	Good	Moderate	Mod/less	Good	Good	-	-
GB109057033170	Afon Taf Fawr	Watercourse	2013	Moderate	Good	Moderate	Mod/less	Good	Moderate	-	-
			2014	Moderate	Good	Moderate	Mod/less	Moderate	Moderate	-	-
			2015	Moderate	Good	Moderate	Mod/less	Moderate	Moderate	-	-
GB110058032320	Sychryd	Watercourse	2013	Poor	Good	Poor	-	Good	Poor	-	-
			2014	Moderate	Good	Moderate	-	Good	Moderate	-	-
			2015	Poor	Good	Poor	-	Good	Poor	-	-

Waterbody ID	Waterbody Name	Type	Phosphase	Ammonia	Dissolved Oxygen	pH	Phytobenthos and Macrophytes C2 only	Hydro_Regime
GB30941017	Nant Hir Reservoir	Reservoir	-	-	-	-	-	-
			-	-	-	-	-	-
			-	-	-	-	-	-
GB109057033100	Taff	Watercourse	High	High	High	High	-	-
			High	High	High	High	-	-
			High	High	High	High	-	-
GB109057033110	Afon Cynon	Watercourse	High	High	High	High	-	-
			High	High	High	High	High	-
			High	High	High	High	High	-
GB109057033130	River Rhymney	Watercourse	High	High	High	High	-	-
			High	High	High	High	High	-
			High	High	High	High	High	-
GB109057033150	Nant Morlais	Watercourse	High	Good	High	High	-	-
			Good	High	High	High	High	-
			Good	High	High	High	High	-
GB109057033160	Taf Fechan	Watercourse	High	High	High	High	-	-
			High	High	High	High	-	-
			Good	High	High	High	-	-
GB109057033170	Afon Taf Fawr	Watercourse	High	High	High	High	-	-
			High	High	High	High	Good	-
			-	-	-	-	Good	-
GB110058032320	Sychryd	Watercourse	High	High	High	High	-	-
			High	High	High	High	-	-
			Poor	High	High	High	-	-

Appendix 17E – Nant Hir Reservoir Correspondence Information

See following page

Armstrong, Ross

From: Cotter Barry <Barry.Cotter@dwrcymru.com>
Sent: 25 January 2016 11:06
To: Clay, Kate; Howls Steve; Burr Andy
Cc: Watson, Daniel; A465 Sections 5 & 6
Subject: RE: Nant Hir Reservoir Operation

Follow Up Flag: Follow up
Flag Status: Completed

Hi Kate

Yes that is correct. The reservoir is maintained as an emergency supply for drought purposes. It is not used as a daily source

Kind regards

Barry

From: Clay, Kate [mailto:Kate.Clay@jacobs.com]
Sent: 25 January 2016 10:36
To: Cotter Barry; Howls Steve; Burr Andy
Cc: Watson, Daniel; A465 Sections 5 & 6
Subject: Nant Hir Reservoir Operation

******** External Mail ********
Dear sirs,

I am currently writing the environmental statement for the A465 Sections 5 and 6 road widening scheme in relation to the water environment. As you are aware the A465 currently passes above the Dwr Cymru Nant hir reservoir, with road widening operations to occur across and in the vicinity of the reservoir.

Through a previous discussion with Gwyn Thomas, who inducted me on the site for water quality monitoring, I understand that this reservoir is an emergency supply reservoir. I assume that this means that during times of drought the reservoir supplies public drinking water, however is usually not in operational use. Could you confirm whether this is the case, or whether it is in regular use?

Kind regards,

Kate

Kate Clay | Jacobs | Graduate Hydrologist | Sustainable Solutions | +44 (0)20 7939 6435 | Kate.Clay@jacobs.com | www.jacobs.com

NOTICE - This communication may contain confidential and privileged information that is for the sole use of the intended recipient. Any viewing, copying or distribution of, or reliance on this message by unintended recipients is strictly prohibited. If you have received this message in error, please notify us immediately by replying to the message and deleting it from your computer.

Appendix 17F – HAWRAT Assessment Data

User Input Parameters

Parameter	A	B	C	D	E	F	G	J	K
Watercourse	**2**	**8**	**13**	**14**	**19**	**22**	**23**	**26**	**35**
Traffic Band	>10,000, <50,000	>10,000, <50,000	>10,000, <50,000	>10,000, <50,000	>10,000, <50,000	>10,000, <50,000	>10,000, <50,000	>10,000, <50,000	>10,000, <50,000
Climate region	Warm / wet	Warm / wet	Warm / wet	Warm / wet	Warm / wet	Warm / wet	Warm / wet	Warm / wet	Warm / wet
Rainfall Site	Cardiff	Cardiff	Cardiff	Cardiff	Cardiff	Cardiff	Cardiff	Cardiff	Cardiff
Hardness	High	High	Medium	Medium	Medium	Medium	Medium	Medium	Medium
95%ile River Flow (m^3/s)	0.002	0.006	**0.002**	**0.126**	0.002	0.016	**0.010**	**0.005**	0.001
Impermeable road area drained (ha)	2.05	1.09	5.11	1.14	4.64	1.17	1.98	3.06	3.38
Permeable area draining to outfall (ha)	1.35	0.52	3.09	0.53	1.29	0.69	1.72	2.12	9.56
Proposed attenuation (l/ha/s)	15.17	15.17	15.17	15.17	15.17	13.63	13.63	13.63	12.7
Within 1 km upstream of a protected site?	Y	N	N	N	N	Y	Y	Y	N
Downstream structure <100 m?	Y	N	N	N	N	N	N	Y	N
Estimated river width at Q95 (m)	0.4	1.24	1	4	1	3	2	0.1	1
Existing treatment of solubles (%)	None	None	None	None	None	None	None	None	None
Existing attenuation (%)	None	None	None	None	None	None	None	None	None
Existing settlement of sediments (%)	None	None	None	None	None	None	None	None	None
Proposed treatment of Copper (%)	40	40	40	40	40	40	40	40	40
Proposed treatment of Zinc (%)	53	53	53	53	53	53	53	53	53
Proposed attenuation (l/s)	51.5	24.4	124.4	25.3	90.0	25.3	50.3	70.6	164.3
Proposed settlement of sediments (%)	75	75	75	75	75	75	75	75	75

Parameter	Cumulative Assessment								
	L	M	N	P2	P3	3JA	4JA	6JAB	L+M
Watercourse	**38**	**39**	**41**	**45**	**49**	25	29	46	38
Traffic band	>10,000, <50,000	>10,000, <50,001	>10,000, <50,000	>10,000, <50,000	>10,000, <50,000	>10,000, <50,000	>10,000, <50,000	>10,000, <50,000	>10,000, <50,000
Climate region	Warm / wet	Warm / wet	Warm / wet	Warm / wet	Warm / wet	Warm / wet	Warm / wet	Warm / wet	Warm / wet
Rainfall site	Cardiff	Cardiff	Cardiff	Cardiff	Cardiff	Cardiff	Cardiff	Cardiff	Cardiff
Hardness	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
95%ile River flow (m^3/s)	**0.00865**	**0.00865**	0.135	0.005	0.019	**0.01358**	0.00049	0.00436	**0.00865**
Impermeable road area drained (ha)	2.42	3.09	2.19	7.674	5.667	1.966	3.339	0.657	5.52
Permeable area draining to outfall (ha)	1.57	3.67	1.38	1.849	0.662	0.255	1.056	0.179	5.23
Proposed attenuation (l/ha/s)	12.7	12.7	12.7	12.42	12.42	13.63	13.63	12.42	NA
Within 1 km upstream of a protected site?	N	N	N	Y	Y	Y	Y	N	N
Downstream structure <100 m?	N	N	N	N	N	N	N	N	N
Estimated river width at Q95 (m)	3	3	4	1	0.5	0.2	0.2	0.2	3
Existing treatment of solubles (%)	None	None	None	None	None	None	None	None	None
Existing attenuation (%)	None	None	None	None	None	None	None	None	None
Existing settlement of sediments (%)	None	None	None	None	None	None	None	None	None
Proposed treatment of Copper (%)	40	40	0	40	40	0	0	0	40
Proposed treatment of Zinc (%)	53	53	45	53	53	0	0	0	53
Proposed attenuation (l/s)	50.7	85.8	45.3	118.3	78.6	30.3	59.9	10.4	136.5
Proposed settlement of sediments (%)	75	75	60	75	75	0	0	**0**	75

Outfall	Step 2 – In-river impacts								Step 3 – Post-mitigation							
	Soluble pollutants						Sediment-bound pollutants		Soluble pollutants						Sediment-bound pollutants	
	RST 24 (exc. / year)		RST6 (exc. / year)		AA-EQS (µg/l)		Low-flow velocity (m/s)	DI value (settlement needed)	RST 24 (exc. / year)		RST 6 (exc./year)		AA-EQS (µg/l)		Low-flow velocity (m/s)	DI value
	Cu	Zn	Cu	Zn	Cu	Zn			Cu	Zn	Cu	Zn	Cu	Zn		
A	3.40	0.40	0.00	0.00	1.26	4.52	0.08	376.13 (74 %)	0.80	0.00	0.00	0.00	0.75	2.13	0.08	94.03
B	0.30	0.00	0.00	0.00	0.33	1.22	0.04	220.56 (55 %)	0.00	0.00	0.00	0.00	0.20	0.58	0.04	55.14
C	9.30	1.00	5.00	1.50	2.16	7.75	0.02	2022.69 (96 %)	2.50	1.40	0.00	0.00	1.30	3.64	0.02	505.67
D	0.00	0.00	0.00	0.00	0.02	0.08	0.11	-	0.00	0.00	0.00	0.00	0.01	0.04	0.11	-
E	9.20	1.00	5.00	1.50	2.08	7.47	0.02	1836.65 (95 %)	2.10	1.40	0.00	0.00	1.25	3.52	0.02	459.16
F	0	0.1	0	0.1	0.15	0.55	0.02	138.39 (28 %)	0	0	0	0	0.09	0.26	0.02	34.6
G	0.3	0.5	0	0.1	0.36	1.31	0.03	306.84 (68 %)	0	0.1	0	0	0.21	0.61	0.03	76.71
J	2.2	1.8	0.1	0.3	0.88	3.17	0.19	-	0.2	0.3	0	0	0.53	1.49	0.19	-
K	9	4.9	1	1.5	2.09	7.52	0.01	1305.36	2.1	1.2	0	0	1.26	3.53	0.01	326.34
L	0.5	0.7	0	0.1	0.48	1.74	0.01	386.67 (75 %)	0	0.1	0	0	0.29	0.82	0.01	96.67
M	0.9	0.9	0	0.1	0.57	2.09	0.01	493.72 (80 %)	0	0.1	0	0	0.34	0.98	0.01	123.43
N	0	0.1	0	0	0.03	0.13	0.12	-	0	0	0	0	0.03	0.07	0.12	-
P2	6.8	3.4	0.8	1	1.64	5.91	0.04	1558.43 (94 %)	1.3	0.8	0	0	0.99	2.78	0.04	389.61
P3	0.6	0.8	0	0.1	0.51	1.85	0.51	-	0	0.1	0	0	0.3	0.87	0.51	-
3JA	0.2	0.4	0	0.1	0.27	1.01	1.67	-	0	0	0	0	0.16	0.48	1.67	-
4JA	16.4	9.2	3.5	3	3.4	12.23	0.06	2021.71 (96 %)	6.1	2.9	0.4	0.2	2.04	5.75	0.06	505.43
6JAB	0.2	0.4	0	0.1	0.28	1.04	0.54	-	0	0	0	0	0.17	0.49	0.54	-
Cumulative assessment																
L + M	1.2	0.2	0	0.1	0.62	1.46	-	-	0.1	0.1	0	0	0.37	0.68	-	-

Page left intentionally blank.

