Welsh Government

M4 Corridor around Newport

Environmental Statement Volume 3: Appendix 10.25

Otter and Water Vole Survey 2015

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S.2 Previous otter and water vole surveys were undertaken by Arup in 2014. At that time, otter field signs were found in 18 of the 1,442 watercourses surveyed, whereas water vole activity was recorded in 126 of the 1,442 watercourses.

S.3 The 2015 otter and water vole surveys were undertaken during July to September, inclusive, focusing on 58 waterbodies.

S.4 There were no field signs of otter activity found within the 2015 study area. However, otter spraints were found in close proximity to the survey area south east of Tatton Farm.

S.5 Water vole signs were located on 19 of the 58 waterbodies surveyed. Their presence was restricted to both reens and field ditches south of Llandevenny.

1 Introduction

1.1.1 RPS has undertaken a water vole and otter survey of the proposed M4 Corridor around Newport (M4CaN) between Castleton and Magor to inform the ecological baseline for the Environmental Impact Assessment (EIA) of the Scheme. The survey included land generally within 250 metres of the alignment of the proposed new section of motorway to the south of Newport following the guidance set out in Chanin (2003), Crawford (2003) and Strachan *et al.* (2011). The EIA is reported in the M4CaN Environmental Statement (ES) of which this document is an appendix to the chapter on Ecology and Nature Conservation.

1.1.2 A water vole and otter survey previously undertaken by Arup on behalf of Welsh Government in 2014 is reported separately in Appendix 10.8 of the M4CaN ES. A review of that work was undertaken independently by Hyder (see Appendix 9.1 of the ES Scoping Report (ES Appendix 5.1)) and RPS (see ES Chapter 10). The conclusions of that review and the requirements for additional surveys in 2015 were set out in the Scope of Ecology Surveys Report (see Appendix 9.1 of the ES Scoping Report). This was discussed with Natural Resources Wales and they were further consulted on the scope of the proposed surveys through the consultation on the ES Scoping Report.

1.1.3 This document reports the findings of the European otter (*Lutra lutra*) and water vole (*Arvicola amphibius)* survey which was undertaken from July to September 2015, inclusive, using standard methods.

1.1.4 This report also outlines the previous survey carried out and the reasons for this additional 2015 survey (Section 2), describes the methods used in the 2015 survey (Section 3) and the findings of the survey (Section 4). A discussion of the survey findings is provided in Section 5.

2 Previous Surveys

2.1 Introduction

2.1.1 The 2014 otter and water vole survey is reported in Appendix 10.8 of the ES. The aims and objectives of the surveys were to:

- Determine the presence and distribution, or likely absence, of both otters and water voles within the study area.
- Assess the suitability of habitat within the study area for these two species.

2.1.2 The study area for the purpose of the 2014 survey was based on a 500 m buffer around the physical extents of the previous alignment studied in 2007/8, including the route alignment proposed at that time, potential junctions and water treatment areas.

2.2 2014 Survey Methods

2.2.1 Information was recorded using standard recording sheets in the field using iPads, which had Global Positioning System (GPS) mapping capability.

2.2.2 The surveys for otters and water voles were combined. The field survey involved surveying 1,442 waterbodies that were identified from Ordnance Survey (OS) data.

Otter

2.2.3 The survey methods adopted for otters were adapted from authoritative sources and best practice survey guidelines (Chanin, 2003; Crawford, 2003).

Presence/Absence Survey – Otter

2.2.4 The field signs that were searched for included:

- spraints;
- anal jelly (a jelly-like secretion left by adult otters for scent marking purposes);
- holts;
- laying–up sites;
- bank slides, runs and tunnels;
- prey remains; and
- footprints.

2.2.5 Features that had high potential to be attractive to otters were examined, including suitable bridges, bases of large trees, dense vegetation, water crossings, confluences of waterbodies, culverts and boulders.

2.2.6 The full methodology for the 2014 otter survey is set out in the Otter and Water Vole Survey 2014 Report (Appendix 10.8 of the ES).

Water Vole

2.2.7 The survey method for water voles was based on the best practice survey guidelines described in the Water Vole Conservation Handbook (Strachan *et al.*, 2011). Banks of waterbodies were surveyed from a minimum of 2 metres from the water's edge, and where the waterbody was inaccessible the survey was carried out up to 4 metres from the top of the bank.

Presence/Absence Survey – Water Vole

2.2.8 At each waterbody a search for the following field signs was undertaken:

- water vole faeces/droppings;
- latrines;
- feeding stations;
- burrows; and
- footprints.

2.2.9 Droppings are the most distinctive field sign to indicate recent use of a waterbody by water voles (Strachan *et al.*, 2011). A thorough search of the bankside vegetation was performed at each waterbody until a latrine was found, thereafter point checks were performed.

2.3 Results

2.3.1 The full results of the 2014 otter and water vole survey are provided in ES Appendix 10.8. A summary of the results is provided below.

Otter

2.3.2 Otter activity was recorded at 18 of the 1442 waterbodies surveyed during the 2014 survey. These signs were found across a diverse range of habitats including a lake, a river, two streams, reens and ditches.

Water Vole

2.3.3 Water vole field signs were found on 126 of the 1,442 waterbodies across the 2014 study area. These were mostly found on either reens or field ditches, with few signs being located on streams and ponds.

2.4 Requirements for Further Survey

2.4.1 The 2014 report recommended that an additional survey during the spring/summer (June/July) would allow for a more thorough understanding of how otters and water voles use the waterbodies in the survey area throughout the year. It was also recommended that future surveys to inform the design should include those waterbodies which could not be surveyed in 2014.

2.4.2 At a Hyder/NRW meeting on 30 January 2015 NRW commented that a very comprehensive survey effort had been expended in those areas where access had been possible in 2014, and that this had covered the entire width of the survey corridor. It was agreed that the focus for 2015 should be on those areas

where survey had not previously been possible for access reasons and should be to concentrate on a narrower corridor, once the route alignment had been fixed.

2.4.3 With regard to otters, it was concluded that a search for holts, spraints and other signs of otter activity would only be required 100 m either side of the fixed alignment footprint on suitable watercourses. NRW noted that the survey effort would need to take account of European Protected Species (EPS) licence considerations and the fact that otter is a qualifying feature of the River Usk Special Area of Conservation (SAC). NRW also noted that there was a known otter holt within the Docks Way Landfill.

2.4.4 NRW noted that water voles had been found in a number of locations where records had not previously existed. They agreed that the detailed survey work carried out in 2014 over the wide corridor could inform the impact assessment (by setting out the context of the population across the Gwent Levels) and that the 2015 surveys should concentrate on the footprint of the new section of motorway (once the route alignment was fixed) within the areas not previously surveyed owing to access restrictions. This would save a considerable amount of survey effort.

2.4.5 Having considered the 2014 otter and water vole survey report (Appendix 10.8) in the context of the above recommendations RPS proposed that further surveys for signs of otter and water vole be carried out in those areas within 100 m of the footprint of the new section of motorway to which access was not previously possible.

3 2015 Survey Methods

3.1 Introduction

3.1.1 The 2015 otter and water vole surveys were undertaken during July to September, inclusive. The survey area was based upon the land take of the proposed new M4 motorway alignment, together with a 100 m corridor. In certain areas the survey was extended up to 250 m for the following reasons.

- Allow for changes in the alignment of the proposed new section of motorway.
- To provide data with regard the extent of water vole populations.
- To provide data with regard to the potential for areas to be utilised as mitigation sites.

3.1.2 The extent survey area is shown in Figure 1.

3.2 Methodology

3.2.1 As the habitat requirements for otters and water voles are similar, the two surveys were combined. Each survey was undertaken by two surveyors. A total of 58 waterbodies were surveyed. The locations of these waterbodies are shown in Figure 1.

Weather

3.2.2 Heavy rainfall can cause flooding that could obscure field signs of both otter and water vole. It may also wash away field signs and weigh down overhanging vegetation that obscures signs. Surveys for both otter and water vole were therefore only undertaken during dry weather and no surveys were undertaken after periods of heavy rainfall.

Otter Survey

3.2.3 The survey methods used for surveying otters were adapted from authoritative sources and best practice guidelines (Chanin, 2003; Crawford, 2003).

Presence/Absence Survey – Otter

3.2.4 Where a waterbody was accessible, one surveyor walked slowly through the centre of the water channel and the other surveyor along the bank. Both surveyors conducted a thorough visual search of the bank to the water's edge to identify any signs of otter. The adjacent habitat, such as woodland and scrub, was surveyed when it was considered suitable for otter activity or shelter.

