ARCADIS Design & Consultancy for natural and built assets

# BRYNGLAS TUNNEL REFURBISHMENT PROJECT

## Statement to Inform the Appropriate Assessment (SIAA)

FEBRUARY 2016

Incorporating

EC HARRIS BUILT ASSET CONSULTANCY

Hyder

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# 1 INTRODUCTION

This report has been produced by Arcadis Consulting (UK) Ltd on behalf of the Welsh Government in relation to the proposed maintenance and improvement works to be carried out for the Brynglas Tunnel Refurbishment Project.

This report has been drafted as part of the formal Assessment of the Implications on European Sites (AIES) which determines the likelihood of any significant effects associated with the Brynglas Tunnel Refurbishments and reviews potential implications of the works on European Sites. This is set out by Regulation 61 of the Conservation of Habitats and Species Regulations 2010 (as amended). The report provides further assessment following the screening exercise (see Appendix A).

## 1.1 Purpose

This document considers the Brynglas Tunnel Refurbishment Project in relation to the requirements of the Conservation of Habitats and Species Regulations 2010 (as amended), known as and referred to in this report as the Habitats Regulations. This document will be made available to statutory consultees including Natural Resources Wales (NRW) and Newport City Council (NCC). Consultation outcomes/meetings with consultees have informed this document.

## 1.2 Requirements of the Habitats Regulations

Before deciding to undertake or give authorisation for a plan or project, the Welsh Government as a determining body and competent authority must consider under the requirements of Regulation 61 whether the plan or project —

(a) is likely to have a significant effect on a European site (either alone or in combination with other plans or projects), and

(b) is not directly connected with or necessary to the management of that site, and in such cases they must make an appropriate assessment of the implications for that site in view of that site's conservation objectives. A plan or project should only be undertaken or authorised if it can be shown that it will not result in an adverse effect on the integrity of European sites except in situations of imperative reasons of overriding public interest where compensation measures have been included.

The assessment considers whether there will be likely significant effects of the maintenance and improvement works, its reasonable alternatives and the Do Minimum scenario on the European designated sites. In the case of any likely significant effects arising, consideration of effects in relation to the conservation objectives will be assessed.

## 1.3 Professional Judgement

Professional judgement was used in the carrying out of this work where professional guidance was not available, and in the interpretation of results. Where there was not enough information about the risk of a qualifying interest being present, or of the risk of impacts, the assessment has used the precautionary principle to inform the judgement. The precautionary principle has been applied to ensure that potential impacts are given sufficient consideration whilst also ensuring these are proportionate to the works. This principle means that the conservation objectives should prevail where there is uncertainty or that harmful effects will be assumed in the absence of evidence to the contrary.

## 1.4 Project Description

The scheme involves the maintenance of three structures along the existing M4 between Junctions 25A and 26 (inclusive) with some minor improvement works. Maintenance and

improvement works are proposed for the River Usk Viaduct (Grid Reference ST 31496 89978), Malpas Viaduct (Grid Reference ST 30674 89738) and the Brynglas Tunnel (Grid Reference ST 31047 89875). The locations of the existing structures are illustrated on the accompanying site plan (Drawing Numbers 004-UA007844-01 and 005-UA007844-01).

The works discussed below (i.e. the River Usk Viaduct maintenance works and the installation of the hydro-carbon interceptor) are to be carried out as one scheme within the same time frame. Given the location and nature of the works to the Malpas Viaduct (including the installation of a fire hydrant and new water main) as well as the maintenance to be carried out to the tunnel (none of which would affect the River Usk SAC), these aspects of the project have been screened out of the assessment, and no further consideration of these elements of the Project will therefore be given.

Arcadis are the Employers Agent, advisors to the Welsh Government. The project will be run under a Design and Build (D&B) Contract. Welsh Government have commissioned WSP/Parsons Brinkerhoff to design the repair/strengthening works required for the River Usk Viaduct. Given the nature of the contract, Arcadis have drafted this Report and will then oversee the works when carried out by the Contractor once appointed.

The assessment focuses upon the maintenance activities to be carried to the River Usk Viaduct which spans the River Usk Special Area of Conservation (SAC) and the highway drainage improvements to be undertaken on the western bank of the River Usk. The works to the River Usk Viaduct, which carries the existing M4, are considered to be essential repairs and will be carried out from early 2016 until early 2018. It should be noted that no works will be carried out within the wetted channel of the River Usk (defined as the river channel below Mean High Water (MHW) (i.e. the mean of mean high water springs (MHWS) and mean high water neaps (MHWN)). The definition of wetted channel was provided by NRW) in 2015 for another highways project in South Wales, which includes both temporary works (such as scaffolding) and permanent works further downstream on the River Usk.

## 1.4.1 The River Usk Viaduct

The works in relation to the River Usk Viaduct comprise three key elements:

- surfacing and deck works to ‘topside’, including resurfacing of the carriageway;
- installation and commissioning of a post-tensioning system to the deck between the existing deck beams; and
- concrete repairs to deck beams.

In order to undertake the works, it will be necessary to install and attach scaffolding/a temporary structure to the existing viaduct, which will tie into the banks either side of the River Usk. As stated above, no works will be undertaken within the wetted channel; consequently, scaffolding will be suspended immediately beneath the bridge deck and will not enter the water or be positioned on the channel bed. Workboat operating is also not anticipated.

Temporary lighting to the scaffold may be necessary; however, this would be task lighting directed at the works rather than general illumination of the structure or river below. The working areas will be contained and enclosed to retain all dust and any debris caused by the works.

The temporary site compound is to be located at Glebelands Recreational Ground to the east of the River Usk SAC. Some lighting of the compound will be required for security purposes during the construction phase. Navigational lighting is not anticipated. However, this will be agreed with the Harbourmaster, and discussions will be held with NRW if required. It is anticipated that there would be a temporary reduction in freeboard below the existing soffit line of the bridge to accommodate underslung scaffolding. Scaffolding would be in place across all five spans of the structure rather than the moving scaffolding along the structure as works progress. This approach

will reduce the levels of disturbance and minimise the risk of materials associated with the temporary works (e.g. scaffolding) entering into the River Usk.

### 1.4.2 Drainage and Pollution Control Installation Measures

The works in relation to the highway drainage improvements and pollution control measures comprise:

- Installation of a hydrocarbon interceptor;
- Installation of a pollution containment tank;
- Fitting of a non-return flap valve to the existing outfall to prevent sediment entering into the highway drainage during periods of high tide; and
- Maintenance to the existing drainage which carries the current M4 highway runoff to the outfall to the River Usk.

Minor earthworks will be required on the existing M4 soft estate (accessed via the hard shoulder and emergency evacuation route from the Brynglas Tunnel) in order to install an interceptor and pollution containment tank. The interceptor and pollution containment tank will provide long-term, permanent protection measures for the River Usk in the event of a road traffic incident on the M4 carriageway. Currently the existing M4 highway drainage discharges directly into the River Usk with no treatment measures in place.

In addition, there will also be some improvements/repairs made to the existing drainage which leads to the outfall positioned on the western bank of the River Usk. A non-return flap valve will also be fitted to the existing drainage outfall as currently, as a result of the estuary tides, the existing drainage has become filled with sediment.

### 1.4.3 Anticipated Programme of Works

Works are anticipated to start on site in early 2016, with the road drainage and installation of the interceptor and pollution containment tank being prioritised. The installation of scaffolding and the decking out of the River Usk Viaduct will also be carried out at this time.

At present the following programme of works has been drafted:

Scaffolding would be installed in early 2016 and is anticipated to be in place for up to 52 weeks for the works to be carried out associated with the River Usk Viaduct repairs. Given that works will require the use of concrete, and will therefore be temperature susceptible, 52 weeks have been proposed, although works may take less time. Due to the location of the works (i.e. above water), at present it is anticipated that only daytime working will be undertaken. Works to the topside of the Usk Viaduct bridge deck (the M4 carriageway) would be carried out between 20:00 and 05:30hrs, as night closures would be needed for any resurfacing works. Prior to any major works commencing on site, the installation of the hydro-carbon interceptor and any required maintenance to the existing drainage will be carried out. As stated in Section 1.4 above, no further consideration has been given to other site activities, as these have been scoped out of the assessment.

# 2 BACKGROUND TO THE ASSESSMENT OF IMPLICATIONS ON EUROPEAN SITES (AIES)

Under Article 6 of the Habitats Directive, an assessment is required where a plan or project may give rise to significant effects upon a Natura 2000 site (also known as ‘European Sites’). Natura 2000 is a network of areas designated to conserve natural habitats and species that are rare, endangered, vulnerable or endemic within the European Community. This includes SACs

designated under the Habitats Directive for their habitats and/or species of European importance and Special Protection Areas (SPA) classified under Directive 2009/147/EC on the Conservation of Wild Birds (the codified version of Directive 79/409/EEC as amended) for rare, vulnerable and regularly occurring migratory bird species and internationally important wetlands.

In addition, it is a matter of law that candidate SACs (cSACs) and Sites of Community Importance (SCI) are considered in this process. Furthermore, it is Government policy that sites designated under the 1971 Ramsar Convention as internationally important wetlands (i.e. Ramsar sites) and potential SPAs (pSPAs) are also considered.

The requirements of the Habitats Directive are transposed into UK law by means of the Conservation of Habitats and Species Regulations 2010 (as amended).

Paragraph 3, Article 6 of the Habitats Directive states that:

> *'Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to paragraph 4, the competent national authority shall agree to the plan or project only having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public'.*

Paragraph 4, Article 6 of the Habitats Directive states that:

> *'If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.'*

## 2.1 Legislation and Guidance

Design Manual for Roads and Bridges (DMRB). Volume 11, Section 4, Part I, HD44/09 Assessment of Implications (of highways and/or roads projects) on European Sites (AIES) (including Appropriate Assessment) (Highways Agency, 2009) states that

> *"The Habitats Regulations, and their amendments (hereafter referred to as the Habitats Regulations), require Competent Authorities… before deciding to undertake, or give any consent, permission or other authorisation… to undertake an Appropriate Assessment (AA) …of the implications for the site's conservation objectives…, where a project:*
>
> *• is likely to have a significant effect on a European Site in Great Britain (either alone or in combination with other plans or projects), and*
> *• is not directly connected with or necessary to the management of the site.*
>
> *In addition, in undertaking any such assessment Competent Authorities are also required to:*
>
> *• …consult the appropriate nature conservation body…;*
> *• …have regard to any representations made by that body…; and*

*• …if they consider it appropriate, take the opinion of the general public….*

*It is important to note that any such project should normally only proceed where it has been ascertained that it will not adversely affect the integrity of the European Site. Exceptionally, where there is a negative assessment conclusion, Competent Authorities may only agree to a project where:*

*• …there are no alternative solutions…; and*
*• it …must be carried out for imperative reasons of over-riding public interest…; and*
*• …that any compensatory measures are taken…"*

European Commission guidance (2001)[1] recommends that an Assessment of Implications of European Sites (AIES) screening should fulfil the following steps:

1. Determine whether the plan is directly connected with or necessary for the management of Natura 2000 sites;
2. Describe the plan and describe and characterise any other plans or projects which, in combination, have the potential for having significant effects on Natura 2000 sites;
3. Identify the potential effects on Natura 2000 sites;
4. Assess the likely significance of any effects on Natura 2000 sites.

The first part of the process requires consideration of the project or plan in respect of whether it is directly connected with or necessary for the management of European Sites. 'Directly' in this context means solely conceived for the conservation management of a site and 'management' in this context refers to the management measures required in order to maintain in favourable condition the features for which the European Site has been designated.

The proposed refurbishment works are not directly connected with, or necessary for, the management of any of the five European Sites identified in Section 2, below.

