



# Awel y Môr Offshore Wind Farm

## Category 6: Environmental Statement

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# AWEL Y MÔR OFFSHORE WIND FARM

## Otter and Water Vole Survey Report

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## 1.0 Introduction

Awel y Môr Offshore Wind Farm (AyM) is a Nationally Significant Infrastructure Project (NSIP). An Environmental Impact Assessment (EIA) is being undertaken and an Environmental Statement (ES) will be provided as part of a Development Consent Order (DCO) application under the Planning Act 2008.

SLR Consulting was commissioned by GoBe Consultants, on behalf of Awel y Môr Offshore Wind Ltd (The Applicant), in May 2020 to undertake the onshore ecological work necessary to inform the EIA. This report provides details of the surveys for otter *Lutra lutra* and water vole *Arvicola amphibius*.

As AyM progresses, the emerging scheme design will continue to be refined and so the precise locations and final extent of the proposed scheme are subject to change. Therefore, the scheme details presented in this report may vary from those that are ultimately presented within the ES, but the survey area includes all areas currently under consideration at the time of survey.

### 1.1 Background

An EIA Scoping Report was prepared in accordance with Regulation 10 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 and Regulation 6 of the Marine Works (Environmental Impact Assessment) Regulations 2007. The EIA Scoping Report was submitted to the Planning Inspectorate (PINS) in June 2020. Within the EIA Scoping Report, full details were provided as to the proposed approach for ecological survey and assessment. An Scoping Opinion was provided by PINS in response to the EIA Scoping Report, in July 2020. Comments made in the Scoping Opinion have been taken into account within this report, where relevant. Both documents are available at the PINS website<sup>1</sup>; the EIA Scoping Report and EIA Scoping Opinion content is not repeated here, and readers should refer to the original documents for details.

A Preliminary Ecological Appraisal (PEA) was subsequently carried out during the period July to September 2020 for three landfall locations, cable route corridors and substation locations that were under consideration by The Applicant at that time. This was informed by additional desk-based study and initial habitat survey, based on interpretation of aerial imagery and ground-based survey, where access was possible. Findings were presented in a PEA<sup>2</sup> report, submitted to the AyM EIA Evidence Plan Expert Topic Group (which includes Natural Resources Wales (NRW), Denbighshire County Council (DCC), the Royal Society for the Protection of Birds (RSPB) and North Wales Wildlife Trust (NWWT)), in February 2021 for information and comment. The PEA report included detailed survey proposals for otter and water vole.

In line with the recommendations in the PEA report and following discussion and agreement of the final survey scope during an ETG meeting on 26<sup>th</sup> February 2021, the otter and water vole surveys commenced in June 2021.

### 1.2 Survey Area

Surveys were undertaken at all water courses that may be breached by the onshore infrastructure options under consideration at the time of survey. However, the River Clwyd was not surveyed for water vole since it will not be directly affected by current development proposals, and the section within the survey area is tidal and

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<sup>1</sup><https://infrastructure.planninginspectorate.gov.uk/projects/wales/awel-y-mor-offshore-wind-farm/?ipcsection=docs>

<sup>2</sup> For a copy of the PEA refer to AyM Offshore Windfarm Environmental Statement Volume 5, Annex 5.1.

therefore unsuitable for use by water vole.

Within this report the following terms are used:

- Study Area: This is the 2km zone around the Draft Order Limits (DOL) that were presented at Statutory Consultation.
- Survey Area: A 250m up/downstream search area from the DOL that were presented at Statutory Consultation for each water course that may be crossed by the cable corridor and/associated haul road or other infrastructure was used for otter and water vole, since these are highly mobile, territorial species. It is therefore possible that effects from the proposed development, such as habitat loss and disturbance, may impact populations of these species that occur outside the DOL that were presented at Statutory Consultation. It is worth noting that potential hydrological impacts do not have such a bearing on this search area as a) they would be mitigated at source as part of good construction practice and b) both these species have a degree of tolerance to short term changes in water quality or flow, assuming adequate habitat remains present.
- Areas other than these are specifically described.

### 1.3 Purpose of this Report

This report presents the findings of the otter and water vole survey. The report seeks to establish baseline conditions and identify habitats that may be important for these species. The assessment of impacts resulting from the onshore elements of AyM is beyond the scope of this report and is covered in the Onshore Biodiversity and Nature Conservation chapter of the ES.

The main objectives of the work were to:

- identify the extent of suitable habitat for otter and/or water vole within the Survey Area;
- determine the presence/absence of otter and/or water vole within the Survey Area; and
- evaluate the importance of the water vole and/or otter populations (if present) in a local, regional and national context.

### 1.4 Evidence of Technical Competence and Experience

Emma Clarke and Liz Probert undertook the field surveys in June 2021 and Shannon Davies and Amy Gill undertook the field surveys in August 2021. All field ecologists have at least 3 years' experience of habitat and protected species survey, including at least one year of otter and water vole survey. All are working toward full CIEEM membership and abide by its professional code of conduct.

Jess Colebrook undertook surveys at the River Clwyd in 2020 and 2021 and authored this report. Jess Colebrook is a Principal Ecologist at SLR Consulting with over 20 years' experience as a professional ecologist. She is a Chartered Environmentalist (CEnv) and a full member of CIEEM (MCIEEM). Jess is leading the onshore ecological work necessary to inform the EIA for AyM.

Jess was assisted with the report writing by Shannon Davies, a Senior Ecologist at SLR with 4 years' experience as a professional ecologist and Qualifying member of CIEEM.

Additional technical support and Quality Assurance review has been provided by Duncan Watson, a Technical

Director at SLR Consulting with over 23 years' experience as a professional ecologist. Duncan is a Chartered Environmentalist (CEnv) and a full member of CIEEM (MCIEEM).



## 2.0 Methodology

### 2.1 Desk Study

A desk-based study for protected species records has been undertaken to identify sources of pre-existing ecological data of relevance, that could inform the EIA; this is reported within Table 2-1 of the PEA report. Subsequent to completion of the PEA report, an updated data request was made to Cofnod for records within c.2km of the DOL that were presented at Statutory Consultation and any relevant data received up to 8<sup>th</sup> September 2021 have been included in this report.

#### 2.1.1 Field Surveys

Otter survey was carried out at all watercourses crossing the DOL that were presented at Statutory Consultation, plus 250m up and downstream, as shown on Figure 1. Survey methods were informed by current references<sup>3</sup> and surveys took place in conjunction with surveys for water vole (below).

Water vole survey was carried out at all watercourses crossing the preferred cable corridor route, onshore substation or associated construction areas, plus 200m up and downstream as shown on Figure 1. Surveys were undertaken in accordance with standard methods<sup>4</sup>, which require up to two visits, two months apart, between April and October.

The section of the River Clwyd within the study area was surveyed (for otter only) by Jess Colebrook on 17<sup>th</sup>, 21<sup>st</sup> and 26<sup>th</sup> August 2020, 15<sup>th</sup> April 2021 and 3<sup>rd</sup> June 2021 (final visit to the west bank only). For health and safety reasons, the river was approached to within 2m of the bank edge. Binoculars were used to survey inaccessible areas at the bank edge and also to scan the opposite banks from distance. Given the type of vegetation present at the river, this is not considered to be a significant constraint to survey since signs of a path/slide, holt or couch would have been detected, spraints may however have been missed.

Surveys at all remaining areas were undertaken by Emma Clarke and Liz Probert from 14<sup>th</sup> - 17<sup>th</sup> June 2021 (Visit 1); and by Shannon Davies and Amy Gill between 23<sup>rd</sup> and 26<sup>th</sup> August 2021 (Visit 2). Full details of the dates and locations for survey are included at Appendix 1.

### 2.2 Limitations

#### 2.2.1 Desk Study

Desk study data are unlikely to be exhaustive, especially in respect of species, and are intended mainly to set a context for the study. It is therefore possible that protected species (in this case otter and water vole) not identified during the data search do in fact occur within the study area.

#### Field Survey

Survey access was impeded at some areas due to encroachment by dense scrub and/or vegetation. However, it is considered that sufficient access was possible at each water course such that the likely presence of either

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3 Chanin, P. (2003). 'Ecology of the European Otter', in Conserving Natura 2000 Rivers, Ecology Series No. 10, (Peterborough: English Nature).

Chanin, P. (2003). 'Monitoring the Otter', in Conserving Natura 2000 Rivers, Monitoring Series No 10, (Peterborough: English Nature).

4 Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). 'The Water Vole Mitigation Handbook', The Mammal Society Mitigation Guidance Series, Fiona Mathews and Paul Chanin (eds.), (London: The Mammal Society).

species would have been detected.

As already noted above, lack of access to within 2m of the River Clwyd bank is not considered a significant constraint to the otter survey, since signs of a path/slide, holt or couch would have been detected, though spraints may however have been missed.

An ecological study provides only a “snapshot” of the conditions prevailing at the time of survey. Lack of evidence at the time of survey does not necessarily preclude otter or water vole, both of which are highly mobile species, from being present within an area at a later date.




The above limitations are not considered to be significant, and given the site context and the types of habitat present, the level of survey is considered to be sufficient to meet the objectives listed in Section 1.3.





## 3.0 Results

### 3.1 Watercourse Descriptions




Summary descriptions for each water course surveyed are provided in Table 3-1, with locations shown on Figure 1. Further details for each, including the dates of survey and access constraints (if any) are included at Appendix 1.




**Table 3-1**  
**Watercourse Summary Description and Photo**

Watercourse Reference (Figure 1)	Photograph	Short description
River Clwyd		<p>Wide, tidal section of the River Clwyd; the banks are earth/silt but also include some reinforced rocky sections. Saltmarsh vegetation is present mainly to the west side, there is no visible in channel vegetation.</p> <p>The river was not subject to field survey for water vole. It is unsuitable for use by water vole at this location due to its tidal nature and the saltmarsh is periodically inundated.</p>
1		<p>Dry ditch bordered to the east by a hedgerow. The ditch is dominated by common reed <i>Phragmites australis</i> with tall grasses and herbs frequent along the top of the banks.</p>
2		<p>Ditch approximately 3m wide with steep banks and of high suitability for otter and water vole.</p> <p>The banks are dominated by common reed, tall grasses, herbs and tall ruderal vegetation with the occasional area of bramble <i>Rubus fruticosus</i> scrub.</p>




Watercourse Reference (Figure 1)	Photograph	Short description
3		Dry and shallow ditch located within grazing fields. The ditch is unshaded and dominated by herbs and grasses of similar characteristic to the adjacent fields with occasional bramble scrub.
4		The ditch was dry in June 2021 however held a small amount of water in part of the ditch in August 2021. The ditch is bordered by a hedgerow and occasional trees. The ditch is dominated by common reed and tall grasses.
5		Dry and shallow ditch located along the boundary of a grazing field. The ditch is bordered to the west by a hedgerow and is dominated by herbs and grasses with occasional bramble scrub.
6		Dry ditch bordered by a hedgerow to the west. The ditch is dominated by common reed, herbs and grasses.