Appendix 17G – DMRB Spill Assessment

Spillage risk results for drainage catchments (See Table 16-19)

Spillage Risk Results

Drainage Catchment A

Catchment A	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.65	0.29	10,219	9.2	0.00006450718	0.45	2.90282E-05	34449.22213	0.003
Slip road	0.18	0.83	4,454	9.6	0.00002331397	0.45	1.04913E-05	95317.21282	0.001
Within 100 m of slip road	0.38	0.83	10,219	9.2	0.00010793403	0.45	4.85703E-05	20588.70759	0.005
	Total for Catchment A				0.00019575518	0.45	8.80898E-05	11352.04817	0.009

Drainage Catchment B

Catchment B	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.1	0.29	7,837	8.1	0.00001	0.45	3.0236E-06	330731.5395	0.000
Slip road	0.07	0.83	5,041	4.0	0.00000	0.45	1.92424E-06	519686.9372	0.000
Within 100 m of slip road	0.2	0.83	5,041	4.0	0.00001	0.45	5.49782E-06	181890.428	0.001
	Total for Catchment B				0.00015576260	0.45	8.03122E-06	124514.0751	0.001

Drainage Catchment C

Catchment C	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	1.28	0.29	13,032	7.1	0.00012536566	0.45	5.64145E-05	17725.92482	0.006
	Total for Catchment C				0.00012536566	0.45	5.64145E-05	17725.92482	0.006

Drainage Catchment D

Catchment D	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.57	0.29	13,033	7.1	0.00006	0.45	2.51226E-05	39804.82197	0.003
	Total for Catchment D				0.00005582797	0.45	2.51226E-05	39804.82197	0.003

Drainage Catchment E

Catchment E	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.99	0.29	13,100	7.1	0.00010	0.45	4.40653E-05	22693.58666	0.004
Slip road	0.22	0.83	13,100	7.1	0.00006228048	0.45	2.80262E-05	35680.88023	0.003
Within 100 m of slip road	0.4	0.83	13,100	7.1	0.00011323723	0.45	5.09568E-05	19624.48413	0.005
	Total for Catchment E				0.00027344062	0.45	0.000123048	8126.891269	0.012

Drainage Catchment F

Catchment F	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.43	0.29	15,847	5.7	0.00004111190	0.45	1.85004E-05	54053.01928	0.002
	Total for Catchment F				0.00004111190	0.45	1.85004E-05	54053.01928	0.002

Drainage Catchment G

Catchment G	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.76	0.29	15,847	5.7	0.00007266289	0.45	3.26983E-05	30582.62933	0.003
	Total for Catchment G				0.00007266289	0.45	3.26983E-05	30582.62933	0.003

Drainage Catchment H

Catchment H	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.24	0.29	15,847	5.7	0.00002	0.45	1.03258E-05	96844.99287	0.001
	Total for Catchment H				0.00002	0.45	1.03258E-05	96844.99287	0.001

Drainage Catchment J

Catchment J	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road within 100 m of slip road	0.7	0.83	16,163	5.9	0.00020051499	0.45	9.02317E-05	11082.57427	0.009
Slip road	0.4	0.83	16,163	5.9	0.00011457999	0.45	5.1561E-05	19394.50497	0.005
Road no junction	0.75	0.29	16,163	5.9	0.00007506370	0.45	3.37787E-05	29604.48575	0.003
	Total for Catchment J				0.00039015868	0.45	0.000175571	5695.688324	0.018

Drainage Catchment K

Catchment K	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Slip road	0.2	0.83	18,489	7.0	0.00007841528	0.45	3.52869E-05	28339.14975	0.004
Road within 100 m of slip road	0.2	0.83	18,489	7.0	0.00007841528	0.45	3.52869E-05	28339.14975	0.004
Road no junction	0.86	0.29	18,489	7.0	0.00011781187	0.45	5.30153E-05	18862.46535	0.005
	Total for Catchment K				0.00027464242	0.45	0.000123589	8091.329306	0.012

Drainage Catchment L

Catchment L	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.6	0.29	15,036	6.2	0.00005896536	0.45	2.65344E-05	37686.91052	0.003
Slip road	0.55	0.83	6,900	3.7	0.00004196084	0.45	1.88824E-05	52959.43662	0.002
Road within 100 m of slip road	0.4	0.83	15,036	6.2	0.00011250862	0.45	5.06289E-05	19751.57359	0.005
	Total for Catchment L				0.00021343481	0.45	9.60457E-05	10411.71402	0.010

Drainage Catchment M

Catchment M	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.37	0.29	11,583	6.8	0.00003084635	0.45	1.38809E-05	72041.6545	0.001
	Total for Catchment M				0.00003084635	0.45	1.38809E-05	72041.6545	0.001

Drainage Catchment N

Catchment N	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.56	0.29	18,041	5.0	0.00005311394	0.45	2.39013E-05	41838.77541	0.002
Road within 100 m of slip road	0.34	0.83	18,041	5.0	0.00009229528	0.45	4.15329E-05	24077.31087	0.004
Slip road	0.31	0.83	18,041	5.0	0.00008415158	0.45	3.78682E-05	26407.37321	0.004
	Total for Catchment N				0.00022956081	0.45	0.000103302	9680.320739	0.010

Drainage Catchment P1

Catchment P1	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.75	0.29	13,512	6.1	0.00006570067	0.45	2.95653E-05	33823.43151	0.003
	Total for Catchment P1				0.00006570067	0.45	2.95653E-05	33823.43151	0.003

Drainage Catchment P2

Catchment P2	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	1.72	0.29	13,479	6.4	0.00015705688	0.45	7.06756E-05	14149.15583	0.007
Slip road	0.74	0.83	13,479	6.4	0.00019339281	0.45	8.70268E-05	11490.71789	0.009
Road within 100 m of slip road	0.28	0.83	13,479	6.4	0.00007317566	0.45	3.2929E-05	30368.32585	0.003
	Total for Catchment P2				0.00042362534	0.45	0.000190631	5245.725381	0.019

Drainage Catchment P3

Catchment P3	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	1.38	0.29	12,938	6.6	0.00012473290	0.45	5.61298E-05	17815.84621	0.006
Slip road	0.1	0.83	12,938	6.6	0.00002586914	0.45	1.16411E-05	85902.42956	0.001
Road within 100 m of slip road	0.4	0.83	12,938	6.6	0.00010347657	0.45	4.65645E-05	21475.60739	0.005
	Total for Catchment P3				0.00025407862	0.45	0.000114335	8746.19928	0.011

Drainage Catchment Q1

Catchment Q1	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.34	0.29	12,938	6.6	0.00003073130	0.45	1.38291E-05	72311.37579	0.001
Slip road	1	0.83	12,938	6.6	0.00025869143	0.45	0.000116411	8590.242956	0.012
Road within 100 m of slip road	0.41	0.83	12,938	6.6	0.00010606349	0.45	4.77286E-05	20951.81209	0.005
	Total for Catchment Q1				0.00039548621	0.45	0.000177969	5618.962608	0.018

Drainage Catchment Q2

Catchment Q2	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.34	0.29	12,938	6.6	0.00003073130	0.45	1.38291E-05	72311.37579	0.001
Slip road	1	0.83	12,938	6.6	0.00025869143	0.45	0.000116411	8590.242956	0.012
Road within 100 m of slip road	0.41	0.83	12,938	6.6	0.00010606349	0.45	4.77286E-05	20951.81209	0.005
	Total for Catchment Q2				0.00039548621	0.45	0.000177969	5618.962608	0.018

Drainage Catchment 1JA

Catchment 1JA	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Slip road	0.9	0.83	10,219	9.2	0.00025563323	0.45	0.000115035	8693.009869	0.012
Side road	0.51	0.93	4,910	6.5	0.00005536930	0.45	2.49162E-05	40134.55711	0.002
Roundabout	1.25	3.09	10,633	6.3	0.00094440379	0.45	0.000424982	2353.042471	0.042
	Total for Catchment 1JA				0.00125540632	0.45	0.000564933	1770.121904	0.056

Drainage Catchment 2JA

Catchment 2JA	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.09	0.93	13,032	7.1	0.00002826806	0.45	1.27206E-05	78612.46466	0.001
Within 100 m of roundabout	0.43	3.09	13,032	7.1	0.00044874286	0.45	0.000201934	4952.106038	0.020
Roundabout	0.12	3.09	13,032	7.1	0.00012523057	0.45	5.63538E-05	17745.04664	0.006
	Total for Catchment 2JA				0.00002826806	0.45	1.27206E-05	78612.46466	0.001

Drainage Catchment 2JB

Catchment 2JB	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.49	0.29	13,032	7.1	0.00004799154	0.45	2.15962E-05	46304.45667	0.002
	Total for Catchment 2JB				0.00004799154	0.45	2.15962E-05	46304.45667	0.002

Drainage Catchment 3JA

Catchment 3JA	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Roundabout	0.45	3.09	13,100	7.1	0.00047	0.45	0.00021342	4685.601388	0.021
Slip road	0.16	0.83	4,261	0.9	0.00000185904	0.45	8.36568E-07	1195360.289	0.000
Within 100 m of roundabout	0.75	3.09	13,100	7.1	0.00079044362	0.45	0.0003557	2811.360833	0.036
Road	0.13	0.29	13,100	7.1	0.00001285856	0.45	5.78635E-06	172820.3907	0.001
	Total for Catchment 3JA				0.00127942739	0.45	0.000575742	1736.888111	0.058

Drainage Catchment 3JB

Catchment 3JB	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Roundabout	0.12	3.09	13,100	7.1	0.00013	0.45	5.69119E-05	17571.00521	0.006
Slip road	0.08	0.83	4,261	0.9	0.00000092952	0.45	4.18284E-07	2390720.577	0.000
Within 100 m of roundabout	0.22	3.09	13,100	7.1	0.00023186346	0.45	0.000104339	9584.184658	0.010
Road	0.13	0.29	13,100	7.1	0.00001285856	0.45	5.78635E-06	172820.3907	0.001
	Total for Catchment 3JB				0.00037212252	0.45	0.000167455	5971.748763	0.017

Drainage Catchment 4JA

Catchment 4JA	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road within 100 m of roundabout	0.76	3.09	16,163	5.9	0.00081048088	0.45	0.000364716	2741.856434	0.036
Roundabout	0.5	3.09	16,163	5.9	0.00053321111	0.45	0.000239945	4167.62178	0.024
Road no junction	1.67	0.29	16,163	5.9	0.00016714184	0.45	7.52138E-05	13295.42773	0.008
Slip road	0.174	0.83	2,052	8.4	0.00000909905	0.45	4.09457E-06	244225.6667	0.000
	Total for Catchment 4JA				0.00151993288	0.45	0.00068397	1462.052866	0.068

Drainage Catchment 4JB

Catchment 4JB	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.45	0.29	16,163	5.9	0.00004503822	0.45	2.02672E-05	49340.80958	0.002
Road within 100 m of Roundabout	0.3	3.09	16,163	5.9	0.00031992666	0.45	0.000143967	6946.0363	0.014
Roundabout	0.2	3.09	16,163	5.9	0.00021328444	0.45	9.5978E-05	10419.05445	0.010
	Total for Catchment 4JB				0.00004503822	0.45	2.02672E-05	49340.80958	0.002