The AIES for the Brynglas Tunnel Project will be carried out in line with:

- The Conservation of Habitats and Species Regulations 2010 (as amended);
- Design Manual for Roads and Bridges (DMRB). Volume 11, Section 4, Part I, HD44/09 Assessment of Implications (of highways and/or roads projects) on European Sites (AIES) (including Appropriate Assessment) (Highways Agency, 2009);
- European Commission, Managing Natura 2000 sites: The provisions of Article 6 of the Habitats Directive 92/43/EEC;
- European Commission, Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC;
- Welsh Government Technical Advice Note 5: Nature Conservation and Planning. Section 5: Development affecting designated sites and habitats;
- The Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2000).

In addition, other sources of information were reviewed which included the Strategic Habitat Regulations Assessment (SHRA) for the M4 Corridor around Newport (M4CaN)[2] and the

[1] European Commission (2001) *Assessment of plans and projects significantly affecting Natura 2000 sites*

[2] M4 Corridor around Newport. Strategic Habitat Regulations Assessment. Welsh Government. July 2014.

Brynglas Tunnel Refurbishments Environmental Assessment Report[3] which included the extended Phase 1 habitat survey of the proposed works area which was undertaken in early 2015.

## 2.2 Stages in AIES Process

The requirements of the Habitats Directive comprise four distinct stages:

**Stage 1: Screening** is the process which initially identifies the likely impacts upon a European site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts may be significant. It is important to note that the burden of evidence is to show, on the basis of objective information, that there will be no significant effect; if the effect may be significant, or is not known, that would trigger the need for an Appropriate Assessment. There is European Court of Justice case law to the effect that unless the likelihood of a significant effect can be ruled out on the basis of objective information, then an Appropriate Assessment must be made.

**Stage 2: Appropriate Assessment** is the detailed consideration of the impact on the integrity of the European site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's conservation objectives and its structure and function. This is to determine whether or not there will be adverse effects on the integrity of the site. This stage also includes the development of mitigation measures to avoid or reduce any possible impacts.

**Stage 3: Assessment of alternative solutions** is the process which examines alternative ways of achieving the objectives of the project or plan that would avoid adverse impacts on the integrity of the European site, should avoidance or mitigation measures be unable to cancel out adverse effects.

**Stage 4: Assessment where no alternative solutions exist and where adverse impacts remain.** At Stage 4 an assessment is made with regard to whether or not the development is necessary for imperative reasons of overriding public interest (IROPI) and, if so, of the compensatory measures needed to maintain the overall coherence of the Natura 2000 network.

This report comprises a draft statement to inform the Stage 2 Appropriate Assessment process An updated SIAA may need to be submitted by the successful Contractor following commission, should any elements of the scheme design be modified such that they would have a material effect upon the assessment.

## 2.3 Definition of Significant Effects

As part of the assessment process it is necessary to determine whether there is to be a Likely Significant Effect on any of the qualifying features of the identified European Designated Sites as a result of the proposed scheme/project, whether undertaken in isolation or conjunction with other projects. As part of the process, potential direct and indirect effects are considered.

DMRB Volume 11, Section 4, Part I, HD44/09 states that during the initial assessment stage:

[3] Brynglas Tunnel Refurbishments Environmental Assessment Report. Arcadis Consulting. November 2015.

*"The key aspects of the project identified in the description of the project should be related to the key characteristics of the site, and an initial (precautionary) assessment should be undertaken of their likely significance on the European Site. This needs to include consideration of effects (including scale or magnitude), which may include those which are direct, indirect, temporary or permanent, or harmful to the site, or a combination of these."*

During the assessment, activities which form part of the project/Scheme are scrutinised and where mitigation measures are proposed (including avoidance) such approaches are considered and incorporated into the assessment process.

## 2.4 In Combination Effects

It is necessary for the assessment to consider not only the proposals that may lead to significant impacts upon European Sites on their own, but those that may have a significant impact in combination with other plans and projects. Cumulative effects have been considered in relation to other projects in the locality of the proposed works based on a review of the M4 Corridor around Newport SHRA. In addition, Local Authority Development Plans (LDPs)/Unitary Development Plans (UDPs) have been reviewed in conjunction with Regional Transport Plans (RTPs). In-combination effects are only considered relevant during the construction-phase/maintenance activities on site.

In this case, three projects were assessed, given their proximity to the scheme/the River Usk and the timings of works:

- The planned housing development to the south of Glebelands on the eastern bank of the River Usk SAC. The Glebelands Residential Housing Development will provide 153 houses, 102 of which will be built within the timeframe of the Brynglas Tunnel Refurbishments.

- The planned housing development to the south of Shaftesbury Park, located on the western bank of the River Usk, which will provide 140 houses, 135 of which will be built within the timeframe of the Brynglas Tunnel Refurbishments..

- During the construction-phase of the Brynglas Tunnel Refurbishments, on the south-western bank of the River Usk, NRW will be carrying out works to the banks of the watercourse as part of their flood defence strategy. The flood defence works will be carried out immediately downstream of the Brynglas Tunnel Refurbishments and the River Usk Viaduct.

# 3 EUROPEAN DESIGNATED SITES OF RELEVANCE TO THE PROJECT

All European Designated sites have been considered where located within 2km of the works and up to 30km where bats are a qualifying feature as outlined in DMRB Volume 11, Section 4, Part I, HD44/09.

The Scheme crosses the River Usk SAC, a tidal watercourse which forms part of the Severn Estuary. The River Usk is the nearest European Designated Site to the proposed works. As the River Usk SAC flows into the Severn Estuary SAC, SPA and Ramsar Site, these designations have also been given further consideration.

Five designated sites have thus been identified for further consideration in this document:

- The River Usk SAC;

- The Severn Estuary SAC, SPA and Ramsar;
- The Wye Valley and Forest of Dean SAC;
- The Usk Bat Sites SAC;
- Wye Valley Woodlands SAC.

The sites and their qualifying features and conservation objectives (extracted from the M4 Corridor around Newport SHRA) are detailed in Table 3-1, below.

Table 3-1 Designated Sites

| Designated Site | Site Ref. No. | Proximity to Scheme | Qualifying Features and Conservation Status |
|---|---|---|---|
| River Usk SAC | UK0013007 | 0m (immediately beneath the River Usk viaduct) | **Annex I habitats that are present as a qualifying feature, but not a primary reason for selection of the site:**<br>Water courses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [unfavourable: unclassified]<br>**Annex II species that are a primary reason for site selection:**<br>Sea lamprey (*Petromyzon marinus*) [unfavourable: unclassified]<br>Brook lamprey (*Lampetra planeri*) [favourable]<br>River lamprey (*Lampetra fluviatilis*) [favourable]<br>Twaite shad (*Alosa fallax*) [unfavourable: unclassified]<br>Atlantic salmon (*Salmo salar*) [unfavourable: unclassified]<br>Bullhead (*Cottus gobio*) unfavourable: unclassified]<br>Otter (*Lutra lutra*) [favourable]<br>**Annex II species present as a qualifying feature, but not a primary reason for site selection:**<br>Allis shad (*Alosa alosa*) [unfavourable: unclassified] |
| Severn Estuary SAC | UK0013030 | 7.4km | **Annex I habitats that are a primary reason for selection of this site:**<br>Estuaries<br>Mudflats and sandflats not covered by seawater at low tide<br>Atlantic salt meadows (*Glauco-Puccinellietalia Maritimae*)<br>Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:<br>Sandbanks which are slightly covered by sea water all the time<br>Reefs |

| Designated Site | Site Ref. No. | Proximity to Scheme | Qualifying Features and Conservation Status |
|---|---|---|---|
| | | | **Annex II species that are a primary reason for selection of this site:**<br>Sea lamprey<br>River lamprey<br>Twaite shad |
| Severn Estuary SPA | UK9015022 | 6km | **During passage:**<br>Ringed plover (*Charadrius hiaticula*)<br>**Over-wintering:**<br>Bewick's swan (*Cygnus columbianus bewickii*)<br>Dunlin (*Calidris alpina alpina*)<br>Redshank (*Tringa totanus*)<br>Shelduck (*Tadorna tadorna*)<br>Curlew (*Numenius arquata*)<br>Pintail (*Anas acuta*)<br>Assemblage of nationally important populations of wintering waterfowl |
| Severn Estuary Ramsar | UK11081 | 6km | **Habitats:**<br>Sandbanks which are slightly covered by sea water all the time<br>Estuaries<br>Mudflats and sandflats not covered by seawater at low tide<br>Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)<br>**Migratory fish:**<br>Salmon<br>Sea trout (*Salmo trutta*)<br>Sea lamprey<br>River lamprey<br>Allis shad<br>Twaite shad<br>European eel (*Anguilla anguilla*)<br>**Bird assemblages of international importance**<br>**Species with peak counts in winter:**<br>Bewick's swan<br>European white-fronted goose (*Anser albifrons albifrons*) |

| Designated Site | Site Ref. No. | Proximity to Scheme | Qualifying Features and Conservation Status |
|---|---|---|---|
| | | | Shelduck<br>Gadwall (*Anas strepera*)<br>Dunlin<br>Redshank<br>**Species regularly supported during the breeding season:**<br>Lesser black-backed gull (*Larus fuscus graellsii*)<br>**Species with peak counts in spring/autumn:**<br>Ringed plover<br>Species with peak counts in winter:<br>Eurasian teal (*Anas crecca*)<br>Pintail |
| Wye Valley & Forest of Dean Bat Sites SAC | UK0014794 | 17.1km | **Annex II species that are a primary reason for selection of this site:**<br>Lesser horseshoe bat (*Rhinolophus hipposideros*) [unfavourable]<br>Greater horseshoe bat (*Rhinolophus ferrumequinum*) [unfavourable declining] |
| Wye Valley Woodlands SAC | UK0012727 | 21.6km | **Annex I habitats that are a primary reason for selection of the site:**<br>*Asperulo-Fagetum* beech forests [unfavourable].<br>*Tilio-Acerion* forests of slopes, screes and ravines [unfavourable].<br>*Taxus baccata* woods of the British Isles (Priority habitat) [favourable].<br>**Annex II species present as a qualifying feature, but not a primary reason for site selection:**<br>Lesser horseshoe bat [unknown] |
| Usk Bat Sites SAC | UK0014784 | 23.8km | **Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:**<br>European dry heaths [unfavourable]<br>Degraded raised bogs still capable of natural regeneration [unfavourable]<br>Blanket bogs (Priority habitat) [unfavourable]<br>Calcareous rocky slopes with chasmophytic vegetation [favourable]<br>Caves not open to the public [favourable] |

| Designated Site | Site Ref. No. | Proximity to Scheme | Qualifying Features and Conservation Status |
|---|---|---|---|
| | | | *Tilio-Acerion* forests of slopes, screes and ravines (Priority habitat) [favourable]<br>**Annex II species that are a primary reason for selection of this site:**<br>Lesser horseshoe bat [favourable] |

Of the sites detailed in Table 3-1, the River Usk SAC will be considered further as works are to take place directly above the watercourse and on the river banks immediately adjacent to the designated site (although outside of the site boundary). Due to connectivity with the River Usk SAC and presence of species such as migratory fish (including eels), the Severn Estuary SAC and Ramsar site will also be considered further (refer to the Designated Sites Figure).

The banks of the River Usk immediately beneath the Viaduct structure/M4 comprise exposed mudflats at times of low tide. Although the mudflats do provide potential foraging and roosting habitat for wetland and wintering birds, the habitat immediately beneath the viaduct is subject to high levels of noise and disturbance as a result of the daily high volumes of traffic using the M4. Based on the habitat conditions present and extensive areas of more suitable and less disturbed habitat available for use by wintering and wetland birds, and the distance of the site boundary from the proposed works, the Severn Estuary SPA will not be considered further in this assessment.