3.2.5 In freshwater habitats otters are predominantly nocturnal and therefore survey techniques focus on searching for field signs such as spraints, bank slides, runs, tunnels, holts (underground dens), couches (where the otter lies up in the day) and footprints. Features that might be utilised by otters were examined including the bases of large trees, dense vegetation, water crossings, confluences of waterbodies, culverts and boulders. Otters are active throughout the year and therefore survey timing is not seasonally constrained (Chanin, 2003), however

surveys are ideally conducted between May to September when the water levels are less variable.

Habitat Suitability Assessment – Otter

3.2.6 Otters are known to use a wide range of habitats and often travel long distances between key sites used for breeding, shelter (lying-up) and foraging. They prefer areas with little human disturbance with abundant vegetation cover with good access to available sources food.

3.2.7 The 2014 survey (ES Appendix 10.8) showed that otter are widespread throughout the study area but signs are found infrequently (i.e. 1.2% of watercourse were found to have signs of otter). It is therefore considered that the reen system and associated bankside vegetation, scrub and woodland provide a wide array of suitable habitat that might be used by otter.

3.2.8 Notes for each watercourse were taken throughout the survey (see Annex A). However, no watercourses were discounted during the survey.

Water Vole Survey

3.2.9 The survey methods were based on published guidance (Strachan *et al.,* 2011) and were in accordance with standing advice issued by Natural England (2014), which defines which survey activities may be undertaken within the current framework of legal protection without the need for a licence.

Presence/Absence Survey – Water Vole

3.2.10 Each waterbody was surveyed for the following field signs:

- Faeces/droppings;
- Latrines;
- feeding stations;
- burrows;
- lawns;
- pathways; and
- footprints.

3.2.11 Droppings are the most distinctive field sign and indicate recent water vole presence. A detailed search of the bankside vegetation was undertaken at each suitable waterbody until a latrine or dropping was found, thereafter 10 m point checks were performed.

Habitat Suitability Assessment – Water Vole

3.2.12 Assessments of habitat suitability give an indication of the likelihood of water vole presence within a watercourse. Habitat suitability was assessed by evaluating the features of each waterbody whilst considering the species-specific habitat requirements of water voles. Typically, the most desirable sites will include highly layered bankside vegetation with tall grasses, and stands of species such as willowherb (*Epilobium* spp.), purple loosestrife (*Lythrum salicaria*), meadowsweet

(*Filipendula ulmaria*) or nettles that are often accompanied by rushes, sedges and reed (Strachan *et al.*, 2011).

3.2.13 Habitat suitability assessments were carried out at each watercourse within the 2015 study area by an experienced ecologist. The assessment was based on the following criteria.

- Rate of water flow.
- Bank profiles.
- Degree of shading from overhanging trees.
- Extent of suitable emergent and bankside herbaceous vegetation for providing shelter, food and nesting material.
- Degree of cattle poaching (i.e. extent of damage to banks resulting from trampling by cattle).
- Levels of site disturbance (e.g. proximity to public rights of way, farm vehicle access tracks or road traffic).
- Potential for the waterbody to dry out.
- Suitability of bank substrates for burrowing.
- Water quality.

3.2.14 Table 3.1 below presents the criteria for the assessment of habitat quality.

Table 3.1: Methodology for the Assessment of Habitat Suitability for Water Voles

Habitat Suitability	Hydrology	Food Availability	Shelter Requirements
High	Slow flowing water course around 1–3 m wide and 1 m deep.	Abundant growth of both emergent and herbaceous vegetation.	Moderately steep banks, minimal shading by trees and shrubs.
Moderate	A variation of slow flowing optimal conditions and suboptimal conditions such as fast flowing or very shallow sections.	Optimal feeding conditions interspersed with suboptimal conditions as described under the low habitat suitability conditions.	Watercourse partially shaded with open area providing suitable conditions.
Low	Fast flowing water, widely fluctuating water levels prone to seasonally drying out.	Little to no suitable food. Heavily poached by livestock.	Heavily shaded by overhanging trees and shrubs, shallow banks.
Negligible	Little to no water present.	No suitable food sources.	Overgrown and 100% shaded.

3.3 Limitations

3.3.1 Where there were limitations, surveyors made attempts to collect as much relevant information within the survey criteria as possible. The main limitations of the survey were as follows.

- Dense vegetation, including vegetation growing in and adjacent to the waterbody, restricting access.
- Security fencing stopping safe access to water.
- No access permission granted at the time of the survey.
- Health and safety concerns with regard to dangerous animals (e.g. cattle, horses, dogs).
- Poaching of banks obscuring field signs.
- Steep banks and deep water limiting access.
- Rain showers wetting field signs.

3.3.2 NRW has records of a known otter holt within the Docks Way Landfill. However, there was no access granted during the time of the survey and the otter holt could not be verified.

3.3.3 Management of the bankside vegetation acted as a hindrance to survey efforts in some situations. Poaching from livestock, strimming of the vegetation and bank re-profiling potentially removed or obscured field signs.

3.3.4 Due to the nature of management of the reens within the Gwent Levels, water levels fluctuate. Therefore, not all of the waterbodies hold water for the entire year. In some instances the field ditches did not hold water at the time of survey, but this does not mean that at another time of year that waterbody would not be suitable.

4 Results

4.1 Introduction

4.1.1 This section presents the results from the 2015 otter and water vole survey indicating which waterbodies were surveyed and the field signs found. Drawings illustrating the locations of the results are provided at the end of this report (see Figure 1). The waterbodies in which water vole field signs were found were restricted to either reens or field ditches. These reens and field ditches had high and moderate habitat suitability and were subject to regular management.

4.2 Results

Otters

4.2.1 There were no otter field signs found during the surveys of 58 waterbodies within the 2015 survey area despite there being an abundance of suitable habitat. A table indicating the habitat quality in terms of otter is provided in Annex A. The watercourse numbering is shown on Figure 1.

4.2.2 During a walkover survey within land to the south east of the Tata Steel landholding (Figure 1f), and outside of the 2015 survey area, a recent otter spraint was identified (waterbody 1,300).

4.2.3 The majority of the reens, main rivers and fields ditches that were surveyed were within the Gwent Levels Site of Special Scientific Interest (SSSI). The regular management of many of these watercourses provides an abundance of good otter habitat throughout the 2015 survey area and the wider proposed M4CaN survey corridor.

Water Vole

4.2.4 Water vole field signs were found in 19 of the 58 waterbodies surveyed. Drawings showing the locations where water vole field signs were found are provided at the end of this report (Figure 1) and details are in provided Table 4.1 below. The waterbodies where field signs were found were restricted to either field ditches or reens. These waterbodies typically have still or slow flow of water, vegetated banks and are often well managed.

Table 4.1: Water Vole Field Signs Found During the 2015 Surveys

Date	Waterbody Reference Number	Waterbody Characteristics	Habitat Suitability	Field Sign
07/07/2015	861	Little to no flow, 0.5 m deep, 2.5 m wide, clear, bank depth >2 m, bank slope 0-50 degrees, banks dominated with monocots and herbs	High	No signs
07/07/2015	56	Little to no flow, 0.5 m deep, 3 m wide, clear, bank depth >2 m, bank slope 0-50 degrees, banks dominated with monocots and herbs	High	No signs
07/07/2015	51	Little to no flow, 0.5 m deep, 3 m wide, clear, bank depth >2 m, bank slope 0-50 degrees, banks dominated with monocots and herbs	Moderate	No signs
07/07/2015	42	Holds little to no water	Negligible	Unsuitable/no signs
07/07/2015	54	Holds little to no water	Negligible	Unsuitable/no signs
08/07/2015	43	Little to no flow, 1 m deep, 2.5 m wide, clear, bank depth 1-2 m, bank slope >50 degrees, banks dominated with monocots & herbs, with occasional trees and shrubs	High	No signs
08/07/2015	94	Holds little to no water, dominated with common reed (*Phragmites australis*)	High	No signs
08/07/2015	54	Holds little to no water	Low	Unsuitable/no signs
08/07/2015	99	Holds little to no water, 100% shaded by trees	Low	Unsuitable/no signs
08/07/2015	96	Holds little to no water, 100% shaded by trees	Low	Unsuitable/no signs
13/07/2015	671	Little to no flow, 0.75 m deep, 4 m wide, clear, bank depth 1-2 m, bank slope 0-50 degrees, banks dominated with monocots and herbs	High	Feeding stations
13/07/2015	664	Holds little to no water, 100% shaded by trees	Negligible	Unsuitable
13/07/2015	894	Little to no flow, 0.75 m deep, 4 m wide, clear, bank depth 1-2 m, bank slope 0-50 degrees, banks dominated with monocots and herbs	High	Feeding stations; latrines; burrows; one sighting
13/07/2015	673	Little to no flow, 1 m deep, 4 m wide, clear, bank	High	Feeding stations;