Drainage Catchment 6JA1

Catchment 6JA1	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road no junction	0.419	0.29	18,489	7.0	0.00005739904	0.45	2.58296E-05	38715.32268	0.003
Slip road	0.145	0.83	8,570	3.0	0.00001121853	0.45	5.04834E-06	198084.9322	0.001
Roundabout	0.069	3.09	18,489	7.0	0.00010071639	0.45	4.53224E-05	22064.15674	0.005
Road within 100 m of roundabout	0.2	3.09	18,489	7.0	0.00029193157	0.45	0.000131369	7612.134075	0.013
	Total for Catchment 6JA1				0.00046126553	0.45	0.000207569	4817.663796	0.021

Drainage Catchment 6JA2

Catchment 6JA2	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Roundabout	0.148	3.09	18,489	7.0	0.00021602936	0.45	9.72132E-05	10286.66767	0.010
	Total for Catchment 6JA2				0.00021602936	0.45	9.72132E-05	10286.66767	0.010

Drainage Catchment 6JB

Catchment 6JB	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Roundabout	0.11	3.09	18,489	7.0	0.00016056236	0.45	7.22531E-05	13840.24377	0.007
Road within 100 m of roundabout	0.29	3.09	18,489	7.0	0.00042330077	0.45	0.000190485	5249.747638	0.019
Road no junction	0.112	0.29	18,489	7.0	0.00001534294	0.45	6.90432E-06	144836.7875	0.001
	Total for Catchment 6JB				0.00059920607	0.45	0.000269643	3708.610982	0.027

Drainage Catchment 6JC

Catchment 6JC	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road within 100 m of roundabout	0.3	3.09	18,489	7.0	0.00043789735	0.45	0.000197054	5074.75605	0.020
Road no junction	0.336	0.29	18,489	7.0	0.00004602882	0.45	2.0713E-05	48278.92917	0.002
Slip road	0.159	0.83	8,570	3.0	0.00001230170	0.45	5.53577E-06	180643.4916	0.001
	Total for Catchment 6JC				0.00049622787	0.45	0.000223303	4478.229354	0.022

Drainage Catchment 7JA

Catchment 7JA	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road within 100 m of roundabout	0.1	3.09	13,512	6.1	0.00009334027	0.45	4.20031E-05	23807.75519	0.004
Slip road	0.195	0.83	13,512	6.1	0.00004889036	0.45	2.20007E-05	45453.17488	0.002
	Total for Catchment 7JA				0.00014223063	0.45	6.40038E-05	15624.07636	0.006

Drainage Catchment 7JB

Catchment 7JB	Total annual accident probability (Pacc)					Annual pollution incident probability (Pinc)			
	Road length (km)	Serious spillage risk factor	Two-way AADT	%HGV	Annual probability (Pacc)	Probability factor (Ppol)	Probability	Return period (years)	Percentage probability (%)
Road within 100 m of roundabout	0.1	3.09	13,512	6.1	0.00009334027	0.45	4.20031E-05	23807.75519	0.004
Slip road	0.326	0.83	13,512	6.1	0.00008173466	0.45	3.67806E-05	27188.24878	0.004
	Total for Catchment 7JB				0.00017507493	0.45	7.87837E-05	12692.97828	0.008

Page left intentionally blank.

Appendix 17H – Good Construction Practice

Construction methodology

The risk of pollution to the water environment during construction can be reduced through the adoption of good working practices. The Pollution Prevention Guidelines (PPG)[1] were withdrawn in December 2015, however, still provide suitable good practice advice. Certain aspects of the guidance for pollution prevention (GPP) were updated in 2017 and have been considered in the writing of this advice including:

- GPP2: Above ground oil storage tanks;
- GPP5: Works and maintenance in or near water; and
- GPP13: Vehicle washing and cleaning.

Additionally the CIRIA construction guidance details pollution prevention best practice, specifically:

- CIRIA C532 Control of water pollution from construction sites; and
- CIRIA C648 Control of water pollution from linear construction projects – technical guidance.

Information on general construction mitigations can be found in Chapter 5: Scheme Description and the CEMP, and is supplemented by consideration of the relevant water environment in this section. This section will review and consider specific construction mitigation relating to surface water quality, groundwater quality, flood risk, attenuation, abstractions, discharges and ecology.

Construction Environmental Management Plan (CEMP)

A draft CEMP has been compiled to provide targeted guidance for the construction phase. The CEMP includes targeted sediment control and erosion considerations to meet the requirement in HD45/09. The CEMP should be finalised by the principle contractor and approved by NRW and the LAs prior to construction commencing.

Once complete the CEMP will cover the following critical areas that will assist in limiting and managing pollution impacts to the water environment:

- construction drainage strategy;
- sediment management strategy;
- works to watercourses;
- management of historic contamination;
- materials inventory;
- material storage and handling requirements;
- construction monitoring requirements; and
- pollution response plan.

Construction drainage strategy

The construction drainage strategy could be designed to treat surface water runoff for sediment and to reduce any significant increases in runoff associated with construction. Prior to the commencement of any major soil stripping activities or earthworks in a given area, temporary construction drainage should be installed then monitored and maintained until works along that section have been completed. Where practicable the temporary drainage should retain surface water runoff within the site boundary. Ideally this should be stored to assist in dust suppression during dry periods.

[1] Environment Agency, website< https://www.gov.uk/government/collections/pollution-prevention-guidance-ppg>, Accessed May 2016.
Merthyr Tydfil Angling Association, website < http://www.mtaa.co.uk/>, Accessed February 2016.

The temporary construction drainage would incorporate features such as cut-off ditches at the tops of embankments. These ditches could direct surface water runoff to storage lagoons and hence stop the runoff from entering earthworks areas. Where practicable, permanent drainage arrangements could utilise the temporary construction drainage system.

The temporary construction drainage could discharge to watercourses either via existing road discharge points or new discharge points. The design will depend upon an assessment of each point to determine the impact. A full drainage survey of the existing road could be undertaken to confirm the location of existing discharge points. The use of existing outfalls could be considered further in detail following the detailed design.

During construction there is a risk of seepage from cut slopes. Additionally this may occur when perched groundwater within lenses is encountered during excavation. To mitigate against this, additional drainage features or temporary pumping may be required to take groundwater away. Where groundwater is encountered NRW could be consulted and any required consents obtained to allow removal of perched water. In areas where shallow groundwater is known to be an issue, work could, where practicable, take place from May to October when ground water flows and levels are typically lower.

Mitigation of surface runoff from compounds or other temporary surfaces could be agreed with the relevant drainage authority and NRW. Except in areas where it is otherwise required for pollution control construction, compounds could be constructed with permeable materials to prevent significant changes in runoff. Runoff from compounds could all pass through pollution control systems such as settlement ponds prior to discharge. These will also attenuate flows.

All temporary discharges (either directly or via attenuation features) could be directed to surface waters where practicable and could be subject to consent from NRW. Where discharges to groundwater were required, these could be undertaken only with the consent of NRW.

Sediment management strategy

A detailed sediment and erosion plan will be developed which will set out measures to limit silt entering the watercourses. This could include provisions relating to the construction site layout and sediment control measures which could include:

- ensuring site compounds and other significant construction activities could be sited a minimum distance from all water features, following best practice guidance of a buffer of 15 m from top of bank for main rivers, and 8 m from top of bank for ordinary watercourses. This could be applied in all areas unless there is a clear requirement for works to approach a channel such as in relation to an outfall or a watercourse crossing;
- minimising the length of time that stripped ground is exposed;
- providing toe drains or silt fences at the toe of any significant areas where excavated material was stored;
- temporarily divert clean water from the construction site to minimise the potential volume of contaminated water;
- preventing runoff flowing across exposed or excavated ground through the provision of diversion drains to channel runoff from up-gradient areas, around any construction areas or areas disturbed as a result of construction works;
- carrying out regular water quality monitoring of receiving watercourses to ensure construction phase EQS's set by NRW are met;
- re-vegetating, or otherwise stabilising disturbed areas as soon as possible following completion of works. Providing impermeable mats (e.g. plastic sheeting) as covers to mounded excavated material during periods of heavy rainfall. Applying mulching and binders to unprotected exposed soil on the site where necessary. Providing silt fencing alongside and within watercourses as required. In the event of dissolved solids becoming difficult to control, consulting with NRW and considering the deployment of flocculation or other bespoke silt management techniques such as *Siltbuster*;

- providing wheel washing facilities at the site exit to prevent soils being spread onto public roads beyond the boundary of the site and provision for road sweeping vehicles if required;
- consulting with NRW where excavations are below the water table to determine if an abstraction licence for dewatering is required;
- obtaining consent from NRW for any abstractions required for provision of water for dust suppression or site works;
- avoiding work on steep slopes above watercourses without first implementing additional provision for sediment management; and
- taking additional care with regard to work during the construction near to Penywern Ponds and during works to the bridge crossing of Nant Hir Reservoir.

Vehicle washing

Responsible washing of vehicles acts to minimise contamination from excavations and other construction pollutants. However it can also mobilise vehicle specific pollutants such as oils, brake dust and traffic film residue which can be hazardous to the surrounding environment. An essential building block to responsible vehicle washing is a well thought out and fully functioning construction drainage strategy. Specifically relating to vehicle washing:

- washing bays should be designed to minimise runoff by covering, using appropriate ditches and gullies and utilise silt traps or other sediment management measures prior to discharging;
- reduce the volume of water used in washing to minimise the waste generated; and
- where possible connect to an appropriate foul sewer and obtain the relevant consent.

Works to watercourses

Works in or within 8 m of channels / watercourses may be subject to separate consent from the appropriate land drainage authority. These works could be subject to further sediment and pollution control measures which will cover exposed ground and stockpiles, plant washing, roads and river crossings, dredging and de-watering/pumping excavations including:

- minimising work in the watercourse;
- working in highly sensitive water features during the period May - September inclusive. No works to any water features could be undertaken if heavy rainfall has recently occurred or is forecast;
- ensuring temporary works consent is obtained from the relevant drainage authority if work involves blockage of the channel;
- if it is necessary to block a minor watercourse during culvert construction, this will be done in accordance with pollution control measures and water could be over-pumped to preserve downstream flows;
- timing works in or near watercourses to avoid interfering with migrating or spawning fish; and
- sediment control measures being installed downstream of any construction activities at the upstream end of drainage runs, adjacent to or over any water features.

Management of historic contamination

As outlined within this Chapter and Chapter 12: Geology and Soils, it is likely that there are significant areas of pollution within the study area which could be mobilised through the construction of the proposed scheme. The mitigation for this is contained within Chapter 12: Geology and Soils, however, the main mitigation will involve:

- testing of made ground and soils to identify any contamination along the route, in material that may be excavated and re-used as fill, specifically at Dowlais Top and Hirwaun; and
- removal or treatment of contaminated soils to prevent the mobilisation of contaminated sediment or leaching of contaminated water to the water environment.

Material inventory

The CEMP will include a detailed inventory of all materials contained within the construction site compound, where each material is stored and the relevant pollution control measures associated. This will include a list of:

- machinery, vehicles and other plant;
- oils, fuels and other polluting materials;
- cementitious materials;
- excavated material;
- soil or plant material from areas of non-native invasive species;
- construction materials;
- any stored contaminated land; and
- waste including wastes from construction compounds.