As part of the Environmental Assessment for the Scheme, bat surveys were carried out on the River Usk and Malpas viaducts. No bat species associated with the Wye Valley & Forest of Dean Bat Sites SAC, Wye Valley Woodlands SAC nor the Usk Bat Sites SAC (namely lesser and greater horseshoe bats) were recorded. In addition, the River Usk Viaduct does not provide favourable roosting opportunities for these species, and better foraging resources are present within closer proximity to the sites rather than the River Usk Viaduct. Although there will be the need for scaffolding to be fitted to the structure, it will still be possible for commuting and foraging bats to pass beneath the M4 Viaduct, and access will be maintained along the banks of the River Usk. Therefore, these designated sites will not be given further consideration in this SIAA.

# 4 ASSESSMENT

## 4.1 Selection of European Sites to take through Appropriate Assessment

Given the location and nature of the works, and for the reasons outlined in Section 3, above, the River Usk SAC and the Severn Estuary SAC and Ramsar have been considered as part of this assessment.

## 4.2 Potential impacts

In order to identify any Likely Significant Effects on the relevant European Designated Sites, potential direct and indirect impacts have been identified and briefly summarised in Table 4-1. In summary, the majority of impacts are anticipated to occur during the construction phase, with no negative impacts anticipated during the operational phase.

As stated in Section 1.4.2, the installation of pollution control measures (as part of the Scheme) have been designed to safeguard the River Usk in the event of an incident/accident on the

existing M4 resulting in spillages or the use of fire suppression waters, and this would be considered to represent a beneficial effect on the SAC. Due to the nature of the works, no scaffolding or temporary structures will be installed in the wetted channel or directly within the boundary of the designated site. However, works involving the use of concrete will be carried out above the River Usk.

Table 4-1 Impact Summary Table:

| Impact | Pathway | Likely Effect |
|---|---|---|
| Physical Presence | Temporary and partial habitat loss/fragmentation and barrier to movement. No permanent habitat loss/fragmentation or barrier effects anticipated. | Potential for temporary partial habitat loss/ fragmentation/barrier to movement during periods of night-time working. |
| Dust/emissions to air | Deposition to sensitive habitats/surface water | Potential to reduce water quality and impact upon the fish assemblage. |
| Discharge of pollutants (including suspended solids) into controlled waters | Direct and indirect discharging thereby reducing water quality | Potential reduction in water quality could impact upon the fish assemblages present in the River Usk SAC. From here, pollutants could also discharge into the Severn Estuary. |
| Disturbance | Noise & Vibration | Night-time works will form part of the standard maintenance activities of the M4, such as resurfacing, and could potentially impact upon the fish assemblages and otters present in the River Usk SAC. |
| | Lighting (including security) | Temporary disturbance of qualifying species, namely otters and light-sensitive fish species such as eel and shad in the event of security lighting (and navigational lighting, if required) being used during the construction phase. |

## 4.3 Determining significance thresholds

For the purposes of this assessment, any compromise of the conservation objectives/impacts sustained to the qualifying features of the SAC sites and Severn Estuary Ramsar site would be considered significant. A deterioration in habitat quality or a disruption in natural processes as a result of the maintenance works would also be considered significant, particularly given the location of the working area along the River Usk.

Based on the impacts identified in Table 4-1 above, the following features have been identified as potentially being at risk of impact in the absence of any mitigation measures being implemented.

## River Usk SAC impacts - otters

Although no otter holts (or resting sites) have been identified during surveys carried out as part of the extended Phase 1 habitat survey, otters do use the River Usk which passes beneath the Scheme corridor. In the absence of mitigation measures, otters using the River Usk could potentially be disturbed through the use of security lighting associated with the site compound, which will be situated >50m away from the eastern bank of the River Usk. Habitats could also become temporarily fragmented if access to the banks of the Usk is not provided given the extensive scaffolding requirements. Otters could also get trapped in excavations and within the site boundary. In the absence of mitigation, impacts could be experienced by otters.

Works to the live carriageway undertaken during night-time closures are considered unlikely to result in significant disturbance to otters, particularly given the existing levels of background noise and lighting associated with the M4. Night-time working directly above the watercourse on the scaffold/temporary works is also not anticipated.

## River Usk SAC and Severn Estuary SAC and Ramsar impacts - effects on fish (including eels)

Maintenance activities will include the use of hand tools to undertake targeted concrete patch repairs as well as hydro-demolition working from a suspended temporary platform above the River Usk. Without mitigation measures the works could have impacts upon migratory fish (including eels) as a result of disturbance. Fish responses to lighting and other forms of disturbance can range from avoidance behaviour to permanent physical damage or mortality. In addition, water quality of the Usk could be affected in the event of debris and materials entering the waterbody. In the absence of mitigation, particularly given that the works will span the waterbody potentially acting as a barrier, impacts to the SAC and Ramsar species assemblage could be significant.

# 5 SUMMARY OF MITIGATION MEASURES (INCLUDING AVOIDANCE)

Given the potential impacts that have been identified above, a range of mitigation measures have been agreed with NRW and Newport City Council, during meetings held in late 2014 and 2015, and these have been incorporated into the scheme design. The mitigation measures presented below are to be implemented during the construction phase to avoid and minimise any impacts being sustained to qualifying features of the sites and to ensure conservation objectives are not compromised.

## 5.1 Essential Repairs to the River Usk Viaduct (maintenance)

No works (including temporary works such as scaffolding) are to be undertaken in the wetted channel or directly within the boundary of the River Usk SAC.

- A temporary site compound will be required as part of the works. This will be located outside of the River Usk SAC boundary to the east of the watercourse. The compound will be secured and located a sufficient distance away from the river to avoid impacts on otters and fish and to ensure no flood risk. This will be further mitigated through the installation of a bund.

- The temporary works and scaffolding system that will surround the structure will slope down to meet ground level near to the abutments of the Viaduct/M4. These will not be

positioned inside the wetted channel and will be positioned outside of the River Usk SAC boundary.

- Working times will vary depending upon the nature of the works and the Contractor's proposed programme. However, works to the 'topside' of the deck would be limited to night-shifts between 20:00 and 06.00 as maintenance activities will include the resurfacing of the M4 carriageway. Night-time working is only envisaged during the resurfacing works of the carriageway which is elevated above and away from the River Usk. Activities below deck level (i.e. on the scaffold) would be undertaken during daylight hours, particularly given the health and safety concerns associated with working above water. This would minimise potential disturbance effects on otters.

- Impacts to the qualifying features (namely, fish and otters) are therefore considered unlikely. However, all mitigation measures will be incorporated within a Construction Environmental Management Plan (CEMP).

- Fencing and covering of any excavations will be ensured. In addition, the site compound and works areas will be secured to ensure otters cannot gain access. The covering of excavations should also assist in preventing eels getting trapped inside the working area.

- The river banks and public footpaths will remain accessible, and therefore species associated with the designated sites will still be able to move freely within the area. The channel of the River Usk will also remain unobstructed.

- The structure and working area will be enclosed to retain any dust and debris created as a result of the works. Consequently, task lighting will be needed as the use of sheeting (or similar) may result in insufficient natural light being provided to the working area. If this is the case, temporary task lighting would be directed at the working area. As works above the River Usk are anticipated to be carried out during daylight hours only, light spill is not considered to be an issue.

- The need for navigational lighting will be guided by the Harbourmaster's requirements, and these would be specific to the temporary works proposals. It would also be appropriate for the contractor to inform NRW of the lighting arrangements and ensure that the lighting is directional and does not illuminate the channel banks and/or the watercourse. The navigational lighting will only be in place to demarcate the temporary works. Any lighting (particularly security lighting) will be installed to ensure that the River Usk is not illuminated at any time. If necessary, this will be directional lighting and baffles will be used.

- Given the nature of the works, high levels of vibration are not anticipated, particularly as heavy plant will not be moving along the channel banks frequently. In addition, due to the high volumes of heavy traffic the Viaduct receives on a daily basis, the works to the structure are not anticipated to significantly increase vibration below the water level.

- Workboat methods will not be used as part of the works. All works are to be undertaken from the scaffolding/temporary works areas.

## 5.2 Installation of interceptor, pollution containment tanks, replacement drainage and outfall (improvements)

An overall benefit will be provided as a result of these improvement works as currently no protection measures exist in the event of a pollution incident on the existing M4 carriageway. Therefore contaminants such as hydrocarbons currently have a direct pathway to the River Usk SAC. In order to ensure that there will be no temporary water quality effects during the installation of these features, silt fencing, hay bales and other protection measures will be used to ensure that sediment-laden run-off does not enter the river.

## 5.3 Best Practice & Standard Working Methods

During the construction phase, all on-site activities will be carried out in accordance with best practice guidelines including:

- CEMP to be produced;
- Pollution control plan to feature as part of the CEMP;
- New pollution control measures to be installed to help protect the integrity of the River Usk during the operational phase of the works. These will be installed prior to works commencing on site as this will also provide a method of pollution control.
- Lighting strategy for the construction phase;
- Night-time working to be avoided;
- Strategic programming of works to avoid any delays to programme and site personnel needing to be present on site for longer periods of time than necessary;
- PPG1 General Guide to the Prevention of Pollution[4];
- PPG5 Works and Maintenance in or near water[5] (despite having been withdrawn, this guidance will still be applied until new guidance has been provided);
- PPG6 Working Construction and Demolition Sites[6].
- The Environmental Good Practice on Site CIRIA Guidelines.

# 6 CONCLUSIONS

Based on the proposed approach to works, construction-phase maintenance activities, and implementation of stringent pollution control measures as detailed in Section 5, significant impacts to the River Usk SAC, Severn Estuary SAC and Ramsar are not anticipated. The assessment of impacts on the European Sites is based upon a 'worst case' scenario. The Screening Reports are presented in matrix form in Appendix A. The Screening Matrix format is taken from The Design Manual for Roads and Bridges (DMRB) Volume 11 Section 4 Part 1 HD

[4] Pollution Prevention Guidelines, Environmental Alliance (Environment Agency, SEPA, Environment and Heritage Service). http://www.doeni.gov.uk/niea/ppg01.pdf. [Note that whilst these PPGs have now been officially withdrawn by the Welsh Government, the principles of pollution prevention within them will continue to be applied.]

[5] Pollution Prevention Guidelines. Works and Maintenance in or near water. Environmental Alliance (Environment Agency, SEPA, Environment and Heritage Service). http://www.doeni.gov.uk/niea/ppg05.pdf.

[6] Pollution Prevention Guidelines. Works at Construction and Demolition Sites. Environmental Alliance (Environment Agency, SEPA, Environment and Heritage Service). http://www.doeni.gov.uk/niea/ppg06.pdf

44/09 Assessment of Implications (of Highways and/or Roads Projects) on European Sites (including Appropriate Assessment). The screening matrices are informed by the Ecological Surveys undertaken to inform the Environmental Assessment Report.

Based on the results of this screening exercise, and the additional assessment presented in this report, it is considered that the proposed project will not result in significant adverse effects on the River Usk SAC, Severn Estuary SAC and Severn Estuary Ramsar, nor inhibit the delivery of the Conservation Objectives for these sites (as presented in Appendix B). The installation of pollution prevention measures, which will be incorporated into the existing highway drainage design, will provide long-term benefits and protect the River Usk in the event of a spillage or incident on the M4. This will provide long-term benefits, as such measures are currently absent. Based on the results of the screening, a 'No Significant Effects Report' has also been produced and included in Appendix C of this report.

HD44/09 recommends that clear answers to the following two questions should be provided (based on the information presented) when concluding an assessment in relation to the Habitat Regulations:

*a) Is the proposal directly connected with or necessary to site management for nature conservation?*

No - The proposals relate to a maintenance scheme with some improvement works included for the existing M4 and are not connected with nor necessary to the management of the River Usk SAC, Severn Estuary SAC or Severn Estuary Ramsar Site.

