

## **ENVIRONMENTAL STATEMENT – (VOLUME III)**

### **Appendix 9-6 Riparian Mammal Survey Report (Clean)**

#### **HyNet Carbon Dioxide Pipeline DCO**

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 –  
Regulations 5(2)(a)

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# 1. INTRODUCTION

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## 1.1. PROJECT BACKGROUND

- 1.1.1. This technical appendix reports on the presence of riparian mammals along the DCO Proposed Development, and supports the assessment contained in **Chapter 9 – Biodiversity (Revision B) (Volume II)**.
- 1.1.2. This **Revision B** of **Appendix 9.6 Riparian Mammal Survey Report** replaces and supersedes **Revision A** of **Appendix 9.6 (APP-107)** to take account of updated survey data that was not presented within the **Revision A**.
- 1.1.3. The Applicant intends to build and operate a new underground carbon dioxide (CO<sub>2</sub>) pipeline from Cheshire, England to Flintshire, Wales with necessary Above Ground Installations (AGIs) and Block Valve Stations (BVSs). It is classed as a Nationally Significant Infrastructure Project (NSIP) and will require a Development Consent Order (DCO) under the Planning Act 2008 ('PA2008') granted by the Secretary of State for Business, Energy and Industrial Strategy (BEIS).
- 1.1.4. The DCO Proposed Development will form part of HyNet North West ('the Project'), which is a hydrogen supply and Carbon Capture and Storage ('CCS') project. The goal of the Project is to reduce CO<sub>2</sub> emissions from industry, homes and transport and support economic growth in the North West of England and North Wales. The wider Project is based on the production of low carbon hydrogen from natural gas. It includes the development of a new hydrogen production plant, hydrogen distribution pipelines, hydrogen storage and the creation of CCS infrastructure. CCS prevents CO<sub>2</sub> entering the atmosphere by capturing it, compressing it and transporting it for safe, permanent storage.
- 1.1.5. The DCO Proposed Development is a critical component of HyNet North West which, by facilitating the transportation of carbon, enables the rest of the Project to be low carbon. The hydrogen production, distribution and CO<sub>2</sub> capture and storage elements of the Project do not form part of the DCO Proposed Development and will be delivered under separate consenting processes.
- 1.1.6. The DCO Application will seek consent for the construction, operation and maintenance of the following components which are part of the DCO Proposed Development, namely:
- **Ince Above Ground Installation (AGI) to Stanlow AGI Pipeline** – a section of new underground onshore pipeline (20" in diameter) to transport CO<sub>2</sub>;
  - **Stanlow AGI to Flint AGI Pipeline** – a section of new underground onshore pipeline (36" in diameter) to transport CO<sub>2</sub>;

- **Flint AGI to Flint Connection Pipeline** – a section of new underground onshore pipeline (24" in diameter) to transport CO<sub>2</sub>;
- **Flint Connection to Point of Ayr (PoA) Terminal Pipeline** – a section of existing Connah's Quay to Point of Ayr (PoA) underground onshore pipeline (24" in diameter) which currently transports natural gas but would be repurposed and reused to transport CO<sub>2</sub>. The Flint Connection to PoA Terminal Pipeline is scoped out of the EIA, except for the areas adjacent to the three BVSSs that are within the Newbuild Infrastructure Boundary;
- **Four AGIs** - Ince AGI, Stanlow AGI, Northop Hall AGI, and Flint AGI;
- **Six Block Valve Stations (BVSSs)** - located along:
  - The new Stanlow AGI to Flint AGI Pipeline (three in total);
  - the existing Flint Connection to PoA Terminal Pipeline (three in total);
- Other above ground infrastructure, including Cathodic Protection (CP) transformer rectifier cabinets and pipeline marker posts;
- Utility Connection infrastructure, including power utilities and Fibre Optic Cable (FOC); and
- Temporary ancillary works integral to the construction of the Carbon Dioxide Pipeline, including Construction Compounds and temporary access tracks.

1.1.7. Further details of each element of the DCO Proposed Development are set out in **Chapter 3 – Description of the DCO Proposed Development (Volume II) (APP-055)**.

## 1.2. ECOLOGICAL BACKGROUND

1.2.1. Extended Phase 1 habitat surveys were conducted within the Newbuild Infrastructure Boundary, which includes the three Block Valve locations, in 2020, 2021 and 2022 (**Appendix 9.1, Habitats and Designated Sites Survey Report, (APP-091 - APP-093)**). During these surveys, habitats with the potential to support otter *Lutra lutra* or water vole *Arvicola amphibius* across the Newbuild Infrastructure Boundary were identified and subsequently targeted for specific surveys of these species. The findings are presented in this technical appendix.

## 1.3. BRIEF SCOPE AND OBJECTIVES

1.3.1. The Applicant commissioned the undertaking of otter and water vole surveys within the Newbuild Infrastructure Boundary, based on recommendations following the Extended Phase 1 habitat surveys, in accordance with the current

good practise guidance for these species (**Ref. 1, Ref. 2**). The purpose of the surveys was to:

- Establish whether otter or water vole were present, or likely or unlikely to be present, within the Newbuild Infrastructure Boundary and the surrounding habitats; and
- determine the value of the habitats within Newbuild Infrastructure Boundary for riparian mammals, in order to establish the likelihood of their presence and the impact the DCO Proposed Development may have on otter and water vole populations.

1.3.2. This report (Revision B) supersedes Revision A [APP-061]. Further surveys were completed from July 2022 to September 2022 which were not reported within Revision A. The results of these surveys and subsequent evaluation of the habitats are presented within this report. The impact assessment and recommendations for mitigation and compensation are presented within **Chapter 9: Biodiversity (Revision B) (Volume II)**.

## 1.4. RELEVANT LEGISLATION AND POLICY

### OTTER

- 1.4.1. Otters are fully protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended) (**Ref. 3**), under which they are designated as a European Protected Species (EPS).
- 1.4.2. Otter are also protected under the Wildlife and Countryside Act 1981 (WCA) (as amended) (**Ref. 4**). Under this legislation, it is illegal to:
- Deliberately capture, kill, injure or disturb otter;
  - cause damage, destruction or obstruction of access to a holt (and otter resting place);
  - possess or transport otter, or parts of one, unless acquired legally; or,
  - sell, exchange, advertise or barter for otter.
- 1.4.3. Natural Resources Wales (NRW) may licence these activities, that would otherwise constitute an offence under this legislation, for certain purposes.
- 1.4.4. Under Section 7 of the Environment (Wales) Act 2016, otters are a priority species (**Ref. 5**), considered to be of key significance to sustain and improve biodiversity in Wales.
- 1.4.5. Under Section 42 of the Natural Environment and Rural Communities (NERC) Act 2006, otters are listed as a Species of Principal Importance (SPI) (**Ref. 6**). In accordance with Section 40 of this Act, public authorities must have regard for these species when carrying out their functions, which includes permitting developments which may affect these species.

## **WATER VOLE**

- 1.4.6. Water vole are protected under WCA 1981 (as amended), meaning it is an offence to kill, injure or take this species; damage or destroy places of rest or shelter, or disturb this species whilst occupying a place of rest or shelter.
- 1.4.7. NRW may licence these activities, that would otherwise constitute an offence under this legislation, for certain purposes.
- 1.4.8. Water voles are a priority species under Section 7 of the Environment (Wales) Act 2016.
- 1.4.9. As with otters, under Section 42 of the NERC Act 2006, water vole are listed as an SPI. In accordance with Section 40 of this Act, public authorities must have regard for these species when carrying out their functions, which includes permitting developments which may affect these species.

## 2. BASELINE METHODOLOGY

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### 2.1. OVERVIEW

2.1.1. To establish whether otter or water vole were present or likely absent from the Newbuild Infrastructure Boundary, information was gathered from:

- A desk study of publicly available information; and,
- Field surveys of watercourses which had been previously identified during assessments of freely available aerial imagery as part of the desk study and during the extended Phase 1 habitat surveys (**Appendix 9.1, Habitats and Designated Sites Survey Report**).

### 2.2. DESK STUDY

2.2.1. A desk study was undertaken by WSP in 2020 to review existing ecological baseline information available in the public domain, and obtain information held by relevant third parties relating to otter and water vole, in the last ten years, within 2km of the Newbuild Infrastructure Boundary. This was carried out in accordance with current good practise guidance published by the Chartered Institute for Ecology and Environmental Management (CIEEM) (**Ref 7, Ref 8**). Records of protected and/or notable species were requested from:

- rECOrd (The Biodiversity Information System for Cheshire, Halton, Warrington and Wirral); and
- Cofnod (North Wales Environmental Information Service).

2.2.2. Open source 1:25,000 Ordnance Survey mapping was used to identify any mapped waterbodies and watercourses within 150 m up and downstream of the Newbuild Infrastructure Boundary.

2.2.3. The findings of the desk study have been incorporated within **Section 3.1** of this report and are detailed in **Table 3** within **Annex B**.

### 2.3. FIELD SURVEY

2.3.1. A field survey of the watercourses identified during the assessment of aerial images, as part of the study, and the Phase 1 habitat surveys was conducted. The length of the watercourse within the Newbuild Infrastructure Boundary was walked, plus an additional 150 m up and downstream where access was possible (the 'Survey Area'). The size of the area directly affected by the DCO Proposed Development is currently unknown, therefore the 150 m buffer from the Newbuild Infrastructure Boundary was set as a precautionary minimum and is currently based on the reasonable worst case. Depending on the final scale of the area which will be directly affected by the scheme, this buffer may later be altered and potentially result in a change to the required Survey Area.

- 2.3.2. The surveys involved a search for otter and water vole field signs, along with a habitat suitability assessment. The surveys were completed within the appropriate season (late April to early October) following the current relevant best practise guidance for these species (**Ref.1**, **Ref.2**), with detail of the survey dates presented in **Table 1** below. For water vole, this guidance required at least two visits to each water course at different times across the season (one usually in spring and another late summer or autumn).
- 2.3.3. The surveys incorporated the following elements:
- A thorough visual inspection of the watercourse and immediate vicinity for water vole or otter, and their respective field signs, through walking the banks and wading in channel where possible. Field signs included:
    - Water vole – faeces, latrines (piles of droppings), feeding stations (piles of chopped up vegetation with a distinctive 45° cut), burrows, 'lawns' (areas of closely cropped grass, usually around burrows), nests, footprints and runways in vegetation.
    - Otter – spraint (otter faeces), footprints, feeding remains and confirmed or potential resting sites or holts (otter 'burrows').
  - The recording of habitat variables and features relevant to otters and water voles (for example general habitat type, shore/bank substrate, bordering land use, vegetation, disturbance level, bank profile, water depth) to assess suitability to support otters and/or water voles; and,
  - The recording of any field signs or evidence relating to other relevant wildlife (for example mink *Neovison vison* or brown rat *Rattus norvegicus*).
- 2.3.4. The otter and water vole surveys were completed by competent surveyors with extensive otter and water vole survey experience able to confidently identify the relevant field signs. All surveyors are members of CIEEM.
- 2.3.5. In total, 61 watercourses were identified within the Newbuild Infrastructure Boundary for riparian mammal surveys following the extended Phase 1 Habitat survey, including the River Dee and the Shropshire Union Canal. Otter and water vole populations may travel between connected watercourses, therefore watercourses were compiled into 25 groups based on their location and hydrological links. The watercourse groups are listed in **Table 1** along with the dates of the first and second survey visits as part of the riparian mammal surveys. Watercourse locations are presented on **Figure 9.6.1** and **Figure 9.6.2**.
- 2.3.6. Where the habitat was determined to be unsuitable for both otter and water vole, watercourses were scoped out of further surveys and assessments. In some cases, a watercourse was determined to be suitable for one species but



unsuitable for the other, in which case the watercourse was labelled accordingly as to the suitability for each species and remained subject to further survey.