Material storage and handling requirements

Within the CEMP a detailed plan of the materials stored on site could be developed, as well as specific methodologies to prevent pollution to the water environment. Consideration could be given to existing drainage pathways when storing materials and plant.

Where practicable, site compounds could be located away from watercourses and buffer zone areas of no works could be applied for all water features. Particular care could be taken with regard to work during the construction near to sensitive watercourses, Penywern Ponds and during works to the bridge crossing of Nant Hir Reservoir.

The site compounds could contain designated areas for refuelling which could be bunded and sealed to contain spillages at source. Specifications of storage containers should be in line with the GPP2 guidelines and the checklist for oil storage tanks be utilised to ensure full compliance with regulations. These could be sited on hardstanding and away from watercourses to prevent pollution to surface water and groundwater. All contaminated material could be removed and disposed from the area. Any oil or contaminants retained could be pumped into tankers at regular intervals for disposal off site. Storage of any potentially polluting materials should avoid areas:

- within 50 m of a spring, well or borehole;
- within 10 m of a watercourse;
- places where spilt oil could enter open drains, loose fitting manhole covers or soak into the ground where it could pollute groundwater;
- places where a spill could run over hard ground to enter a watercourse or soak into the ground where it could pollute groundwater;
- places where tank vent pipe outlets cannot be seen from the filling point;
- above roof level, as spilt oil can run unseen into guttering connected to surface water systems; and
- Source Protection Zones (SPZs) where groundwater is particularly vulnerable.

Additional mitigation measures could be applied through construction methodologies and timings to mitigate against pollution to surface water and groundwater. These could include:

- ensuring that wet cement / concrete does not come into contact with surface water or groundwater particularly at proposed bridge crossings;
- not storing large volumes of construction materials on the floodplain;
- securing plant and materials to ensure minimal impediment of conveyance or blockage of channels;

- using drip trays under mobile plant;
- storing oils, fuels and chemicals within site compounds on hard standing with appropriate bunding;
- ensuring that suitable insurance is acquired to cover cost incurred as a result of accidental oil spillage. The policy should also provide cover in the event of vandalism;
- providing specific wash-down areas for plant and equipment used for cement work and containing/locating these on defined areas of hardstanding; and
- prior to discharge, neutralising any cement wash-down water and agreeing such discharges with NRW.

Construction monitoring requirements

An Ecological Clerk of Works (ECoW) could be employed during the construction of the proposed scheme. Daily visual inspections of local watercourses and the ground could be carried out by the ECoW for evidence of contamination, for example, sheens and increased turbidity. These could be focus particularly on areas around site compounds, near working plant and watercourses where new or extended bridges and culverts are being provided.

A detailed monitoring plan could be developed for watercourses adjacent to or downstream of construction activities. This could include the requirement of taking and inspecting water samples prior to, during and following construction to ensure that the pollution control measures outlined within the CEMP were successful.

Pollution response plan

A pollution response plan could be developed prior to construction and kept on site throughout construction to inform contractors of required actions in the event of a pollution event. This could include the provision on-site of spill kits including absorbent material and inflatable booms. All site personnel could be briefed on the importance of the water environment, action to protect it and trained in the use of spill kits.

The plan could be in place to deal with any issues as soon as they occur for a particular site and to ensure that works are undertaken with the utmost care, especially where they have potential to lead to pollution of surface water or groundwater. Emergency planning could also include measures to prevent contamination caused by severe weather events. It is also advisable that a suitable insurance policy be taken out in order to manage additional cost and ensure an appropriate response is planned.

Flood risk measures

During construction there is a risk of flooding of the proposed works from a number of sources and there is also a potential impact on flooding elsewhere as a result of these works.

Fluvial risk

The construction activities associated with the A465 project present multiple risks to the site works from fluvial sources;

- works in the floodplain will temporarily decrease floodplain storage, impacting risk elsewhere;
- excavated materials stored in the floodplain could become mobilised during flood events, potentially damaging receptors downstream; and
- temporary access bridges may constrict flows and reduce floodplain storage.

Working within the floodplain

Culvert, bridge, outfall and realignment works will take place within the floodplain. This poses a risk to works and personnel in the floodplain. At these locations further mitigation will be required in order to minimise the risk detailed below.

All works affecting a Main River or Ordinary Watercourse could require a consent from NRW.

The contractor could prepare a risk assessment and method statement for works within the floodplain, following the EA's Flood Risk Standing Advice (FRSA) to minimise risks to personnel, equipment and materials. In addition to the FRSA, it is recommended that the method statement also includes the following mitigation to minimise the impacts of flooding:

- avoidance of work near watercourses during periods of heavy rainfall;
- timing of works – works within the area could be scheduled to minimise the risk of flood events occurring during the construction period. The works could be undertaken during the summer months;
- duration of works – the length of time between topsoil stripping and reinstatement could be minimised to reduce the opportunity of a flood event occurring whilst the surfaces are stripped. Topsoil removal can increase the risk of silt mobilisation during floods;
- monitoring of local weather conditions and stopping work (if required);
- not storing plant and materials in the channel or floodplain, particularly overnight and during shutdown periods;
- ensuring that all areas of the site have a safe access and egress route during high water levels;
- introducing a flood warning and evacuation procedure during the construction period to provide advance warning of predicted flooding and provide details of safe access and egress routes. The contractor could register for NRW Flood Warnings, where available;
- area of ground to be stripped of topsoil could be minimised as much as possible in floodplain areas;
- the length of time between topsoil stripping and reinstatement could be minimised to reduce the risk of a flood event occurring during construction activity;
- the timing of works could be carefully considered, works within the flood risk areas could be scheduled so as to minimise the risk of flood events occurring during the construction period; and
- where practicable, vegetated strips could be retained adjacent to watercourses within floodplains to impede surface water run-off and to catch sediment.

Channel diversions and construction of culverts

There are many minor watercourses throughout the scheme that will be diverted to nearby watercourses or culverts either temporarily or permanently. The following mitigation, in line with the recommendations in CIRIA C689, will be implemented to minimise the risk of adverse impacts on the watercourses:

- construction time within the watercourse could be kept to a minimum;
- where flumes are required to temporarily divert the watercourse, flume pipes could be of a sufficient length to span the trench width and ensure they are not undermined during trench excavation. They could also be sized to avoid placing the works and personnel at risk of flooding;
- where flumes are required, suitable over-pumping equipment could be on standby in case of any unforeseen issues;
- over pumping equipment could be of sufficient capacity to deal with significant volumes of water; and
- in the event of an unforeseen (no-notice) flood, planned for safe refuges and access routes could be provided on site.

It is not known at this stage whether pipe jacking will be implemented during any of the proposed culvert installations. Where pipe jacking is considered it is recommended that consideration be given to the placement of launch and reception pits so that construction works and personnel are not placed at risk of flooding.

Surface water

Surface water flooding may compromise the safety of personnel and damage construction materials and works. The following mitigation measures could be implemented;

- assessing likely surface water flow paths;
- installing temporary drainage systems of sufficient capacity to prevent the works, materials and construction personnel being inundated with surface water runoff;
- registering for severe weather warnings and monitor weather forecasts to provide notice of future heavy rainfall events;
- when equipment vulnerable to water ingress is required, construction works could only take place when low or no rainfall is forecast and equipment could be stored in compounds when not in use;
- an emergency evacuation procedure could be developed for removal of works items and contractor staff during heavy rainfall;
- where the installation of temporary drainage is not considered feasible, pumping equipment could be on standby to remove surface water from the works area; and
- constructing temporary bunds with regular spaces between bunds to prevent surface water backing up behind the bund and being re-directed elsewhere.

Groundwater

Groundwater has been identified as a potential contributing risk to other sources of flooding. At locations where groundwater has the potential to be an independent source of flooding there are the following risks:

- groundwater seeping into excavations where sub-surface flow paths are encountered;
- groundwater flooding from cutting points where sub-surface flow paths are intercepted; and
- groundwater flooding due to the above reasons coinciding with other sources of flooding.

The following mitigation measures could be implemented in order to minimise the risk:

- making groundwater dewatering available for works that are in groundwater risk zones;
- over-pumping equipment could be available on standby to remove groundwater that may seep into the excavation sites; and
- where there is a risk of groundwater flooding, surface water management plans and temporary drainage could have additional capacity in order to accommodate the possibility of multiple types of flooding.

Land drainage systems

During the construction period, it is likely that a high number of land drainage systems will be encountered due to the length of the scheme. Although the likelihood of encountering such systems is high, the low flow volumes associated with these structures and the use of appropriate site investigations and planning could help to minimise the risks.

Given the unrecorded nature of land drainage, it is not feasible to assess each of these assets individually. However, it can be assumed that at some point during construction, these systems have the potential to be accidentally removed, filled in or damaged, therefore increasing flood risk to the surrounding area. It is therefore advised that land drains are appropriately identified prior to construction and rerouted for the duration of construction, following completing of the construction phase it is recommended that the land drains are reinstated to the original rout and capacity. By identifying and intercepting existing land drainage systems ahead of any open excavations and creating thorough risk assessments and detailed site investigations, the risks from land drainage flooding can be reduced.

Pre-construction drainage could be designed by a drainage engineer and installed using a drainage contractor. Where land drains are encountered and / or have the potential to be damaged during trenching operations, a cut off or header drain could be installed to divert flow around the works, in order to prevent the works from being inundated with water when excavated. This will minimise the risks to workers within excavations during pipeline construction.

Flooding from reservoirs

As discussed within the FCA the proposed scheme is potentially at risk from the following reservoirs flooding;

- Nant Moel Reservoir (grid ref: SN 98148, 07102);
- Nant Hir Reservoir (grid ref: SN 98902, 06894);
- Beacons Reservoir (grid ref: SN99707, 17286);
- Cantref Reservoir (grid ref: SO 99871 15971);
- Llwyn-on Reservoir (grid ref: SO 00760, 12042);
- Upper Neuadd Reservoir (grid ref: SO03500 17300);
- Pentwyn Reservoir (grid ref: SO 05316, 14964);
- Ponsticill Reservoir (grid ref: SO 05611, 13259);
- Upper Penywern (grid ref: SO 07054, 08602); and
- Lower Penywern (grid ref: 07209, 08292).

This risk is also applicable during the construction phase. The likelihood of reservoir failure is extremely low, but as a precautionary measure, contact could be made with Merthyr Tydfil County Borough Council (MTCBC) and Rhondda Cynon Taf County Borough Council (RCTCBC) (the local authorities responsible for Emergency Planning) and Welsh Water's reservoir and safety inspection team. They could be informed about the presence of a large temporary workforce in the floodplain, and lines of communication established in the event of a reservoir flood warning being received. The reservoir undertakers could be informed that there is work planned downstream to prevent any drawdown works (maintenance / testing) during this period that could place staff and site at risk.

Appendix 17I – Proposed Site Compounds Flood Risk Summary

1. Surface Water Flood Risk

There are few proposed compound locations along the A465 scheme which are at a significantly high risk of surface water flooding. The majority of proposed sites which interact with the surface water flood outlines do so to a limited extent with only a small proportion of the proposed site compound area at risk. The proposed compound locations have been assessed for the surface water flood risk using the updated Flood Map for Surface Water (uFMfSW)

The proposed site compound 1870-2220_0 appears to be the compound which is at greatest risk. Surface water flow paths originating from the west flow through the site compound and collect on the existing A465. There are two main flow paths which put the proposed compound at risk, one at the north-west end and one at the south-east end (Plate 1-1), both these flow paths flow from south-west to north-east. The uFMfSW classes the level of risk for both these flow paths as low.