*b) Is the proposal likely to have a significant effect on the features of the site of European Importance, alone or in combination with other plans and projects?*

The screening exercise identified that the proposal was unlikely to have a significant effect on features of the River Usk SAC, Usk Bat Sites SAC, Severn Estuary SAC or Severn Estuary Ramsar Site. Potential impacts and mitigation measures identified during the appropriate assessment stage are summarised in the above sections and provide further assurance that there will be no significant effect on European Sites.

Therefore, for the purposes of Regulation 61 of the Conservation of Habitats and Species Regulations 2010, it is concluded that there would be **no adverse effect on the integrity of the European Sites** considered in this assessment.

# APPENDIX A

## Screening Matrices

**Table 1: River Usk SAC**

| **Project Name:** | **M4 Brynglas Tunnel Improvements & Maintenance** | |
|---|---|---|
| **Natura 2000 Site under Consideration** | **River Usk SAC** | |
| **Date: October 2015** | **Author (Name/Organisation): Hannah Corcoran, Arcadis** | **Verified (Name/Organisation): Jon Davies, Arcadis** |
| **Description of Project** | | |
| Size and scale: | *Essential Repairs/ Maintenance*<br>The Scheme involves undertaking essential repairs to the underside of the River Usk Viaduct which currently carries the M4 motorway between Junctions 25 and 26a. Although there will be the need for temporary works in the form of scaffolding suspended above the River Usk, no works will be undertaken in the wet channel. The works to the River Usk Viaduct are considered to be maintenance works undertaken in relation to the existing M4 carriageway and include resurfacing of all carriageways.<br><br>*Improvements*<br>Improvement works are also proposed which will involve the installation of an interceptor and pollution containment tank along with some maintenance to the existing drainage which leads to the existing outfall. | |
| Land-take: | There will be no land take within the River Usk SAC boundary.<br><br>*Essential Repairs/Maintenance*<br>Land take for the essential repairs and maintenance activities for the River Usk Viaduct will be minimal and within the existing soft estate. However, a temporary site compound will be constructed for the duration of the construction phase to the east of the River Usk at Glebelands Recreational Ground. The majority of the works associated with the Scheme will be within land currently owned by the Welsh Government and Newport City Council. This will be kept to the minimum required area but will be positioned outside of the SAC boundary. All land will be reinstated to its former land use on completion of construction.<br><br>*Improvements*<br>There will be some temporary land take required to install the new interceptor and pollution containment tank. However, this will be <0.01ha and outside of the SAC boundary. The land take for the Scheme will have no impact on the SAC qualifying features. | |
| Distance from the European Site or key features of the site: | The River Usk SAC is located directly beneath the proposed working area as the existing M4 carriageway/River Usk Viaduct crosses the watercourse. The designation covers the wet channel area and does not include the flood plain areas or surrounds. Therefore any temporary works which tie into the banks of the River Usk (outside the wet channel) will remain outside of the designated site boundary. | |
| Resource requirements: | The Scheme will have no impacts upon the resource requirements of the SAC/ qualifying features. | |

| **Project Name:** | **M4 Brynglas Tunnel Improvements & Maintenance** | |
|---|---|---|
| **Natura 2000 Site under Consideration** | **River Usk SAC** | |
| **Date:**<br>**October 2015** | **Author (Name/Organisation):**<br>**Hannah Corcoran, Arcadis** | **Verified (Name/Organisation):**<br>**Jon Davies, Arcadis** |
| Emissions: | During the works there may be some localised emissions to air or polluted surface water run-off (for example) during the construction-phase operations in the event of no mitigation measures being implemented.<br><br>As stringent mitigation measures will be put in place during the works, there will not be any additional emissions in the locality during the improvement and maintenance activities or during the operational phase. The scheme is located within the existing M4 highway boundary and immediately adjacent to the motorway.<br><br>Mitigation against noise, vibration and lighting will also be included in the CEMP. | |
| Excavation requirements: | Some minor excavations will be required as part of the improvement works. However, given the nature of the works and location it is not considered likely that excavations from the Scheme will impact the River Usk SAC. | |
| Transportation requirements: | There will be a requirement for materials to be transported to and from site during the construction phase. Exact details will be confirmed by the Contractor. | |
| Duration of construction: | Total project 104 weeks, River Usk Viaduct works up to 52 weeks. | |
| Other: | Although there are large scale temporary works proposed, there are no temporary or permanent works proposed to be installed in the wet channel/designated site boundary. | |
| | | |
| **Description of avoidance and/or mitigation measures** | Extensive mitigation measures are proposed with regard to works in proximity to the River Usk SAC.<br><br>*Essential Repairs*<br>The scaffold working areas will be enclosed to ensure all dust, water and debris will be contained during the works and will not enter the River Usk. In the event of any lighting being required it is considered unlikely that there would be any direct influence on the river channel.<br><br>In addition, access will be maintained for members of the public using both banks of the River Usk which should also ensure otters can move freely alongside the wet channel.<br><br>No works, including the use of temporary structures will occur inside the wet channel of the River Usk.<br><br>Works to the underside of the Usk will be carried out during daylight hours thereby avoiding any potential disturbance of otters which use the area. | |
| Nature of proposals: | The essential repair works to the underside of the River Usk Viaduct will require temporary works such as the installation of scaffolding beneath and surrounding the structure. The scaffolding would not be positioned inside the wet channel and would slope down to meet ground level near to the existing structure abutments. The scaffolding will remain in place for up to 52 weeks. | |

| | | |
|---|---|---|
| **Project Name:** | **M4 Brynglas Tunnel Improvements & Maintenance** | |
| **Natura 2000 Site under Consideration** | **River Usk SAC** | |
| **Date:**<br>**October 2015** | **Author (Name/Organisation):**<br>**Hannah Corcoran, Arcadis** | **Verified (Name/Organisation):**<br>**Jon Davies, Arcadis** |
| | At present the maintenance works to the existing M4 carriageway would be limited to night-shifts between 20:00 and 06.00. However these would have no impact/influence on the river channel below. At this stage it is anticipated that works to the underside of the deck would be undertaken during daylight hours.<br><br>Works will be carried out following CIRIA Guidelines. A Construction Environmental Management Plan (CEMP) would be produced and would also incorporate Pollution Control Plans and ensure all recommended guidance and best practice measures are incorporated. | |
| Location: | The existing River Usk Viaduct, surrounding the sides and underside of the structure directly above the River Usk wet channel. | |
| Evidence for effectiveness: | Best practice working methods to be implemented. | |
| Mechanism for delivery: | Construction Environmental Management Plan. All necessary permits, licenses, consents and assents will be obtained. The Works Information/ Contractors Contract. | |
| | | |
| **Characteristics of European site** | | |
| Name and EU code of European site: | River Usk SAC (UK0013007) | |
| Location and distance of the European Site from the proposed works: | River Usk, Newport, South Wales. Directly beneath the proposed working area. | |
| European site size: | Area – 1007.71ha | |
| Key features of the European Site including<br>the primary reasons for selection and any other<br>qualifying interests: | Annex I habitats that are a primary reason for selection of this site: not applicable.<br><br>Annex I habitats that are a qualifying feature but not a primary reason for selection of the site:<br>• Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation**.**<br><br>Annex II species that are a primary reason for selection of this site:<br>• Sea lamprey (*Petromyzon marinus*);<br>• Brook lamprey *(Lampetra planeria);*<br>• River lamprey (*Lampetra fluviatillis*);<br>• Twaite shad *(Alosa fallax);*<br>• Atlantic salmon *(Salmo salar);*<br>• Bullhead *(Cottus gobio); and*<br>• Otter *(Lutra lutra).*<br><br>Annex II species present as a qualifying feature, but not a primary reason for site selection:<br>• Allis shad *(Alosa alosa).* | |
| Existing vulnerability of the European Site: | The River Usk is an excellent habitat for six Annex II freshwater fish species. There are some concerns over long-term aquatic and riparian habitat degradation but these are being addressed in the Usk Catchment | |

| **Project Name:** | **M4 Brynglas Tunnel Improvements & Maintenance** | |
|---|---|---|
| **Natura 2000 Site under Consideration** | **River Usk SAC** | |
| **Date:**<br>**October 2015** | **Author (Name/Organisation):**<br>**Hannah Corcoran, Arcadis** | **Verified (Name/Organisation):**<br>**Jon Davies, Arcadis** |
| | Management Plan, the Conservation Strategy, the River SSSI Management Plan, and by NRW encouraging owners and occupiers to carry out positive habitat management through agreements and agri-environment schemes.<br><br>There are few barriers to migration for fish species and where barriers exist, investigation is proposed to analyse for potential impacts and remedy them through multi-species fish passes. Water quality is good throughout the main river, except for localised enrichment from sewage discharges, the effects of which, along with the more significant water abstractions, are being closely monitored by NRW. | |
| European Site conservation objectives: | See Appendix B. | |
| Assessment criteria: | No elements of the Scheme are likely to give rise to impacts on the European Site and associated qualifying features providing the mitigation and protection measures stated are implemented.<br><br>The location of the proposed site compound is located outside of the designation boundary and also forms part of a recreational site that is of negligible value for the qualifying features of the SAC. | |
| | | |
| **Initial assessment** | | |
| Reduction of habitat area: | It is not considered likely that the reduction of habitat as a result of the Scheme will impact the SAC. There will be a small amount of land-take (temporarily) to accommodate the site compound and to also allow for the installation of the interceptor, pollution containment tank and replacement drainage and outfall but this will be outside of the SAC boundary. | |
| Disturbance to key species: | Key species with regard to the SAC (otters and fish assemblage) are considered unlikely to be subject to disturbance during the construction-phase given the anticipated timings of the works and nature of works which will involve working on a platform/scaffolding which will be attached to the existing River Usk Viaduct which carries the M4. Vibration and noise during daylight working hours is unlikely to be significant against the existing M4 background noise and levels of traffic using the structure daily. Any security lighting required, particularly in relation to the site compound will be directional and if necessary baffles will be fitted to ensure the Usk river corridor is not illuminated. | |
| Habitat or species fragmentation: | It is not anticipated that the Scheme will result in any habitat or species fragmentation over baseline conditions. | |
| Reduction in species density: | It is not anticipated that the Scheme will lead to any density reduction in the species of importance to the SAC. | |
| Changes in key indicators of conservation value: | It is not considered likely that the Scheme will have any impact on key indicators of conservation value. | |
| Climate Change | Sea level rise resulting in loss of habitat/ coastal squeeze from existing coastal flood defences and warming temperatures affecting species composition/ distribution are considered to be the most significant impacts on the species | |

| | | |
|---|---|---|
| **Project Name:** | **M4 Brynglas Tunnel Improvements & Maintenance** | |
| **Natura 2000 Site under Consideration** | **River Usk SAC** | |
| **Date:**<br>**October 2015** | **Author (Name/Organisation):**<br>**Hannah Corcoran, Arcadis** | **Verified (Name/Organisation):**<br>**Jon Davies, Arcadis** |
| | and habitats contained within the European site and are a common potential impact for all European designated sites in coastal/ tidal locations. | |
| Interference with the key relationships that define the structure of the site: | It is unlikely that the Scheme will interfere with any of the key relationships that define the site structure. | |
| Interference with the key relationships that define the function of the site: | It is unlikely that the Scheme will interfere with any of the key relationships that define the function of the site. The installation of the new interceptor will provide long-term protection measures to the River Usk and therefore water quality, the fish assemblage and local otter population. | |
| | | |
| **Impact significance** | | |
| Reduction of habitat area: | Not significant. | |
| Disturbance to key species: | Not significant. | |
| Habitat or species fragmentation: | Not significant. | |
| Loss: | Not significant. | |
| Fragmentation: | Not significant. | |
| Disruption: | Not significant. | |
| Disturbance: | Not significant. | |
| Change to key elements of the site: | Not significant. | |
| | | |
| **Outcome of the screening stage** | No significant effects. | |
| | | |
| **Statutory environmental bodies-** *are they in agreement with the screening outcome.* | Natural Resources Wales and the Local Authority (Newport City Council) have been consulted throughout the environmental assessment process and will continue to be consulted during the construction phase. Copies of this document will be provided for review and their records. | |