**Table 1 – Watercourse Groups and Survey Dates**

<b>Watercourse Group</b>	<b>Visit 1</b>	<b>Visit 2</b>
<b>Group 1: East Central Drain, West Central Drain a and Elton Land Ditches</b>	17/06/2021 - East Central Drain only 12/05/2022- West Central Drain and Elton Land Ditches	12/05/2022 - East Central Drain only
<b>Group 2: West Central Drain b, Elton Marsh Ditches and Hapsford Brook</b>	27/04/2022	15/07/2022
<b>Group 3: Gale Brook</b>	07/10/2021	12/05/2022
<b>Group 4: Halls Green Lane Brook and Thornton Uplands</b>	28/04/2022	17/07/2022 – Thornton Uplands only.
		Halls Green Lane Brook scoped out following Visit 1.
<b>Group 5: Thornton Ditches, Thornton Main Drain and the River Gowy</b>	26/04/2022 – 28/04/2022	09/08/2022 22/09/2022 – Thornton Ditches only
<b>Group 6: Stanney Main Drain, Stanney Mill Brook and Gowy Tributaries 2 and 3.</b>	26/04/2022 - Gowy Tributary 2, and 3 07/07/2022- Stanney Main Drain, Stanney Mill Brook	07/07/2022 – Gowy Tributary 2 only Gowy Tributaries 3 was scoped out of further surveys Stanney Main Drain and

<b>Watercourse Group</b>	<b>Visit 1</b>	<b>Visit 2</b>
		Stanney Mill Brook did not receive a Visit 2 due to access limitations.
<b>Group 7: Wervin Hall Ditch and Tributary</b>	Scoped out of further survey following the Phase 1 habitat surveys due to unsuitable habitat.	
<b>Group 8: Rake Lane Brook</b>	26/04/2022	Scoped out of further survey following Visit 1.
<b>Group 9: Backford Brook and Friars Park Ditch</b>	26/04/2022	17/08/2022 – Backford Brook only
		Friars Park Ditch scoped out following Visit 1.
<b>Group 10: Shropshire Union Canal</b>	26/04/2022 16/06/2022	20/09/22
<b>Group 11: Parkgate Road Ditch and Finchetts Gutter Tributary</b>	28/04/2022	28/07/2022 – Finchetts Gutter Tributary
		Parkgate Road Ditch scoped out following Visit 1.
<b>Group 12: Seahill Drain and Tributary 2</b>	09/06/2022	17/08/2022
<b>Group 13: Sealand Main Drain</b>	09/06/2022	17/08/2022
<b>Group 14: River Dee</b>	23/03/2022	15/06/2022

<b>Watercourse Group</b>	<b>Visit 1</b>	<b>Visit 2</b>
<b>Group 15: Broughton Brook</b>	23/06/2022	16/08/2022
<b>Group 16: Chester Road Tributary 1, Chester Road Drain North and Chester Road Drain South</b>	09/06/2022	Scoped out of further survey following Visit 1.
<b>Group 17: Chester Road Brook Tributary 2 and Sandycroft Drain</b>	31/05/2022	Scoped out of further survey following Visit 1.
<b>Group 18: Mancoat Brook and Tributaries</b>	31/05/2022	19/08/2022
<b>Group 19: Willow Park Brook</b>	31/05/2022	19/08/2022
<b>Group 20: New Inn Brook</b>	15/06/2022	18/08/2022
<b>Group 21: Alltami Brook</b>	06/10/2021	No Access during 2022
<b>Group 22: Wepre Brook</b>	06/10/2021	15/06/2022
<b>Group 23: Wepre Brook Tributary 1</b>	09/06/2022	Scoped out of further survey following Visit 1.
<b>Group 24: Northop Brook and Tributary 2</b>	09/06/2022	18/08/2022
<b>Group 25: Nant-y-Fflint</b>	28/07/2022	21/09/22

## **2.4. LIMITATIONS AND ASSUMPTIONS**

- 2.4.1. During the desk study, records obtained from local record centres were reviewed. These records are voluntarily submitted by members of the public. As such, they are not a comprehensive view of species presence in an area and a lack of records does not mean the species is absent.
- 2.4.2. Access to the extent of some watercourses within the Survey Area was restricted due to fences or dense vegetation. This blocked access to the watercourse in some cases or obscured the view of the channel. In these circumstances, certain watercourses could not be surveyed fully and therefore

signs of presence may have been missed. Watercourses where only 60% or less of the watercourse could be accessed included:

- Some sections of Gale Brook;
- Rake Lane Brook;
- Friars Park Ditch;
- Finchetts Gutter Tributary;
- Sealand Main Drain;
- Chester Road Drain;
- New Inn Brook;
- Wepre Brook Section C; and
- Some sections of Northop Brook.

- 2.4.3. Of these watercourses, using desk study data and field survey results, Rake Lane Brook, Friars Park Ditch and Chester Road Drain were deemed to be unsuitable for supporting otter and water vole and were scoped out from further assessment.
- 2.4.4. Finchetts Gutter Tributary and parts of the Northop Brook were deemed to be of low habitat suitability for either species. Therefore, the limited access during the field surveys to these watercourses, is not thought to affect the conclusions relating to suitability or the required mitigation.
- 2.4.5. For the remaining watercourses, a ranging pole was utilised to aid access and achieve a more accurate representation of otter and water vole presence at these locations.
- 2.4.6. Access was denied for the second survey visit at three locations, the 'East and West Central Drains & Elton Land Ditches', 'Stanney Main Drain and Mill Brook and 'Alltami Brook'. Mitigation measures detailed within **Chapter 9: Biodiversity (Revision B) (Volume II (Document Reference: D.6.2.9))** are based on the assumed presence of otters or water vole as a reasonable worst-case approach, thus any watercourses precautionarily assessed will be subject to the mitigation measures detailed within the Register of Environmental Actions and Commitments (REAC) (Revision B) including pre-construction surveys.
- 2.4.7. Whilst every effort was made to undertake surveys during optimal survey conditions, during two survey visits – Nant-y-Fflint Visit 1 and Finchetts Gutter Tributary Visit 2 – rain occurred prior to the survey visit. No evidence of riparian mammal presence was recorded during the survey visits, however, taking into account the results of the alternative survey visit, this is not considered to have negatively impacted the results and conclusions of this assessment.

- 2.4.8. The second survey visit at Finchetts Gutter Tributary was restricted by limited access to the watercourse. This was due to giant hogweed *Heracleum mantegazzianum* within the watercourse and dense vegetation.
- 2.4.9. Due to the length of the watercourse, Wepre Brook was split into sections (A, B and C) during the survey visits, and these areas have been assessed separately. The sections represent different parts of the watercourse that were accessible in between where the watercourse was culverted underneath Brookside and Chester Road.

### 3. RESULTS

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#### 3.1. DESK STUDY

##### OTTER

- 3.1.1. The desk study results supplied by rECOrd contained 10 records of otter within 2 km of the Newbuild Infrastructure Boundary in England in the last ten years. Seven of the records were of latrines or spraint, with three records of individual otter sightings. The records were associated with Gowy Meadows (SJ4315074381), a nature reserve to the east of Ellesmere Port, the River Gowy, in particular around Bailey Bridge (SJ44097153), and Trafford Bridge (SJ4494171042) in Mickle Trafford. The closest records were 619 m from the Newbuild Infrastructure Boundary.
- 3.1.2. There was one record relating to otter in Wales in the last 10 years, pertaining to spraint recorded 938 m north of the Newbuild Infrastructure Boundary at Pandy Lake Brook, which runs through Flint (SJ25557208).
- 3.1.3. Details of the otter records identified during the desk study are provided in **Annex B**.

##### WATER VOLE

- 3.1.4. Three water vole records were returned by rECOrd within 2 km of the Newbuild Infrastructure Boundary in England in the last ten years. Two of the records were associated with Chester Zoo, where wild water vole had colonised zoo facilities, with one record of a burrow and one record of 17 individual water voles identified on Lemur Island. The third record was of a water vole latrine along the Sealand Main Drain to the west of Chester (SJ37946698). The closest record is 731 m from the Newbuild Infrastructure Boundary.
- 3.1.5. There were four records of water vole within 2 km of the Newbuild Infrastructure Boundary in Wales in the last ten years. Three of the records comprised a mixture of field signs (latrines, burrows and feeding remains) associated with Broughton Brook in Hawarden Business Park (SJ33676460). The remaining record was from Swinchiard Brook in Flint (SJ239719), relating to regular sightings of water vole in the brook. The closest record was 1.2 km south of the Newbuild Infrastructure Boundary.
- 3.1.6. Details of the desk study records relating to water vole are provided in **Annex B**.

## **3.2. FIELD SURVEY**

- 3.2.1. Of the 25 watercourse groups, 24 groups have been subject to at least one survey. Group 7 was scoped out following the Phase 1 habitat surveys, and therefore no riparian mammal surveys were required.
- 3.2.2. A summary of the riparian mammal survey results, including habitat suitability and field signs recorded, for each of the 24 watercourse groups surveyed is provided in **Table 2**. Watercourse descriptions and suitability assessments are provided in detail for each watercourse individually in **Table 4** in **Annex** , and presented on **Figure 9.6.1** and **Figure 9.6.2**. Photographs of watercourses are provided in **Annex D**.
- 3.2.3. Descriptions of the otter and water vole field signs recorded during the surveys are provided in **Table 5** in **Annex C**, along with any additional field signs not related to otter or water vole. Field signs are presented in **Figure 9.6.1** and **Figure 9.6.2**.
- 3.2.4. Field signs relating to otter were recorded along the following watercourses:
- Thornton Ditches;
  - Alltami Brook;
  - Gowy Tributary 2
  - Shropshire Union Canal,
  - Thornton Uplands; and
  - Wepre Brook.
- 3.2.5. Field signs relating to water vole were recorded along the following watercourses:
- West Central Drain A and B;
  - Gale Brook,
  - Hapsford Brook;
  - Thornton Ditches;
  - River Gowy;
  - Backford brook;
  - Thornton Uplands
  - Gowy Tributary 2; and
  - Thornton Main Drain.