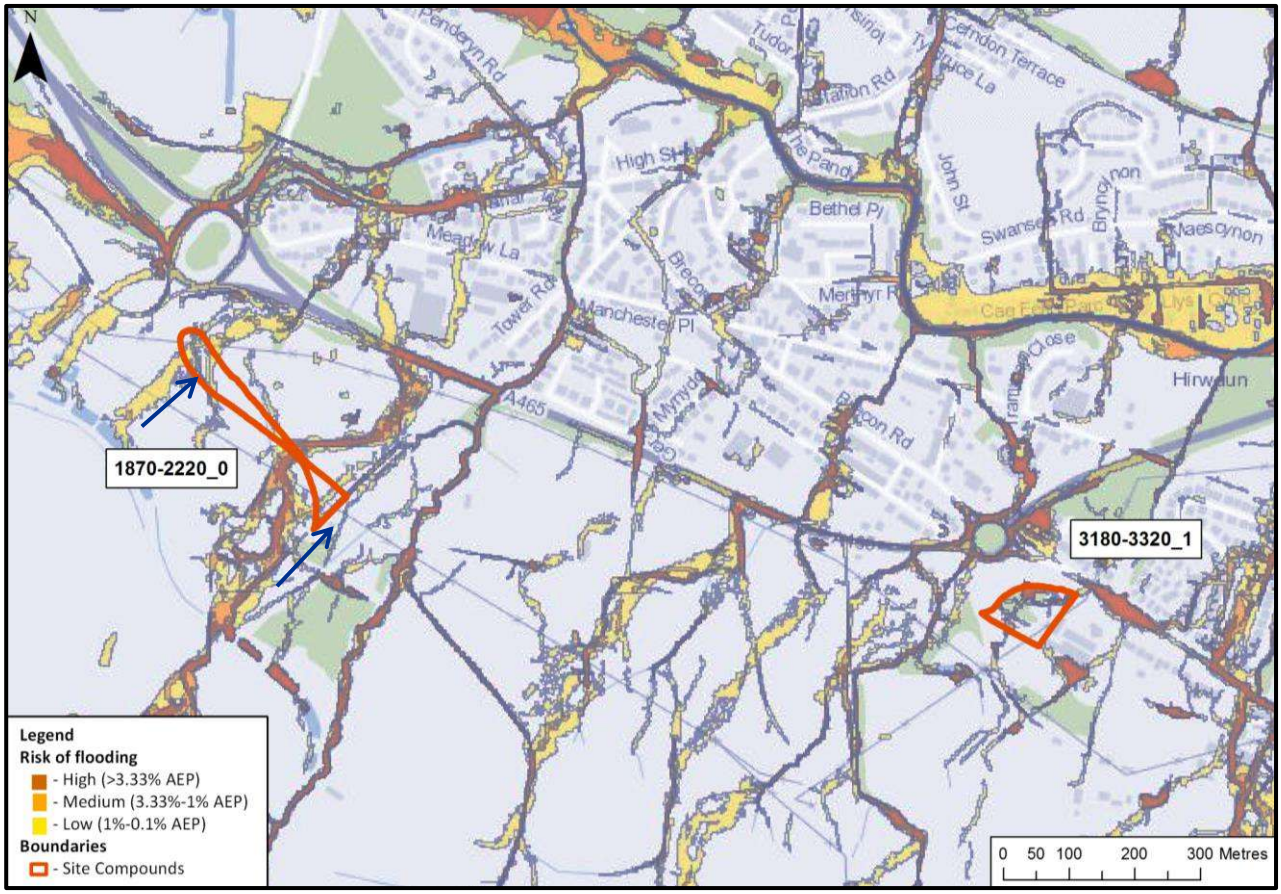


Plate 1-1. Surface water flood risk for proposed site compounds 1870-2220_0 and 3180-3320_1. Blue arrows show the likely flow paths. (Source: https://naturalresources.wales/our-evidence-and-reports/maps/flood-risk-map/?lang=en)

There are two further proposed compounds that demonstrate a notable interaction with the surface water flood extents; compounds 10220-10370_8 (Plate 1-2) and 14720-14820_15 (Plate 1-3). For both of these proposed compounds it is clear that the risk is related to a surface water flow path moving through the site. The risk to the site at proposed compound 10220-10370_8 is classed as a medium risk, according to the uFMfSW, whilst the risk at proposed compound 14720-14820_15 is low. There are a number of other potential sites which have a flow path passing directly through them; proposed compounds 7460-7700_5, 7860-8340_6 and 7880-8140_7. The flow paths at these locations are relatively small compared to that at proposed compound 14720-14820_15,

but should still be considered as being a risk. Proposed compounds 7460-7700_5 and 7860-8340_7 have flow paths flowing from north to south, straight through the centre with a low and medium risk respectively. The proposed compound 7880-8140_7 has a flow path flowing from south to north, which is classified as a low flood risk according to the uFMfSW. These proposed compounds are shown in Plate 1-4 below.

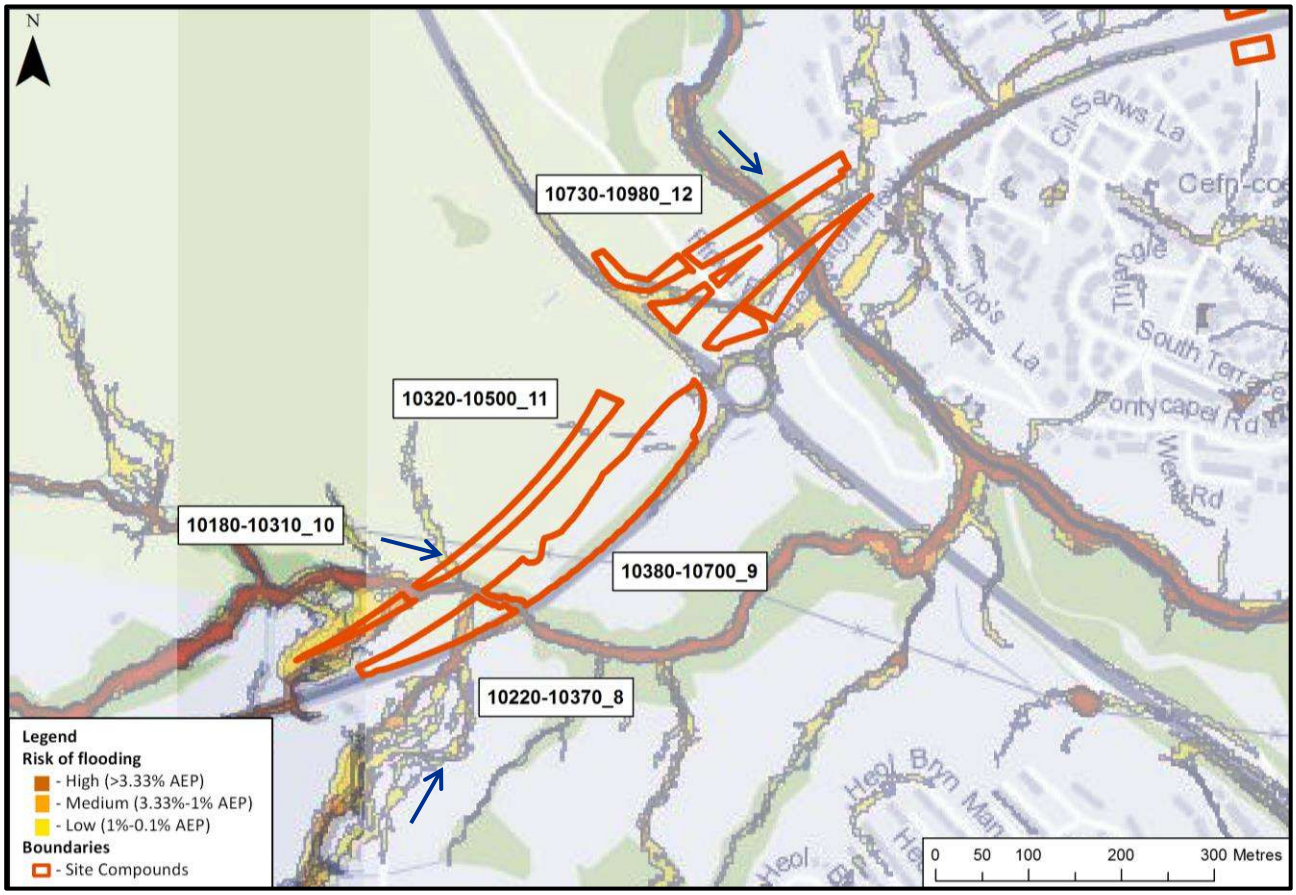


Plate 1-2. Surface water risk between chainage 9,000 and 11,000. Likely flow paths indicated by the blue arrows. (Source: https://naturalresources.wales/our-evidence-and-reports/maps/flood-risk-map/?lang=en)

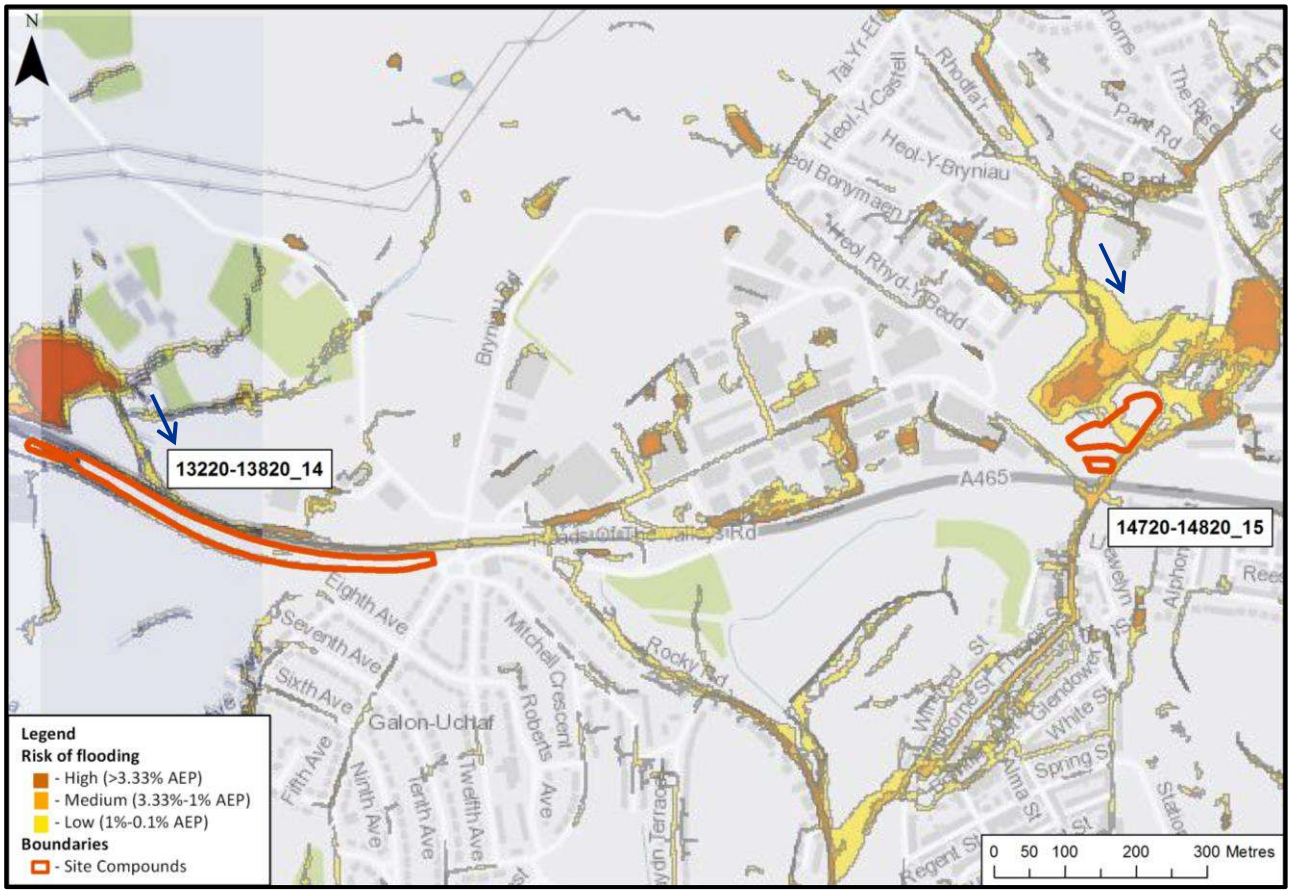


Plate 1-3. Surface water risk between chainage 13,000 and 15,000. Likely flow paths are indicated by the blue arrows. (Source: https://naturalresources.wales/our-evidence-and-reports/maps/flood-risk-map/?lang=en)