**Table 2: Severn Estuary SAC**

| **Project Name:** | **M4 Brynglas Tunnels Improvements & Maintenance** | |
|---|---|---|
| **Natura 2000 Site under Consideration** | **Severn Estuary SAC** | |
| **Date:**<br>**October 2015** | **Author (Name/Organisation):**<br>**Hannah Corcoran, Arcadis** | **Verified (Name/Organisation):**<br>**Jon Davies, Arcadis** |
| **Description of Project** | | |
| Size and scale: | *Essential Repairs/ Maintenance*<br>The Scheme involves undertaking essential repairs to the underside of the River Usk Viaduct which currently carries the M4 motorway between Junctions 25 and 26a. Although there will be the need for temporary works in the form of scaffolding suspended above the River Usk, no works will be undertaken in the wet channel. The works to the River Usk Viaduct are considered to be maintenance works undertaken in relation to the existing M4 carriageway and include resurfacing of all carriageways.<br><br>*Improvements*<br>Improvement works are also proposed which will involve the installation of an interceptor and pollution containment tank along with some maintenance to the existing drainage which leads to the existing outfall. | |
| Land-take: | There will be no land take within the Severn Estuary SAC boundary.<br><br>*Essential Repairs/ Maintenance*<br>Land take for the essential repairs and maintenance activities for the River Usk Viaduct will be minimal and within the existing soft estate. However, a temporary site compound will be constructed for the duration of the construction-phase to the east of the River Usk at Glebelands Recreational Ground. The majority of the works associated with the Scheme will be within land currently owned by the Welsh Government and Newport City Council. This will be kept to the minimum required area but will be positioned outside of the SAC boundary. All land will be reinstated to its former land use on completion of construction.<br><br>*Improvements*<br>There will be some temporary land take required to install the new interceptor, pollution containment tank. However, this will be <0.01ha and outside of the SAC boundary. The land take for the Scheme will have no impact on the SAC qualifying features. | |
| Distance from the European Site or key features of the site: | The Severn Estuary SAC is located approximately 6.25km to the south of the Scheme. | |
| Resource requirements: | The Scheme will have no impacts upon the resource requirements of the SAC/ qualifying features. | |
| Emissions: | Given the pollution control measures to be implemented as part of the works and the nature of the onsite activities, no additional emissions in the locality during the improvement and maintenance activities and during the operational phase. The scheme is located within the existing M4 highway boundary and immediately adjacent to the motorway and >5km to the north of the Severn Estuary site | |
| Excavation requirements: | Some minor excavations will be required as part of the improvement works. However, given the nature of the works and location it is not considered likely that excavations from the Scheme will impact the Severn Estuary SAC. | |

| | | |
|---|---|---|
| **Project Name:** | **M4 Brynglas Tunnels Improvements & Maintenance** | |
| **Natura 2000 Site under Consideration** | **Severn Estuary SAC** | |
| **Date:**<br>**October 2015** | **Author (Name/Organisation):**<br>**Hannah Corcoran, Arcadis** | **Verified (Name/Organisation):**<br>**Jon Davies, Arcadis** |
| Transportation requirements: | It is not considered likely that transportation requirements for the Scheme will have any impacts on the SAC. | |
| Duration of construction: | The duration of construction operations will not impact on the SAC. Total project 104 weeks, River Usk Viaduct works 52 weeks. | |
| Other: | None. | |
| | | |
| **Description of avoidance and/or mitigation measures** | The Severn Estuary SAC has been considered further in this screening document as the fish assemblage (one of the qualifying features of the Severn Estuary SAC) utilise the River Usk as a migration route in order to reach spawning gravels further upstream in the catchment. Consequently, the mitigation measures proposed in Table 1 in relation to fish are applicable to the Severn Estuary SAC.<br><br>Refer to Table 1. | |
| Nature of proposals: | Maintenance repair works required to the existing River Usk Viaduct, surrounding the sides and underside of the structure directly above the River Usk wet channel. | |
| Location: | Working area above the River Usk. | |
| Evidence for effectiveness: | Best practice working methods to be implemented. . | |
| Mechanism for delivery: | Construction Environmental Management Plan. All necessary permits, licenses, consents and assents will be obtained. The Works Information/Contractors Contract. | |
| | | |
| **Characteristics of European site** | | |
| Name and EU code of European site: | Severn Estuary SAC (UK0013030). | |
| Location and distance of the European Site from the proposed works: | Approximately 6.25 km to the south of the Scheme. | |
| European site size: | Area - 73715.4 ha | |
| Key features of the European Site including<br>the primary reasons for selection and any other<br>qualifying interests: | **The qualifying features for the SAC are:-**<br><br>Annex I habitats that are a qualifying feature but not a primary reason for selection of the site:<br>• Sandbanks which are slightly covered by sea water all the time;<br>• Estuaries;<br>• Mudflats and sandflats not covered by seawater at low tide;<br>• Reefs;<br>• *Salicornia* and other annuals colonising mud and sand;<br>• *Spartina* swards (*Spartinion maritimae*);<br>• Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*); and<br>• Embryonic shifting dunes<br><br>Annex II species that are a primary reason for selection of this site:<br>• Sea Lamprey *(Petromyzon marinus);*<br>• River Lamprey *(Lampetra fluviatilis);* | |

| **Project Name:** | **M4 Brynglas Tunnels Improvements & Maintenance** | |
|---|---|---|
| **Natura 2000 Site under Consideration** | **Severn Estuary SAC** | |
| **Date:**<br>**October 2015** | **Author (Name/Organisation):**<br>**Hannah Corcoran, Arcadis** | **Verified (Name/Organisation):**<br>**Jon Davies, Arcadis** |
| | • Allis Shad *(Alosa alosa);*<br>• Twaite Shad *(Alosa fallax);* | |
| Existing vulnerability of the European Site: | The conservation of the site features is dependent on the tidal regime. The tidal range in the Severn Estuary is the second-highest in the world and the scouring of the seabed and strong tidal streams result in natural erosion of the habitats and the presence of high sediment loads. The estuary is therefore vulnerable to large-scale interference, mainly as a result of human actions. These include land-claim, aggregate extraction, physical developments such as barrage construction and other commercial construction activities, flood defences, industrial pollution, oil spillage and tourism-based activities and disturbance.<br>There are several management mechanisms that seek to secure sustainable management of the Severn Estuary and its wildlife interest. Under the 1994 Habitats Regulations, a management scheme under Regulation 34 was established in 2004 in relation to the international bird interest that underpins designation as a Special Protection Area (SPA). Conservation advice has been provided under Regulation 33 for the Severn Estuary SAC, SPA and Ramsar site. Under the 2010 Habitat Regulations the management scheme previously produced is being reviewed and expanded to cover the not only the SPA but also the SAC and Ramsar site. The Severn Estuary Partnership is a long-standing partnership whose remit and membership extends beyond the designated area. It predates the European designations and seeks to deliver holistic management of the uses of the estuary. In Wales, Community Strategies and Local Biodiversity Action Plans also contribute to achieving the conservation aims for the Estuary. | |
| European Site conservation objectives: | Refer to Appendix B | |
| Assessment criteria: | No elements of the Scheme are likely to give rise to impacts on the European Site. | |
| | | |
| **Initial assessment** | | |
| Reduction of habitat area: | It is not considered likely that the reduction of habitat as a result of the Scheme will impact the SAC. | |
| Disturbance to key species: | It is considered unlikely that there will be any disturbance to key species during the temporary construction-phase/maintenance activities particularly given the distance of the works from the site. However, it should be noted that any security lighting required, particularly in relation to the site compound will be directional and if necessary baffles will be fitted to ensure the Usk river corridor is not illuminated and therefore any migratory species such as fish should not be impacted. | |
| Habitat or species fragmentation: | It is not anticipated that the Scheme will result in any habitat or species fragmentation over baseline conditions. | |
| Reduction in species density: | It is not anticipated that the Scheme will lead to any density reduction in the species of importance to the SAC. | |
| Changes in key indicators of conservation value: | It is not considered likely that the Scheme will have any impact on key indicators of conservation value. | |
| Climate change: | Sea level rise resulting in loss of habitat/ coastal squeeze from existing coastal flood defences and warming temperatures affecting species composition/ | |

| | | |
|---|---|---|
| **Project Name:** | **M4 Brynglas Tunnels Improvements & Maintenance** | |
| **Natura 2000 Site under Consideration** | **Severn Estuary SAC** | |
| **Date:**<br>**October 2015** | **Author (Name/Organisation):**<br>**Hannah Corcoran, Arcadis** | **Verified (Name/Organisation):**<br>**Jon Davies, Arcadis** |
| | distribution are considered to be the most significant impacts on the species and habitats contained within the European site and are a common potential impact for all European designated sites in coastal/ tidal locations. | |
| Interference with the key relationships that define the structure of the site: | It is unlikely that the Scheme will interfere with any of the key relationships that define the site structure. | |
| Interference with the key relationships that define the function of the site: | It is unlikely that the Scheme will interfere with any of the key relationships that define the function of the site. | |
| | | |
| **Impact significance** | | |
| Reduction of habitat area: | Not significant. | |
| Disturbance to key species: | Not significant. | |
| Habitat or species fragmentation: | Not significant. | |
| Loss: | Not significant. | |
| Fragmentation: | Not significant. | |
| Disruption: | Not significant. | |
| Disturbance: | Not significant. | |
| Change to key elements of the site: | Not significant. | |
| | | |
| **Outcome of the screening stage** | Not likely to be significant effects. | |
| | | |
| **Statutory environmental bodies** | Natural Resources Wales and the Local Authority (Newport City Council) have been consulted throughout the environmental assessment process and will continue to be consulted during the construction-phase. Copies of this document will be provided for review and their records. | |