Date	Waterbody Reference Number	Waterbody Characteristics	Habitat Suitability	Field Sign
		depth 1-2 m, bank slope 0-50 degrees, banks dominated with monocots and herbs, with occasional trees		latrines; burrows; pathway
13/07/2015	847	Little to no flow, 1 m deep, 5 m wide, clear, bank depth <1 m, bank slope 0-50 degrees, banks dominated with monocots and herbs	Moderate	Feeding stations; latrines
13/07/2015	850	Little to no flow, 1 m deep, 5 m wide, clear, bank depth <1 m, bank slope 0-50 degrees, banks dominated with monocots & herbs	Moderate	Feeding stations; latrines; burrows
15/07/2015	629	Little to no flow, depth unrecorded, 5 m wide, clear, bank depth >2 m, bank slope >50 degrees, bank grazed	Moderate	Feeding stations; latrines; burrows
15/07/2015	882	Little to no flow, <1 m deep, 4 m wide, clear, bank depth 1-2 m (west), <1 m (east), bank slope >50 degrees, banks dominated by common reed	High	Feeding stations; latrines; burrows
15/07/2015	845	Little to no flow, depth unrecorded, 5 m wide, clear, bank depth <1 m, bank slope 0-50 degree, southern side dominated by common reed	Moderate	Feeding stations; latrines; burrows
15/07/2015	675	Little to no flow, <1 m deep, 3 m wide, clear, bank depth 1 m (west), <1-2 m (east), bank slope >50 degrees, banks dominated by monocots and herbs	Moderate	Feeding stations; latrines
15/07/2015	672	Little to no flow, <2 m deep, 3 m wide, clear, bank depth 1 m (west), <1-2 m (east), bank slope >50 degrees, banks grazed	Moderate	No signs
15/07/2015	674	Little to no flow, depth not recorded, 3 m wide, clear, bank depth >2 m, bank slope 0-50 degrees, banks dominated by monocots and herbs	High	No signs
16/07/2015	621	Little to no flow, 0.5 m deep, 3 m wide, clear, bank depth 1-2 m, bank slope >50 degrees, banks	Moderate	No signs

Date	Waterbody Reference Number	Waterbody Characteristics	Habitat Suitability	Field Sign
		dominated by monocots and herbs with hawthorn (*Crataegus monogyna*)		
16/07/2015	631	Little to no flow, 0.5 m deep, 2-3 m wide, clear, bank depth 1-2 m, bank slope >50 degrees, banks dominated by monocots and herbs with hawthorn	Moderate	No signs
16/07/2015	890	Little to no flow, depth not recorded , 3 m wide, clear, bank depth >2 m, bank slope >50 degrees, banks dominated by monocots and herbs, poached banks on the southern side	Moderate	Burrows; feeding stations
16/07/2015	888	Little to no flow, depth not recorded, 3 m wide, clear, bank depth >2 m, bank slope >50 degrees, banks dominated by monocots and herbs	High	No signs
16/07/2015	875, 950	Little to no flow, depth not recorded, 3 m wide, clear, bank depth >2 m, bank slope >50 degrees, banks dominated by monocots and herbs	High	No signs
17/07/2015	636	Little to no flow, 0.5 m depth not recorded, 3 m wide, clear, bank depth >2 m, bank slope >50 degrees, banks dominated by monocots and herbs	High	Feeding stations; latrines
20/07/2015	873	Holds little to no water, 90% shaded by trees	Low	Unsuitable/no signs
20/07/2015	830	Holds little to no water, 90% shaded by trees	Low	Unsuitable/no signs
20/07/2015	968	Holds little to no water, 90% shaded by trees	Low	Unsuitable/no signs
20/07/2015	627	Little to no flow, <0.5 m deep, 2 m wide, slightly murky, bank depth 1-2 m, bank slope >50 degrees, grazed to the east and silage on the west	Moderate	Feeding stations; latrines; burrows
20/07/2015	625	Ditch within dense shrub (hedgerow) cover	Negligible	Unsuitable/o signs
20/07/2015	623	Holds little to no water, 100% shaded by trees	Negligible	Unsuitable
27/07/2015	677	Holds little to no water, 100% shaded by trees	Negligible	Unsuitable/no signs
27/07/2015	622	Little to no flow, 0.5m deep, 4m wide, bank depth 2m, bank slope <50	High	Feeding stations

Date	Waterbody Reference Number	Waterbody Characteristics	Habitat Suitability	Field Sign
		degrees, grazed to the south		
27/07/2015	621	No field ditch information recorded		Feeding stations; latrines; burrows
20/07/2015	638	Little to no flow, depth not recorded, 4 m wide, clear, bank depth >2 m, bank slope >50 degrees, banks dominated by monocots and herbs	High	Feeding stations; latrines; burrows
20/08/2015	919	Little to no flow, 1 m deep, 2.5 m wide, slightly turbid, bank depth <1 m, bank slope 0-50 degrees, banks dominated by monocots and herbs	High	Feeding stations; latrines; burrows
20/08/2015	668	Little to no flow, 1 m deep, 2.5 m wide, slightly turbid, bank depth <1 m, bank slope 0-50 degrees, hedge with trees on the east side, occasional poached banks	Moderate	Feeding stations
26/09/2015	120	Little to no flow, 1.5 m deep, 3 m wide, clear, bank depth 1-2 m, bank slope 0-50 degrees, eastern bank dominated by common reed	High	No signs
06/09/2015	604	Holds little to no water, 75% shaded by trees	Low	No signs
06/09/2015	612	No field ditch information recorded	Low	No signs
07/09/2015	1108	Little to no flow, 1 m deep, 3 m wide, slightly turbid, bank depth >1-2 m banks, bank slope 0-50 degrees, occasional poached banks	Moderate	No signs
07/09/2015	1111	Holds little to no water, 75% shaded by trees	Low	Unsuitable/no signs
07/09/2015	1123	Little to no flow, depth not recorded, 2.5 m wide, slightly turbid, poached banks	Moderate	No signs
07/09/2015	1101	Holds little to no water, 100% shaded by trees	Negligible	Unsuitable/no signs
07/09/2015	1102	Holds little to no water, 75% shaded by trees	Low	Unsuitable/no signs
07/09/2015	1106	Holds little to no water, 75% shaded by trees	Low	Unsuitable/no signs
07/09/2015	1179	Holds little to no water, 60% shaded by trees	Low	No signs
07/09/2015	1164	Holds little to no water,	Low	No signs

Date	Waterbody Reference Number	Waterbody Characteristics	Habitat Suitability	Field Sign
		60% shaded by trees		
23/09/2015	676	Little to no flow, depth not recorded, 3 m wide, clear, bank depth <2 m, bank slope <50 degrees, banks dominated by monocots and herbs	High	Feeding stations; latrines; burrows; pathway
23/09/2015	642	Dense vegetation on either side of the waterbody prevented access		Inaccessible
23/09/2015	973	Dense vegetation on either side of the waterbody prevented access		Inaccessible
23/09/2015	710, 712	Little to no flow, 0.5 m deep, 4 m wide, clear, bank depth <2 m, bank slope <50 degrees, banks dominated by monocots and herbs	High	No signs
23/09/2015	955	Dense vegetation on either side of the waterbody prevented access		Inaccessible

5 Discussion

5.1 Introduction

5.1.1 This section sets out the main findings of the surveys carried out in 2015 and refers to the results of previous surveys completed in 2014.

5.2 Survey Findings

Otter

5.2.1 No otter field signs were found within the 2015 survey area. In 2014 the Arup otter survey covered a total of 1,442 waterbodies and identified otter signs at a total of 18 waterbodies surveyed, which equates to 1 in every 80 watercourses. Full details of the results of the 2014 survey are provided in ES Appendix 10.8. The low number of waterbodies at which evidence of otter activity was found indicates that although otter are present along the length of the survey area associated with the route of the proposed new section of motorway, they are widely dispersed. Although no signs of otters were found during the 2015 survey (whilst also considering the single spraint found incidentally near to the survey area), the findings of the 2015 survey, confirmed the suitability of the habitat within the Gwent Levels section of the M4CaN for otter.

Coedkernew

5.2.2 The 2014 survey undertaken by Arup (ES Appendix 10.8) recorded otter activity south of Coedkernew (Figure 1b) near the disused road in waterbodies 862 and 55. Waterbody 55 itself lies outside the study area but it is a tributary to Percoed Reen.

5.2.3 Although no otter field signs were found in this area during the 2015 surveys, there was an abundance of suitable habitat present. Percoed Reen (waterbodies 43 and 315) has a high level of connectivity to the surrounding area, with a width of 2.5 m and well vegetated banks and could provide a commuting route to more favourable habitat for otters. The small area of woodland south of the disused roundabout and directly adjacent to and north of Percoed Reen was also surveyed as the area provides a potentially suitable environment for otter holts. At the time of the survey, development of a new cycle path/road was underway along the north-eastern side of Percoed Reen (waterbody 315) and this may have increased disturbance in this area, possibly accounting for the lack of otter signs found in the area.