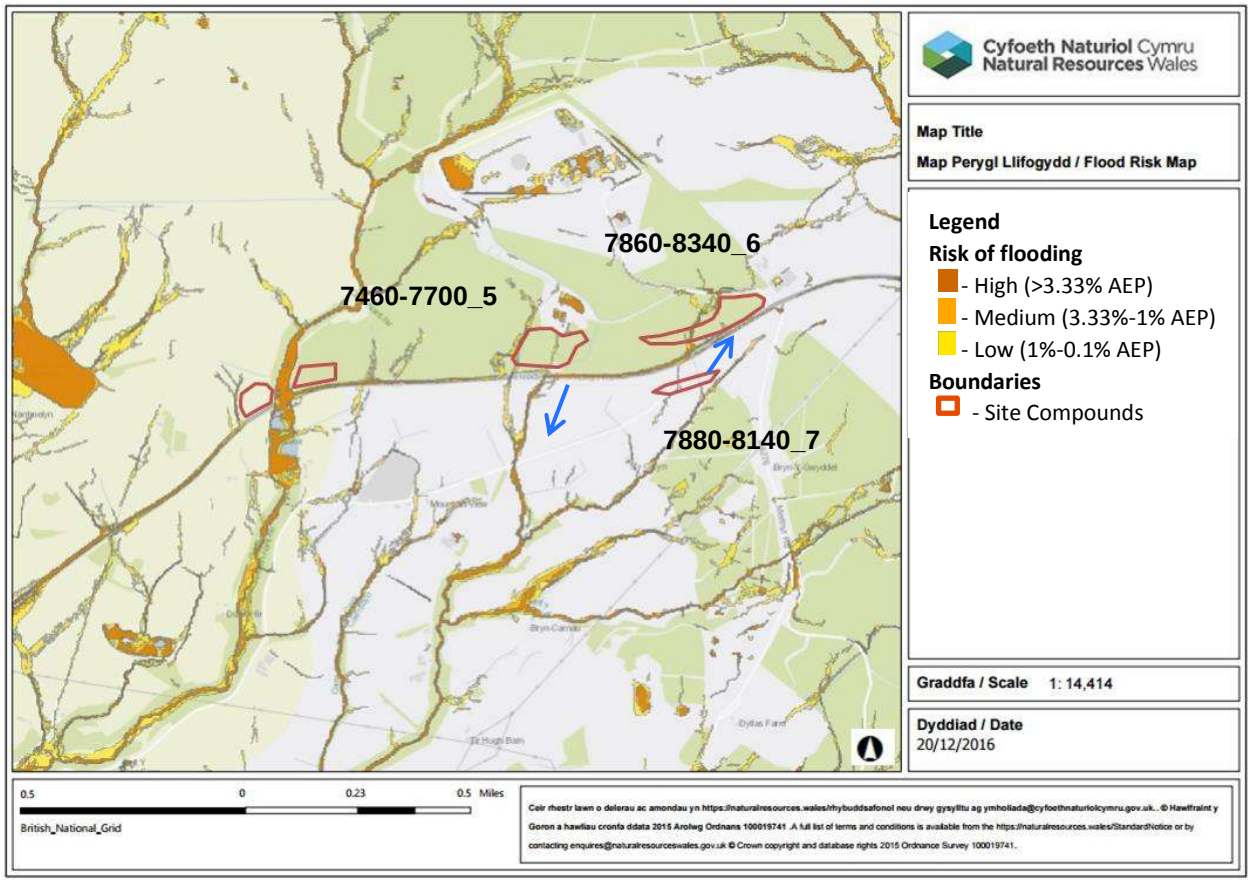


Plate 1-4. Surface water risk between chainage 6,000 and 9,000. Blue arrows indicate the likely flow paths. (Source: https://naturalresources.wales/our-evidence-and-reports/maps/flood-risk-map/?lang=en)

There is one potential instance of surface water ponding occurring within a proposed site compound, this being proposed compound 14720-14820_15. According to the surface water mapping, surface water is likely to pond around the eastern end of the proposed compound, between chainage (ch.) 13220 and 13300 (Plate 1-3), and is likely to pose a high risk during a flood event.

2. Fluvial Flood Risk

There is very limited fluvial risk to the proposed site compounds. The majority of potential sites have been located away from watercourses and their flood plains. However there are three watercourses which pass in close proximity to some of the proposed compounds. These are, Nant Ffrwd, Taf Fawr and Taf Fechan.

2.1 Nant Ffrwd

There are four proposed compounds between ch. 10,000 and 10,700 which may be at fluvial risk due to their close proximity to Nant Ffrwd. The proposed construction compounds 10220-10370_8, 10380-10700_9, 10180-10310_10 and 10320-10500_11 have been designed as separate compounds to accommodate the Nant Ffrwd watercourse which passes through them. However, there is still potential for the proposed compound to be at risk from the 1 % AEP fluvial flood event, refer to Plate 2-1 below.

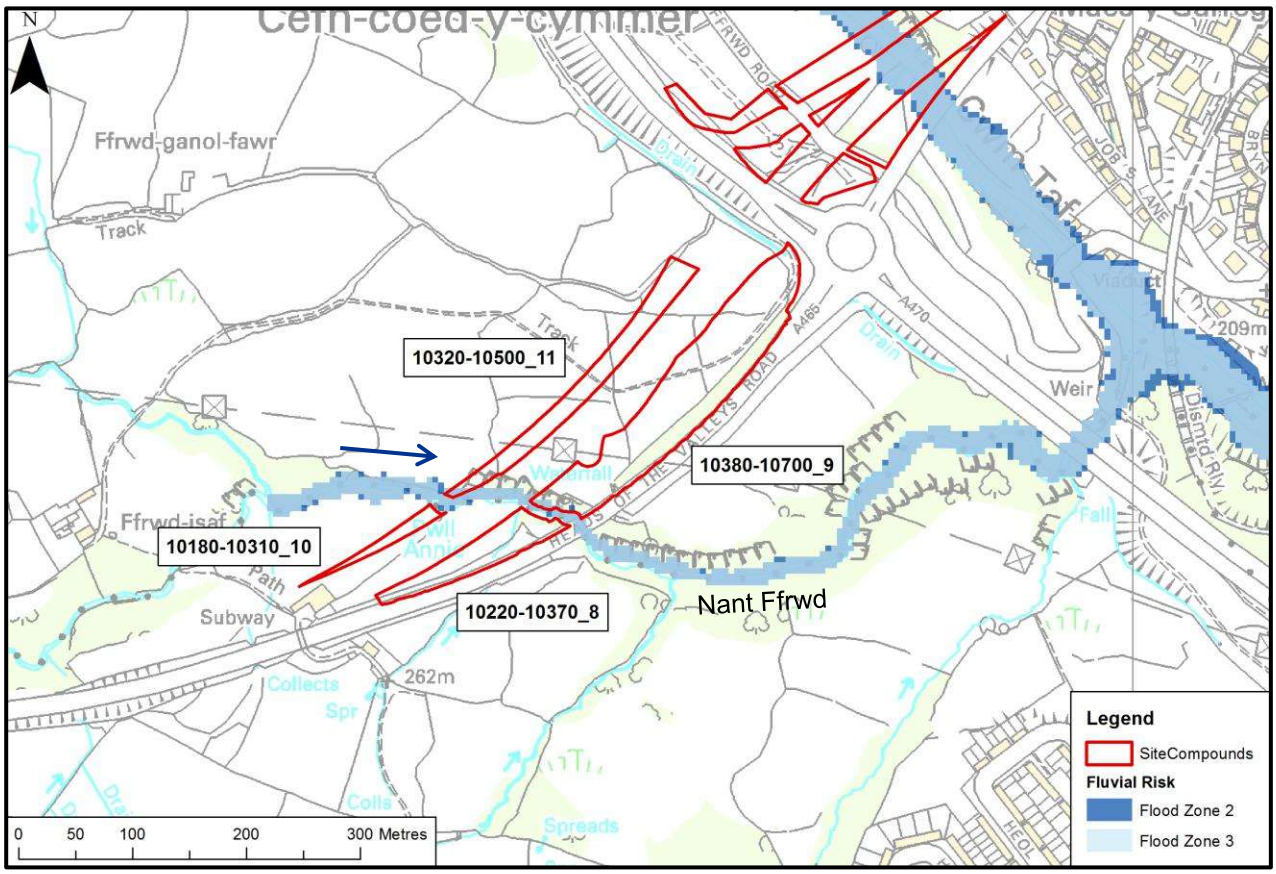


Plate 2-1. Fluvial risk associated with Nant Ffrwd.

2.2 Taf Fawr

Further east, proposed compound 10730-10980_12 has been split into six different sites to accommodate the Ffrwd road, two of these sites pass directly over the Taf Fawr. The existing A465 is a bridge at this point and the proposed compound is located here for the purpose of construction on the bridge. If the proposed sites are located on the bridge then the risk will likely be minimal due to the height above the watercourse. However, if based at ground level then the proposed sites will need to be split to account for the path of the watercourse. During the construction phase, there will be a risk when moving equipment, materials and construction personnel between the proposed compounds.