**Table 3: Severn Estuary Ramsar**

| **Project Name:** | **M4 Brynglas Tunnels Improvements & Maintenance** | |
|---|---|---|
| **Natura 2000 Site under Consideration** | **Severn Estuary Ramsar** | |
| **Date:**<br>**October 2015** | **Author (Name/Organisation):**<br>**Hannah Corcoran, Arcadis** | **Verified (Name/Organisation):**<br>**Jon Davies, Arcadis** |
| **Description of Project** | | |
| Size and scale: | *Essential Repairs/ Maintenance*<br>The Scheme involves undertaking essential repairs to the underside of the River Usk Viaduct which currently carries the M4 motorway between Junctions 25 and 26a. Although there will be the need for temporary works in the form of scaffolding suspended above the River Usk, no works will be undertaken in the wet channel. The works to the River Usk Viaduct are considered to be maintenance works undertaken in relation to the existing M4 carriageway and include resurfacing of all carriageways.<br><br>*Improvements*<br>Improvement works are also proposed which will involve the installation of an interceptor and pollution containment tank along with some maintenance to the existing drainage which leads to the existing outfall. | |
| Land-take: | There will be no land take within the Severn Estuary Ramsar boundary.<br><br>*Essential Repairs/ Maintenance*<br>Land take for the essential repairs and maintenance activities for the River Usk Viaduct will be minimal and within the existing soft estate. However, a temporary site compound will be constructed for the duration of the construction-phase to the east of the River Usk at Glebelands Recreational Ground. The majority of the works associated with the Scheme will be within land currently owned by the Welsh Government and Newport City Council. This will be kept to the minimum required area but will be positioned outside of the Ramsar boundary. All land will be reinstated to its former land use on completion of construction.<br><br>*Improvements*<br>There will be some temporary land take required to install the new interceptor, pollution containment tank. However, this will be <0.01ha and outside of the Ramsar site boundary. The land take for the Scheme will have no impact on the Severn Estuary Ramsar site qualifying features. | |
| Distance from the European Site or key features of the site: | The Severn Estuary Ramsar site is located approximately 6.25km to the south of the Scheme. | |
| Resource requirements: | The Scheme will have no impacts upon the resource requirements of the Ramsar site/ qualifying features. | |
| Emissions: | It is considered unlikely that any emissions from the Scheme produced during the construction-phase (emissions are unlikely) will impact on the Ramsar site due to the distances involved. | |
| Excavation requirements: | Given the pollution control measures to be implemented as part of the works and the nature of the onsite activities, no additional emissions in the locality during the improvement and maintenance activities and during the operational phase. The | |

| | | |
|---|---|---|
| **Project Name:** | **M4 Brynglas Tunnels Improvements & Maintenance** | |
| **Natura 2000 Site under Consideration** | **Severn Estuary Ramsar** | |
| **Date:**<br>**October 2015** | **Author (Name/Organisation):**<br>**Hannah Corcoran, Arcadis** | **Verified (Name/Organisation):**<br>**Jon Davies, Arcadis** |
| | scheme is located within the existing M4 highway boundary and immediately adjacent to the motorway and >5km to the north of the Severn Estuary site<br><br>It is not considered likely that excavations from the Scheme will impact on the Ramsar site and species such as eels. Any excavations on site will be fenced off, covered and secured to ensure there are no risks posed to the public or species associated with the designated sites. | |
| Transportation requirements: | It is not considered likely that transportation requirements for the Scheme will have any impacts on the Ramsar site. | |
| Duration of construction: | The duration of construction operations will not impact on the Ramsar site. The works are only temporary and not positioned within the wetted channel, therefore no impacts are anticipated with fish (and eel) migration seasons. Total project 104 weeks, River Usk Viaduct works 52weeks. | |
| Other: | None. | |
| | | |
| **Description of avoidance and/or mitigation measures** | Pollution control measures will be put in place to ensure water quality is not impacted or deteriorates. Working areas above the River Usk will be contained to ensure no impacts to the River Usk SAC occur and consequently impacts to fish species associated with the Ramsar Site. | |
| Nature of proposals: | The essential repair works to the underside of the River Usk Viaduct will require temporary works such as the installation of scaffolding beneath and surrounding the structure. The scaffolding will not be positioned inside the wet channel and will slope down to meet ground level near to the existing structure abutments. At this stage it is assumed that the scaffolding will be remain in place for up to 52 weeks.<br><br>Maintenance works to the existing M4 carriageway would be limited to night-shifts between 20:00 and 05:30. However these would have no impact/influence on the river channel below. At this stage it is anticipated that works to the underside of the deck would be undertaken during daylight hours.<br><br>Works will be carried out following the CIRIA Good Practice Onsite Guidelines. A Construction Environmental Management Plan (CEMP) would be produced and would also incorporate Pollution Control Plans and ensure all recommended guidance and best practice measures are incorporated. | |
| Location: | The existing River Usk Viaduct, surrounding the sides and underside of the structure directly above the River Usk wet channel. By protecting the integrity of the River Usk, any species present associated with the Severn Estuary Ramsar site should remain unaffected by the works. | |
| Evidence for effectiveness: | Best practice working methods to be implemented. | |
| Mechanism for delivery: | Construction Environmental Management Plan. All necessary permits, licenses, consents and assents will be obtained.<br>The Works Information/ Contractors Contract. | |
| | | |

| **Project Name:** | **M4 Brynglas Tunnels Improvements & Maintenance** | |
|---|---|---|
| **Natura 2000 Site under Consideration** | **Severn Estuary Ramsar** | |
| **Date:**<br>**October 2015** | **Author (Name/Organisation):**<br>**Hannah Corcoran, Arcadis** | **Verified (Name/Organisation):**<br>**Jon Davies, Arcadis** |
| **Characteristics of European site** | | |
| Name and EU code of European site: | Severn Estuary Ramsar Site (UK11081). | |
| Location and distance of the European Site from the proposed works: | Approximately 6.25 km to the south of the Scheme. | |
| European site size: | Severn Estuary Ramsar: Area - 24662.98 ha | |
| Key features of the European Site including the primary reasons for selection and any other qualifying interests: | **The qualifying features for the Ramsar site are:-**<br><br>**Habitats:**<br>• Sandbanks which are slightly covered by sea water all the time;<br>• Estuaries;<br>• Mudflats and sandflats not covered by seawater at low tide; and<br>• Atlantic salt meadows<br><br>**Migratory fish:**<br>• Salmon;<br>• Sea trout;<br>• Sea lamprey;<br>• River lamprey;<br>• Allis shad;<br>• Twaite shad; and<br>• European eel<br><br>**Bird assemblages of international importance**<br><br>**Species with peak counts in winter:**<br>• Bewick's swan;<br>• European white-fronted goose;<br>• Shelduck;<br>• Gadwall;<br>• Dunlin; and<br>• Redshank<br><br>**Species regularly supported during the breeding season:**<br>• Lesser black-backed gull<br><br>**Species with peak counts in spring/autumn:**<br>• Ringed plover<br><br>**Species with peak counts in winter:**<br>• Eurasian teal; and<br>• Pintail | |
| Existing vulnerability of the European Site: | Human activities currently believed to be actual or potential threats, and thereby the site is vulnerable to them include:<br>• Physical loss (removal/loss of substratum, smothering); | |

| | | |
|---|---|---|
| **Project Name:** | **M4 Brynglas Tunnels Improvements & Maintenance** | |
| **Natura 2000 Site under Consideration** | **Severn Estuary Ramsar** | |
| **Date:**<br>**October 2015** | **Author (Name/Organisation):**<br>**Hannah Corcoran, Arcadis** | **Verified (Name/Organisation):**<br>**Jon Davies, Arcadis** |
| | • Physical damage (changes in suspended sediment, changes in water flow rate, wave exposure and grazing management);<br>• Non-physical damage (noise and visual disturbance);<br>• Toxic contamination (introduction of synthetic and non-synthetic compounds, introduction of radionuclides);<br>• Non-toxic contamination (changes in nutrient loading, thermal regime, turbidity, salinity. Oxygenation);<br>• Biological disturbance (introduction of microbial pathogens and non-native species, selective extraction of species). | |
| European Site conservation objectives: | Refer to Appendix B. | |
| Assessment criteria: | No elements of the Scheme are likely to give rise to impacts on the Ramsar site. | |
| | | |
| **Initial assessment** | | |
| Reduction of habitat area: | It is not considered likely that the reduction of habitat as a result of the Scheme will impact the Ramsar site. | |
| Disturbance to key species: | It is considered unlikely that there will be any disturbance to key species during the temporary construction-phase/maintenance activities particularly given the distance of the works from the site. However, it should be noted that any security lighting required, particularly in relation to the site compound will be directional and if necessary baffles will be fitted to ensure the Usk river corridor is not illuminated and therefore any migratory species such as fish should not be impacted. | |
| Habitat or species fragmentation: | It is not anticipated that the Scheme will result in any further habitat or species fragmentation over baseline conditions. | |
| Reduction in species density: | It is not anticipated that the Scheme will lead to any density reduction in the species of importance to the Ramsar site. | |
| Changes in key indicators of conservation value: | It is not considered likely that the Scheme will have any impact on key indicators of conservation value. | |
| Climate change: | Sea level rise resulting in loss of habitat/ coastal squeeze from existing coastal flood defences and warming temperatures affecting species composition/ distribution are considered to be the most significant impacts on the species and habitats contained within the European site and are a common potential impact for all European designated sites in coastal/ tidal locations. | |
| Interference with the key relationships that define the structure of the site: | It is unlikely that the Scheme will interfere with any of the key relationships that define the site structure. | |
| Interference with the key relationships that define the function of the site: | It is unlikely that the Scheme will interfere with any of the key relationships that define the function of the site. | |
| | | |
| **Impact significance** | | |
| Reduction of habitat area: | Not significant. | |

| **Project Name:** | **M4 Brynglas Tunnels Improvements & Maintenance** | |
|---|---|---|
| **Natura 2000 Site under Consideration** | **Severn Estuary Ramsar** | |
| **Date:**<br>**October 2015** | **Author (Name/Organisation):**<br>**Hannah Corcoran, Arcadis** | **Verified (Name/Organisation):**<br>**Jon Davies, Arcadis** |
| Disturbance to key species: | Not significant. | |
| Habitat or species fragmentation: | Not significant. | |
| Loss: | Not significant. | |
| Fragmentation: | Not significant. | |
| Disruption: | Not significant. | |
| Disturbance: | Not significant. | |
| Change to key elements of the site: | Not significant. | |
| | | |
| **Outcome of the screening stage** | Not likely to be significant effects. | |
| | | |
| **Statutory environmental bodies** | Natural Resources Wales and the Local Authority (Newport City Council) have been consulted throughout the environmental assessment process and will continue to be consulted during the construction-phase. This document will be provided for review and for their records. | |

# APPENDIX B

## Conservation Objectives

## River Usk SAC

**The ecological status of the water course is a major determinant of favourable conservation status (FCS) for all features. The required conservation objective for the water course is defined below.**

**4.1 Conservation Objective for the water course**

4.1.1 The capacity of the habitats in the SAC to support each feature at near-natural population levels, as determined by predominantly unmodified ecological and hydromorphological processes and characteristics, should be maintained as far as possible, or restored where necessary.

4.1.2 The ecological status of the water environment should be sufficient to maintain a stable or increasing population of each feature. This will include elements of water quantity and quality, physical habitat and community composition and structure. It is anticipated that these limits will concur with the relevant standards used by the Review of Consents process.

4.1.3 Flow regime, water quality and physical habitat should be maintained in, or restored as far as possible to, a near-natural state, in order to support the coherence of ecosystem structure and function across the whole area of the SAC.

4.1.4 All known breeding, spawning and nursery sites of species features should be maintained as suitable habitat as far as possible, except where natural processes cause them to change.

4.1.5 Flows, water quality, substrate quality and quantity at fish spawning sites and nursery areas will not be depleted by abstraction, discharges, engineering or gravel extraction activities or other impacts to the extent that these sites are damaged or destroyed.

4.1.6 The river planform and profile should be predominantly unmodified. Physical modifications having an adverse effect on the integrity of the SAC, including, but not limited to, revetments on active alluvial river banks using stone, concrete or waste materials, unsustainable extraction of gravel, and addition or release of excessive quantities of fine sediment, will be avoided.

4.1.7 River habitat Site of Special Scientific Interest (SSSI) features should be in favourable condition. In the case of the Usk Tributaries SSSI, the SAC habitat is not underpinned by a river habitat SSSI feature. In this case, the target is to maintain the characteristic physical features of the river channel, banks and riparian zone.

4.1.8 Artificial factors impacting on the capability of each species feature to occupy the full extent of its natural range should be modified where necessary to allow passage, e.g. weirs, bridge sills, acoustic barriers.

4.1.9 Natural factors such as waterfalls, which may limit the natural range of a species feature or dispersal between naturally isolated populations, should not be modified.

4.1.10 Flows during the normal migration periods of each migratory fish species feature will not be depleted by abstraction to the extent that passage upstream to spawning sites is hindered.