**Table 2 - Summary of Otter and Water Vole Survey Results**

Watercourse Group	No. of watercourses in group	Central grid references	Summary of habitat description	Evidence of otter and/or water vole presence	Preliminary Overall Suitability Assessment
<b>Group 1:</b> <b>East Central Drain, West Central Drain A, and Elton Lane Ditches</b>	8	SJ 46977 76053	<p>The East Central Drain bordered an arable field and the car park to an industrial site and was deep, with slow flow and largely fenced off.</p> <p>West Central Drain A was a large, deep ditch, no flow, with some in channel vegetation. Some tadpoles and fish.</p> <p>Two of the Elton Lane Ditches were dry. The remaining three were of various depths, choked with <i>Typha sp</i> with steep banks in places.</p>	<p>Water vole burrow identified on West Central Drain A during Visit 1, within the Newbuild Infrastructure Boundary.</p> <p>No field signs of otter were recorded.</p> <p>No new field signs were identified during Visit 2 at East Central Drain.</p>	<p>Suitable for foraging/commuting and burrowing water vole</p> <p>Suitable for foraging and commuting otter.</p>
<b>Group 2:</b> <b>West Central Drain B, Hapsford Brook and Elton Marsh Ditches</b>	12	SJ 46886 75432, SJ 46682 75386, SJ 46975 75534, SJ 47107 75550, SJ 46682 75386	<p>The West Central Drain, Hapsford Brook, and Elton Marsh Ditches run along the borders of pasture fields grazed by livestock.</p> <p>The majority of the Elton Marsh Ditches were dry with only a little water in places.</p> <p>The West Central Drain and Hapsford Brook were similar in habitat, 0.5-1 m deep and 2-5 m wide, with vegetated earth banks. Both had varying bank profiles, steep in some places with little poaching from livestock.</p>	<p>Water vole burrows and feeding stations were identified on the Hapsford Brook and West Central Drain B during Visit 1, several of which were within the Newbuild Infrastructure Boundary.</p> <p>No field signs of otter were recorded during Visit 1.</p> <p>No field signs for either species were identified during Visit 2.</p>	<p>Suitable for foraging/commuting and burrowing water vole.</p> <p>Suitable for commuting otter.</p>
<b>Group 3:</b> <b>Gale Brook</b>	1	SJ 45003 74408	<p>The Gale Brook borders an arable field, with pasture on the other bank. Parts of the brook run through hedgerow and is culverted where it passes under Cryers Lane (B5132).</p> <p>Banks were vegetated with reed sp <i>Sparganium sp</i>, cow parsley <i>Anthriscus sylvestris</i>, common nettle, tall grasses, bramble and bulrush sp. There was little in-channel vegetation.</p>	<p>Burrows, thought to be water vole, were identified in the bank during Visit 2 outside of the Newbuild Infrastructure Boundary within the 150 m buffer. No other evidence observed on either visit to confirm water vole presence.</p> <p>No field signs for otter were recorded during Visit 1 or 2.</p>	<p>Suitable for foraging, commuting and burrowing water vole.</p> <p>Suitable for commuting otter.</p>
<b>Group 4:</b>	2	SJ 44583 73264, SJ 44572 73215	Halls Green Lane Brook was a small ditch along the side of a minor lane. It was very shallow during Visit 1, fully vegetated	No water vole or otter field signs recorded following Visit 1.	Suitable for foraging/commuting water vole.



Watercourse Group	No. of watercourses in group	Central grid references	Summary of habitat description	Evidence of otter and/or water vole presence	Preliminary Overall Suitability Assessment
Halls Green Lane Brook and Thornton Uplands			<p>and was scoped out of further survey due to unsuitable habitat.</p> <p>Thornton Uplands ran through pasture grazed fields. It was culverted twice and was largely unvegetated during Visit 1, it appeared recently dug out. There were signs of eutrophication.</p> <p>During Visit 2, the ditch was recorded as dry.</p>	<p>During Visit 2 of Thornton Uplands an otter spraint was found on a rock on the road adjacent to the watercourse.</p> <p>-A fallen tree was recorded with potential to be used as a lay-up/holt and slide, however, no evidence of use was recorded.</p> <p>-A small mammal hole was found on the southern bank, with bank vole and rat droppings recorded.</p>	Suitable for commuting and resting otter.
Group 5: Thornton Ditches, Thornton Main Drain and the River Gowy	9	SJ 43884 72742 SJ 43657 72886	<p>A network of seven ditches within a marshy grassland which are adjacent and link to the River Gowy. The ditches have been canalised. Very little disturbance to the area.</p> <p>Banks were heavily vegetated with grasses, rush sp. <i>Juncus</i> sp. (such as soft rush <i>Juncus effusus</i>), reed sp and typha sp. during Visit 1.</p>	<p>A high number of water vole field signs recorded including burrows, latrines and feeding stations across all the ditches during Visit 1, the majority of which were within the Newbuild Infrastructure Boundary.</p> <p>Burrows were also identified during the aquatic ecology surveys along the River Gowy, within the Newbuild Infrastructure Boundary.</p> <p>One possible otter holt and an otter 'couch' were recorded at two of the ditches during Visit 1.</p> <p>During Visit 2, a number of water vole signs were recorded along the River Gowy and Thornton Ditches. Along Thornton Ditch 4 potential otter activity was recorded; a potential holt was recorded under a fallen tree and a smooth area on the</p>	<p>Suitable for foraging, commuting and burrowing water vole.</p> <p>Suitable for foraging, commuting and resting otter.</p>

Watercourse Group	No. of watercourses in group	Central grid references	Summary of habitat description	Evidence of otter and/or water vole presence	Preliminary Overall Suitability Assessment
				western side of the bank assumed to be a slide.	
<b>Group 6:</b> <b>Stanney Main Drain, Stanney Mill Brook and Gowy Tributaries 2 and 3.</b>	4	SJ 42987 72018	Gowy Tributary 2 bordered a sheep grazed pasture field and an arable field, with a narrow channel and overgrown banks.  Within similar surrounding habitat, Stanney Main Drain was heavily vegetated, with steep banks and poor water quality.  Stanney Mill Brook was mainly dry, with water present only at one end and dense vegetation.  Gowy Tributary 3 was dry and scoped out of further survey following Visit 1.	No field signs recorded following Visit 1.  During Visit 2, potential otter footprints were recorded on Gowy Tributary 2. A water vole burrow was also recorded during the surveys at Gowy Tributary 2.	Suitable for foraging, commuting and burrowing water vole.  Suitable for commuting otter.
<b>Group 8:</b> <b>Rake Lane Brook</b>	1	SJ 40198 71097	Bordered cattle grazed pasture. Dry at the southern end and overgrown. Mostly inaccessible due to dense scrub and a barbed wire fence.  Scoped out following Visit 1 due to unsuitable habitat.	No field signs recorded following Visit 1.	Unsuitable for otter and water vole.
<b>Group 9:</b> <b>Backford Brook and Friars Park Ditch</b>	2	SJ 39720 71127 SJ 39376 70887	Both ditches ran through grazed pasture and linked to the Shropshire Union Canal. The Backford Brook was culverted in places.  Friars Park Ditch was ephemeral and likely to dry out, with no submerged vegetation, and was scoped out following Visit 1 due to unsuitable habitat.	No field signs recorded during Visit 1.  No field signs recorded during Visit 2.	Unsuitable for otter.  Suitable for foraging, commuting` and burrowing water vole.
<b>Group 10:</b> <b>Shropshire Union Canal</b>	1	SJ 39631 70908	Active canal, bordered by grazed pasture, with some submerged aquatic vegetation. The bank is reinforced and well maintained with few gaps.	No field signs recorded during Visit 1.  An otter spraint was recorded along the Canal during Visit 2. This was located 22 m outside of the Newbuild Infrastructure Boundary.	Suitable for commuting water vole.  Suitable for commuting and foraging otter.
<b>Group 11:</b> <b>Parkgate Road Ditch and Finchetts Gutter Tributary</b>	2	SJ 37993 69897, SJ 37851 69847	Both ditches run through pasture and arable fields, with parts of the Finchetts Gutter Tributary passing through more densely vegetated/wooded areas.	No field signs recorded during Visit 1.  No field signs recorded during Visit 2.	Suitable for foraging and commuting water vole.  Suitable for commuting otter.

Watercourse Group	No. of watercourses in group	Central grid references	Summary of habitat description	Evidence of otter and/or water vole presence	Preliminary Overall Suitability Assessment
			Some sections of Finchetts Gutter Tributary were dry and some areas inaccessible due to dense scrub and steep banks.  Parkgate Road Ditch was dry during Visit 1, fully vegetated, and was scoped out from further assessment due to unsuitable habitat.		
<b>Group 12: Seahill Drain and Tributary 2</b>	2	SJ 36478 68960	Bordering arable fields, with steep densely vegetated banks.	No field signs recorded during Visit 1.  No field signs recorded during Visit 2.	Suitable for foraging and burrowing water vole.  Suitable for commuting otter
<b>Group 13: Sealand Main Drain</b>	1	SJ 35401 67988	Bordering an agricultural field, with thick margins of dense vegetation. Difficult to access in places due to steep banks and dense ruderal vegetation, clearly eutrophicated in places.	No field signs recorded during Visit 1.  No field signs recorded during Visit 2.	Suitable for foraging, commuting and burrowing water vole.  Suitable for foraging and commuting otter.
<b>Group 14: River Dee</b>	1	SJ 34779 67128	A canalised section of the River Dee, with embankments on both sides with public footpaths. Adjacent to neutral grassland, with a lower sloping section of bare mud to the water's edge.	No field signs recorded during Visit 1.	Suitable for commuting water vole.  Suitable for foraging and commuting otter.
<b>Group 15: Broughton Brook</b>	1	SJ 33772 66206	A fenced ditch bordering Chester Road and improved grassland fields.	No field signs recorded during Visit 1.  No field signs recorded during Visit 2.	Suitable for foraging and commuting water vole  Suitable for commuting otter.
<b>Group 16: Chester Road Drain North and South, Chester Road Drain Tributary 1</b>	3	SJ 32785 67259	A ditch along a main road adjacent to an industrial estate. Mostly earth banks but culverted with concrete walls where it passes under a road. Chester Road Drain Tributary 1 had areas with artificial cement banks.  Not accessible for survey so observed from the footpath. Scoped out of further survey following Visit 1.	No field signs recorded during Visit 1.	Unsuitable for otter or water vole.
<b>Group 17:</b>	2	SJ 32574 67438	Sandycroft Drain borders a main road. Chester Road Drain Tributary 2 was recorded as dry.	No field signs recorded during Visit 1.	Unsuitable for otter or water vole.

Watercourse Group	No. of watercourses in group	Central grid references	Summary of habitat description	Evidence of otter and/or water vole presence	Preliminary Overall Suitability Assessment
<b>Chester Road Drain Tributary 2 and Sandycroft Drain</b>			Both ditches were scoped out of further survey following Visit 1 due to unsuitable habitats and high levels of disturbance.		
<b>Group 18: Mancot Brook and Tributaries</b>	1	SJ 31985 67419	A shallow ditch running through grazed pasture. Shallow/flat banks for the majority of the length, poached by sheep and cattle where they cross regularly. Little aquatic vegetation.	No field signs recorded during Visit 1. No field signs recorded during Visit 2.	Suitable for foraging and commuting water vole. Suitable for commuting otter.
<b>Group 19: Willow Park Brook</b>	1	SJ 31855 67422	Small, shallow ditch running through a hedgerow bordered by horse grazed fields. Some parts difficult to access due to dense vegetation.	No field signs recorded during Visit 1. No field signs recorded during Visit 2.	Suitable for commuting and foraging water vole. Unsuitable for otter.
<b>Group 20: New Inn Brook</b>	1	SJ 28607 66449	A narrow, slow flowing brook, only partially accessible due to dense vegetation. Culverted under Green Lane at the easterly extent.	No field signs recorded during Visit 1. No field signs recorded during Visit 2.	Suitable for foraging and commuting water vole. Suitable for commuting otter.
<b>Group 21: Alltami Brook</b>	1	SJ 27770 67205	A rapid flowing wide channel watercourse through a wooded area with steep rock cliff banks. Some disturbance from cattle in certain locations where the bank profile is lower. Little aquatic vegetation but surrounded by trees and shrubs in the woodland.	Possible otter footprints were identified along the bank, heavily eroded by water. These were within the Newbuild Infrastructure Boundary. No evidence of water vole was recorded during Visit 1. The second survey visit was not conducted due to access restrictions.	Suitable for foraging, commuting and resting otter. Suitable for foraging and commuting water vole.
<b>Group 22: Wepre Brook Sections A B and C</b>	1	Wepre Brook A: SJ 27162 67449, Wepre Brook B: SJ 26925 67499, Wepre Brook C: SJ 26442 67612	Surveyed in three sections where it crosses the Newbuild Infrastructure Boundary at various locations. Sections A and B were large and wide, with a rocky substrate. At Section C it was much smaller and ran through a small woodland, where it had earth banks and was densely vegetated.	Fresh otter spraint, otter laying up sites and a potential otter holt recorded in Sections A and B during Visits 1 and 2, just outside of the Newbuild Infrastructure Boundary (within 20 m).	Suitable for foraging, commuting and resting otter Suitable for foraging, commuting and burrowing water vole.