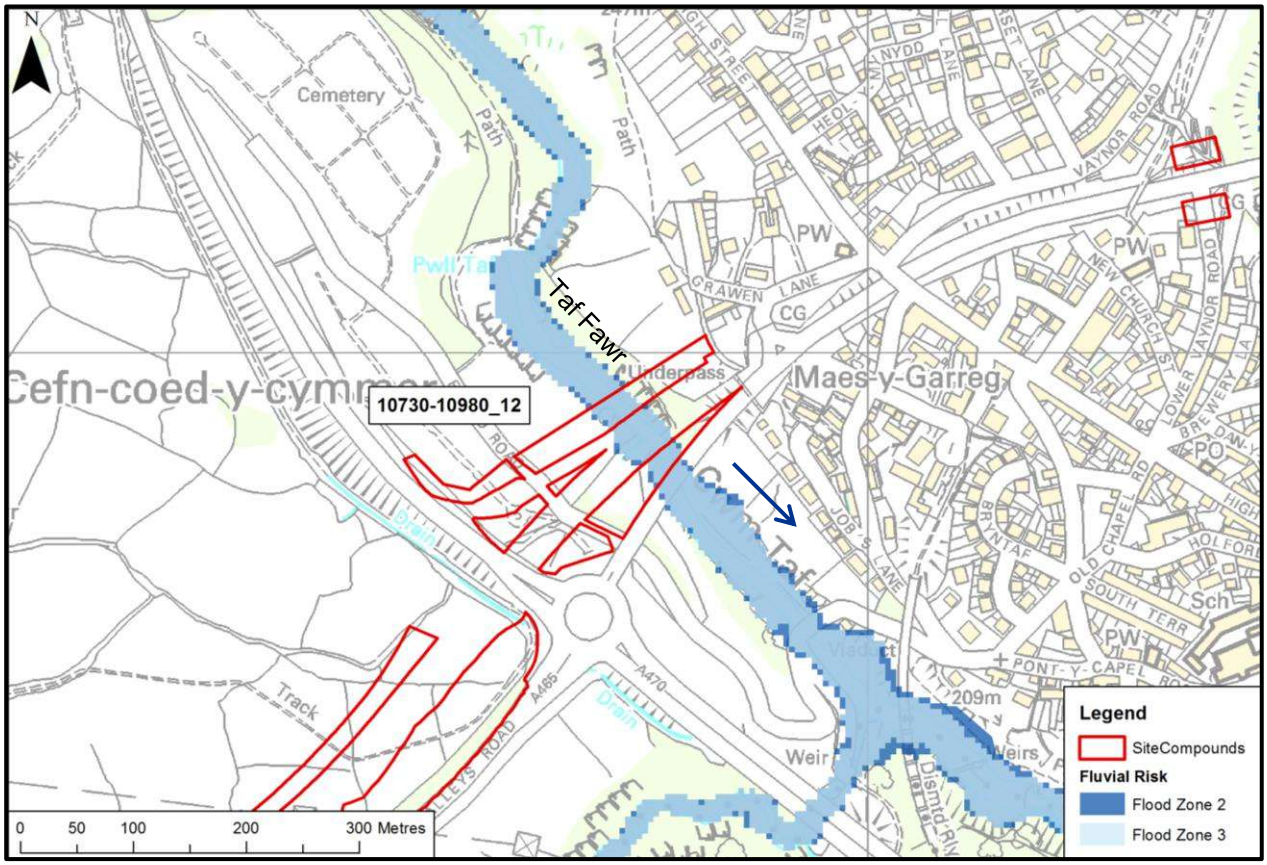


Plate 2-2. Fluvial risk associated with Taf Fawr.

2.3 Taf Fechan

The final watercourse, Taf Fechan, is located at ch. 11520. There are no proposed compounds located within the risk area associated with this watercourse. However, the four proposed compounds at 11420-11580_16 are in close proximity and may be at risk of flooding if they are any different from the layout indicated in Plate 2-3, or if they are located any closer to the watercourse.

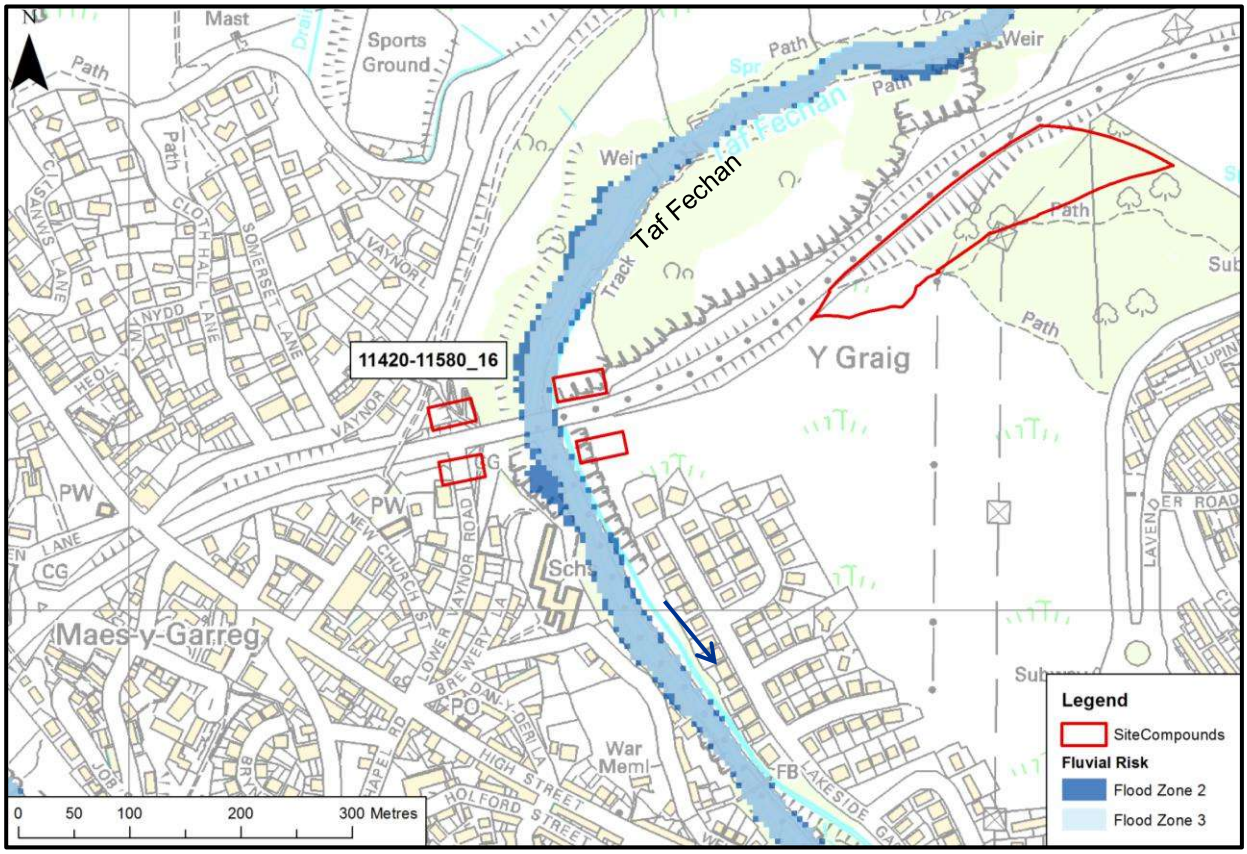


Plate 2-3. Fluvial risk associated with the Taf Fechan.

3. Groundwater Flood Risk

The risk of flooding from groundwater risk is not as straightforward to assess in comparison to surface water and fluvial flood sources. The risk is instead given as a general indication of potential flooding locations. The local information on groundwater flooding is limited in this area but the Merthyr Tydfil Flood Risk Management Plan (MTCBC, 2015) indicates that flooding from groundwater is not a major problem. However, information in the Rhondda Cynon Taf Draft Flood Risk Management Plan (RCTCBC, 2015) contradicts this, identifying that groundwater flooding is commonly experienced where developments have been cut into the hillsides without appropriate land drainage, and also that groundwater has been noted to occur from mines following the cessation of pumping. As part of the A465 Preliminary Sources Study Report (PSSR) a sample of over 100 boreholes was undertaken, ranging from 0.90 m to 35 m in depth. The sampling encountered groundwater at most locations, at various depths ranging from 0 m to 20.2 m below ground level (bgl) across the proposed scheme.

Out of all the potential construction compound locations, there are nine proposed locations which could be affected by groundwater risk. The area of Hirwuan, which is located at the western end of the scheme, is highly susceptible to groundwater flooding and, therefore, proposed compounds 1870-2220_0 and 3180-3320_1, which are in close proximity to Hirwaun, are likely to be at risk. Proposed compound 1870-2220_0 is located in the Hirwuan area and the PSSR found that the groundwater level was almost at the level of the proposed carriageway, but was unlikely to directly contribute to flood risk. Proposed compound 3180-2220_1 is in the Afon Cynon and Trewuan area, the groundwater here is above the level of the proposed scheme and could directly contribute towards flooding.

Proposed compounds 6560-6880_4 and 7460-7700_5 are located within the Nant Hir reservoir area, where groundwater is higher than the proposed route. Within this location groundwater was encountered as standing water in six boreholes and seepage was found in two of these. The sandstone layers within the Lower Coal Measures were also found to contain water as closed aquifers. As there have been previous incidents of seepage there is the likelihood that groundwater could directly contribute towards flooding of these proposed compounds.

The proposed compounds 7860-8340_6 and 7880-8140_7 are within the Bryn Y Gwyddel area. Groundwater here was encountered in nine boreholes between 0.9 m to 17.5 m. In two of these boreholes there were incidents of groundwater reaching the surface overnight. As the maximum groundwater level recorded along the route is above the level of the proposed scheme there is the likelihood that groundwater could directly contribute towards flooding of the proposed compounds.

Proposed compounds 10220-10370_8, 10380-10700_9, 10180-10310_10, 10320-10500_11 and 10730-10980_12 are all located within the Nant Ffrwd area. Standing water was recorded overnight in nine boreholes at this location. Due to the groundwater level being above the level of the proposed carriageway, groundwater could directly contribute towards flooding at these proposed sites.

The final proposed compound which is at risk of groundwater flooding is 13220-13820_14. This would be located within the Gurnos area, where overnight standing water was recorded during the PSSR, along with water recorded in the glacial till and the bedrock. The maximum recorded groundwater level is above the level of the proposed scheme's, indicating a high risk of groundwater flooding.

Groundwater of varying depths was recorded in the vicinity of all of the remaining proposed compounds. However, for proposed compounds 11780-12140_13 and 11420-11580_16, located within the Cefn-coed-y-cymmer area, the maximum groundwater level was approximately 8.3 m below the level of the proposed scheme, indicating that groundwater is unlikely to have a contribution to any sources of flooding. An overview of the compounds at risk from groundwater flooding is provided in Plate 3-1 and Plate 3-2.