4.1.11 Flow objectives for assessment points in the Usk Catchment Abstraction Management Strategy will be agreed between the Environment Agency (EA) and Countryside Council for Wales (CCW) (now Natural Resources Wales NRW) as necessary. It is anticipated that these limits will concur with the standards used by the Review of Consents process.

4.1.12 Levels of nutrients, in particular phosphate, will be agreed between EA and CCW for each Water Framework Directive water body in the Usk SAC, and measures taken to maintain nutrients below these levels.

It is anticipated that these limits will concur with the standards used by the Review of Consents process given in Annex 2 of this document.

4.1.13 Levels of water quality parameters that are known to affect the distribution and abundance of SAC features will be agreed between EA and CCW (now NRW) for each Water Framework Directive water body in the Usk SAC, and measures taken to maintain pollution below these levels. It is anticipated that these limits will concur with the standards used by the Review of Consents process.

4.1.14 Potential sources of pollution not addressed in the Review of Consents, such as contaminated land, will be considered in assessing plans and projects.

4.1.15 Levels of suspended solids will be agreed between EA and CCW (now NRW) for each Water Framework Directive water body in the Usk SAC. Measures including, but not limited to, the control of suspended sediment generated by agriculture, forestry and engineering works, will be taken to maintain suspended solids below these levels.

## Severn Estuary SAC, SPA and Ramsar

The conservation objectives for the Severn Estuary SAC, SPA and Ramsar are outlined below. Further details and explanatory information is contained within the Regulation 33 Advice provided by Natural England[7].

### Severn Estuary SAC

The conservation objective for the **"estuaries"** feature of the Severn Estuary SAC is to maintain the feature in favourable condition, as defined below:

The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met:

i. The total extent of the estuary is maintained;

ii. The characteristic physical form (tidal prism/cross sectional area) and flow (tidal regime) of the estuary is maintained;

iii. The characteristic range and relative proportions of sediment sizes and sediment budget within the site is maintained;

iv. The extent, variety and spatial distribution of estuarine habitat communities within the site is maintained;

v. The extent, variety, spatial distribution and community composition of hard substrate habitats and their notable communities is maintained;

vi. The abundance of the notable estuarine species assemblages is maintained or increased;

vii. The physico-chemical characteristics of the water column support the ecological objectives described above;

viii. Toxic contaminants in the water column and sediment are below levels which would pose a risk to the ecological objectives described above; and

ix. Airborne nutrient and contaminant loads are below levels which would pose a risk to the ecological objectives described above.

The conservation objective for the **"subtidal sandbanks"** feature of the Severn Estuary SAC is to maintain the feature in favourable condition, as defined below:

[7] Severn Estuary / Môr Hafren European Marine Site, Natural England and the Countryside Council for Wales advice given under Regulation 33 of the Conservation (Natural Habitats &c.) Regulations 1994, as amended. June 2009.

The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met:

i. The total extent of the subtidal sandbanks within the site is maintained;
ii. The extent and distribution of the individual subtidal sandbank communities within the site is maintained;
iii. The community composition of the subtidal sandbank feature within the site is maintained;
iv. The variety and distribution of sediment types across the subtidal sandbank feature is maintained; and
v. The gross morphology (depth, distribution and profile) of the subtidal sandbank feature within the site is maintained.

The conservation objective for the **"mudflats and sandflats"** feature of the Severn Estuary SAC is to maintain the feature in favourable condition, as defined below:

The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met:

i. The total extent of the mudflats and sandflats feature is maintained;
ii. The variety and extent of individual mudflats and sandflats communities within the site is maintained;
iii. The distribution of individual mudflats and sandflats communities within the site is maintained;
iv. The community composition of the mudflats and sandflats feature within the site is maintained; and
v. The topography of the intertidal flats and the morphology (dynamic processes of sediment movement and channel migration across the flats) are maintained.

The conservation objective for the **"Atlantic salt meadow"** feature of the Severn Estuary SAC is to maintain the feature in favourable condition, as defined below:

The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met:

i. The total extent of Atlantic salt meadow and associated transitional vegetation communities within the site is maintained;
ii. The extent and distribution of the individual Atlantic salt meadow and associated transitional vegetation communities within the site is maintained;
iii. The zonation of Atlantic salt meadow vegetation communities and their associated transitions to other estuary habitats is maintained;
iv. The relative abundance of the typical species of the Atlantic salt meadow and associated transitional vegetation communities is maintained;
v. The abundance of the notable species of the Atlantic salt meadow and associated transitional vegetation communities is maintained;
vi. The structural variation of the salt marsh sward (resulting from grazing) is maintained within limits sufficient to satisfy the requirements of conditions iv and v above and the requirements of the Ramsar and SPA features;
vii. The characteristic stepped morphology of the salt marshes and associated creeks, pills, drainage ditches and pans, and the estuarine processes that enable their development, is maintained; and

viii. Any areas of *Spartina anglica* salt marsh (National Vegetation Classification community SM6) are capable of developing naturally into other saltmarsh communities.

The conservation objective for the **"reefs"** feature of the Severn Estuary SAC is to maintain the feature in a favourable condition, as defined below:

The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met:

i. The total extent and distribution of *Sabellaria* reef is maintained;
ii. The community composition of the *Sabellaria* reef is maintained;
iii. The full range of different age structures of *Sabellaria* reef are present; and
iv. The physical and ecological processes necessary to support *Sabellaria* reef are maintained.

The conservation objective for the **river lamprey** (*Lampetra fluviatilis*) feature of the Severn Estuary SAC is to maintain the feature in a favourable condition, as defined below:

The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met:

i. The migratory passage of both adult and juvenile river lamprey through the Severn Estuary between the Bristol Channel and any of their spawning rivers is not obstructed or impeded by physical barriers, changes in flows, or poor water quality;
ii. The size of the river lamprey population in the Severn Estuary and the rivers which drain into it, is at least maintained and is at a level that is sustainable in the long term;
iii. The abundance of prey species forming the river lamprey's food resource within the estuary, is maintained; and
iv. Toxic contaminants in the water column and sediment are below levels which would pose a risk to the ecological objectives described above.

The conservation objective for the **sea lamprey** (*Petromyzon marinus*) feature of the Severn Estuary SAC is to maintain the feature in a favourable condition, as defined below:

The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met:

i. The migratory passage of both adult and juvenile sea lamprey through the Severn Estuary between the Bristol Channel and any of their spawning rivers is not obstructed or impeded by physical barriers, changes in flows, or poor water quality;
ii. The size of the sea lamprey population in the Severn Estuary and the rivers which drain into it, is at least maintained as is at a level that is sustainable in the long term;
iii. The abundance of prey species forming the sea lamprey's food resource within the estuary, is maintained; and
iv. Toxic contaminants in the water column and sediment are below levels which would pose a risk to the ecological objectives described above.

The conservation objective for the **twaite shad** *(Alosa fallax)* feature of the Severn Estuary SAC is to maintain the feature in a favourable condition, as defined below:

The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met:

i. The migratory passage of both adult and juvenile twaite shad through the Severn Estuary between the Bristol Channel and their spawning rivers is not obstructed or impeded by physical barriers, changes in flows or poor water quality;
ii. The size of the twaite shad population within the Severn Estuary and the rivers draining into it is at least maintained and is at a level that is sustainable in the long term;
iii. The abundance of prey species forming the twaite shad's food resource within the estuary, in particular at the salt wedge, is maintained; and
iv. Toxic contaminants in the water column and sediment are below levels which would pose a risk to the ecological objectives described above.

## Severn Estuary Ramsar

The area of the estuarine ecosystem designated as a Ramsar site is smaller than that of the SAC as it is restricted to the terrestrial and intertidal areas and excludes all subtidal areas. The conservation objective for the **"estuaries"** feature of the Severn Estuary Ramsar site is to maintain the feature in favourable condition, as defined by the conservation objective for the SAC "estuaries" feature, in so far as these objectives are applicable to the area designated as Ramsar Site and as defined within the Regulation 33 Advice provided by CCW (now NRW).

The conservation objective for the **"assemblage of migratory fish species"** feature of the Severn Estuary Ramsar site is to maintain the feature in favourable condition, as defined below:

The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met:

i. the migratory passage of both adults and juveniles of the assemblage of migratory fish species through the Severn Estuary between the Bristol Channel and any of their spawning rivers is not obstructed or impeded by physical barriers, changes in flows, or poor water quality;
ii. the size of the populations of the assemblage species in the Severn Estuary and the rivers which drain into it, is at least maintained and is at a level that is sustainable in the long term;
iii. the abundance of prey species forming the principle food resources for the assemblage species within the estuary, is maintained; and
iv. Toxic contaminants in the water column and sediment are below levels which would pose a risk to the ecological objectives described above.

The Conservation Objectives relating to individually qualifying species and the assemblage feature are the same as listed for the SPA.