Watercourse Reference (Figure 1)	Photograph	Short description
7		Ditch contained water toward the mid-section during both surveys. The ditch is bordered by a hedgerow and the banks and ditch base are dominated with tall grasses and occasional common reed.
8		Damp ditch bordered by a hedgerow on the southern bank. Ditch base and banks dominated by grasses and tall ruderal vegetation. Aquatic/marginal species present include brooklime <i>Veronica beccabunga</i> and false water-cress <i>Helosciadium nodiflorum</i> .
9		Damp ditch bordered by a hedgerow on the southern bank. Ditch base and banks dominated by grasses and tall ruderal vegetation.




Watercourse Reference (Figure 1)	Photograph	Short description
10		Dry ditch bordered by a hedgerow on the southern bank. Ditch base and banks dominated by dense common reed which extends up the northern bank to combine with a margin of tall grasses and herbs.
11		<p>Ditch comprising approximately 20-40cm of water flowing in a north-westerly direction. The ditch has steep banks, a silt base and is bordered by a grazed field; the ditch is subject to livestock disturbance and poaching.</p> <p>The ditch is bordered by a hedgerow on the north-eastern bank. The adjacent bank comprises short grasses and herbs contiguous with the grazed field. Aquatic/marginal vegetation within the ditch includes false water-cress, great willowherb <i>Epilobium hirsutum</i>, floating sweetgrass <i>Glyceria fluitans</i>, valerian <i>Valeriana officinalis</i>, meadowsweet <i>Flipendula ulmaria</i> and monkeyflower <i>Mimulus sp.</i></p>
12		Ditch comprising approximately 40-60cm of water with steep banks densely vegetated by tall grasses, herbs, rushes and aquatic vegetation including water-cress <i>Nasturtium officinale</i> , redshank <i>Persicaria maculosa</i> and mare's-tail <i>Equisetum arvense</i> .






Watercourse Reference (Figure 1)	Photograph	Short description
13		Large dry ditch with shallow banks and dominated with tall grasses, sedges and reeds including greater pond sedge <i>Carex riparia</i> , pendulous sedge <i>Carex pendula</i> , redshank and bulrush <i>Typha latifolia</i> . Further to the north willow <i>Salix sp</i> and other trees are more frequent along the banks.
14		<p>This section of the River Ffyddion is approximately 2m wide with a westerly flow, steep banks, gravel base and providing high suitability for otter and water vole.</p> <p>The northern part of this river section is bordered by woodland and a hedgerow to the north-east. A road bridge is then present, close to which otter spraints were recorded.</p> <p>Generally, reeds, sedges, herbs and tall grasses were at least frequent along the entirety of this section of river. Aquatic/marginal vegetation recorded includes water-cress, water figwort <i>Scrophularia umbrosa</i>, angelica <i>Angelica sylvestris</i>, water crowfoot <i>Ranunculus aquatilis</i>, brooklime, water-mint <i>Mentha aquatica</i> and floating sweet-grass. The water is clear and large fish were also recorded within deep pools.</p>
15		<p>This tributary to the River Ffyddion is approximately 2m wide comprising fast-flowing shallow water within reinforced banks.</p> <p>No aquatic vegetation is present although bordering habitats are dominated by tall ruderal vegetation, herbs and tall grasses.</p>

Watercourse Reference (Figure 1)	Photograph	Short description
16		Ditch holding a small amount of shallow water. The northern boundary comprises a hedgerow and a vehicular access track is located to the south. The ditch is immediately bordered by tall grasses, herbs and the marginal/aquatic vegetation present within the ditch includes water starwort <i>Callitriche sp</i> , water plantain <i>Alisma plantago-aquatica</i> , yellow iris <i>Iris pseudacorus</i> , water mint and common reed.
17		Damp ditch, adjacent to a vehicular access track and bordered to the south by a hedgerow. The ditch banks comprise tall grasses and herbs and the marginal/aquatic vegetation present within the ditch includes hemlock water-dropwort <i>Oenanthe crocata</i> , water mint, and common reed.
18		<p>This section of the River Ffyddion is approximately 2-5m wide with a westerly flow, varying bank profiles, with a silt and gravel base and providing high suitability for otter and water vole.</p> <p>This section of the river is bordered by grazed fields, the short grasses along the bank are similar to the adjacent field, although common reed grows within the flow and hawthorn <i>Crataegus monogyna</i> and elder <i>Sambucus nigra</i> trees are occasionally present along its length. Marginal/aquatic vegetation within the river includes water-cress, water crowfoot and branched bur-reed <i>Sparganium erectum</i>.</p> <p>The water is clear and deep pools are present along this section of river.</p>









Watercourse Reference (Figure 1)	Photograph	Short description
19		Dry ditch bordered by a hedgerow along the eastern bank. The ditch base and banks are dominated by tall grasses and herbs.
20		Ditch comprising approximately 20cm of water in places, located within grazing fields. The ditch is unshaded and dominated by herbs and grasses of similar species to the adjacent fields. Where water is present within the ditch aquatic/marginal vegetation such as foals water-cress, water plantain and hard rush <i>Juncus inflexus</i> are present.
21		<p>This section of the River Ffyddion is approximately 3-5m wide with a westerly flow, steep earth banks, earth base and small weirs providing high suitability for otter and water vole.</p> <p>Generally, reeds, sedges, herbs and tall grasses were at least frequent along the entirety of this section of river. Aquatic/marginal vegetation recorded includes water-cress, water figwort, angelica, water crowfoot, brooklime, water-mint and floating sweet-grass. The water is clear and large fish were also recorded within deep pools.</p>

Watercourse Reference (Figure 1)	Photograph	Short description
22		<p>Ditch comprising approximately 30cm of water in places, located within grazing fields.</p> <p>The banks are dominated by herbs, grasses, rushes and sedges of similar characteristic to the adjacent fields. Where water is present within the ditch aquatic/marginal vegetation such as fools water-cress, water crowfoot, water starwort, and water plantain are present.</p>
23		<p>Dry and shallow ditch located along the boundary of grassland fields. The ditch was unshaded and dominated by herbs and tall grasses of similar characteristic to the adjacent fields with occasional sedges and rushes.</p>
24		<p>Dry ditch located along the boundary of grassland fields. The ditch was largely unshaded and dominated by herbs and tall grasses of similar characteristic to the adjacent fields with occasional sedges and rushes.</p>




Watercourse Reference (Figure 1)	Photograph	Short description
25		Dry ditch dominated by scrub including hawthorn, bramble and dog-rose <i>Rosa canina</i> .
26		Damp ditch bordering grazing fields and a defunct hawthorn hedgerow. The ditch channel is dominated by tall grasses, herbs and occasional clumps of soft rush <i>Juncus effusus</i> .
27		Mostly dry ditch holding pools of water in places. A hedgerow borders the eastern bank, and the channel was dominated by tall grasses in June 2021. However, the channel had been cleared resulting in limited vegetation in August 2021.






Watercourse Reference (Figure 1)	Photograph	Short description
28		Dry ditch fenced off on both sides and with a hawthorn hedge on the eastern bank and dense bramble on the western bank. The banks and channel are dominated by tall grasses and/or bramble.
29		Dry ditch bordered by a defunct hawthorn hedgerow along the eastern bank. The ditch channel comprises tall grasses, herbs and occasional clumps of soft rush and bramble.
30		Dry ditch located along the boundary of grazing fields, and partially shaded by a hawthorn hedge along the western bank. The ditch channel comprises tall grasses, herbs and frequent clumps of soft rush.




Watercourse Reference (Figure 1)	Photograph	Short description
32		Damp ditch bordering a field, and largely shaded by an adjacent outgrown hedgerow along the western bank. The ditch channel is dominated by tall grasses and herbs such as nettle <i>Urtica dioica</i> .
33		Dry ditch bordering grassland and arable fields. The ditch channel comprises tall grasses, herbs and occasional clumps of soft rush.
34		Dry ditch bordering a field, and largely shaded by adjacent outgrown hedgerow along the western bank. The ditch channel comprises tall grasses with herbs such as nettle and rushes.






Watercourse Reference (Figure 1)	Photograph	Short description
35		Dry ditch bordering grassland fields and shaded by scattered hawthorn shrubs. The ditch channel comprises tall grasses, herbs and frequent clumps of rushes and sedges.
36		Dry ditch bordering a grassland field and bordered to the west by a hawthorn hedgerow. The ditch channel comprises tall grasses, herbs and occasional clumps of rushes and sedges.
37		Dry ditch bordering a grassland field and a hawthorn hedgerow and busy road to the south. The ditch channel comprises tall grasses, herbs and bramble scrub.




Watercourse Reference (Figure 1)	Photograph	Short description
38		Dry ditch bordered by a grassland field, the vegetation within the channel comprises tall and short grasses of similar characteristics to the adjacent field. A hawthorn hedgerow is located along the western bank.
39		Dry ditch bordering grassland fields and shaded by scattered hawthorn shrubs. The ditch channel comprises tall grasses, herbs and frequent clumps of rushes and sedges.
40		Dry ditch bordered by a grassland field and fenced on both banks. The vegetation within the channel is dominated by herbs and tall grasses. A hawthorn hedgerow is located along the southern bank.
41	No photograph	This is a continuation of Ditch 40 and is bordered by grassland fields and fenced on both banks. The vegetation within this section is dominated by dense common reed. The hawthorn hedgerow continues to be located along the southern bank.






Watercourse Reference (Figure 1)	Photograph	Short description
42		Ditch bordered by grassland fields and fenced on both banks. The ditch is approximately 2.5m wide, with a silt and earth base and banks and holds water. The eastern bank comprises a treeline of poplars <i>Populus sp</i> and the banks are dominated by tall grasses and herbs. Aquatic vegetation within the ditch includes water plantain, water starwort, and floating sweet-grass.
43		Ditch bordered by grassland fields and heavily poached by livestock on the eastern bank. The ditch is approximately 2.5m wide, with a silt and earth base and banks and holds water. The western bank comprises tall grasses and herbs. Aquatic vegetation within the ditch includes water plantain, water starwort, duckweed <i>Lemna sp</i> , floating sweet-grass and common reed.
44		Ditch bordered by grassland fields, fenced on both banks and subject to clearance between the June and August 2021 surveys. The ditch is approximately 3.5m wide, with a silt and earth base and banks and holds water. Trees are located along the southern bank but have been subject to management. The banks are vegetated by grasses and herbs. Aquatic vegetation within the ditch includes water plantain, water starwort, and duckweed.