Land South and East of Tatton Farm

5.2.4 No field signs were found in the waterbody network south east of Tatton Farm (Figure 1d and 1e) (waterbodies 491, 1160, 1179, 1164 and 1106).

5.2.5 During a walkover survey, an otter spraint was discovered during a site visit of waterbody 1300 to the east of the otter and water vole survey area within the Tata Steel landholding, confirming that otters are present and active in this area.

South of Llandevenny

5.2.6 No otter field signs were found in the waterbody network south of Llandevenny (Figure 1f and 1g). The 2014 surveys found evidence of otter activity in waterbodies 906 and 747 which are located close to the 2015 study area. The area directly south of Bareland Street and Stutwell Reen (waterbodies 674 and 894) provides extensive areas of optimal habitat in close proximity to nearby reens, hedgerows and ditches that provide corridors for otters to commute to the surrounding areas. The small woodland located south of the A4810 around the waterbody to the north of watercourse 845 similarly had potential for otter holts and/or lying up areas. Despite no field signs having been found during the 2015 survey, this area of habitat lies within a landscape of extensive areas of suitable habitat for otter.

Water Vole

5.2.7 Water vole field signs were found in 19 of the 58 waterbodies within the 2015 study area. These results were mainly within the reen and field ditch network south of Llandevenny, with the only other area of water vole activity being recorded approximately 50 m to the east of Tatton Farm within a small field ditch adjacent to Julian's Reen.

Coedkernew

5.2.8 Previous surveys undertaken by Arup in 2014 recorded water vole activity in the area of Coedkernew (Figure 1b) with latrines, feeding stations and pathways being found in waterbodies 60, 861, 1382 and 1390. During the 2015 survey, waterbodies directly south of this area were covered and no evidence of water vole activity was found.

Land South and East of Tatton Farm

5.2.9 In 2014, Arup recorded water vole activity in waterbodies 516 and 1118 which are located to the east and south of the 2015 study area (Figure 1d and 1e). No field signs were found in the current 2015 study area. However out of the waterbodies located within the 2015 study area, only 1123 and 1118 were deemed suitable for this species, with the other waterbodies containing unsuitable habitat.

South of Llandevenny

5.2.10 An extensive water vole population was identified within watercourses to the south of Llandevenny (Figure 1f and 1g). Evidence of water voles was found within the majority of suitable watercourses in this area and the water voles here are likely to be part of a much larger population within the surrounding landscape. As the habitat quality is optimal in this area it is likely that any territories are relatively small. Therefore, it is likely that a large number of territories are present in this area.

5.2.11 Water voles have been released in this area by the Gwent Wildlife Trust during 2012 and 2015 as part of a re-introduction programme based on their Magor Marsh Nature Reserve, to the east.

6 References

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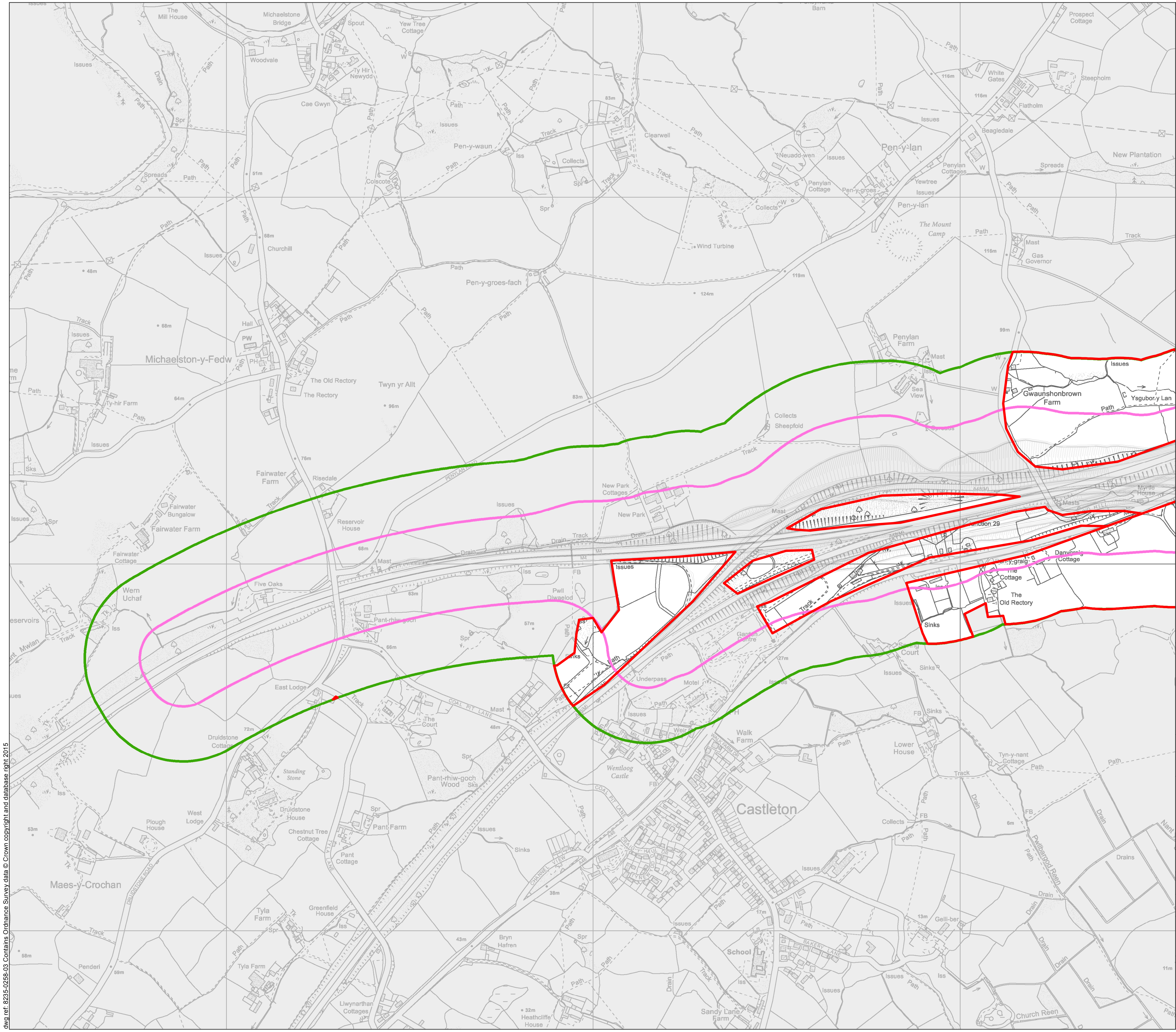
Figures



Legend

- 2015 Survey Areas
- 100m Study Area
- 250m Study Area
- Water Vole & Otter Survey Reference Number
- Proposed M4 (Week 29 Alignment)

Water Vole Survey

- Presence Confirmed
- Old Signs Found
- Dry
- No Signs Found

Study area and scheme shown reflects the scheme design at the time of the survey

Llywodraeth Cymru
Welsh Government

Appendix 10.25 - Water Vole & Otter Survey Report

Study Area and Locations of Water Bodies

Figure: 1a	Revision: 1
Date: March 2016	Status: AT ISSUE
Drawn: CR	Checked: AT

Scale: A3 @ 1:10,000
0 200 400m
N

dwg ref: 8235-0258-03

Legend

- 2015 Survey Areas
- 100m Study Area
- 250m Study Area
- Water Vole & Otter Survey Reference Number
- Proposed M4 (Week 29 Alignment)