Watercourse Group	No. of watercourses in group	Central grid references	Summary of habitat description	Evidence of otter and/or water vole presence	Preliminary Overall Suitability Assessment
				No evidence of water vole recorded following Visit 1 or Visit 2.	
<b>Group 23:</b> <b>Wepre Brook Tributary 1</b>	1	SJ 25591 68397	A dry field boundary ditch. Scoped out of further survey following Visit 1.	No field signs recorded during Visit 1.	Unsuitable for otter or water vole
<b>Group 24:</b> <b>Northop Brook and Tributary 2</b>	2	SJ 25522 68992	Northop Brook ran along the boundaries of arable and pasture fields, bounded by hedgerow and densely vegetated. Northop Brook Tributary 2 was predominantly dry, with small areas of wet channel.	A possible otter slide was recorded on Northop Brook during Visit 1, approx. 52 m outside of the Newbuild Infrastructure Boundary.  No evidence of water vole recorded following Visit 1.  No field signs recorded during Visit 2.	Suitable for commuting otter.  Unsuitable for water vole.
<b>Group 25:</b> <b>Nant-y- Fflint</b>	1	SJ 21539 72404	Nant-y-Fflint runs beneath a small canopy, it varies in profile and depth but is generally low lying with a max depth of 1 m. There is variation between the bank substrate, with boulders and rocks present within the watercourse. Bankside vegetation consisted of Alder <i>Alnus sp.</i> , Goat Willow <i>Salix Caprea</i> , Holly <i>Ilex Aquifolium</i> and Silver Birch <i>Betula Pendula</i> trees. The earth bank is flat in areas, unsuitable for burrows, and is heavily vegetated.	No field signs recorded during Visit 1 and Visit 2.	Suitable for commuting otter and potential holt creating habitat in adjacent woodland  Limited suitability for water vole

## **4. SUMMARY**

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- 4.1.1. The majority of watercourses have been surveyed twice, with the exception of 'Alltami brook, a section of Gale Brook, Stanney Mill Brook and Main Drain, and the 'East and West Central Drains & Elton Land Ditches', which have been surveyed once due to access for Visit 2 being restricted. However, survey results from first survey visits, as well as desk study records and a review of watercourse connectivity have been used to make a precautionary assessment for those above-mentioned watercourses.

### **4.2. OTTER**

- 4.2.1. Of the 61 watercourses surveyed, 36 were identified as having suitable habitat to support foraging, commuting and/or resting otter.
- 4.2.2. Based on the field signs recorded, it is considered likely that otter are present at sections A and B of Wepre Brook. These sections of the watercourse and the recorded field signs were located outside of the Newbuild Infrastructure Boundary (within 20m) but inside the Survey Area.
- 4.2.3. Possible field signs relating to otter were also recorded at Thornton Ditches during the first and second survey visits, located within the Newbuild Infrastructure Boundary, and at Alltami Brook 14 m north-east of the Newbuild Infrastructure Boundary, within the Survey Area. However, these were not conclusive enough to determine otter presence at either watercourse.
- 4.2.4. Based on the lack of field signs indicating otter presence during both survey visits, it is likely that otter were absent from the sections of the River Dee, Gale Brook and East Central Drain within the Survey Area. Whilst no evidence was recorded, the potential exists for these three watercourses to be used by commuting otter.
- 4.2.5. Evidence of otter activity/presence included an otter spraint and potential holt recorded adjacent to Thornton Uplands watercourse; a potential otter footprint recorded at the Gowy Tributary 2 and Alltami Brook; and a fresh otter spraint was recorded at land adjacent to the Shropshire Union Canal, 22m south of the Newbuild Infrastructure Boundary.
- 4.2.6. It is not possible at this stage to determine conclusively the presence or likely absence of otter within the Survey Area at East and West Central Drains, Elton Lane, a section of Gale Brook, Stanney Mill Brook and Stanney Main Drain. Therefore, utilising a precautionary approach, presence of otter has been assumed given results of first survey visits and the known presence of otter in the wider area.



- 4.2.7. The watercourse groups with no suitability to support otter, and which are not considered further in relation to otter, include:
- Group 2: Elton Marshes 1-6, Elton Marshes West and Elton Marsh 12-14;
  - Group 4: Halls Green Lane Brook;
  - Group 6: Gowy Tributary 3;
  - Group 8: Rake Lane Brook;
  - Group 9: Backford Brook and Friars Park Ditch;
  - Group 11: Parkgate Road Ditch and Finchetts Gutter Tributary;
  - Group 16: Chester Road Drain North and South and Chester Road Brook Tributary 1;
  - Group 17: Chester Road Brook Tributary 2 and Sandycroft Drain;
  - Group 19: Willow Park Brook; and
  - Group 23: Wepre Brook Tributary 1.

### 4.3. WATER VOLE

- 4.3.1. Of the 61 watercourses surveyed, 48 were determined to have suitable habitat for foraging, commuting and/or burrowing water vole. Based on the field signs recorded during the first and second survey visits, it is considered likely that water vole are present within the following watercourse groups:
- Group 1: East Central Drain, West Central Drain A and Elton Land Ditches;
  - Group 2: West Central Drain B, Elton Marsh Ditches and Hapsford Brook;
  - Group 5: Thornton Ditches, Thornton Main Drain and the River Gowy; and
  - Group 6: Gowy Tributary 2
- 4.3.2. These watercourses, and the field signs recorded, are all within the Newbuild Infrastructure Boundary.
- 4.3.3. It is not possible at this stage to determine conclusively the presence or likely absence of water vole within the Survey Area at Elton Lane Ditches, a section of Gale Brook, Stanney Mill Brook and Stanney Main Drain and Alltami Brook. Therefore, utilising a precautionary approach, presence of water vole has been assumed given results of first survey visits and the known presence of water vole in the wider area.
- 4.3.4. Due to the lack of evidence recorded during both survey visits, it is considered likely that water vole are absent from the River Dee.

4.3.5. Watercourse groups with no suitable habitat to support water vole and which are not considered further in relation to water vole, include:

- Group 4: Thornton Uplands and Halls Green Lane Brook;
- Group 6: Gowy Tributary 3;
- Group 8: Rake Lane Brook;
- Group 9: Friars Park Ditch;
- Group 11: Parkgate Road Ditch;
- Group 16: Chester Road Drain North and South and Chester Road Brook Tributary 1;
- Group 17: Chester Road Brook Tributary 2 and Sandycroft Drain
- Group 23: Wepre Brook Tributary 1; and
- Group 24; Northop Brook