Watercourse Reference (Figure 1)	Photograph	Short description
45		Damp ditch bordered by grassland fields and subject to dredging between the June and August 2021 surveys. The banks are dominated by rushes, sedges, grasses and herbs. Aquatic vegetation is rare but includes water starwort and floating sweet-grass.
46		Damp ditch with pools of water bordered by grassland fields and subject to poaching from livestock. The ditch was cleared between the June and August 2021 surveys, resulting in steep-sided banks and a new pond creation at the northern end of this ditch section. A hawthorn hedgerow is located along the southern bank, with scattered trees. The banks are dominated by grasses with occasional soft and hard rush clumps.
47		Damp ditch with pools of water bordered by grassland fields. The ditch was cleared between the June and August 2021 surveys. The banks are dominated by rushes, sedges, grasses and herbs of similar characteristic of the adjacent fields. Aquatic vegetation is rare but includes water starwort, water plantain, fool's water-cress, floating sweet-grass, duckweed and water forget-me-not <i>Myosotis scorpioides</i> .




Watercourse Reference (Figure 1)	Photograph	Short description
48		Damp ditch bordered by grassland fields and fenced on both sides. The banks are dominated by rushes, sedges, grasses and herbs of similar characteristic of the adjacent fields and ditches.
49		Ditch bordered by grassland fields, fenced on both banks. The ditch was cleared between the June and August 2021 surveys. The ditch is approximately 2m wide, with a silt and earth base and banks and holds water. Trees are located along the bank but have been subject to management. The banks are vegetated by occasional grasses and herbs.
50		<p>Ditch located adjacent to grassland fields and woodland. The ditch comprises an earth and silt base and banks, is approximately 2m wide and holds approximately 50cm of water flowing in a westerly direction. A hawthorn hedgerow is located along the southern bank and woodland along half of its length to the north.</p> <p>The banks are dominated by tall grasses and herbs. A polecat <i>Mustela putorius</i> was recorded with a small fish during the survey of this ditch.</p>






Watercourse Reference (Figure 1)	Photograph	Short description
51a		<p>Ditch located adjacent to arable fields and fenced on both sides. The ditch comprises earth and silt base and banks, is approximately 2.5m wide and holds approximately 20cm of water.</p> <p>The banks are dominated by tall grasses and herbs. A bankside tree is located in the centre of the ditch section and aquatic vegetation is rare and limited to foals water-cress.</p>
51b		<p>Ditch located adjacent to arable fields and farm track. The ditch comprises an earth and silt base and banks, is approximately 2.5m wide and holds approximately 5cm of water.</p> <p>A hawthorn hedgerow is present to the east and the banks are dominated by tall grasses and herbs and occasional bramble scrub.</p>
52		<p>Ditch located adjacent to an arable field and a lane and fenced on both sides. The ditch comprises earth and gravel base and banks, is approximately 2m wide and holds approximately 10cm of water flowing in a northerly direction.</p> <p>The banks are dominated by tall grasses and herbs with occasional bramble scrub.</p>

Watercourse Reference (Figure 1)	Photograph	Short description
53		<p>Ditch located adjacent to an arable field and a lane and fenced on both sides. The ditch comprises earth and gravel base and banks, is approximately 1m wide and holds approximately 10cm of water flowing in a northerly direction.</p> <p>The banks are dominated by bramble scrub, tall grasses and herbs including nettles and thistle <i>Cirsium sp.</i> Scattered trees are also present along the length of the watercourse.</p>
54		<p>Ditch located adjacent to arable fields. The ditch comprises earth substrate. It is approximately 1.5m wide and 0.75m deep with a water depth of approximately 10cm.</p> <p>The banks are dominated by scrub and trees, including hawthorn, bramble and dog rose.</p>
55		<p>Dry ditch located between two fields of pasture. It is approximately 0.25m deep, 1m wide and dominated by grass species, including meadow foxtail <i>Alopecurus pratensis</i>, false oat grass <i>Arrhenatherum elatious</i> and Yorkshire fog <i>Holcus lanatus</i>.</p>



Watercourse Reference (Figure 1)	Photograph	Short description
56		<p>Ditch with arable land to the east and woodland to the west. It is approximately 3.5m wide and 2.5m deep, with an approximate water depth of 0.25m.</p> <p>The banks are dominated by tall grasses and herbs. Bramble and dog rose, plus mature beech <i>Fagus sylvatica</i> trees were noted on both banks, along with sycamore <i>Acer pseudoplatanus</i>, hazel <i>Corylus avellana</i> and holly <i>Ilex aquifolium</i>.</p>
57		<p>Dry ditch comprising earth banks and bed bordered by arable fields. It is an estimated 1m wide and 1.5m deep. Banks are densely vegetated and include common nettle, bramble and blackthorn <i>Prunus spinosa</i>.</p>
58		<p>Dry ditch approximately 1m wide and 0.5m deep located between two arable fields. The ditch is densely vegetated, dominated by herbs and grasses, including great willowherb, false oat grass and cock's foot <i>Dactylis glomerata</i>.</p> <p>The invasive non-native Himalayan balsam <i>Impatiens glandulifera</i> was noted at the western extent of the ditch section.</p>

Watercourse Reference (Figure 1)	Photograph	Short description
59		<p>Dry ditch between pasture fields and fenced on the west side. It is approximately 1.5m wide and &lt;0.5m deep.</p> <p>Within the ditch, species included hard rush, meadow foxtail and hart's tongue fern <i>Asplenium scolopendrium</i>.</p>
60		<p>The ditch was not evident, it was found dry, and the banks were classified as flat. Species included cock's foot, oak <i>Quercus robur</i>, nettle and bramble.</p> <p>Arable land surrounded the location.</p>
61		<p>Ditch located between a private garden to the west and pasture to the east. The width of the ditch varies between approximately 1.5m to 2m, it is 0.5m deep and contains 5cm of water.</p> <p>The banks are vegetated with tall grasses, herbs and scrub, including perennial rye-grass <i>Lolium perenne</i>, hawthorn and floating sweet-grass.</p>
62	No photograph	<p>Field ditch with arable field and hedgerow to the east and livestock to the west. It is 1.5-2m wide, 50cm deep and holds 10 – 20cm depth of water.</p> <p>The banks comprise tall grasses, ruderal species and scrub. Aquatic and marginal plants include fools water cress, hard rush, water mint and floating sweet-grass.</p>

## 3.2 Otter Evidence

Review of the most recent Cofnod data confirmed that there are 25 records of otter within the 2km Study Area, mainly from the River Clwyd, Afon Gele and Afon Elwy. No records for otter holts are contained in the available data, but a mother and two cubs were recorded in 2006 and 2007 on the River Clwyd at Rhuddlan. The Cofnod dataset includes a single record for otter within the Survey Area; it has previously been recorded at Watercourse 14.

A fresh spraint was noted on the west bank of the River Clwyd at Rhuddlan on 17<sup>th</sup> August 2020, at grid reference SJ 01691 78415.

Otter spraints were also recorded on 24<sup>th</sup> August 2021 at two locations on the Glanffyddion (Watercourses 14 and 21) at grid reference SJ 03200 79474 and SJ 01400 78748, respectively.

No other evidence of otter was noted during surveys.

Figure 1 shows the location of otter records from desk study and field survey data for the Survey Area and immediately surrounding area.

## 3.3 Water Vole Evidence

Review of the most recent Cofnod data confirms that there are 58 records of water vole within the 2km Study Area; predominantly at ditches and drains in the low-lying fields in the northern part of the Study Area near Prestatyn, Rhyl and Abergele. Within the Survey Area, water vole was recorded “before 2004” at Watercourse 14 and potentially also in 2000 at Watercourses 11, 12 or 13; the Aberkinsey stream is the stated location, the co-ordinates provided relate to the 1km grid square within which these watercourses are located. No additional detail is provided with the historical data such as to whether these records are for latrines, burrows or sightings.

Conclusive evidence of water vole presence in the form of latrines or sightings was not found during the 2021 surveys. However, burrows that may potentially be used by the species were recorded at Watercourses 14, 18, 21, 22 and 49, as detailed in Table 3-2.

Figure 1 shows the location of water vole records and potential burrows from desk study and field survey data for the Survey Area and immediately surrounding area.

**Table 3-2**  
**Potential water vole burrow locations**

Watercourse No.	Date	Surveyor	Easting	Northing	Evidence Details
14	15.06.2021	EC	303045	379428	3 potential burrows between 20-40cm above water line. Approx. 5-10cm wide. Not deep-can see back of them from opposite bank.
14	15.06.2021	EC	302920	379196	1 potential burrow. Entrance pointing down towards stream. Approx. 10cm wide.

Watercourse No.	Date	Surveyor	Easting	Northing	Evidence Details
14	24.08.2021	SD&AG	303017	379398	One burrow large enough for water vole, multiple other small mammal burrows in the vicinity.
14	24.08.2021	SD&AG	303018	379388	One burrow large enough for water vole at the water level, multiple other small mammal burrows above.
18	15.06.2021	EC	302537	379087	Several holes large enough for water vole at the southern bank.
18	24.08.2021	SD&AG	302516	379104	One burrow large enough for water vole.
18	24.08.2021	SD&AG	302517	379100	One burrow large enough for water vole.
21	24.08.2021	SD&AG	301695	378796	Burrow with slip into the water.
21	24.08.2021	SD&AG	301489	378761	Potential burrow at water level.
21	24.08.2021	SD&AG	301350	378718	Potential burrow.
22	24.08.2021	SD&AG	301423	378422	Burrow large enough for water vole on southern bank.
49	25.08.2021	SD&AG	301630	376903	Potential burrow under tree on the northern bank.
49	25.08.2021	SD&AG	301670	376888	Two mammal burrows large enough for water vole on the northern bank, obscured by vegetation.

### 3.4 Other Mammal Field Signs

Signs of brown rat *Rattus norvegicus*, and field vole *Microtus agrestis* /bank vole *Myodes glareolus*, including burrows, footprints and runs were frequently recorded along the length of many of the surveyed watercourses.

An old mink *Neovison vison* scat was recorded on 24<sup>th</sup> August 2021 on a protruding boulder at Watercourse 21, near the pedestrian bridge along the Glanfyddion just east of the River Clwyd at grid reference SJ 01394 78742.

A polecat was sighted at Watercourse 50.