Water Vole Survey

- Presence Confirmed
- Old Signs Found
- Dry
- No Signs Found

Study area and scheme shown reflects the scheme design at the time of the survey

Llywodraeth Cymru
Welsh Government

Appendix 10.25 - Water Vole & Otter Survey Report

Study Area and Locations of Water Bodies

Figure: 1b	Revision: 1
Date: March 2016	Status: AT ISSUE
Drawn: CR	Checked: AT

Scale: A3 @ 1:10,000
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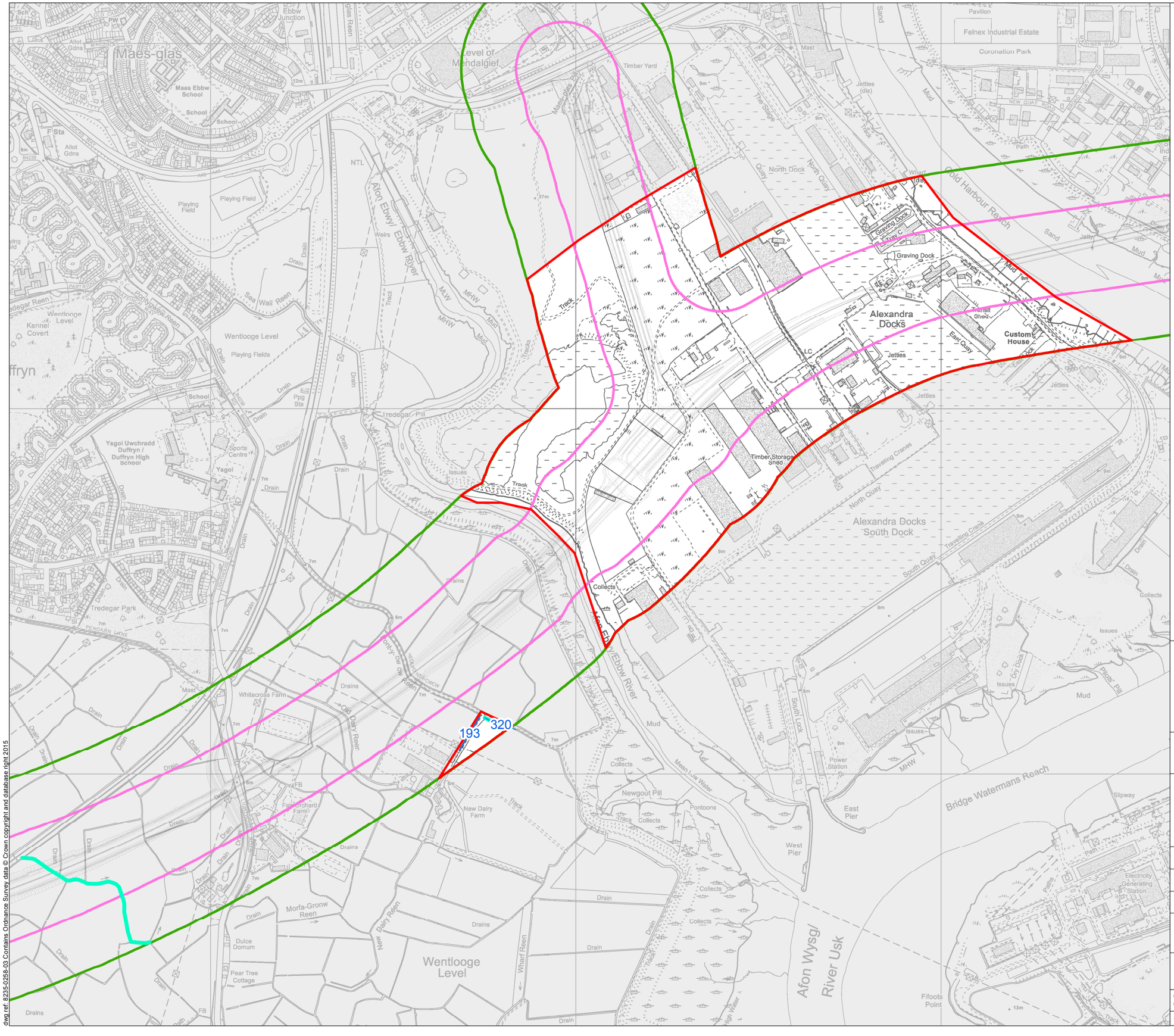
dwg ref: 8235-0258-03



Legend

- 2015 Survey Areas
- 100m Study Area
- 250m Study Area
- Water Vole & Otter Survey Reference Number
- Proposed M4 (Week 29 Alignment)

Water Vole Survey

- Presence Confirmed
- Old Signs Found
- Dry
- No Signs Found

Study area and scheme shown reflects the scheme design at the time of the survey

Llywodraeth Cymru
Welsh Government

Appendix 10.25 - Water Vole & Otter Survey Report

Study Area and Locations of Water Bodies

Figure: 1c	Revision: 1
Date: March 2016	Status: AT ISSUE
Drawn: CR	Checked: AT

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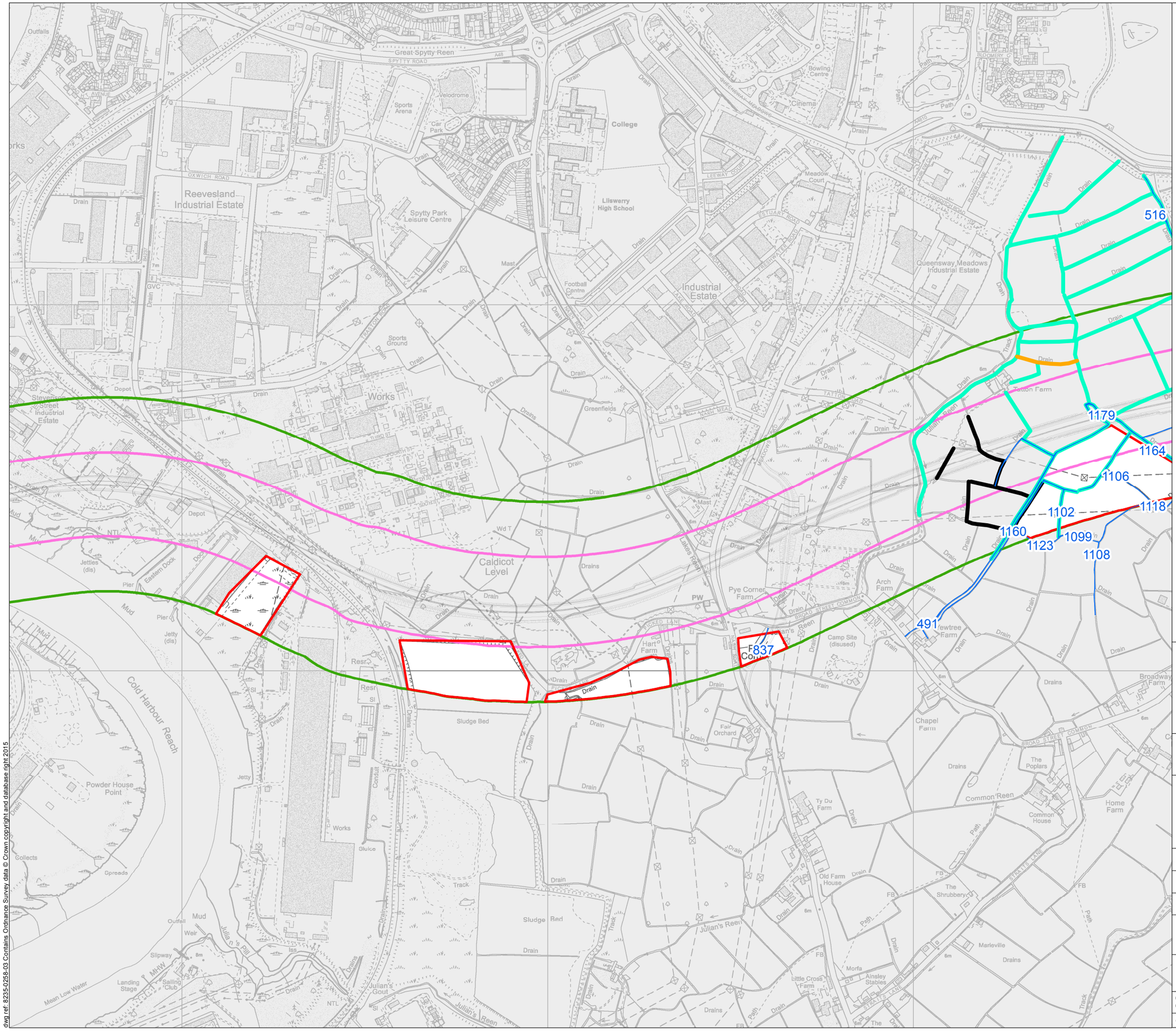

Legend

- 2015 Survey Areas
- 100m Study Area
- 250m Study Area
- Water Vole & Otter Survey Reference Number
- Proposed M4 (Week 29 Alignment)