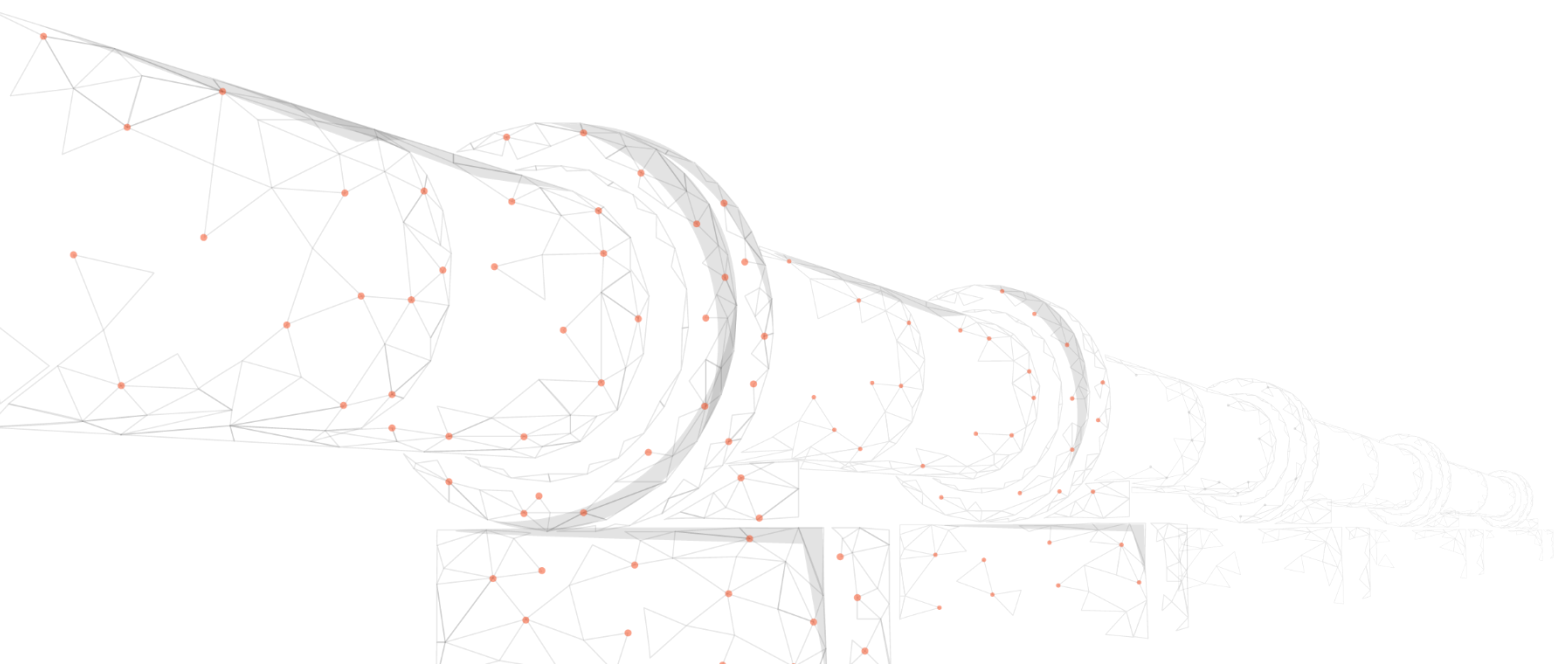
## 5. REFERENCES

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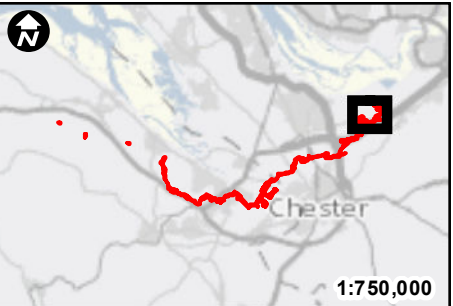
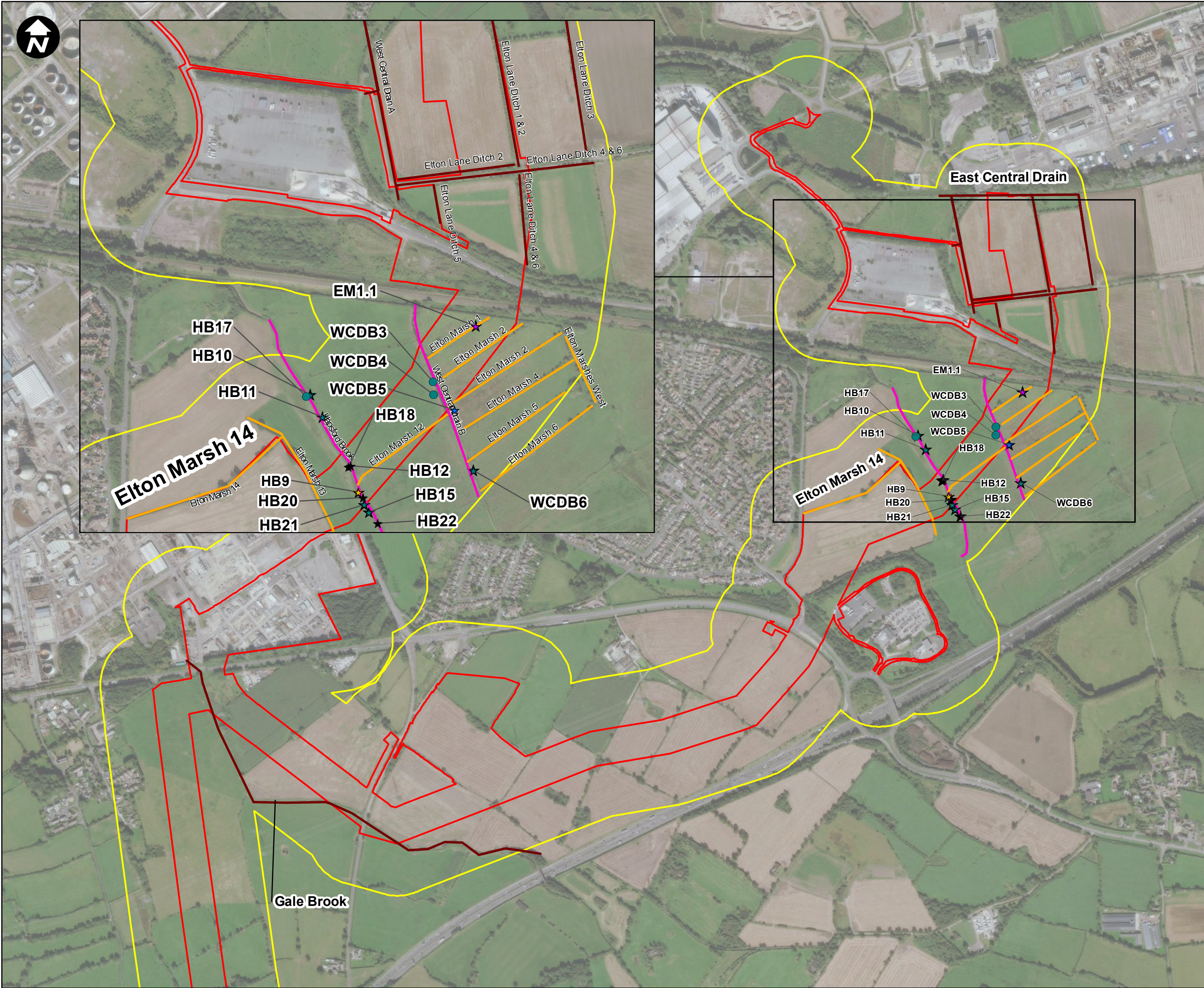
- **Ref. 1** – Chanin, P. (2003). Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough.
- **Ref. 2** – Dean, M., Strachan, R., Gow, D. and Andrews, R (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Matthews and Paul Chanin. The Mammal Society, London.
- **Ref. 3** - GOV (2017). Conservation of Habitats and Species Regulations. Available at: The Conservation of Habitats and Species Regulations 2017 ([legislation.gov.uk](https://www.legislation.gov.uk))
- **Ref. 4** - GOV (1981). The Wildlife and Countryside Act. Available at: Wildlife and Countryside Act 1981 ([legislation.gov.uk](https://www.legislation.gov.uk))
- **Ref. 5** - GOV (2016). Environment (Wales) Act. Available at: Environment (Wales) Act 2016 ([legislation.gov.uk](https://www.legislation.gov.uk))
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- **Ref. 8** - CIEEM (2020). Guidelines for Accessing and Using Biodiversity Data in the UK. Available at: Guidelines for Accessing and Using Biodiversity Data in the UK | CIEEM

# ANNEX A

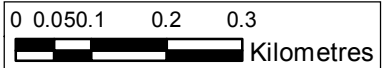
## FIGURES







- Key:**
- Newbuild Infrastructure Boundary
  - Survey Area
- Suitable for Otter**
- Commuting
  - Commuting and Foraging
  - Commuting, Foraging and Resting
  - Precautionarily Assessed – Assumed Presence
  - Scoped out
  - Unsuitable
- Otter**
- Couch
  - Footprint
  - Holt
  - Slide
  - Spraint
  - Burrow
  - Footprint
  - Other
- Mink**
- Footprint
  - Burrow
  - Feeding station
  - Footprint
  - Latrine
  - Mammal path
  - Other
- Rat**
- Burrow
  - Footprint
  - Other



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## HyNet North West

PROJECT TITLE  
**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE  
**Figure 9.6.1  
Riparian Mammals (Otter)  
Sheet 1 of 12**

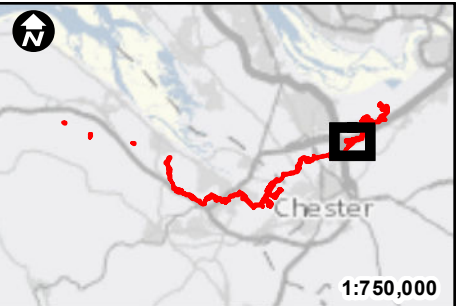
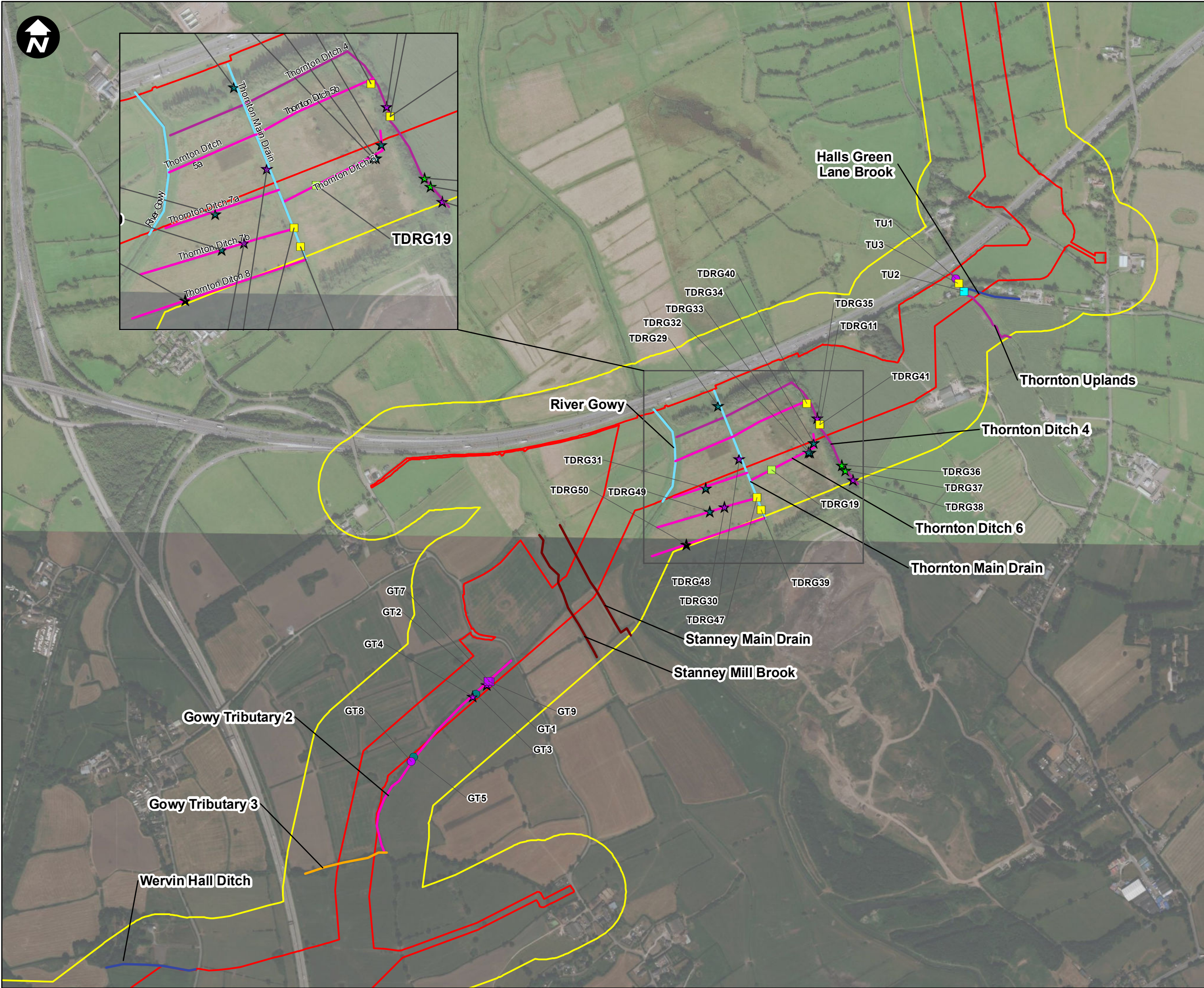
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**EN070007-APP-ES-9.6.1-Sheet 1**





**Key:**

- Newbuild Infrastructure Boundary
- Survey Area

**Suitable for Otter**

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Resting
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

**Otter**

- Couch
- Footprint
- Holt
- Slide
- Spraint

**Mink**

- Footprint
- Burrow
- Feeding station
- Footprint
- Latrine
- Mammal path
- Other

**Rat**

- Burrow
- Footprint
- Other

**Other/Unknown**

- Burrow
- Feeding station
- Footprint
- Latrine
- Mammal path
- Other

0 0.050.1 0.2 0.3 Kilometres

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## HyNet North West

PROJECT TITLE  
**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE  
**Figure 9.6.1  
Riparian Mammals (Otter)  
Sheet 2 of 12**

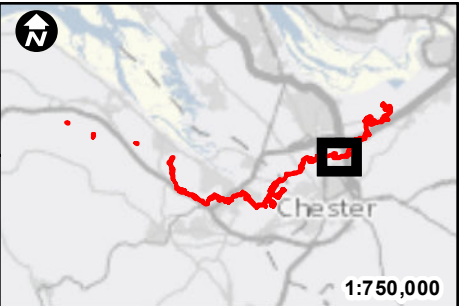
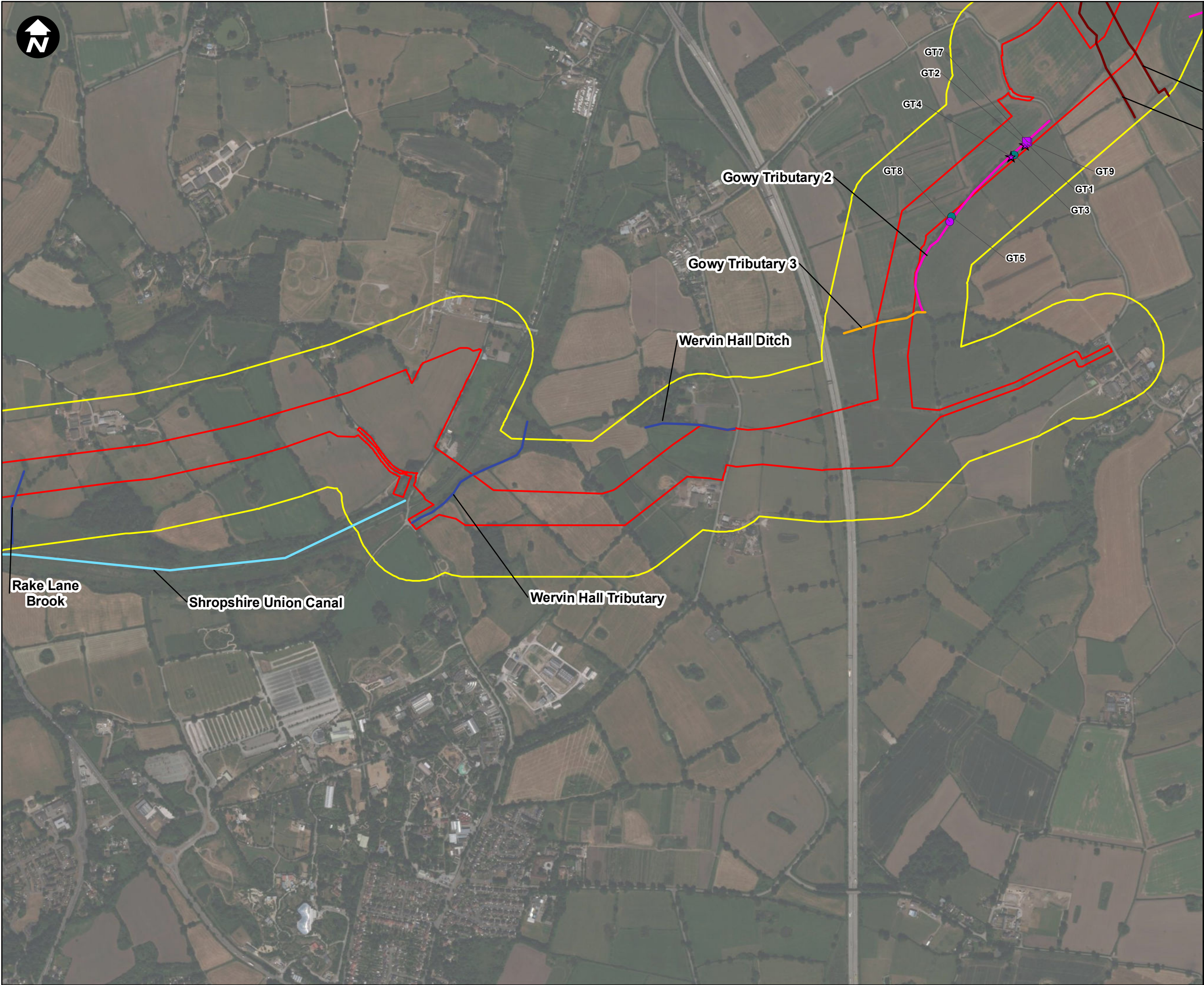
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**EN070007-APP-ES-9.6.1-Sheet 2**