## 4.0 Discussion & Evaluation of Results

### 4.1 Otter

Otter is confirmed to occur within the Survey Area at the River Clwyd and Glanfyddion Cut (which comprises Watercourses 14, 18 and 21 on Figure 1). Relatively limited evidence was found during the surveys in 2021, just two spraints on the Glanfyddion Cut and one on the River Clwyd (though the tidal nature of the river at this point would regularly remove signs).

Based on the relative lack of evidence within the survey area it is considered most likely that otters are periodically using the Glanfyddion watercourse for foraging and movement. High quality hunting opportunities are present at the watercourse and the woodland, trees, scrub and rushes growing along the edges of the watercourse provide potential habitat for sheltering and/or breeding (although no evidence of such use was recorded).

The River Clwyd is also recorded to support otter and is highly suitable for passage, foraging and shelter. The section within the Survey Area is relatively disturbed by the adjacent public rights of way on both banks, which are regularly used by dogwalkers. This is considered to significantly reduce its potential for sheltering otter, though this remains possible in areas of denser, taller vegetation. The saltmarsh areas adjacent to the river, within 100m of the DOL that were presented at Statutory Consultation have been repeatedly visited and observed during other field surveys (notably the habitat survey, badger survey, wintering and breeding bird surveys) and with the exception of a single spraint, no additional evidence of otter has been noted.

It is likely that other watercourses within the survey area could occasionally be used by this species for passage; those with sufficient water to support fish or amphibian populations may also be used on occasion, or seasonally, for foraging.

### 4.2 Water Vole

No conclusive evidence of water vole presence was found in any of the surveyed watercourses in 2021. However, desk study information suggests that the species was recorded “before 2004” at Watercourse 14 and potentially also in 2000 at Watercourses 11, 12 and/or 13.

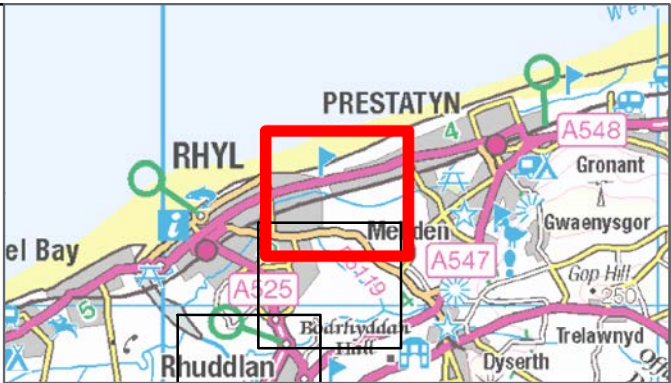
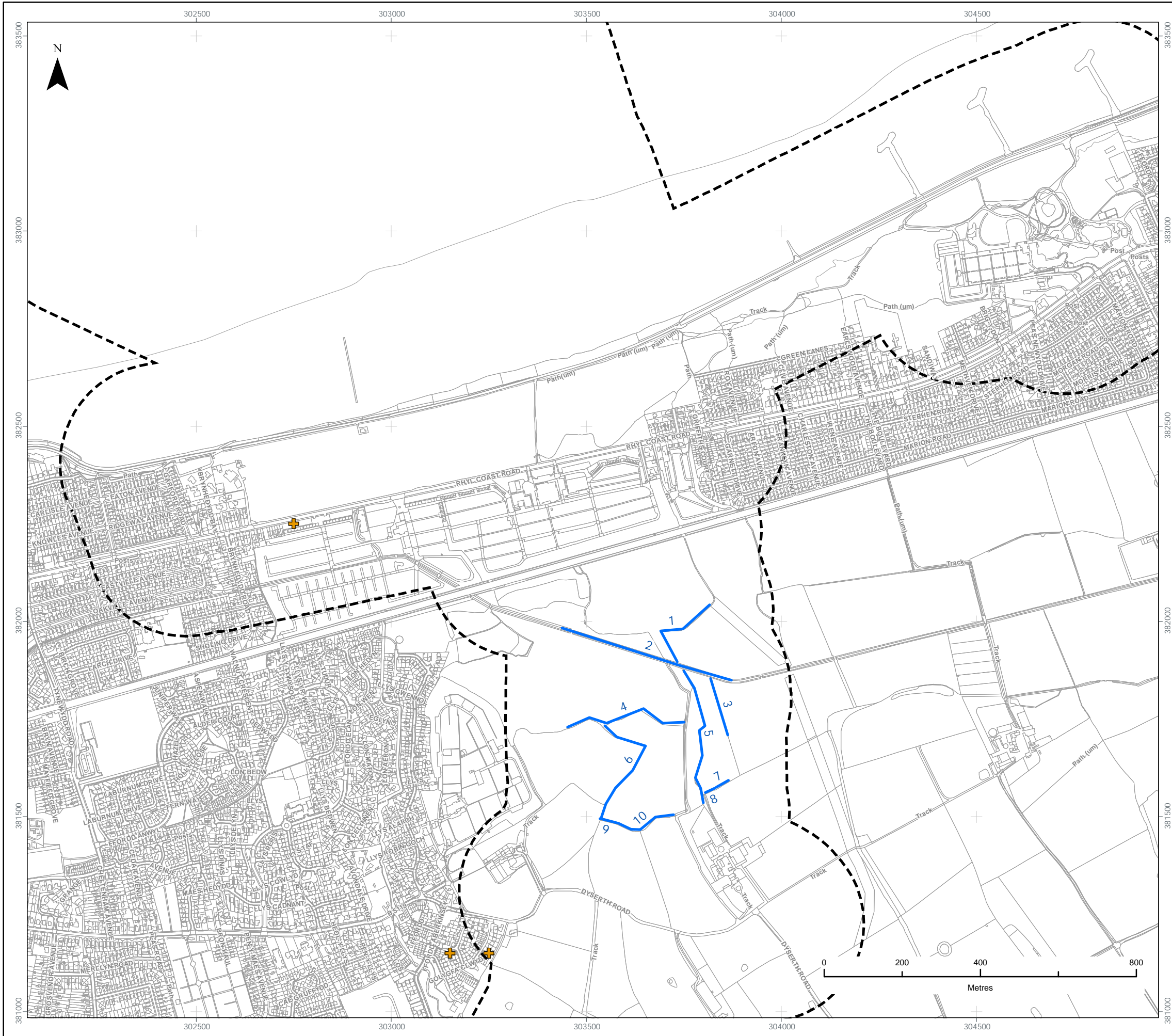
Of those surveyed, the Glanfyddion (Watercourses 14, 18, 21 on Figure 1) provides the most suitable habitat for water vole, in places appearing ideal and including potential burrows. Potential burrows were also noted at Watercourses 22 and 49. However, if the species was present it is considered that latrine and/or other evidence would have been noted. It is possible that the presence of mink (spraint recorded at Watercourse 21 at the confluence of Glanfyddion and River Clwyd), may have had a negative impact on water vole numbers due to predation.

The survey area is considered unlikely to support a population of water vole at present. However, the presence of possible burrows, the relatively high mobility of water vole and the number of records in the wider Study Area means it is possible that this species may recolonise the most suitable watercourses within the Survey Area in the future.

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## FIGURE 01

### Otter and Water Vole Survey Pre-existing Records and 2021 Survey Results



**LEGEND**

- Draft Order Limits 250 m Buffer
- Watercourse Subject to Survey - No Evidence Present
- Water Vole Record - Cofnod

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FIGURE TITLE:  
**OTTER AND WATER VOLE SURVEY - PRE-EXISTING  
RECORDS AND 2021 SURVEY RESULTS**

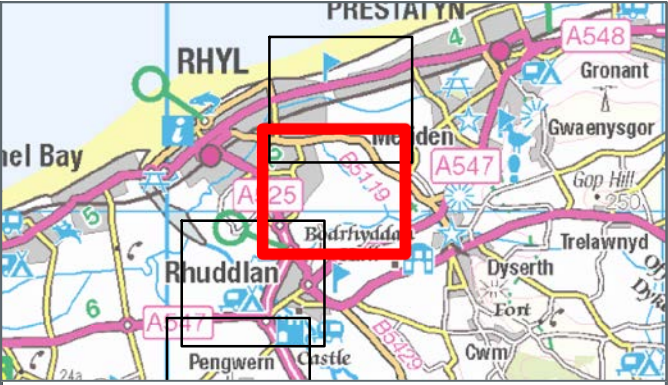
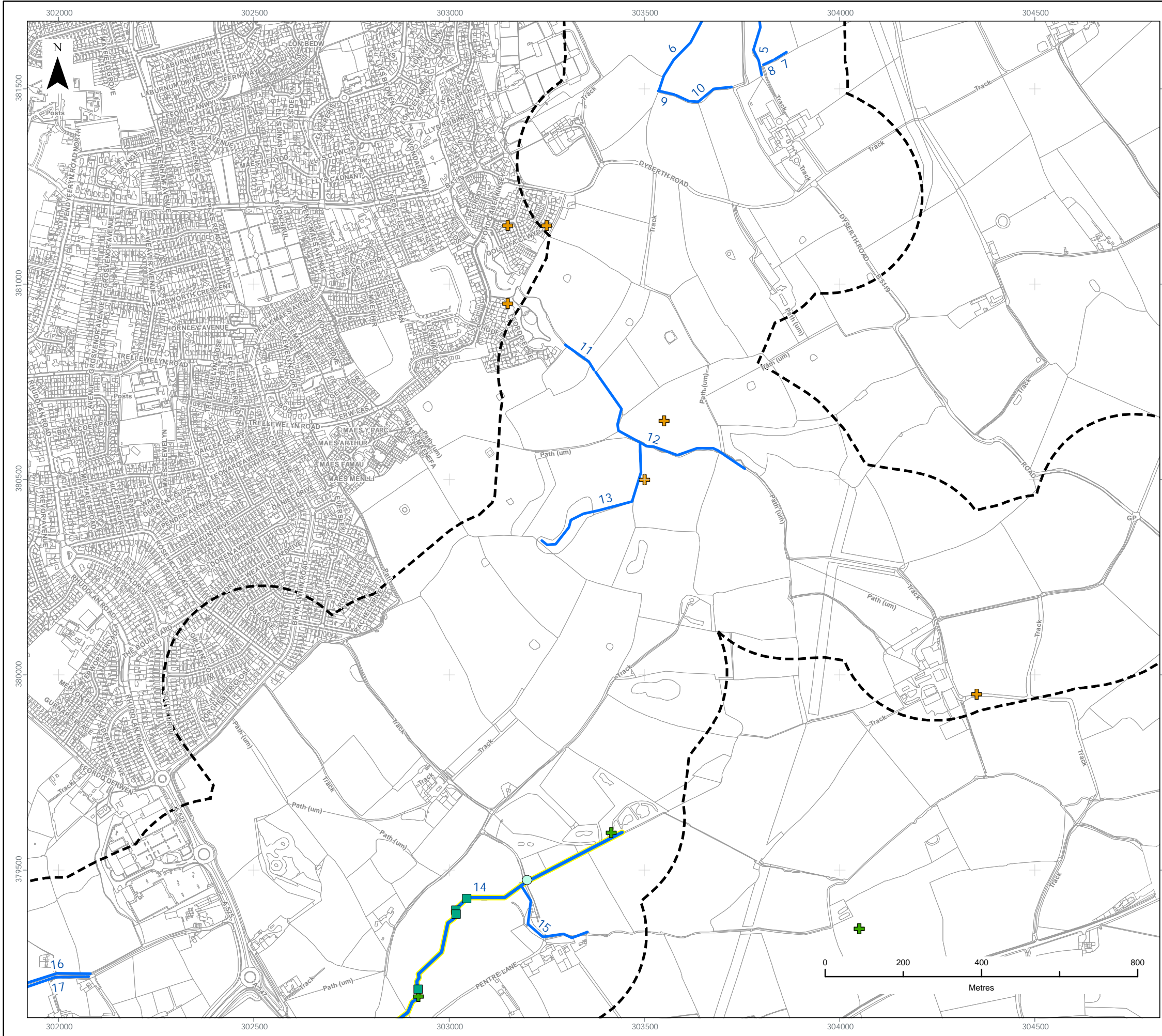
VER	DATE	REMARKS	Drawn	Checked
1	02/11/2021	Draft	JRS	MF