Water Vole Survey

- Presence Confirmed
- Old Signs Found
- Dry
- No Signs Found

Study area and scheme shown reflects the scheme design at the time of the survey

Llywodraeth Cymru
Welsh Government

Appendix 10.25 - Water Vole & Otter Survey Report

Study Area and Locations of Water Bodies

Figure: 1d	Revision: 1
Date: March 2016	Status: AT ISSUE
Drawn: CR	Checked: AT

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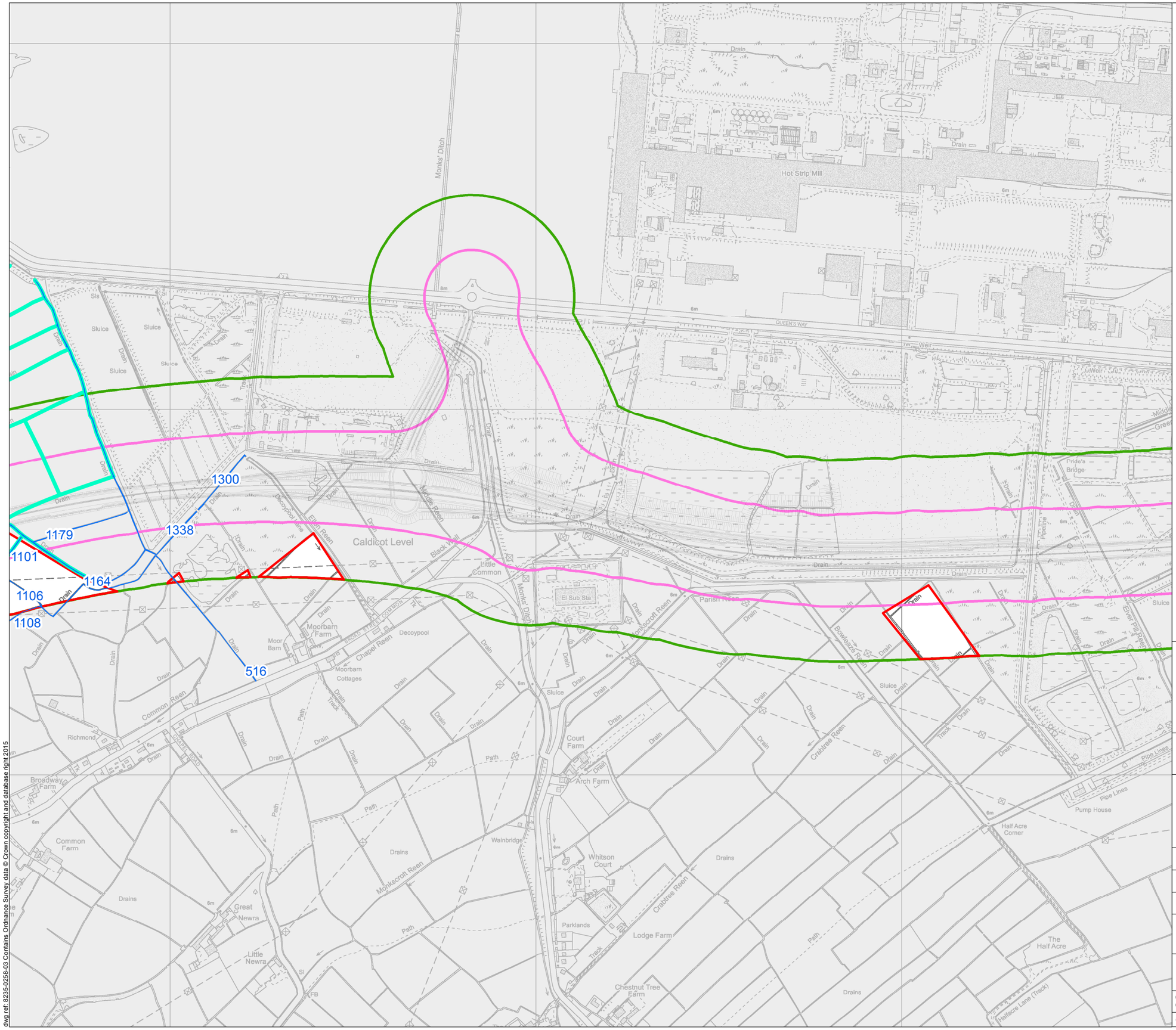

Legend

- 2015 Survey Areas
- 100m Study Area
- 250m Study Area
- Water Vole & Otter Survey Reference Number
- Proposed M4 (Week 29 Alignment)

Water Vole Survey

- Presence Confirmed
- Old Signs Found
- Dry
- No Signs Found

Study area and scheme shown reflects the scheme design at the time of the survey

Llywodraeth Cymru
Welsh Government

Appendix 10.25 - Water Vole & Otter Survey Report

Study Area and Locations of Water Bodies

Figure: 1e	Revision: 1
Date: March 2016	Status: AT ISSUE
Drawn: CR	Checked: AT

Scale: A3 @ 1:10,000

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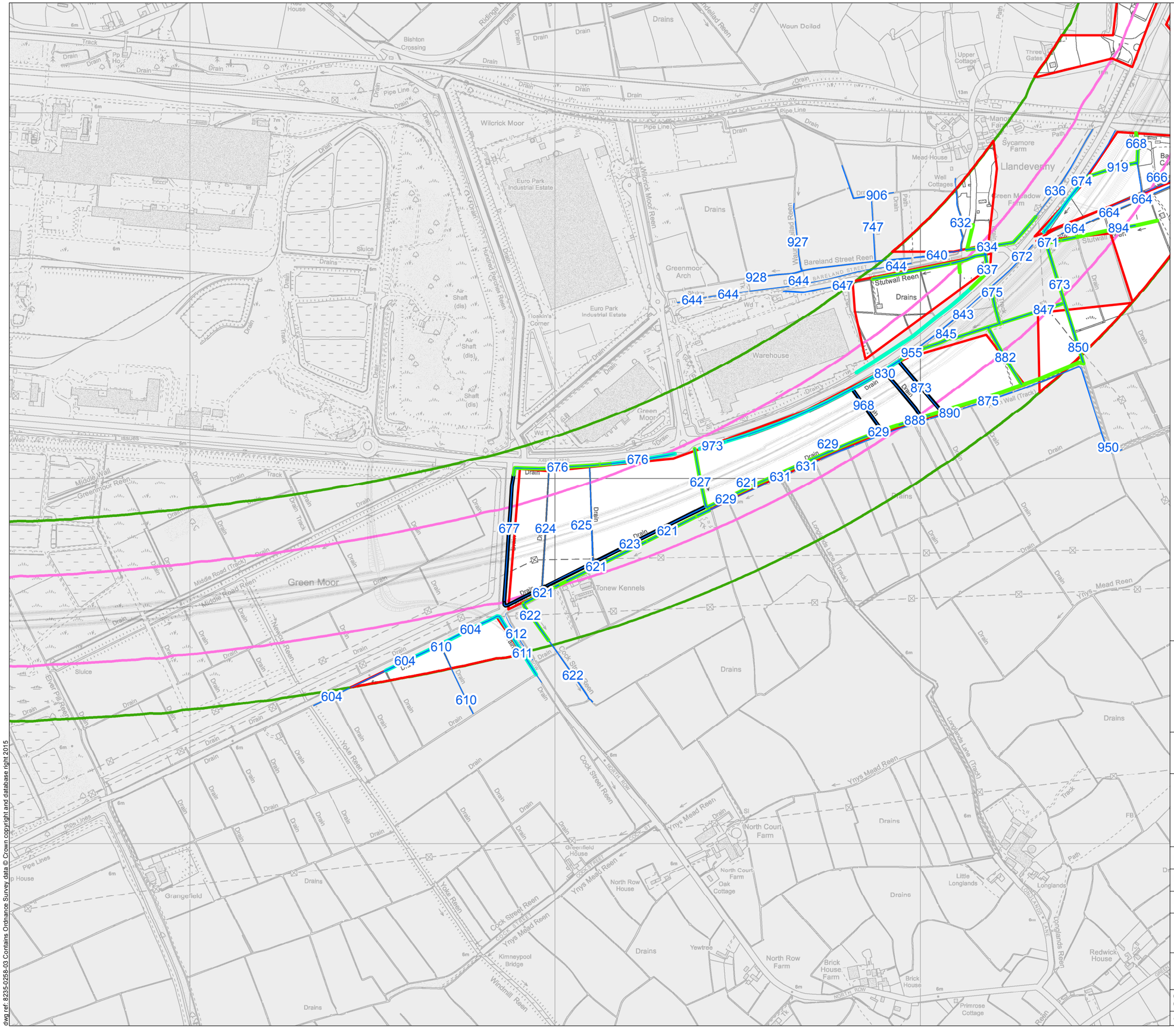

Legend

- 2015 Survey Areas
- 100m Study Area
- 250m Study Area
- Water Vole & Otter Survey Reference Number
- Proposed M4 (Week 29 Alignment)