**Key:**

- Newbuild Infrastructure Boundary
- Survey Area

**Suitable for Otter**

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Resting
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

Otter	Mink
Couch	Footprint
Footprint	<b>Other/Unkown</b>
Holt	Burrow
Slide	Feeding station
Spraint	Footprint
<b>Rat</b>	Latrine
Burrow	Mammal path
Footprint	Other
Other	

0 0.050.1 0.2 0.3  
Kilometres

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PROJECT TITLE

**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE

Figure 9.6.1  
Riparian Mammals (Otter)  
Sheet 3 of 12

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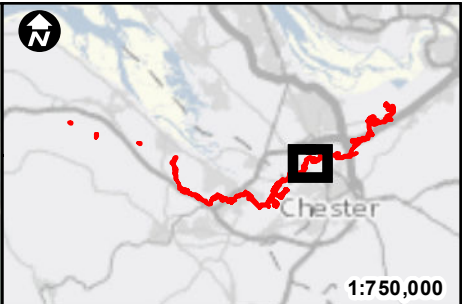
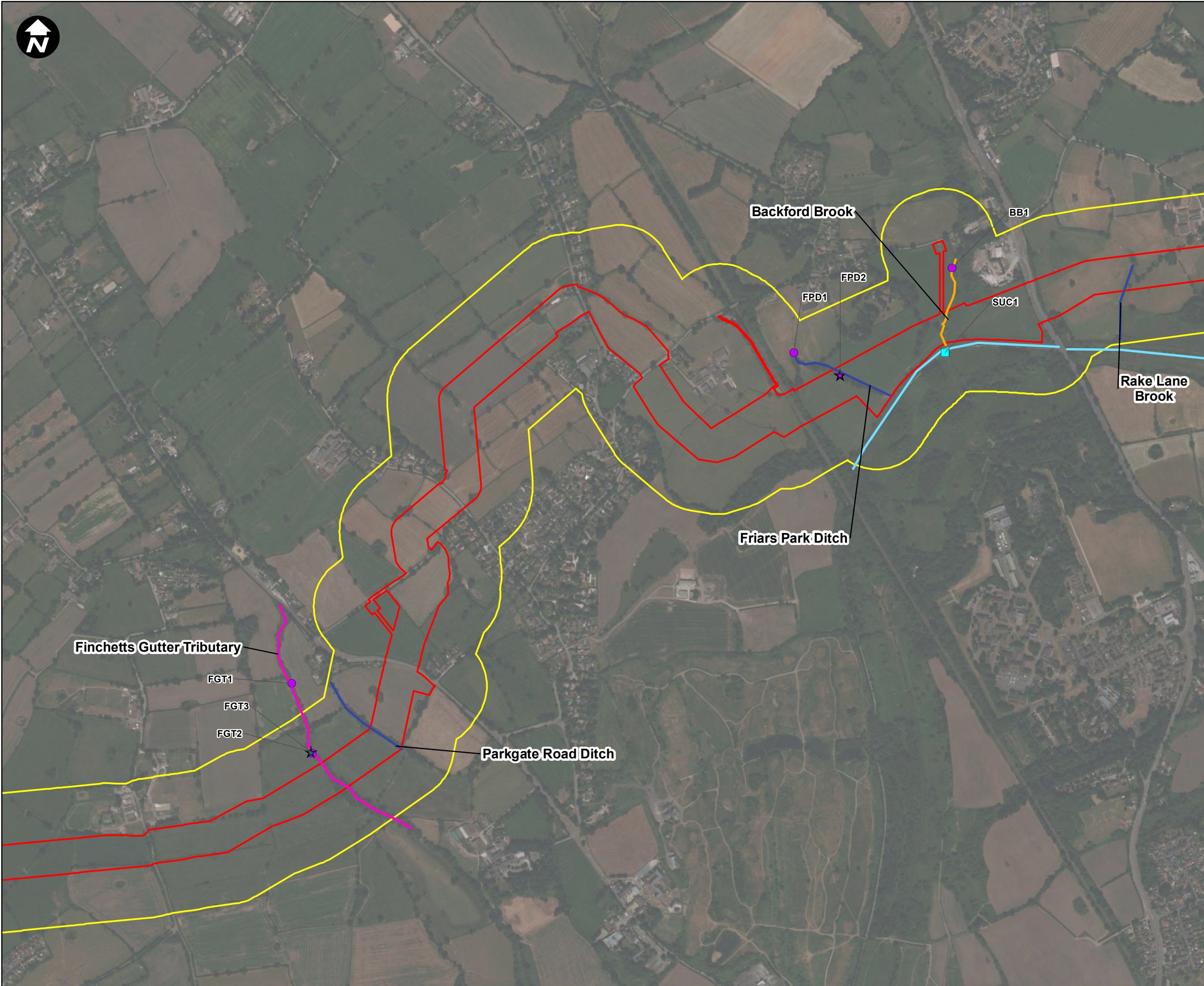
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EN070007-APP-ES-9.6.1-Sheet 3





**Key:**

- Newbuild Infrastructure Boundary
- Survey Area

**Suitable for Otter**

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Resting
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

Otter	Mink
Couch	Footprint
Footprint	Other/Unkown
Holt	Burrow
Slide	Feeding station
Spraint	Footprint
Burrow	Latrine
Footprint	Mammal path
Other	Other

0 0.050.1 0.2 0.3 Kilometres

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**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE

Figure 9.6.1  
Riparian Mammals (Otter)  
Sheet 4 of 12

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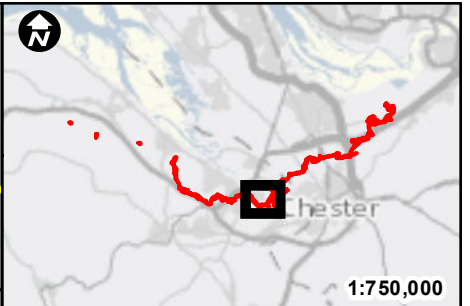
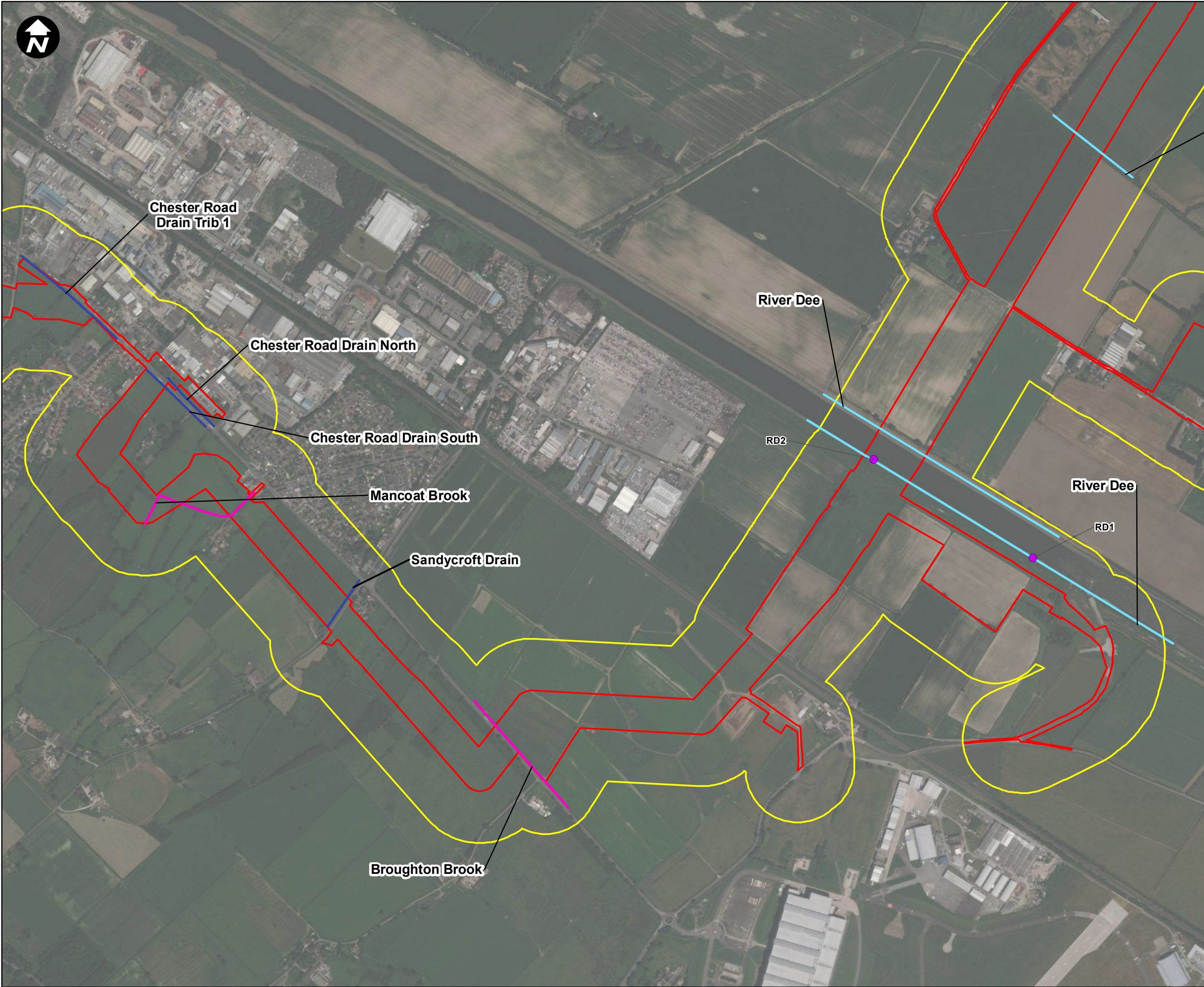
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**Key:**