FIGURE NUMBER:  
**FIGURE 1**  
Page 1 of 5

SCALE: <b>1:10,000</b>	PLOT SIZE: A3	DATUM: ODN	COORDINATE SYSTEM: British National Grid
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- LEGEND**
- Draft Order Limits 250 m Buffer
  - Watercourse Subject to Survey - Evidence Present
  - Watercourse Subject to Survey - No Evidence Present
  - Potential Water Vole Burrow - 2021 Survey
  - Otter Spraint - 2021 Survey
  - Otter Record - Cofnod
  - Water Vole Record - Cofnod

Data Source:  
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FIGURE TITLE:  
**OTTER AND WATER VOLE SURVEY - PRE-EXISTING  
RECORDS AND 2021 SURVEY RESULTS**

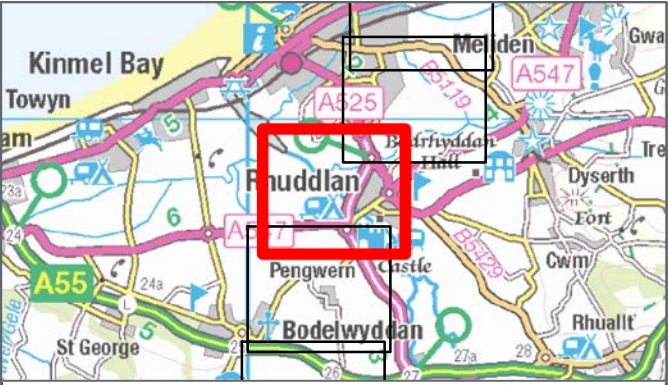
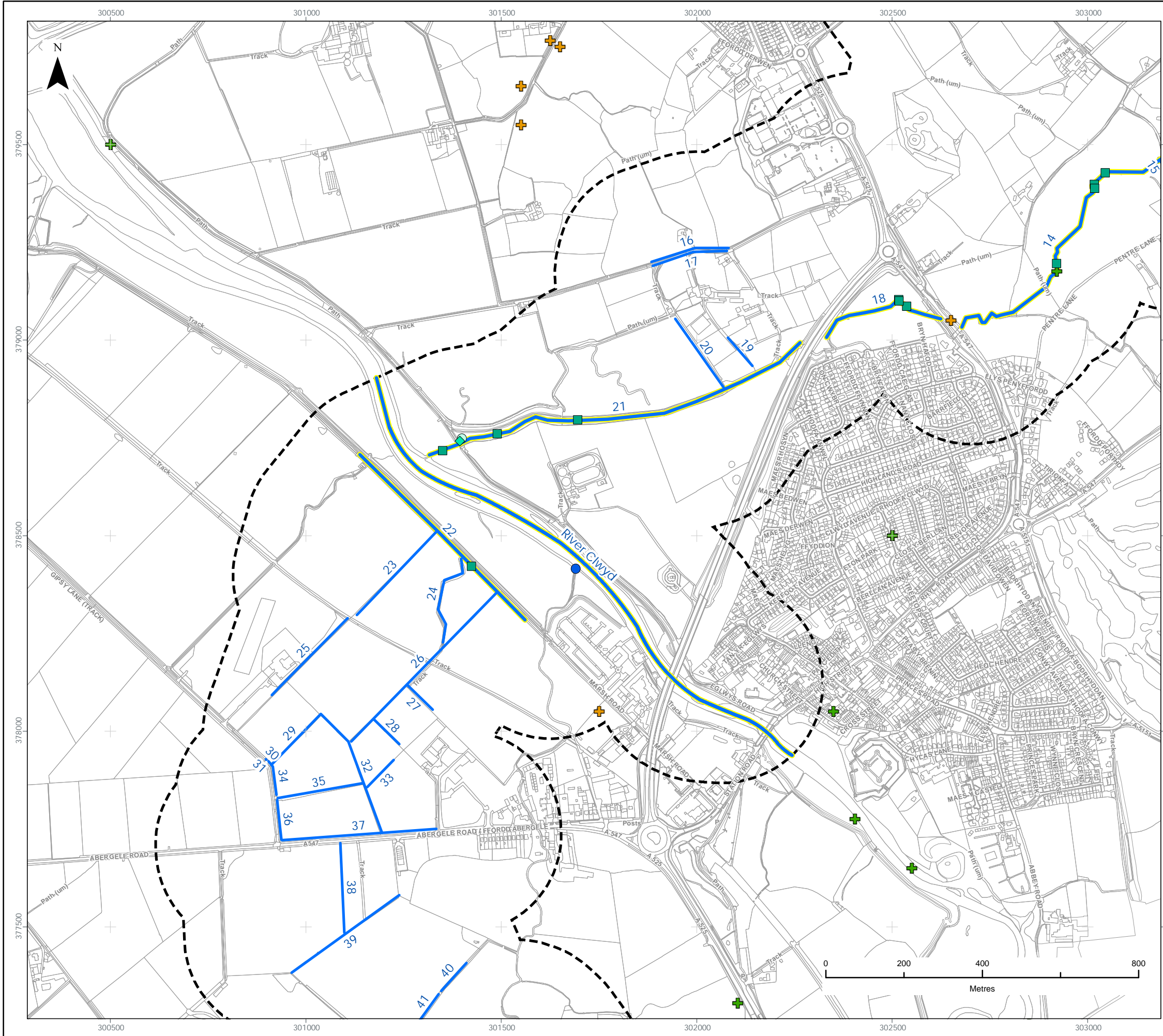
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1	02/11/2021	Draft	JRS	MF

FIGURE NUMBER:  
**FIGURE 1**  
Page 2 of 5

SCALE: 1:10,000 PLOT SIZE: A3 DATUM: ODN COORDINATE SYSTEM: British National Grid







**LEGEND**

- Draft Order Limits 250 m Buffer
- Watercourse Subject to Survey - Evidence Present
- Watercourse Subject to Survey - No Evidence Present
- Potential Water Vole Burrow - 2021 Survey
- Mink Dropping - 2021 Survey
- Otter Spraint - 2021 Survey
- Otter Spraint - 2020 Survey
- Otter Record - Cofnod
- Water Vole Record - Cofnod

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FIGURE TITLE:  
**OTTER AND WATER VOLE SURVEY - PRE-EXISTING  
RECORDS AND 2021 SURVEY RESULTS**

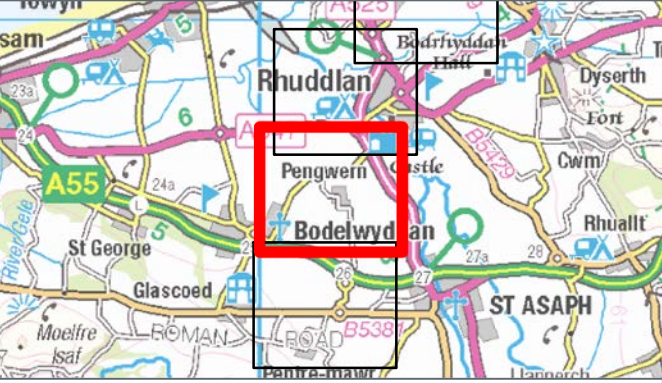
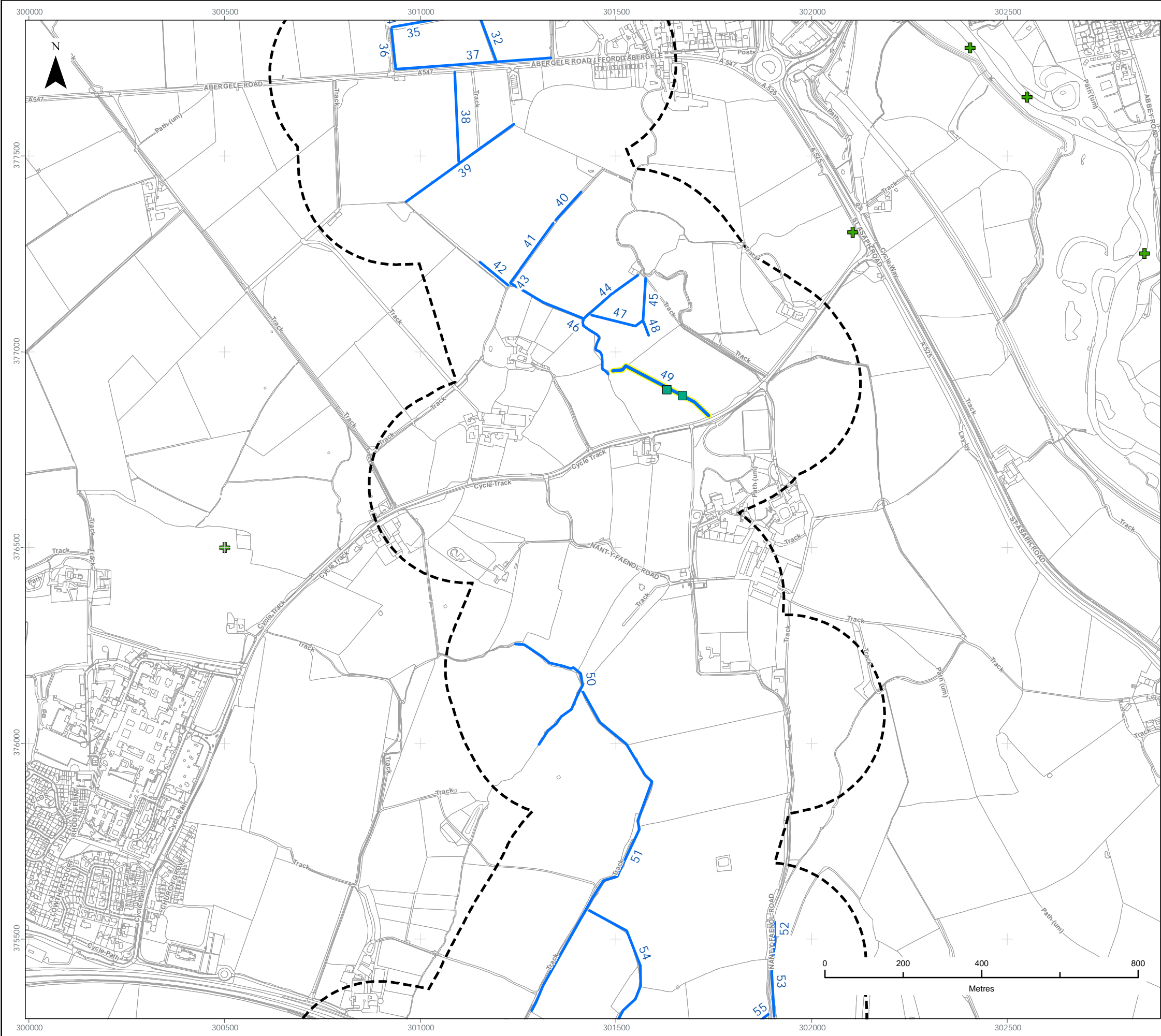
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FIGURE NUMBER:  
**FIGURE 1**  
Page 3 of 5