Water Vole Survey

- Presence Confirmed
- Old Signs Found
- Dry
- No Signs Found

Study area and scheme shown reflects the scheme design at the time of the survey

Llywodraeth Cymru
Welsh Government

Appendix 10.25 - Water Vole & Otter Survey Report

Study Area and Locations of Water Bodies

Figure: 1f	Revision: 1
Date: March 2016	Status: AT ISSUE
Drawn: CR	Checked: AT

Scale: A3 @ 1:10,000
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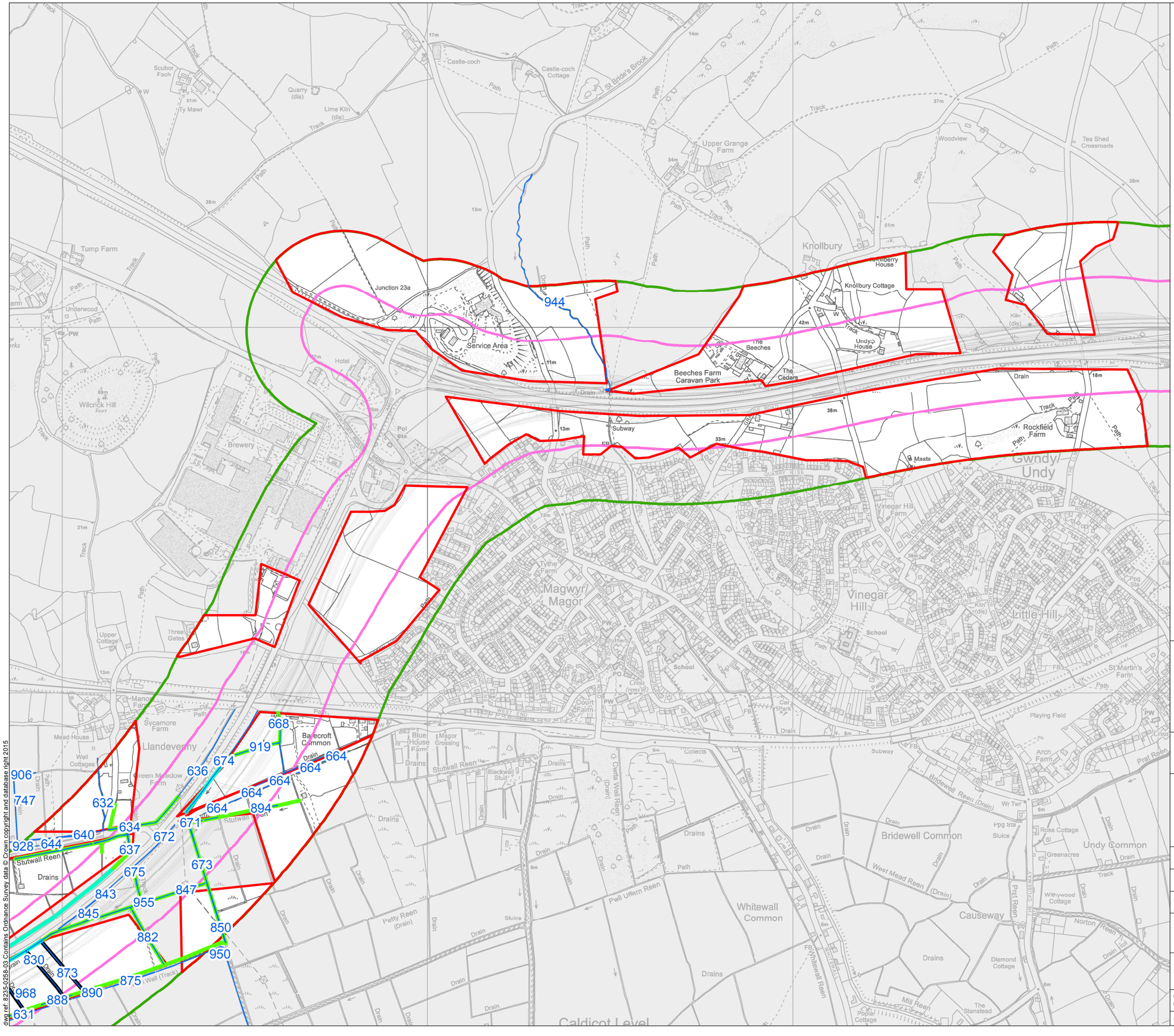


Legend

- 2015 Survey Areas
- 100m Study Area
- 250m Study Area
- Water Vole & Otter Survey Reference Number
- Proposed M4 (Week 29 Alignment)

Water Vole Survey

- Presence Confirmed
- Old Signs Found
- Dry
- No Signs Found

Study area and scheme shown reflects the scheme design at the time of the survey

Llywodraeth Cymru
Welsh Government

Appendix 10.25 - Water Vole & Otter Survey Report

Study Area and Locations of Water Bodies

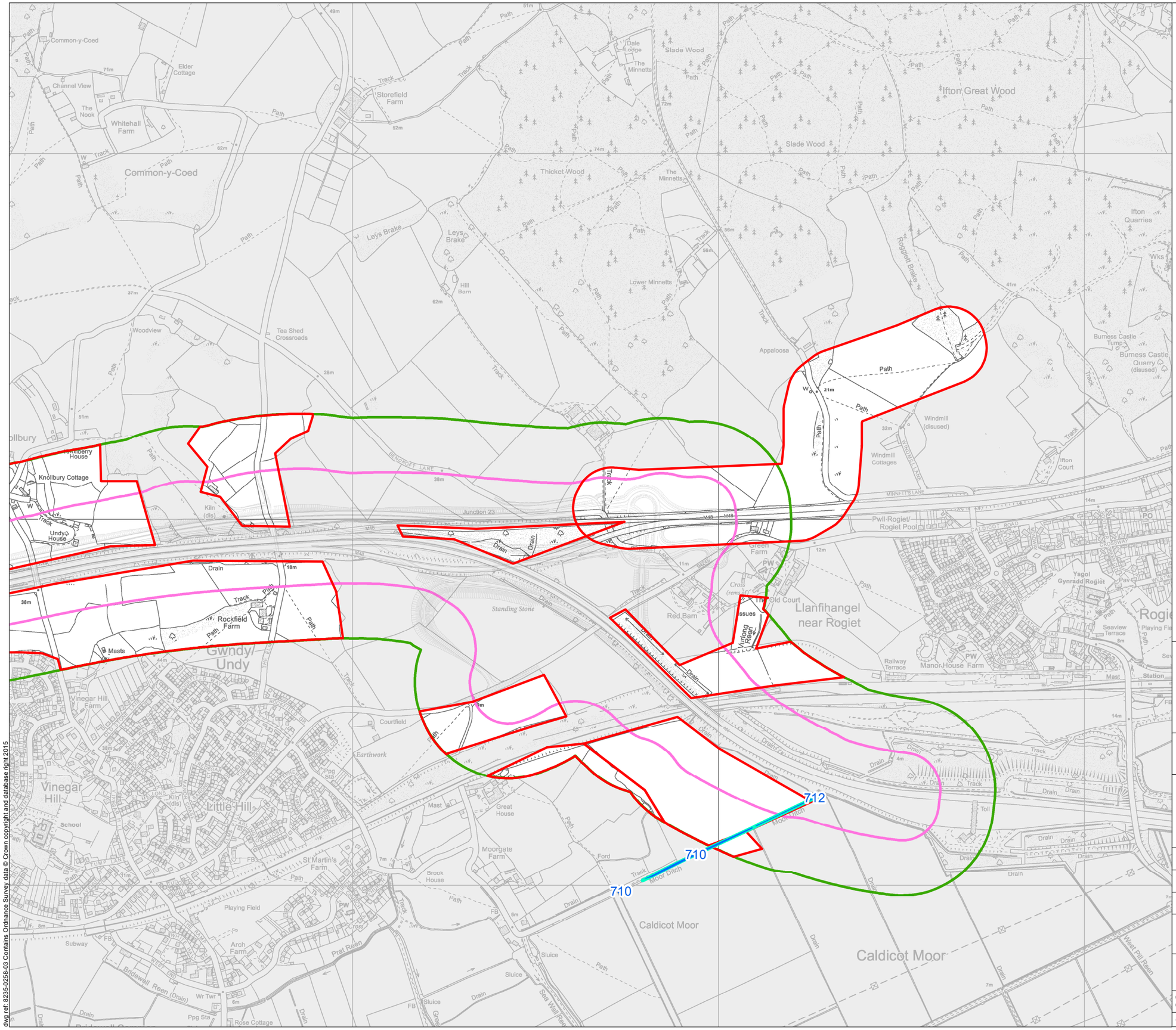
Figure: 1g	Revision: 1
Date: March 2016	Status: AT ISSUE
Drawn: CR	Checked: AT

Scale: A3 @ 1:10,000

0 200 400m

N

dwg ref: 8235-0258-03



Legend

- 2015 Survey Areas
- 100m Study Area
- 250m Study Area
- Water Vole & Otter Survey Reference Number
- Proposed M4 (Week 29 Alignment)