- Newbuild Infrastructure Boundary
- Survey Area

**Suitable for Otter**

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Resting
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

**Otter**

- Couch
- Footprint
- Holt
- Slide
- Spraint
- Burrow
- Footprint
- Other

**Mink**

- Footprint
- Burrow
- Feeding station
- Footprint
- Latrine
- Mammal path
- Other

**Rat**

- Burrow
- Footprint
- Other

**Other/Unkown**

- Burrow
- Feeding station
- Footprint
- Latrine
- Mammal path
- Other

0 0.050.1 0.2 0.3 Kilometres

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**HyNet North West**

PROJECT TITLE

**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE

Figure 9.6.1  
Riparian Mammals (Otter)  
Sheet 6 of 12

DRAWING STATUS

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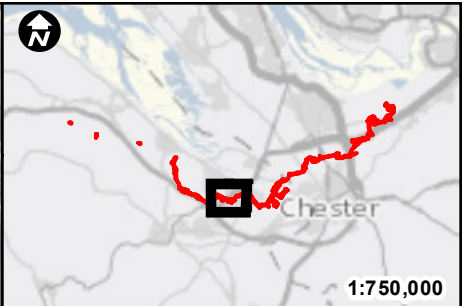
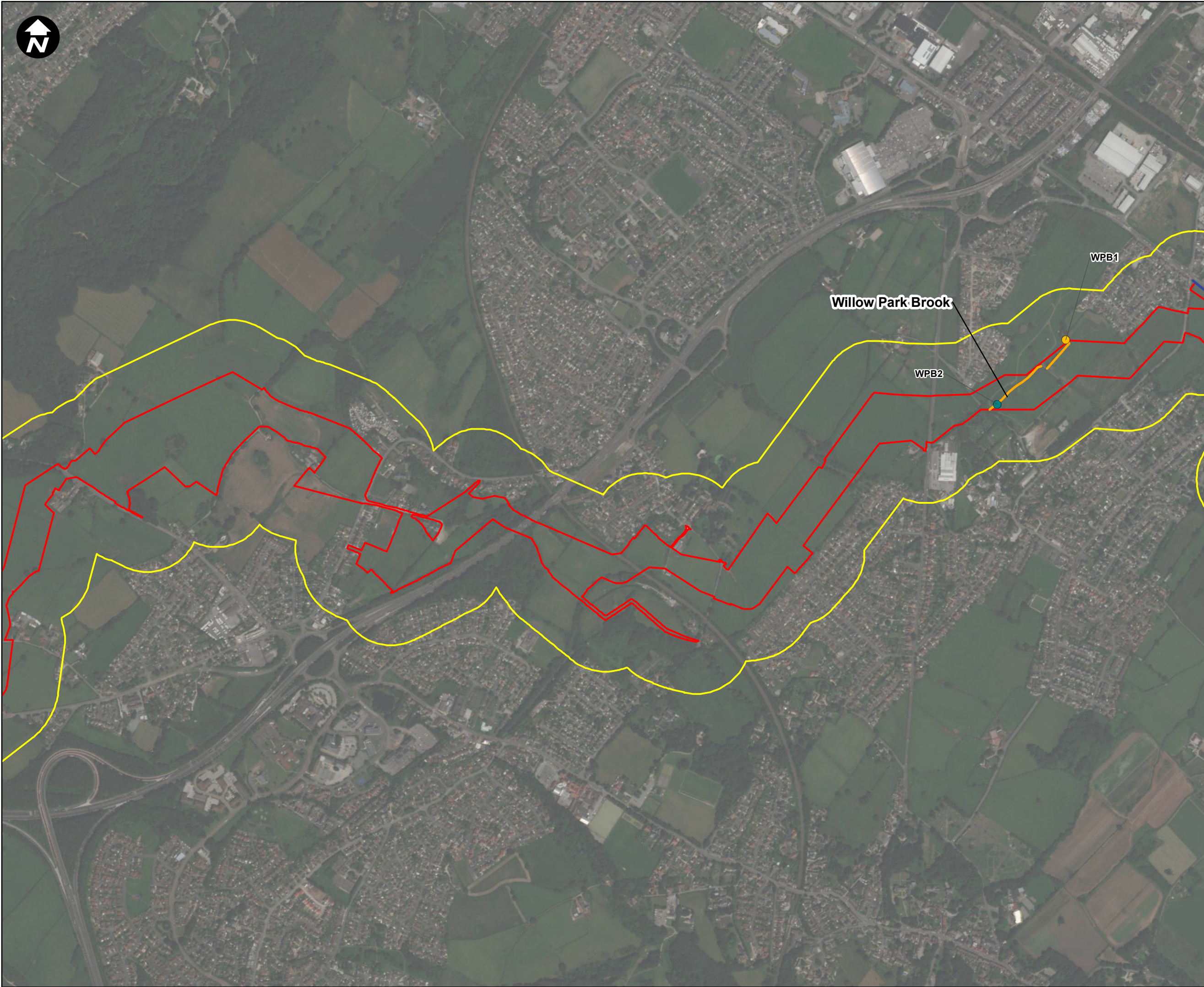
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EN070007-APP-ES-9.6.1-Sheet 6





**Key:**

- Newbuild Infrastructure Boundary
- Survey Area

**Suitable for Otter**

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Resting
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

**Otter**

- Couch
- Footprint
- Holt
- Slide
- Sprint

**Mink**

- Footprint
- Burrow
- Feeding station
- Footprint
- Latrine
- Mammal path
- Other

**Rat**

- Burrow
- Footprint
- Other

0 0.050.1 0.2 0.3 Kilometres

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PROJECT TITLE

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Carbon Dioxide Pipeline DCO**

DRAWING TITLE

Figure 9.6.1  
Riparian Mammals (Otter)  
Sheet 7 of 12

DRAWING STATUS

FOR INFORMATION

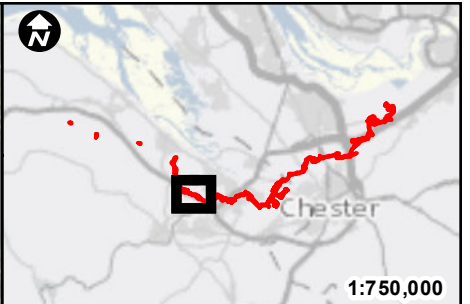
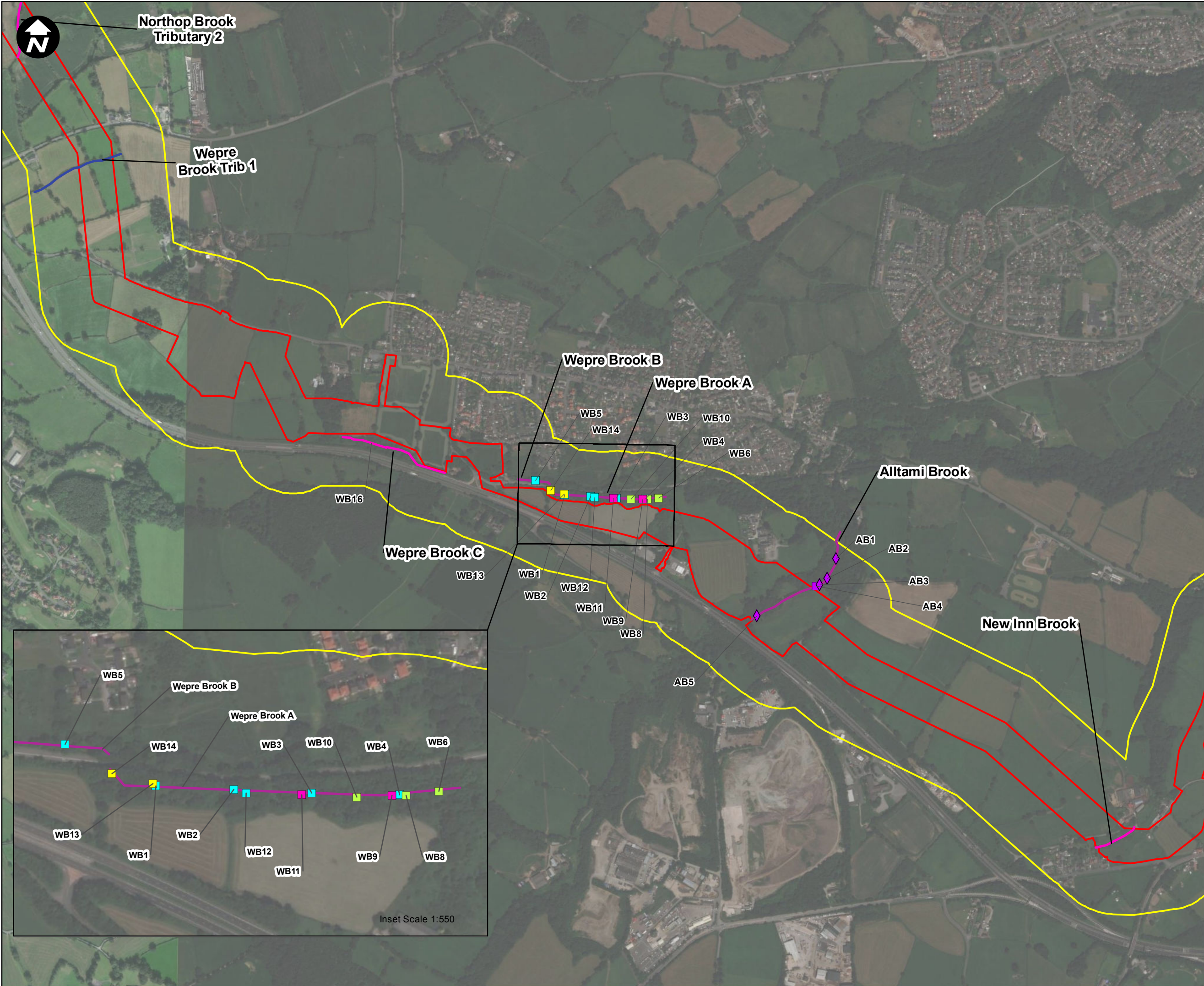
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SCALE @ A3 SIZE 1:10,000	DATE 21/01/2023	REVISION B
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DRAWING NUMBER

EN070007-APP-ES-9.6.1-Sheet 7





**Key:**

- Newbuild Infrastructure Boundary
- Survey Area

**Suitable for Otter**

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Resting
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

**Otter**

- Couch
- Footprint
- Holt
- Slide
- Spraint

**Mink**

- Footprint
- Burrow
- Feeding station
- Footprint
- Latrine
- Mammal path
- Other