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**LEGEND**

- Draft Order Limits 250 m Buffer
- Watercourse Subject to Survey - Evidence Present
- Watercourse Subject to Survey - No Evidence Present
- Potential Water Vole Burrow - 2021 Survey
- Otter Record - Cofnod

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FIGURE TITLE:  
**OTTER AND WATER VOLE SURVEY - PRE-EXISTING  
RECORDS AND 2021 SURVEY RESULTS**

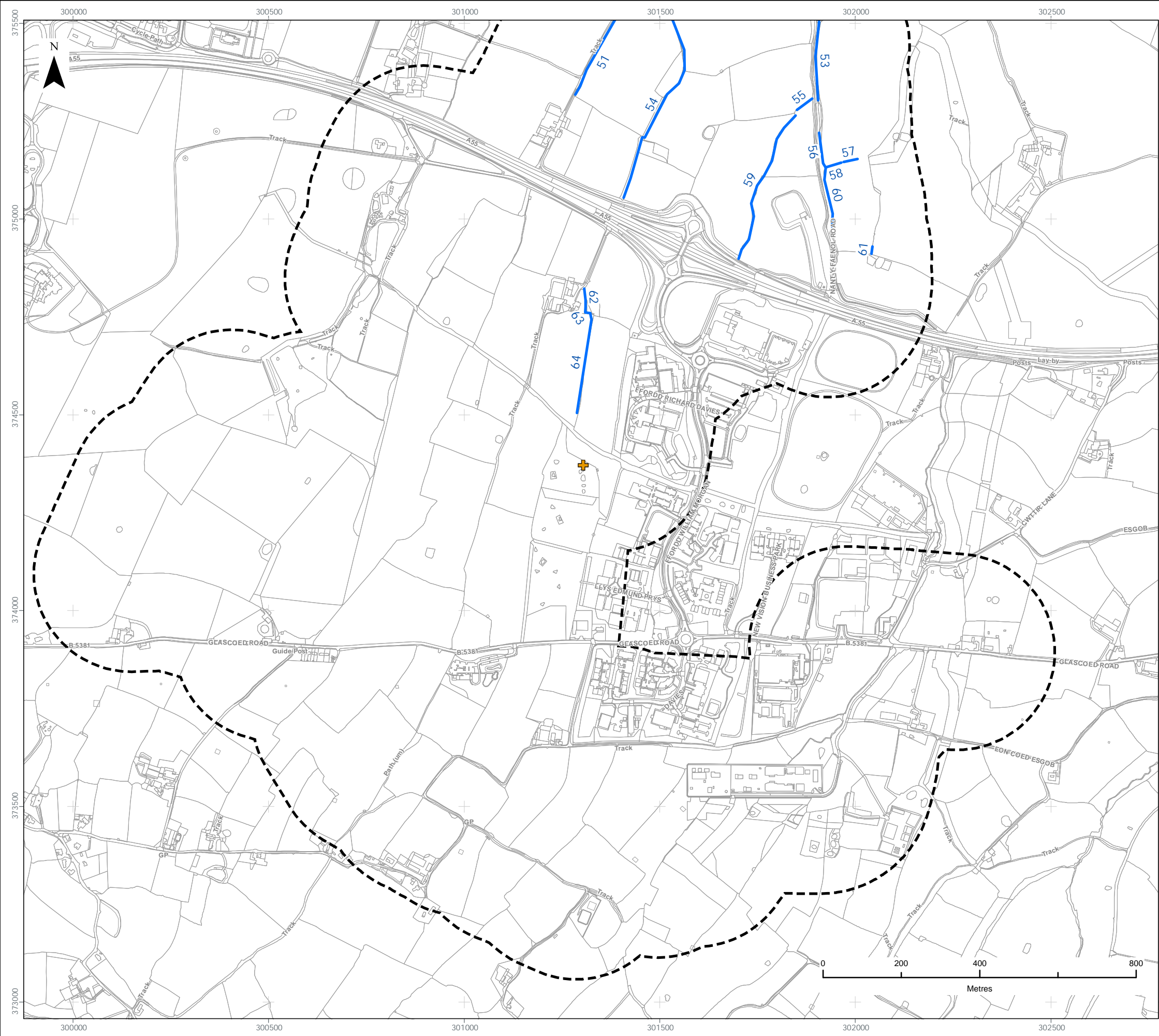
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FIGURE NUMBER:  
**FIGURE 1**  
Page 4 of 5

SCALE: 1:10,000	PLOT SIZE: A3	DATUM: ODN	COORDINATE SYSTEM: British National Grid
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**LEGEND**

- Draft Order Limits 250 m Buffer
- Watercourse Subject to Survey - No Evidence Present
- Water Vole Record - Cofnod

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FIGURE TITLE:  
**OTTER AND WATER VOLE SURVEY - PRE-EXISTING  
RECORDS AND 2021 SURVEY RESULTS**

VER	DATE	REMARKS	Drawn	Checked
1	02/11/2021	Draft	JRS	MF

FIGURE NUMBER:  
**FIGURE 1**  
Page 5 of 5

SCALE: 1:10,000	PLOT SIZE: A3	DATUM: ODN	COORDINATE SYSTEM: British National Grid
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## APPENDIX 1

Survey dates and locations plus watercourse descriptions



## Survey Dates and Locations

Watercourse No	Section (if applicable)	Date	Surveyor	Start Easting	Start Northing	End Easting	End Northing	Access Constraints
River Clwyd		17.08.2020 21.08.2020 26.08.2020 15.04.2021	JC	301187	378863	301713	378431	Deep mud and steep banks adjacent to waterside.
River Clwyd		03.06.2021 (west bank only)	JC	301187	378863	301713	378431	Deep mud and steep banks adjacent to waterside.
1		14.06.2021	EC	303685	381966	303731	381901	Completely dominated by vegetation
1		23.08.2021	SD&AG	303685	381966	303731	381901	Completely dominated by vegetation
2		14.06.2021	EC	303724	381890	303930	381851	Access via the southern bank only
2		23.08.2021	SD&AG	303724	381890	303930	381851	Access via the southern bank only
3		14.06.2021	LP	303815	381853	303858	381719	None
3		23.08.2021	SD&AG	303815	381853	303858	381719	None
4	A	14.06.2021	LP	303462	381734	303566	381746	None
4	A	23.08.2021	SD&AG	303462	381734	303566	381746	None
4	B	14.06.2021	LP	303569	381748	303746	381733	None
4	B	23.08.2021	SD&AG	303569	381748	303746	381733	Dense vegetation
5		14.06.2021	LP	303746	381876	303791	381577	None
5		23.08.2021	SD&AG	303746	381876	303791	381577	None
6		14.06.2021	LP	303545	381731	303537	381499	None
6		23.08.2021	SD&AG	303545	381731	303537	381499	Dense vegetation
7		14.06.2021	EC	303890	381610	303839	381582	None
7		23.08.2021	SD&AG	303890	381610	303839	381582	None
8		14.06.2021	EC	303791	381577	303821	381575	None
8		23.08.2021	SD&AG	303791	381577	303821	381575	None

Watercourse No	Section (if applicable)	Date	Surveyor	Start Easting	Start Northing	End Easting	End Northing	Access Constraints
9		14.06.2021	EC	303584	381490	303544	381501	Dense vegetation
9		23.08.2021	SD&AG	303584	381490	303544	381501	Dense vegetation
10		14.06.2021	EC	303714	381508	303584	381490	Dense vegetation
10		23.08.2021	SD&AG	303714	381508	303584	381490	Dense vegetation
11		14.06.2021	EC	303370	380779	303339	380818	None
11		24.08.2021	SD&AG	303370	380779	303339	380818	None
12	A	14.06.2021	EC	303378	380770	303420	38705	None
12	A	24.08.2021	SD&AG	303378	380770	303420	38705	None
12	B	14.06.2021	EC	303420	380705	303429	380625	None
12	B	24.08.2021	SD&AG	303420	380705	303429	380625	None
13	A	14.06.2021	LP	303241	380329	303360	380411	Dense vegetation
13	A	24.08.2021	SD&AG	303241	380329	303360	380411	Dense vegetation
13	B	14.06.2022	LP	303360	380411	303388	380419	Dense vegetation
13	B	24.08.2021	SD&AG	303360	380411	303388	380419	Dense vegetation
13	D	14.06.2023	LP	303476	380460	303487	380585	None
13	D	24.08.2021	SD&AG	303476	380460	303487	380585	None
14	A	15.06.2021	EC	303354	379546	303199	3794473	Dense vegetation
14	A	24.08.2021	SD&AG	303354	379546	303199	3794473	Dense vegetation
14	B	15.06.2021	EC	303194	379470			Fenced in places
14	B	15.06.2021	EC	303194	379470			Fenced in places
14	B	24.08.2021	SD&AG	303194	379470			Fenced in places
14	B	24.08.2021	SD&AG	303194	379470			Fenced in places
15	A	15.06.2021	LP	303152	379436	303201	379373	None
15	A	24.08.2021	SD&AG	303152	379436	303201	379373	None
15	B	15.06.2021	EC	303201	379373	303244	379327	Dense vegetation
15	B	24.08.2022	SD&AG	303201	379373	303244	379327	Dense vegetation