# APPENDIX C

## No Significant Effects Report – Screening stage

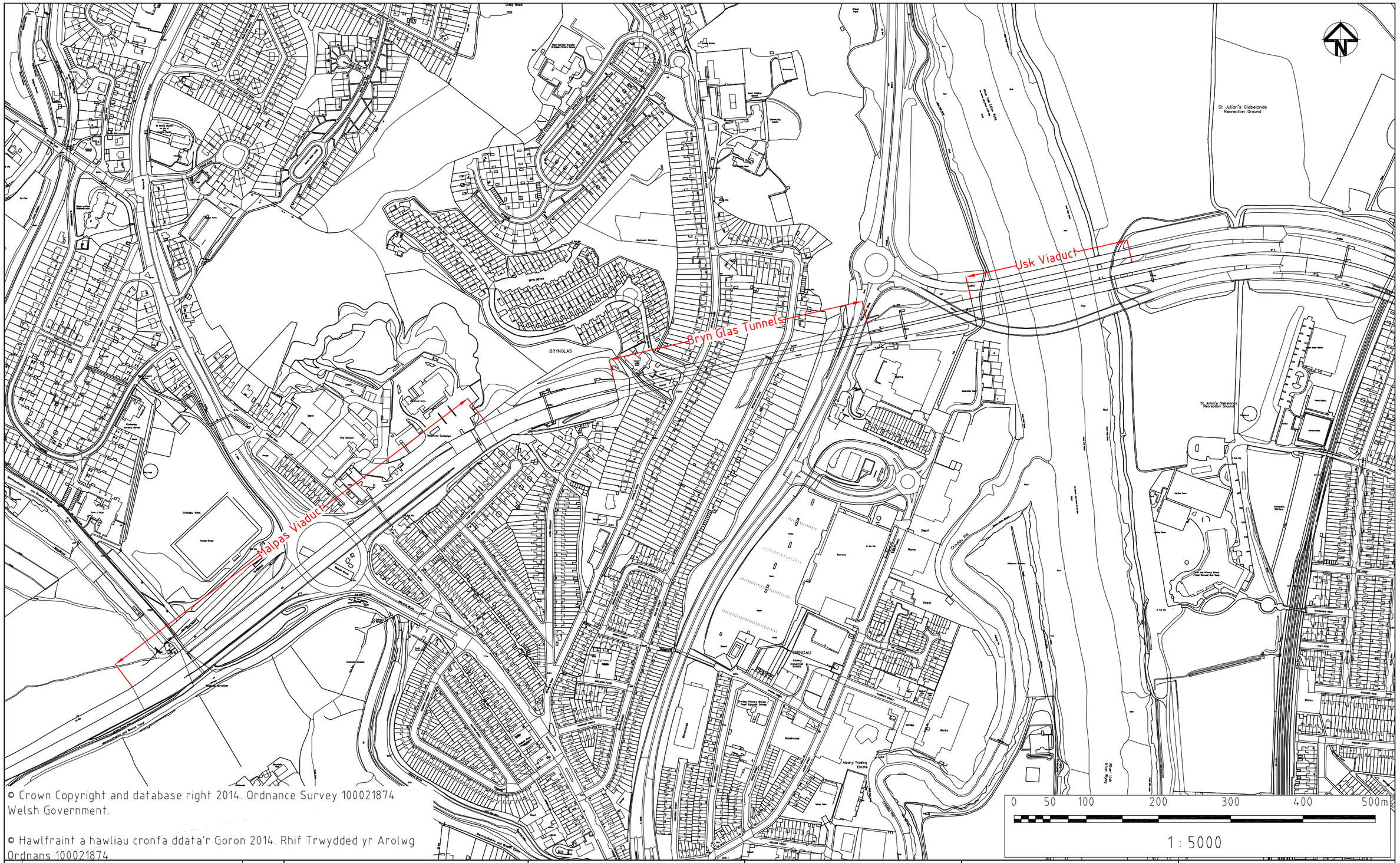
| | | |
|---|---|---|
| **Project Name:** | | Brynglas Tunnel Refurbishments (maintenance of the River Usk Viaduct). |
| **Significance** | | No Likely Significant Effect |
| **Natura 2000 Site under Consideration** | | River Usk SAC, Severn Estuary SAC and Ramsar |
| **Date:** October 2015 | | **Author (Name/Organisation):** Hannah Corcoran - Arcadis |
| **Name and location of European Site** | River Usk, Newport and Severn Estuary. | |
| **Description of the project** | *Essential Repairs/ Maintenance*<br>The Scheme involves undertaking essential repairs to the underside of the River Usk Viaduct which currently carries the M4 motorway between Junctions 25 and 26a. Although there will be the need for temporary works in the form of scaffolding suspended above the River Usk, no works will be undertaken in the wet channel. The works to the River Usk Viaduct are considered to be maintenance works. As part of the project, maintenance works will be undertaken in relation to the existing M4 carriageway to include resurfacing of all carriageways.<br><br>*Improvements*<br>Improvement works are also proposed which will involve the installation of an interceptor and pollution containment. It is also considered likely that a new outfall and associated drainage will be required on the western bank of the River Usk. | |
| **Is the project directly connected with or necessary to the management of the site (provide details)?** | No, unrelated. | |
| **Are there other projects or plans that together with the project being assessed could affect the site (provide details)?** | **Glebelands Residential Housing Development:** residential development of 153 dwellings (total) of which 102 will be constructed during the onsite maintenance works associated with the River Usk Viaduct.<br><br>**Shaftesbury Park:** residential development of 140 dwellings, of which 135 will be constructed during the onsite maintenance works associated with the River Usk Viaduct.<br><br>**Crindu Flood Defence Scheme - NRW:** to be carried out during the construction-phase immediately to the south of the River Usk Viaduct. | |
| **Describe how the project (alone or in combination) is likely to affect the European Site.** | The only activities associated with the project that are likely to have any impact on the European Sites are likely to occur during the temporary construction-phase. Potential impacts (in the absence of mitigation) could include dust and debris deposition in the River Usk and disturbance due to lighting. | |
| **Explain why these effects are not considered significant.** | Given the nature of the works and the mitigation measures to be put in place, the working area will be completely contained thereby ensuring that no debris enters into the River Usk or impacts qualifying features. The construction-phase activities on site are the only activities which could result | |

| | |
|---|---|
| | in an impact on the sites. Based on the proposed mitigation measures, nature of the works and temporary construction phase, in the unlikely event of any impacts occurring these are not considered to be significant.<br>Tried and tested pollution prevention measures (following best practice guidance from CIRIA and the Environment Agency's Pollution Prevention Guidelines (PPGs)) will be in place prior to major works commencing and any surface run-off would be treated and attenuated before entering the estuarine environment. Methods would include silt traps and where necessary the containment and tankering off site of waste water.<br>The implementation of Method Statements for construction works activities will also ensure that any emissions to the environment are controlled and the integrity of the SAC protected.<br>Impacts such as noise and vibration are considered to be insignificant given the low numbers of heavy delivery vehicles that will visit the site. In addition, these will need to report and unload at the site compound, away from the river.<br>There would be negligible disturbance to fish species listed in the SAC designation as a result of the construction/maintenance activities associated with the scheme. Given the nature of the works and methods that will be implemented (use of hand tools) any anticipated noise levels would have a negligible effect on fish species in the SAC.<br>Footpaths and the river bank will remain accessible. In addition, the site compound and working area will be secured to ensure no species associated with the SACs or Ramsar sites (e.g. otters) can enter the working area or get trapped inside excavations.<br>The use of lighting on site will be strictly controlled and if necessary directional and baffles fitted to ensure the River Usk corridor is not, at any time illuminated which could result in disturbance for mammal species such as otters and fish including eel and shad.<br>Excavations would also be covered and works fenced off to ensure no protected species could enter the works area of become trapped in excavations. |

**Data Collected to carry out the Assessment**

| **Who carried out the assessment?** | **Sources of data** | **Level of assessment completed** | **Where can the full results of the assessment be accessed and viewed?** |
|---|---|---|---|
| Hannah Corcoran - Arcadis | JNCC Standard Data Forms for all European Sites.<br><br>Severn Estuary European Marine Site, Natural England CCW advice given under Regulation 33 of the Conservation (Natural Habitats &c.) Regulations 1994, as amended. June 2009. | Screening | All documentation can be made available upon request from Arcadis or the Contractor. Contact details have been provided at the beginning and the end of this document. |

# FIGURES - SCHEME LOCATION PLAN & DESIGNATED SITES PLAN






| Issue | Description | Date |
|---|---|---|
| 01 | PRELIMINARY DESIGN | 27/03/15 |

Client

Llywodraeth Cymru
Welsh Government

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

| | | Current Issue Signatures |
|---|---|---|
| Scales | 1:5000 | Author N.CLEMENTS |
| Original Size | A3 | Checker C.BURGHAM-MALIN |
| Height Datum | DATUM | Approver J. PHILLIPS |
| Grid | GRID | © Copyright reserved |

Filename: 007-UA007844-01.DWG

Project
M4
BRYN GLAS TUNNELS

Title
OVERALL
LOCATION PLAN

Hyder Consulting (UK) Limited
HCL House
St Mellons Business Park
Fortran Road, St Mellons
Cardiff
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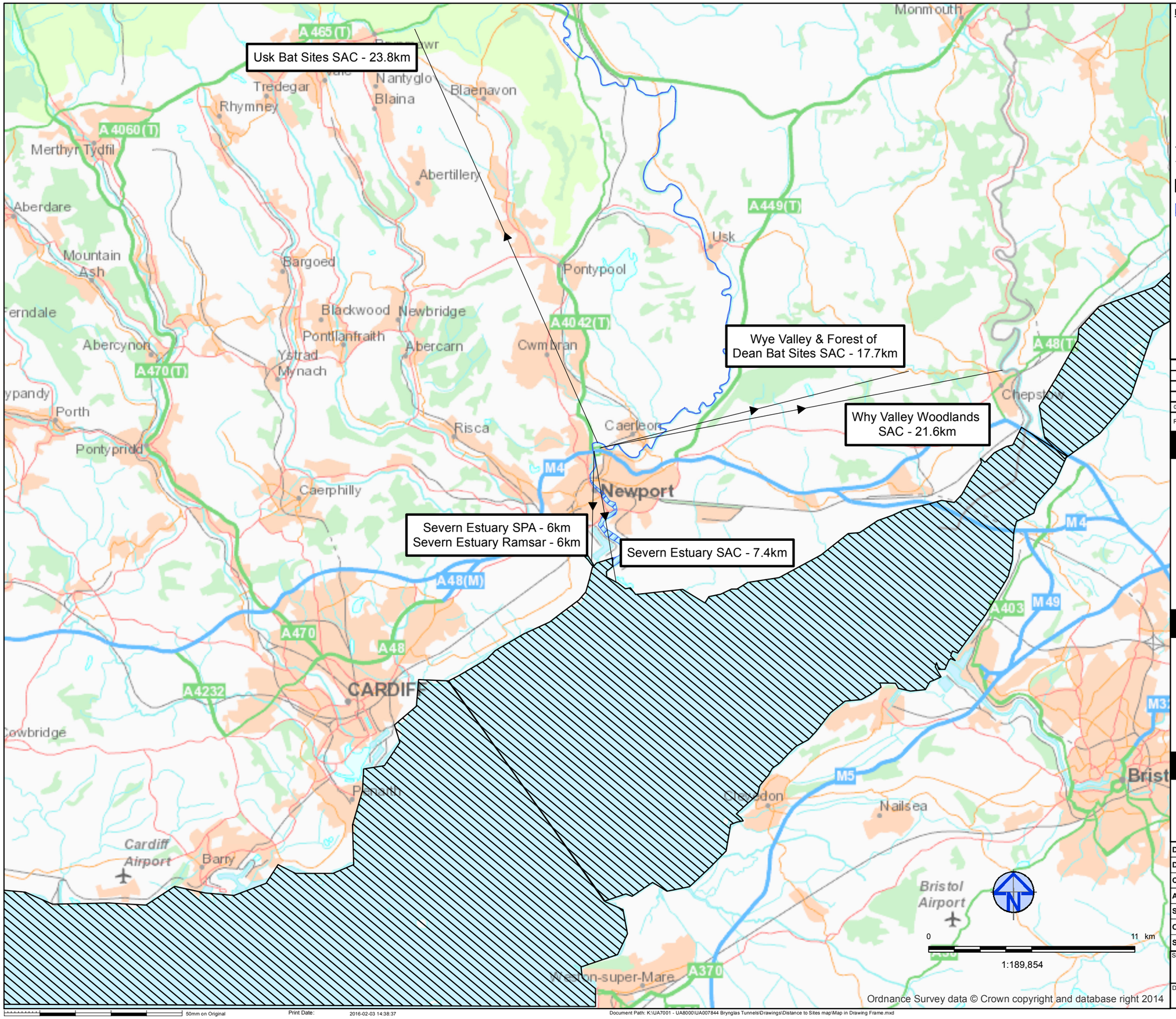
Fax: +44 029 20925222

| Drawing No. | Project No. | Issue |
|---|---|---|
| 007 | — UA007844 — | 01 |

50mm on Original

30/Mar/2015 K:\UA006729 - M4 Corridor\T-Tunnels\E Our Drawings\007-UA007844-01.dwg V1




**NOTES:**

**Legend:**

- Distance To Designated Site
- Severn Estuary SPA/SAC/Ramsar
- USK River SAC

| REV | Date | Description | Drawn | Check | Approv |
|---|---|---|---|---|---|
| 01 | 03/02/2016 | Distances to Designated Sites | CF | HC | JD |

**Client** Welsh Goverment

Llywodraeth Cymru Welsh Government

PROJECT:
Brynglas Tunnel Refurbishments

ARCADIS Design & Consultancy for natural and built assets

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TITLE:
Brynglas Tunnel Refurbishments
Designated Sites

| | | | |
|---|---|---|---|
| **Designed** | Charlotte Fifoot | Date 02FEB16 | Signed |
| **Drawn** | Charlotte Fifoot | Date 02FEB16 | Signed |
| **Checked** | Hannah Corcoran | Date 03FEB16 | Signed |
| **Approved** | Jon Davies | Date 03FEB16 | Signed |
| **Scale:** | As shown | Datum: | AOD |
| **Original Size:** | A3 | Grid: | OS |
| **Suitability Code:** | S2 | Project Number: | UA007844 |

Suitability Description:
Issued for Information

Drawing Number: Drawing Number
Revision: 01

50mm on Original

Print Date: 2016-02-03 14:38:37

Document Path: K:\UA7001 - UA8000\UA007844 Brynglas Tunnels\Drawings\Distance to Sites map\Map in Drawing Frame.mxd

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