Water Vole Survey

- Presence Confirmed
- Old Signs Found
- Dry
- No Signs Found

Study area and scheme shown reflects the scheme design at the time of the survey

Llywodraeth Cymru
Welsh Government

Appendix 10.25 - Water Vole & Otter Survey Report

Study Area and Locations of Water Bodies

Figure: 1h	Revision: 1
Date: March 2016	Status: AT ISSUE
Drawn: CR	Checked: AT

Scale: A3 @ 1:10,000
0 200 400m

N

dwg ref: 8235-0258-03

Annexes

Annex A: Habitat Suitability for Otters

Date of survey	Waterbody reference number	Waterbody characteristics	Adjacent habitat
07/07/2015	861	Banks dominated with monocots & herbs. Dense cover throughout. Nearby area of woodland provide suitable holts and lying up areas.	Marshy grassland and broad leaved plantation woodland
07/07/2015	56	Banks dominated with monocots & herbs with occasional bramble thickets. Nearby area of woodland provide shelter and lying up areas.	Broad leaved plantation woodland
07/07/2015	51	Dominated with monocots & herbs with hedgerow on west bank. Adjacent woodland provides ideal environment of holts and lying up.	Broad leaved woodland
07/07/2015	42	Holds little to no water. Some tree cover would provide suitable commuting routes for otter.	Arable land (south), Percoed reen (north)
07/07/2015	54	Holds little to no standing water with occasional trees.	Arable land
08/07/2015	43	Dominated with monocots & herbs, with occasional trees and shrubs. Adjacent areas of woodland provide otter lying up areas.	Broadleaved woodland & grassland (north),
08/07/2015	94	Holds little water with common reed and line of mature trees.	Percoed reen (north) and arable land (south)
08/07/2015	54	Holds little to no water, dominated with common reed and mature trees.	Arable land
08/07/2015	99, 96	Lane with field ditch with shallow and line of mature trees and shrubs.	Arable land (west) and small road (east)
13/07/2015	671	Banks dominated with monocots & herbs with occasion shrubs and trees. Connectivity via reen and field ditches to other areas of optimal habitat throughout area.	Grazing marsh and marshy grassland
13/07/2015	664	Ditch along Barecroft Common shaded throughout by mature trees and shrubs.	Road (north) and grassland (south)
13/07/2015	894	4m wide reen passing through Wildlife Trust managed habitats, banks dominated with monocots & herbs and connectivity to optimal habitat within local landscape.	Grassland (north) and marshy grassland (south)
13/07/2015	673	Petty Reen with banks dominated with monocots & herbs, with occasional trees. Connectivity to wider habitat within local landscape.	Grassland (west) and marshy grassland (east)
13/07/2015	847	Wide reen regularly cut bank that is very open with little cover for otter. Appears reen has been recently fenced to prevent cattle poaching.	Grassland
13/07/2015	850	Banks dominated with monocots & herbs, with occasional trees. Connectivity to wider habitat within local landscape.	Grassland (east) and marshy grassland (west)
15/07/2015	629	Dry field ditch along south side of farm access track with steep banks and occasional shrub.	Rush Wall track (north) and Grassland (south)
15/07/2015	882	Wide reen with diverse aquatic macrophyte assemblage and areas of dense common reed cover.	Grassland
15/07/2015	845	Wide reen dominated with common reed in places with dense scrub and woodland to the north providing optimal lying up areas.	Broad leaved woodland (north) and grassland (south)
15/07/2015	675	Field ditch with banks dominated with dense stand of monocots & herbs. Dense scrub and woodland to west provide suitable lying up areas for otter.	Broadleaved woodland (west) and grassland (east)

15/07/2015	672	Ditch along south side of the A4810 established with mature trees and occasional areas of marsh vegetation. Connectivity to woodland located to the west.	Road (north) and grassland (south)
15/07/2015	674	Banks dominated with monocots & herbs with occasional shrubs and trees. Connectivity to small scrub area in the road verge directly north which provides suitable shelter for otter.	Road (west) and marshy grassland (east)
16/07/2015	621, 631	Wide reen along north boundary of farm access track. Banks dominated with monocots and herbs with areas of dense vegetation suitable to provide shelter for otter.	Improved grassland (north) and arable (south)
16/07/2015	888, 890	Banks dominated with monocots & herbs to the north and heavily cattle poached banks on the southern side decreasing available cover.	Grassland
16/07/2015	875	Banks dominated with monocots & herbs to the north and heavily cattle poached banks on the south.	Grassland
16/07/2015	950	Wide, open reen with species rich emergent vegetation. Connectivity to surrounding area through reens and field ditches.	Grassland (north & south) and marshy grassland (east)
17/07/2015	636	Field ditch north of Bareland Street. Banks dominated with monocots & herbs. Connectivity to surrounding habitat through reens and field ditches.	Grassland (north) and road (south)
20/07/2015	873	Holds little to no water. Some tree cover providing suitable commuting routes to favourable habitat.	Grassland
20/07/2015	830	Holds little to no water. Some tree cover providing suitable commuting routes for otter.	Grassland
20/07/2015	968	Holds little to no water. Some tree cover providing suitable commuting routes for otter.	Grassland
20/07/2015	627	Field ditch with steep banks, cattle grazed to the east and silage on the west. Connectivity to the surrounding habitat through field ditches and reens.	Grassland
20/07/2015	625	Dense treeline with little standing water. Tree cover providing suitable commuting routes for otter.	Grassland
20/07/2015	623	Holds little to no water. Dense tree cover would provide suitable commuting routes for otter.	Grassland (north) and arable (south)
27/07/2015	677	Field ditch east of North Row, holds little to no water. Some tree cover would provide suitable commuting routes for otter.	Road (west) and Grassland (east)
27/07/2015	621	Field ditch south of Rush wall with steep banks. Connectivity to the local habitat through reens and field ditches.	Grassland
20/07/2015	638	Stutwall Reen dominated with monocots & herbs. Dense scrub to the south provides ideal area for holts and lying up.	Grassland (north) and dense scrub (south)
20/08/2015	919	Banks dominated with monocots & herbs with connectivity to favourable habitat through field ditches.	Grassland (north), Scrub (north east) and marshy grassland (south)
20/08/2015	668	Field ditch with occasional poached banks to the west and hedgerow on the east side.	Marshy grassland (west) and grassland (east)
20/08/2015	120	Morfa-Gronw Reen. Banks dominated with common reed and occasional shrubs providing suitable habitat for commuting routes for otter.	Grassland
20/08/2015	116	Holds little to no water. Some tree cover would	Grassland

		provide suitable commuting routes for otter to favourable habitats	
06/09/2015	604	Field ditch south of Rush wall, holds little to no water. Some tree cover would provide suitable commuting routes for otter.	Road (north) and marshy grassland (south)
06/09/2015	612	Field ditch west of North Row, holds little to no water with mature willows and common reeds. This vegetation cover would provide suitable commuting routes for otter.	Grassland (west) and road (east
07/09/2015	1108	Wide, open field ditch with cattle poached banks.	Grassland
07/09/2015	1111	Field ditch with little standing water, heavily shaded by trees. Tree cover would provide suitable commuting routes for otter.	Grassland
07/09/2015	1123	Wide, open field ditch with cattle poached banks and no overhanging vegetation cover.	Grassland
07/09/2015	1101	Holds little to no water. Dense tree cover would provide suitable commuting routes for otter to favourable habitats.	Grassland
07/09/2015	1102	Holds little to no water. Dense tree cover would provide suitable commuting routes for otter to favourable habitats.	Grassland
07/09/2015	1106	Field ditch heavily shaded with trees. Tree cover would provide suitable commuting routes for otter	Grassland
07/09/2015	1179	Field ditch with little standing water. Heavily shaded by trees. Tree cover will provide suitable commuting routes for otter.	Grassland
07/09/2015	1164	Field ditch with little standing water. Heavily shaded by trees. Tree cover will provide suitable commuting routes for otter.	Grassland
23/09/2015	676	Field ditch south of the A4810 with banks dominated with monocots and herbs. Connectivity via field ditch to small woodland to the east.	Grassland
23/09/2015	642	Dense vegetation on either side of the field ditch prevented access to the waterbody.	Tall ruderal with pockets of scrub (east) and dense scrub (west)
23/09/2015	973	Field ditch south of the A4810 with dense vegetation on the north side and intact hedgerow on the south preventing access to the waterbody.	Grassland
23/09/2015	710, 712	Wide field ditch with banks dominated with monocots & herbs. Occasional cover from trees. Connectivity via field ditches to the surrounding area.	Grassland
23/09/2015	955	Field ditch south of the A4810 with dense vegetation on either side of the waterbody preventing access.	Grassland