Watercourse No	Section (if applicable)	Date	Surveyor	Start Easting	Start Northing	End Easting	End Northing	Access Constraints
15	C	15.06.2021	EC	303244	379327	303352	379337	None
15	C	24.08.2021	SD&AG	303244	379327	303352	379337	Dense vegetation
16		15.06.2021	EC	302062	379231	301895	379197	View of south bank restricted by hedgerow
16		24.06.2021	SD&AG	302062	379231	301895	379197	View of south bank restricted by hedgerow
17		15.06.2021	LP	301899	379195	302072	379227	None
17		24.06.2022	SD&AG	301899	379195	302072	379227	None
18		15.06.2021	EC	302591	379071	302379	379063	None
18		24.08.2021	SD&AG	302591	379071	302379	379063	Dense vegetation
19		15.06.2021	EC	302086	379000	302144	378932	None
19		24.08.2021	SD&AG	302086	379000	302144	378932	None
20		15.06.2021	EC	302057	378903	301938	379060	None
20		24.08.2021	SD&AG	302057	378903	301938	379060	None
21		15.06.2021	LP	302271	378992	301321	378705	Fenced off on both sides
21		24.08.2021	SD&AG	302271	378992	301321	378705	Fenced off on both sides and densely vegetated
22		15.06.2021	EC	301156	378689	301608	378239	None
22		24.08.2021	SD&AG	301156	378689	301608	378239	Dense vegetation
23		16.06.2021	EC	301326	378512	301117	378294	None
23		24.08.2021	SD&AG	301326	378512	301117	378294	None
24		15.06.2021	EC	301392	378439	301324	378186	None
24		24.08.2021	SD&AG	301392	378439	301324	378186	None
25		16.06.2021	EC	301107	378284	300927	378109	Areas of dense scrub
25		24.08.2021	SD&AG	301107	378284	300927	378109	Areas of dense scrub
26		15.06.2021	EC	301117	377987	301496	378352	None
26		24.08.2021	SD&AG	301117	377987	301496	378352	None
27		17.06.2021	LP	301262	383112	301339	378035	None
27		24.08.2021	SD&AG	301262	383112	301339	378035	None



Watercourse No	Section (if applicable)	Date	Surveyor	Start Easting	Start Northing	End Easting	End Northing	Access Constraints
28		17.06.2021	LP	301171	378031	301236	377965	Fences and dense scrub
28		25.08.2021	SD&AG	301171	378031	301248	377953	Fences and dense scrub
29	A	17.06.2021	LP	301038	378041	301109	377971	None
29	A	25.08.2021	SD&AG	301038	378041	301109	377971	None
29	B	17.06.2021	LP	301109	377971	301192	377739	None
29	B	25.08.2021	SD&AG	301109	377971	301192	377739	None
30		16.06.2021	EC	301038	378044	300919	377927	Fence to the west
30		25.06.2021	SD&AG	301038	378044	300919	377927	Fence to the west
32		15.06.2021	LP	300915	377910	300915	377910	Fenced off
32		25.08.2021	SD&AG	300915	377910	300915	377910	Fenced off
33		17.06.2021	LP	301152	377855	301226	377928	None
33		25.08.2022	SD&AG	301152	377855	301226	377928	None
34		17.06.2021	LP	300915	377910	300924	377835	None
34		25.08.2021	SD&AG	300915	377910	300924	377835	None
35		17.06.2021	LP	300927	377825	301145	377865	None
35		25.08.2024	SD&AG	300927	377825	301145	377865	None
36		15.06.2021	LP	300937	377717	300926	377825	None
36		25.08.2025	SD&AG	300937	377717	300926	377825	None
37		15.06.2021	LP	300937	377717	301333	377744	Next to busy road
37		25.08.2026	SD&AG	300937	377717	301333	377744	Next to busy road
38		16.06.2021	LP	301089	377713	301099	377482	None
38		25.08.2027	SD&AG	301089	377713	301099	377482	None
39		16.06.2021	LP	301236	377575	300964	377383	None
39		25.08.2028	SD&AG	301236	377575	300964	377383	None
40		16.06.2021	LP	301347	377336	301425	377421	Fenced on both sides
40		25.08.2029	SD&AG	301347	377336	301425	377421	Fenced on both sides & densely vegetated
41		16.06.2021	LP	301234	377179	301345	377336	Fenced on both sides
41		25.08.2030	SD&AG	301234	377179	301345	377336	Fenced on both sides

Watercourse No	Section (if applicable)	Date	Surveyor	Start Easting	Start Northing	End Easting	End Northing	Access Constraints
42		16.06.2021	LP	301142	377235	301210	377177	Fenced on both sides
42		25.08.2031	SD&AG	301142	377235	301210	377177	Fenced on both sides
43		16.06.2021	LP	301219	377168	301234	377179	None
43		25.08.2032	SD&AG	301219	377168	301234	377179	None
44		16.06.2021	LP	301421	377085	301553	377194	Fenced on both sides
44		25.08.2033	SD&AG	301421	377085	301553	377194	Fenced on both sides
45		16.06.2021	LP	301574	377184	301569	377080	None
45		25.06.2021	SD&AG	301574	377184	301569	377080	None
46	A	16.06.2021	LP	301219	377165	301412	377086	None
46	A	25.08.2034	SD&AG	301219	377165	301412	377086	none
46	B	16.06.2021	LP	301418	377083	301464	376965	None
46	B	25.06.2021	SD&AG	301418	377083	301464	376965	None
47		16.06.2021	LP	301569	377080	301432	377097	None
47		25.08.2021	SD&AG	301569	377080	301432	377097	None
48		16.06.2021	LP	301572	377076	301583	377043	None
48		25.08.2022	SD&AG	301572	377076	301583	377043	None
49		16.06.2021	LP	301482	376949	301735	376937	Fenced on both sides
49		25.08.2021	SD&AG	301482	376949	301735	376937	Fenced on both sides
50		17.06.2021	LP	301236	376253	301282	375965	Southern sections heavily vegetated
50		25.08.2021	SD&AG	301236	376253	301282	375965	Southern sections heavily vegetated
51	A	25.08.2021	SD&AG	301413	376133	301548	375770	Fenced both sides
51	B	25.08.2021	SD&AG	301302	375363	301548	375770	Dense vegetation
51		17.06.2021	LP	301416	376132	301283	375317	None
52		25.08.2021	SD&AG	301938	375643	301906	375510	Fences both sides
53		25.08.2021	SD&AG	301906	375500	301906	375313	Dense vegetation

Watercourse No	Section (if applicable)	Date	Surveyor	Start Easting	Start Northing	End Easting	End Northing	Access Constraints
54	A	17.06. 2021	LP	301403	375052	301431	375572	Dense vegetation
54	A	25.08.2021	SD&AG	301403	375052	301431	375572	Dense vegetation
54	B	17.06.2021	LP	301431	375572	301560	375390	Fenced in some places
54	B	25.08.2021	SD&AG	301431	375572	301560	375390	Dense vegetation
55		17.06.2021	LP	301888	375308	301844	375273	None
55		25.08.2021	SD&AG	301888	375308	301844	375273	None
56		17.06.2021	LP	301916	375131	301941	375011	Fenced off
56		25.08.2021	SD&AG	301916	375131	301941	375011	Fenced off to the west
57		17.06.2021	LP	302027	375155	301970	375145	Dense vegetation
57		25.08.2021	SD&AG	302027	375155	301970	375145	Dense vegetation
58		17.06.2021	LP	301964	375144	301927	375136	Dense vegetation
58		25.08.2021	SD&AG	301964	375144	301927	375136	Dense vegetation
59		17.06.2021	LP	301844	375273	301698	374906	Areas of dense scrub
59		25.08.2021	SD&AG	301844	375273	301698	374906	Areas of dense scrub
60		17.06.2021	LP	302039	374915	302065	375019	None
60		25.08.2021	SD&AG	302039	374915	302065	375019	None
61		17.06.2021	LP	301306	374822	301327	374758	None
61		26.08.2021	SD&AG	301306	374822	301327	374758	None
62		17.06.2021	LP	301327	374758	301283	374476	None
62		26.08.2021	SD&AG	301327	374758	301283	374476	None



## Watercourse Detailed Descriptions

The values from the August 2021 survey are provided here; in most cases very little difference was found between the June and the August visit. The exception is for watercourses 27, 44, 45, 46, 47 and 49, which were cleared between the June and August surveys, in these cases the June information is presented.

Bank Profile classes used are Flat <10°, Shallow <45°, Steep >45°, vertical/undercut

Vegetation cover is ranked using DAFORN: Dominant, Abundant, Frequent, Occasional, Rare and None.