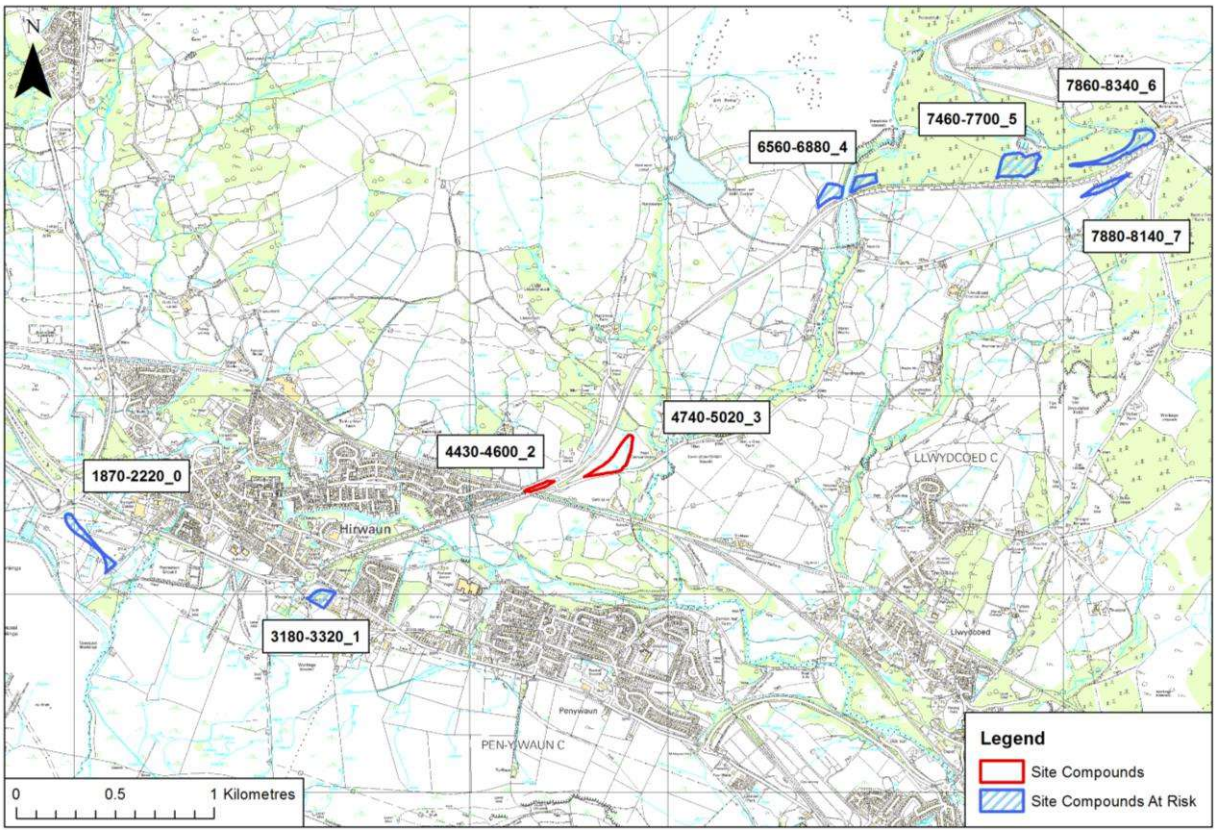


Plate 3-1. Proposed Compounds at risk from groundwater flooding between chainages 1300 and 8500.

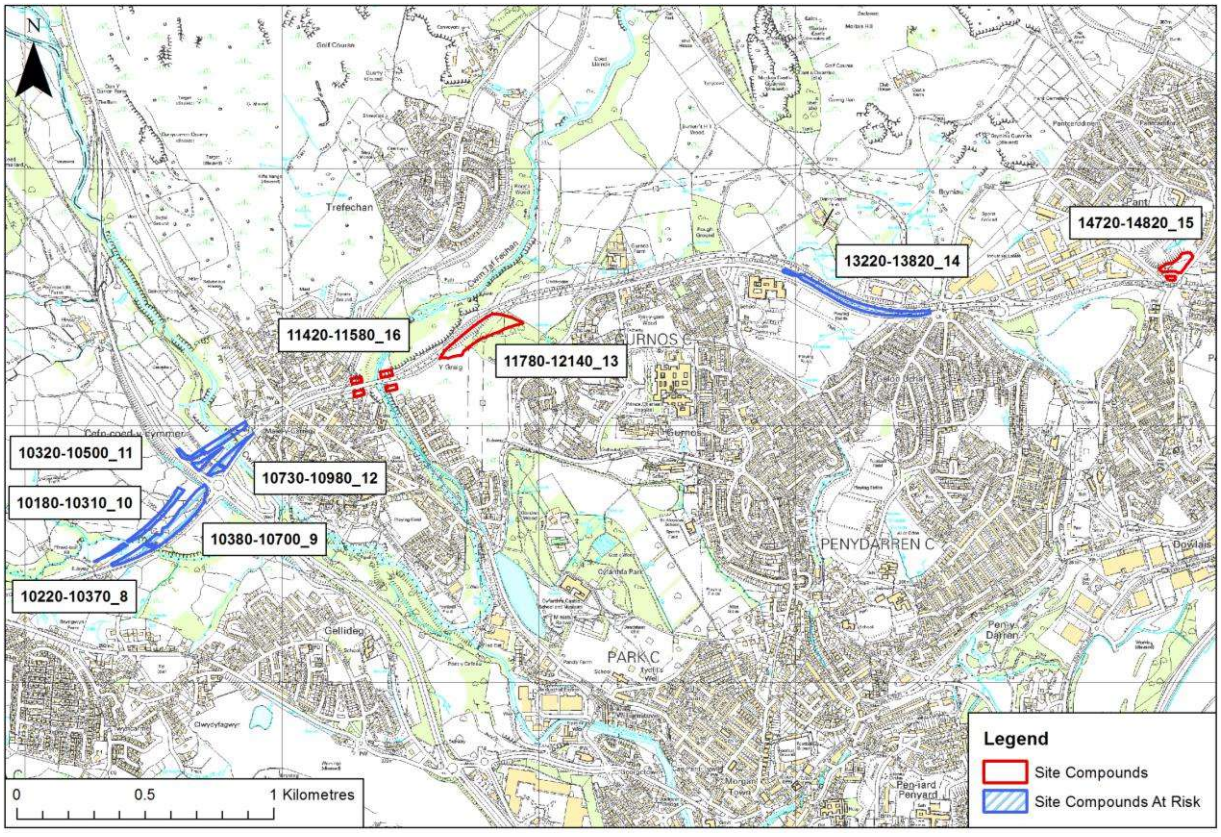


Plate 3-2. Proposed Compounds at risk from groundwater flooding between ch. 10000 and 15000.

4. Summary of Flood Risk to the Proposed Construction Compounds

The flood risk to the proposed construction compounds from fluvial, groundwater and surface water sources has been assessed. The risks to each proposed compound from each source is summarised in Table 17J.1 below.

Table 17J.1 : Summary of flood risk

Proposed Compound (Chainage location followed by Proposed Compound Number)	Fluvial risk?	Surface water risk?	Groundwater risk?
1870-2220_0	✓	✓	✓
3180-3320_1			✓
4430-4600_2			
4740-5020_3		✓	
6560-6880_4			✓
7460-7700_5		✓	✓
7860-8340_6		✓	✓
7880-8140_7		✓	✓
10220-10370_8	✓	✓	✓
10380-10700_9	✓	✓	✓
10180-10310_10	✓		✓
10320-10500_11	✓		✓
10730-10980_12	✓		✓
11780-12140_13			
13220-13820_14		✓	✓
14720-14820_15		✓	
11420-11580_16			

Page left intentionally blank

Appendix 17J – Detailed Assessment Methodologies

DMRB HD45/09 Annex I assessment methodologies

DMRB HD45/09 Annex I includes six methods to assess the potential impacts from the proposed scheme on the water environment, the five used in this assessment are:

- Method A – Effects of Routine Runoff on Surface Waters;
- Method C – Effects of Routine runoff on Groundwater;
- Method D – Pollution Impacts from Accidental Spillages; and
- Methods E and F – Assessing Flood Impacts.

These tests do not influence the importance of attributes but instead provide a rigorous way to consistently assess the magnitude of impact for some of the more significant and common issue associated with road schemes and the water environment. The test methods are detailed below.

Method A – Simple assessment

Method A determines whether routine runoff is likely to have an ecological impact on receiving water features. This method uses HAWRAT, considering dilution of indicator metals (dissolved copper (Cu) and dissolved zinc (Zn)). All discharges have been tested using HAWRAT, due to high levels of traffic and potentially sensitive water feature receptors.

The methodology for routine runoff involves tests to predict future concentrations of zinc and copper in receiving water features. This is based on Annual Average Daily Traffic (AADT) flow, the size of the road drainage catchment, dilution flow (Q95) and current water quality in the receiving water feature. The Q95 flow is exceeded for 95 % of the time; a low flow that provides a conservative estimate when calculating dilution and water quality impacts as the lower the dilution the greater the concentration of pollutant in the water feature. The Q95 flows have been estimated using the methodology presented in the Institute of Hydrology (IoH) Report 108 *Low Flow Estimation*.

In order to accurately assess the operational impact on the environment, the treatment trains were identified and treatment efficiencies calculated for copper (Cu), zinc (Zn) and suspended sediment.

Treatment of road drainage in the proposed scheme is either via filter drains followed by wet retention ponds or filter drains in isolation. The removal efficiencies for dissolved copper and dissolved zinc have been based on removal rates quoted in the DMRB guidance[1]. Removal of sediment from road drainage is applied in accordance with CIRIA 2015 'The SuDS Manual'[2]. The SuDS Manual does not include performance values for filter drains so DMRB HD 33/16 values have been used. When applying a second level of treatment (retention ponds in this case), the efficiency is halved, in accordance with advice in The SuDS Manual, to conservatively reflect the reduced performance of tertiary treatment measures.

Table 17K.1 illustrates the final treatment efficiency values.

[1] DMRB Volume 4, Section 2, Part 3 'Design of Highway Drainage Systems' HD33/16 (Highways England, Transport Scotland, Welsh Government and Department for Infrastructure, 2016).
[2] Pg 568, Chapter 26, The SuDS Manual C753, CIRIA (2015) Woods Ballard, B., Udale-Clark, H., Illman, S., Scott, T., Ashley, R., and Kellagher, R.

Table 17K.1: The treatment efficiencies used for HAWRAT assessments

Drainage system	Treatment efficiencies (%)		
	Dissolved Cu	Dissolved Zn	TSS
Filter drain	0	45	60
Retention pond (wet)	40	15*	38*
Total system	40	53	75

Method C - Assessment of pollution impacts from routine runoff on groundwaters

Method C gives guidance for a situation where routine runoff discharges to Groundwater. Under this approach pollutants fall into one of two categories; pollutants under List 1 are prohibited from being discharged to groundwater and pollutants in List 2 should be minimised. Remaining pollutants after treatment that are in List 2 are assessed using the matrix in Table C1.1, Annex 1. Each component of the system has a weight, and each receiving system will have an appropriate score for each component. The score for each component equates to the weight multiplied by the score; the overall risk score is the sum of the final component scores. A risk score of:

- less than 150 indicates a low risk of pollution;
- between 150 and 250 indicates a medium risk of pollution; and
- over 250 indicates a higher risk of pollution.

Method D – Assessment of pollution impacts from spillages

This method provides an indication of the risk of a spillage causing a pollution impact on receiving water bodies. The risk assessment methodology assesses the annual probability of a serious accidental spillage reaching the environment based on road length, presence of junctions, AADT flow, percentage of Heavy Goods Vehicles (HGVs), serious spillage rates and emergency services response time. The DMRB incorporates a methodology that uses this data to automate the calculation of spillage risk and the probability of a serious pollution incident.

An assessment was undertaken for each discharge to test whether the probability of an accidental spillage causing a pollution incident represents an unacceptable risk.

Method E – Hydrological assessment of design floods

Method E for the estimation of design floods was applied for water features with risk receptors requiring detailed assessment. The results are detailed in the Flood Consequence Assessment (FCA) which is a stand-alone report and is available on request.

Method F – Hydraulic assessment

This method outlines the approaches to hydraulic assessment of flood flows. It also states that a FCA should comply with TAN15: Development and Flood Risk.

A full FCA has been prepared in accordance with the methodology outlined in TAN15 and following consultation with NRW. The FCA includes the assessment methodology, and is summarised in this chapter. Following detailed design the FCA will be expanded to include the DMRB methodologies.