Watercourse No.	Section	Bank Profile	Est Bank Depth (m)	Est Water Depth (m)	Est. Width (m)	Predominant substrate	Bordering land use	Reeds/ Sedges	Tall grasses	Short grass	Bushes	Herb	Submerged Weed (Y/N)	Bankside Trees (Y/N)	% shading	Disturbance	Access Constraints
River Clwyd		Steep but variable	2	>1m tidal	60	Earth, silt, reinforced	Grazed saltmarsh	A	A	O	O	F	N	N	0	Pedestrians. dogs	Deep mud and dangerous banks at water's edge
1		Shallow, steeper in east	1.00	0.00	1.50	Earth	Arable west, cow grazed east	D	F	N	F	O	N	N	100	None	Completely dominated by vegetation
2		Steep	3.00	0.50	6.00	Earth	Arable south, cow grazed north	D	A	N	O	F	R	N	40	None	Access via the southern bank only
3		Shallow	1.00	0.00	2.00	Earth	Cow grazed both sides	R	O	O	O	F	N	N	20	None	None
4	A	Steep	2.00	0.00	1.50	Earth	Grassland	O	A	O	F	A	N	O	80	None	None
4	B	Steep	1.00	0.00	1.00	Earth	Grassland	D	F	R	F	F	N	O	100	None	Dense vegetation
5		Shallow	0.50	0.00	1.50	Earth	Cow grazed both sides	O	F	R	F	A	N	N	100	None	None
6		Steep	1.50	0.00	1.50	Earth	Grassland both sides	D	F	O	F	F	N	N	100	None	Dense vegetation
7		Shallow	0.40	0.00	1.50	earth	Cow grazed fields	O	F	A	F	F	N	N	100	Slightly poached by livestock	None
8		Shallow/flat	0.20	0.00	1.20	Earth	Cow grazed fields	O	F	A	F	F	N	N	51	Slightly poached by livestock	None
9		Shallow/steep	1.80	0.00	1.50	Earth	Arable to south, grass to north	N	A	R	A	F	N	N	100	None	Dense vegetation
10		Shallow, almost steep	1.80	0.00	2.00	Earth	Arable	D	O	R	F	F	N	N	100	None	Dense vegetation
11		Steep	2.00	0.35	2.00	Earth	Grassland	A	O	O	A	F	O	R	30	Some poaching	None
12	A	Steep	1.50	0.50	2.00	Earth	Arable to the south, grass to the north	A	A	R	A	A	O	R	100	None	None
12	B	Steep	1.50	0.50	2.00	Earth	Arable to the south, grass to the north	A	A	N	A	F	R	N	50	None	None
13	A	Flat	0.50	0.00	15.00	Earth	Arable	D	F	N	A	O	N	D	100	None	Dense vegetation
13	B	Flat	0.50	0.00	10.00	Earth	Arable	D	F	R	R	A	R	F	100	None	Dense vegetation
13	D	Steep	2.00	0.00	3.00	Earth	Arable	N	R	F	F	F	N	D	100	None	None

Watercourse No.	Section	Bank Profile	Est Bank Depth (m)	Est Water Depth (m)	Est. Width (m)	Predominant substrate	Bordering land use	Reeds/ Sedges	Tall grasses	Short grass	Bushes	Herb	Submerged Weed (Y/N)	Bankside Trees (Y/N)	% shading	Disturbance	Access Constraints
14	A	Steep	2.00	0.20	2.00	Stone/pebbles/ gravel	Woodland plantation, broadleaved woodland to the north and arable to the south	D	R	R	F	O	R	N	100	Near a bridge to the north	Dense vegetation
14	B	Vertical	2.00	0.25	3.00	Earth/silt - reinforced by bridge	Arable	F	A	N	F	A	R	O	80	None	Fenced in places
14	B	Vertical	2.00	0.25	3.00	Earth/silt - reinforced by bridge	Arable	F	A	N	F	A	R	O	80	None	Fenced in places
15	A	Steep	1.50	0.05	2.00	Reinforced	Rough grassland	R	A	R	O	D	R	O	10	None	None
15	B	Steep	3.00	0.50	10.00	Reinforced	Arable	D	O	N	R	A	R	O	60	Track alongside	Dense vegetation
15	C	Steep	0.50	0.50	2.50	Earth	Arable & farmland	A	F	N	O	A	O	O	90	None	Dense vegetation
16		Steep	1.50	0.25	1.00	Earth	Road to the south, sheep grazed fields to the north	F	F	O	A	A	F	R	90	Walkers/cars	View of south bank restricted by hedgerow
17		Vertical	1.00	0.00	1.50	Earth	Farm track and garden	N	D	F	O	A	N	O	90	Dog walkers	None
18		Steep	1.00	0.20	5.00	Silt/gravel	Grazed fields	D	R	F	R	F	F	F	100	Slightly poached by livestock	Dense vegetation
18		Steep	1.00	0.20	5.00	Silt/gravel	Grazed fields	D	R	F	R	F	F	F	100	Slightly poached by livestock	Dense vegetation
19		Shallow	1.00	0.00	1.00	Earth	Horse pasture/caravan storage	R	D	O	A	F	N	R	30	Horses/farm	None
20		Steep	1.50	0.20	1.50	Earth	Livestock grazed fields	F	F	O	O	F	A	O	20	Poached	None
21		Steep	2.00	1.00	5.00	Earth	Sheep grazed fields	D	A	R	O	A	A	O	80	Slightly poached by livestock	Fenced off on both sides and densely vegetated
22		Steep	3.00	0.30	4.00	Earth	Grassland, river to the North East	A	A	R	F	F	O	O	50	Footpath near	Dense vegetation
23		Shallow and goes steep to the west	1.50	0.00	1.50	Earth	Grassland	O	D	N	N	O	N	N	0	None	None
24		Shallow	0.70	0.00	5.00	Earth	Grassland	A	A	N	R	O	N	R	10	None	None
25		Steep	2.00	0.00	3.00	Earth	Woodland, grassland, helicopter straight	O	O	R	D	O	N	O	70	None	Areas of dense scrub
26		Shallow	2.00	0.00	2.00	Earth	Grassland	A	A	R	A	F	O	N	35	None	None

Watercourse No.	Section	Bank Profile	Est Bank Depth (m)	Est Water Depth (m)	Est. Width (m)	Predominant substrate	Bordering land use	Reeds/ Sedges	Tall grasses	Short grass	Bushes	Herb	Submerge d Weed (Y/N)	Bankside Trees (Y/N)	% shading	Disturbance	Access Constraints
27		Shallow	1.00	0.00	2.00	Earth	Arable	R	O	F	F	F	N	N	0	None	None
28		Steep	1.50	0.00	1.50	Earth	Arable	R	D	R	F	A	N	N	100	None	Fences and dense scrub
29	A	Shallow	0.50	0.00	1.50	Earth	Arable	F	F	O	A	A	N	N	90	None	None
29	B	Steep	0.50	0.00	1.00	Earth	Arable	D	A	R	F	O	N	O	50	None	None
32		steep	1.00	0.00	3.00	Earth	Cow-grazed	N	F	F	O	O	N	D	90	None	Fenced off
33		Steep	0.75	0.00	0.75	Earth	Arable	R	A	F	R	A	N	N	10	None	None
34		Steep	0.75	0.00	2.50	Earth	Grassland to the east and road to the west	F	F	R	A	A	N	F	90	None	None
35		Steep	1.00	0.00	1.00	Earth	Cow grazed and arable	F	A	R	F	F	N	N	60	None	None
36		Steep	0.75	0.00	1.50	Earth	Grassland	O	A	R	F	A	N	N	90	None	None
37		Steep	0.75	0.00	1.50	Earth	Grassland	R	F	F	A	A	N	R	10	Cars on adjacent road	Next to busy road
38		Steep	0.75	0.00	2.00	Earth	Sheep-grazed	N	O	A	A	O	N	N	50	None	None
39		Shallow	0.75	0.00	2.00	Earth	Sheep-grazed	O	A	A	A	F	N	R	80	None	None
40		Vertical	2.00	1.00	3.50	Earth	Cow/Sheep-grazed	O	O	R	A	D	O	N	50	PRoW at west end	Fenced on both sides & Densely vegetated
41		Steep	2.00	1.50	4.00	Earth	Cow/Sheep-grazed	A	F	R	F	A	O	R	50	None	Fenced on both sides
42		Steep	1.75	0.50	2.50	Earth	Sheep-grazed	R	A	F	R	A	O	F	20	None	Fenced on both sides
43		Shallow	0.25	1.00	6.00	Earth	Sheep-grazed	R	O	O	R	F	F	F	20	None	None
44		Steep - recently dredged	1.50	0.50	3.50	Earth	Sheep-grazed	O	O	O	O	F	R	D	30	Recently dredged	Fenced on both sides
46	A	Shallow	0.50	0.00	2.00	Earth	Sheep-grazed	O	F	D	A	O	R	O	30	Poached by sheep	none
47		Steep	0.75	0.30	2.50	Earth	Sheep-grazed	F	O	F	O	F	R	N	100	Recently dredged & Poached by sheep	None
48		Shallow	0.50	0.00	2.00	Earth	Sheep-grazed	A	A	O	N	F	N	N	10	PRoW at north end	None
49		Steep	1.75	0.50	2.00	Earth	Sheep-grazed	R	O	O	F	F	R	O	40	Recently cleared	Fenced on both sides
49		Steep	1.75	0.50	2.00	Earth	Sheep-grazed	R	O	O	F	F	R	O	40	Recently cleared	Fenced on both sides
50		Vertical	2.00	0.25	2.50	Earth	Arable, woodland	O	F	R	A	F	O	A	70	Mown in arable fields	Southern sections heavily vegetated
51	A	Steep	2.00	0.25	2.50	Earth	Arable	R	D	R	O	A	R	R	10	None	Fenced both sides
51	B	Steep	2.00	0.25	3.50	Earth	Arable to the east and track to the west	R	A	R	D	A	R	O	90	None	Dense vegetation



Watercourse No.	Section	Bank Profile	Est Bank Depth (m)	Est Water Depth (m)	Est. Width (m)	Predominant substrate	Bordering land use	Reeds/ Sedges	Tall grasses	Short grass	Bushes	Herb	Submerged Weed (Y/N)	Bankside Trees (Y/N)	% shading	Disturbance	Access Constraints
52		Steep	2.00	0.10	1.00	Earth and boulders	Arable and road	R	D	R	R	A	R	N	80	None	Fences both sides
53		Steep	1.00	0.10	1.00	Earth and boulders	Arable and road	R	D	R	A	A	R	O	90	None	Dense vegetation
54	A	Steep	0.75	0.10	1.50	Earth	Sheep grazed fields	O	F	O	A	O	O	A	60	Poached	Dense vegetation
54	B	Steep	2.00	0.25	2.00	Earth	Arable	R	F	R	F	A	R	F	40	None	Dense vegetation
55		Shallow	0.25	0.00	1.00	Earth	Grassland	O	D	R	N	F	N	N	0	None	None
56		Steep	2.50	0.25	3.50	Earth	Arable to the east and woodland to the west	R	F	R	R	A	R	A	100	Walkers	Fenced off to the west
57		Steep	1.50	0.00	1.00	Earth	Arable	N	A	R	F	D	N	O	100	None	Dense vegetation
58		Steep	0.50	0.00	1.00	Earth	Arable	N	A	R	F	D	N	O	90	None	Dense vegetation
59		Shallow	0.50	0.00	1.50	Earth	Cow-grazed field	A	D	O	O	O	N	F	70	None	Areas of dense scrub
60		Flat	0.25	0.00	1.50	Earth	Arable	N	A	R	N	A	N	A	100	None	None
61		Steep on west, shallow to the east	0.50	0.05	2.00	Earth	Garden, cow-grazed grassland	O	A	A	O	F	O	N	10	Slightly poached by livestock	None
62		Shallow	0.50	0.20	2.00	Earth	Livestock fields to the west and arable to the east	O	F	O	F	O	D	R	50	None	None

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