**Rat**

- Burrow
- Footprint
- Other

0 0.050.1 0.2 0.3 Kilometres

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**HyNet North West**

PROJECT TITLE

**HyNet North West Carbon Dioxide Pipeline DCO**

DRAWING TITLE

Figure 9.6.1  
Riparian Mammals (Otter)  
Sheet 8 of 12

DRAWING STATUS

FOR INFORMATION

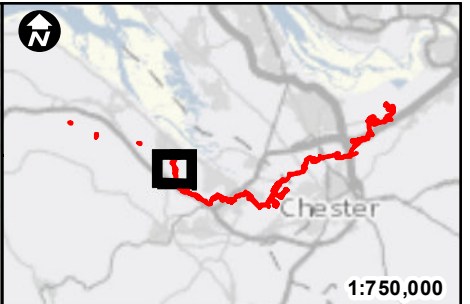
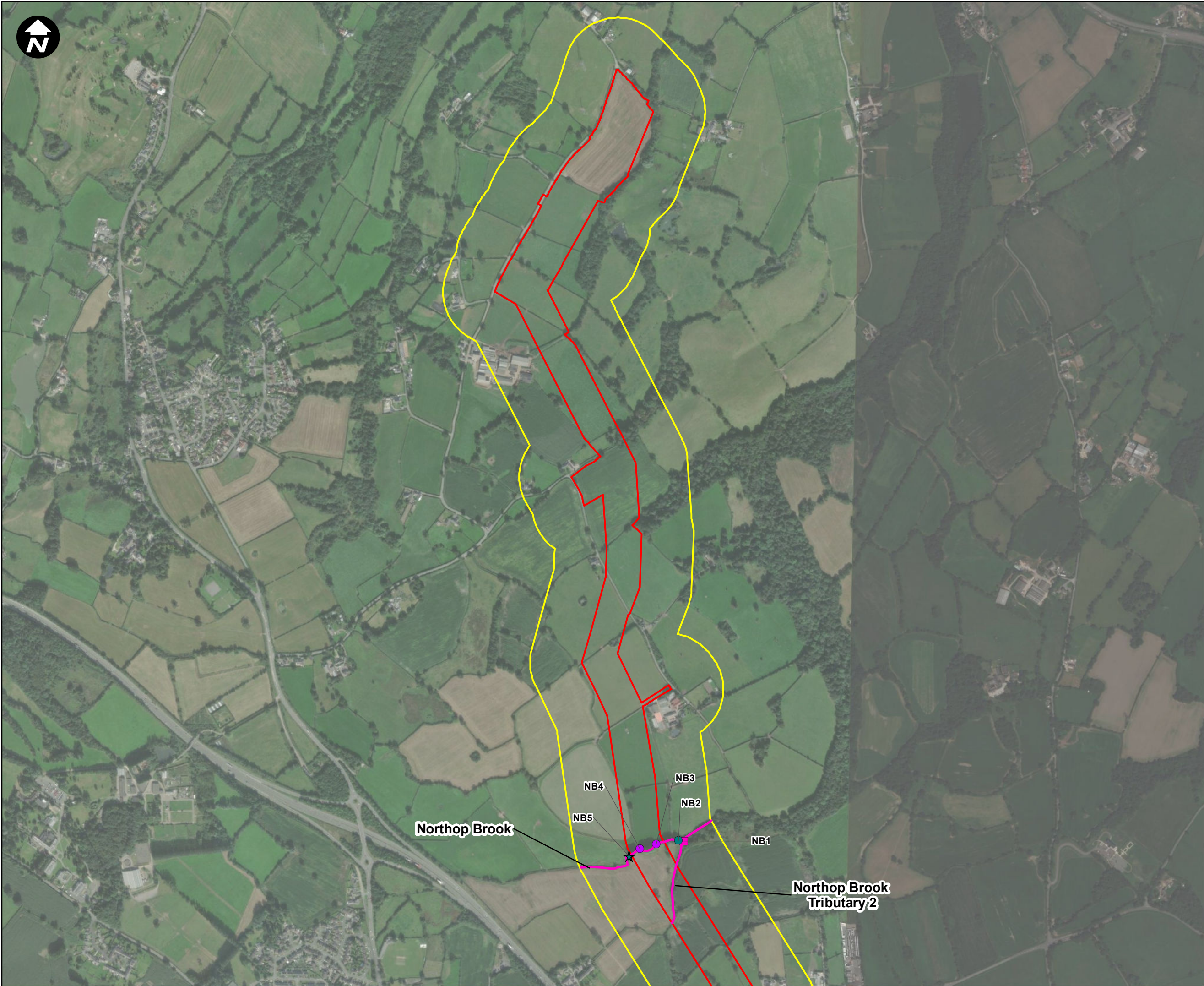
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SCALE @ A3 SIZE 1:10,000	DATE 21/01/2023	REVISION B
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DRAWING NUMBER

EN070007-APP-ES-9.6.1-Sheet 8





**Key:**

- Newbuild Infrastructure Boundary
- Survey Area

**Suitable for Otter**

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Resting
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

**Otter**

- Couch
- Holt
- Slide
- Spraint

**Mink**

- Footprint

**Other/Unkown**

- Burrow
- Footprint
- Mammal path
- Other

**Rat**

- Burrow
- Footprint
- Other

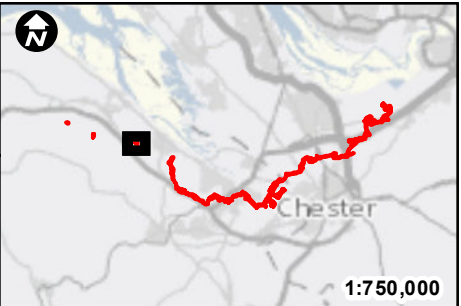
0 0.050.1 0.2 0.3 Kilometres

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## HyNet North West

PROJECT TITLE			
HyNet North West Carbon Dioxide Pipeline DCO			
DRAWING TITLE			
Figure 9.6.1 Riparian Mammals (Otter) Sheet 9 of 12			
DRAWING STATUS			
FOR INFORMATION			
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NG	ImcQ	JOK	SP
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1:10,000		21/01/2023	B
DRAWING NUMBER			
EN070007-APP-ES-9.6.1-Sheet 9			





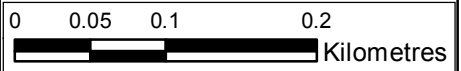
**Key:**

- Newbuild Infrastructure Boundary
- Survey Area

**Suitable for Otter**

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Resting
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

Otter	Mink
Couch	Footprint
Footprint	<b>Other/Unkown</b>
Holt	Burrow
Slide	Feeding station
Spraint	Footprint
<b>Rat</b>	Latrine
Burrow	Mammal path
Footprint	Other
Other	



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## HyNet North West

PROJECT TITLE  
**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE  
**Figure 9.6.1  
Riparian Mammals (Otter)  
Sheet 10 of 12**

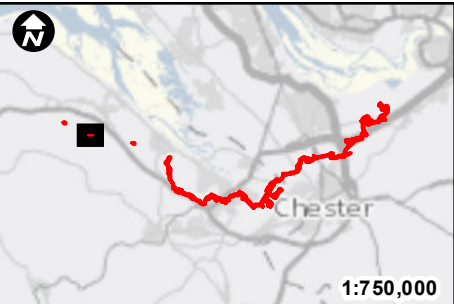
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**FOR INFORMATION**

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SCALE @ A3 SIZE 1:5,000	DATE 21/01/2023	REVISION B
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DRAWING NUMBER  
**EN070007-APP-ES-9.6.1-Sheet 10**





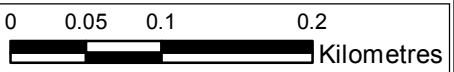
**Key:**

- Newbuild Infrastructure Boundary
- Survey Area

**Suitable for Otter**

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Resting
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

<b>Otter</b>	<b>Mink</b>
<span style="color: #90EE90;">■</span> Couch	<span style="color: #800080;">◆</span> Footprint
<span style="color: #FFFF00;">■</span> Holt	<b>Other/Unkown</b>
<span style="color: #FF00FF;">■</span> Slide	<span style="color: #008080;">★</span> Burrow
<span style="color: #00FFFF;">■</span> Spraint	<span style="color: #800080;">★</span> Footprint
<b>Rat</b>	<span style="color: #008000;">★</span> Mammal path
<span style="color: #008080;">●</span> Burrow	<span style="color: #FFD700;">★</span> Other
<span style="color: #FF00FF;">●</span> Footprint	
<span style="color: #FFA500;">●</span> Other	



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# HyNet North West

PROJECT TITLE  
**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE  
**Figure 9.6.1  
Riparian Mammals (Otter)  
Sheet 11 of 12**

DRAWING STATUS  
**FOR INFORMATION**

DRAWN NG	CHECKED ImcQ	APPROVED JOK	AUTHORISED SP
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SCALE @ A3 SIZE 1:5,000	DATE 21/01/2023	REVISION B
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DRAWING NUMBER  
**EN070007-APP-ES-9.6.1-Sheet 11**





- Key:**
- Newbuild Infrastructure Boundary
  - Survey Area
  - Suitable for Otter**
  - Commuting
  - Commuting and Foraging
  - Commuting, Foraging and Resting
  - Precautionarily Assessed – Assumed Presence
  - Scoped out
  - Unsuitable

- | Otter      | Mink                |
|------------|---------------------|
| Couch      | Footprint           |
| Footprint  | <b>Other/Unkown</b> |
| Holt       | Burrow              |
| Slide      | Feeding station     |
| Spraint    | Footprint           |
| <b>Rat</b> | Latrine             |
| Burrow     | Mammal path         |
| Footprint  | Other               |
| Other      |                     |



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## HyNet North West

PROJECT TITLE  
**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE  
**Figure 9.6.1  
Riparian Mammals (Otter)  
Sheet 12 of 12**

DRAWING STATUS  
**FOR INFORMATION**

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NG	ImcQ	JOK	SP

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1:5,000	21/01/2023	B

DRAWING NUMBER  
**EN070007-APP-ES-9.6.1-Sheet 12**





**Key:**

- Newbuild Infrastructure Boundary
- Survey Area

**Suitable for Water Vole**

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Burrowing
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

**Water Vole**

- Burrow
- Feeding station
- Footprint
- Latrine

**Mink**

- Footprint
- Other/Unkown

**Rat**

- Burrow
- Footprint
- Other

**Other/Unkown**

- Burrow
- Feeding station
- Footprint
- Latrine
- Mammal path
- Other

0 0.050.1 0.2 0.3 Kilometres

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## HyNet North West

PROJECT TITLE  
**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE  
**Figure 9.6.1  
Riparian Mammals (Water vole)  
Sheet 1 of 12**

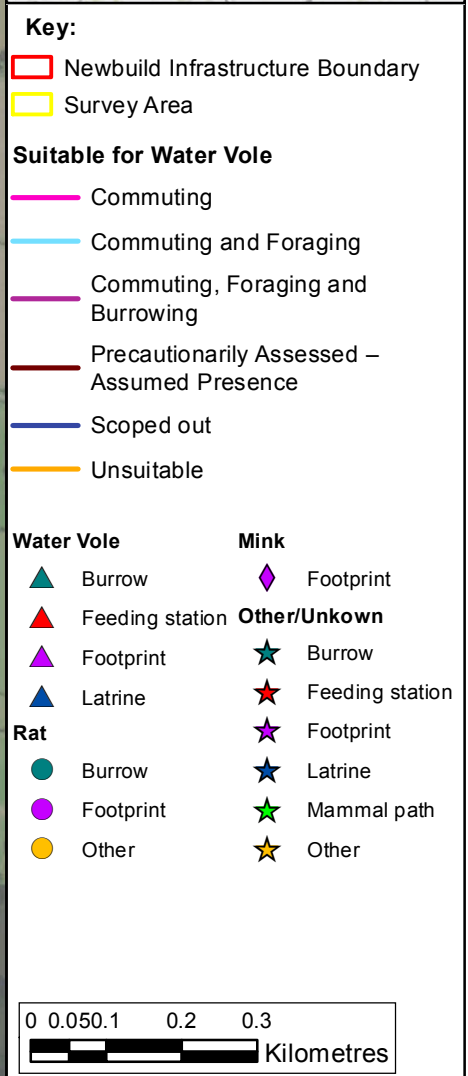
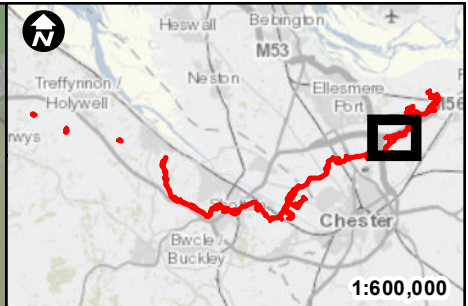
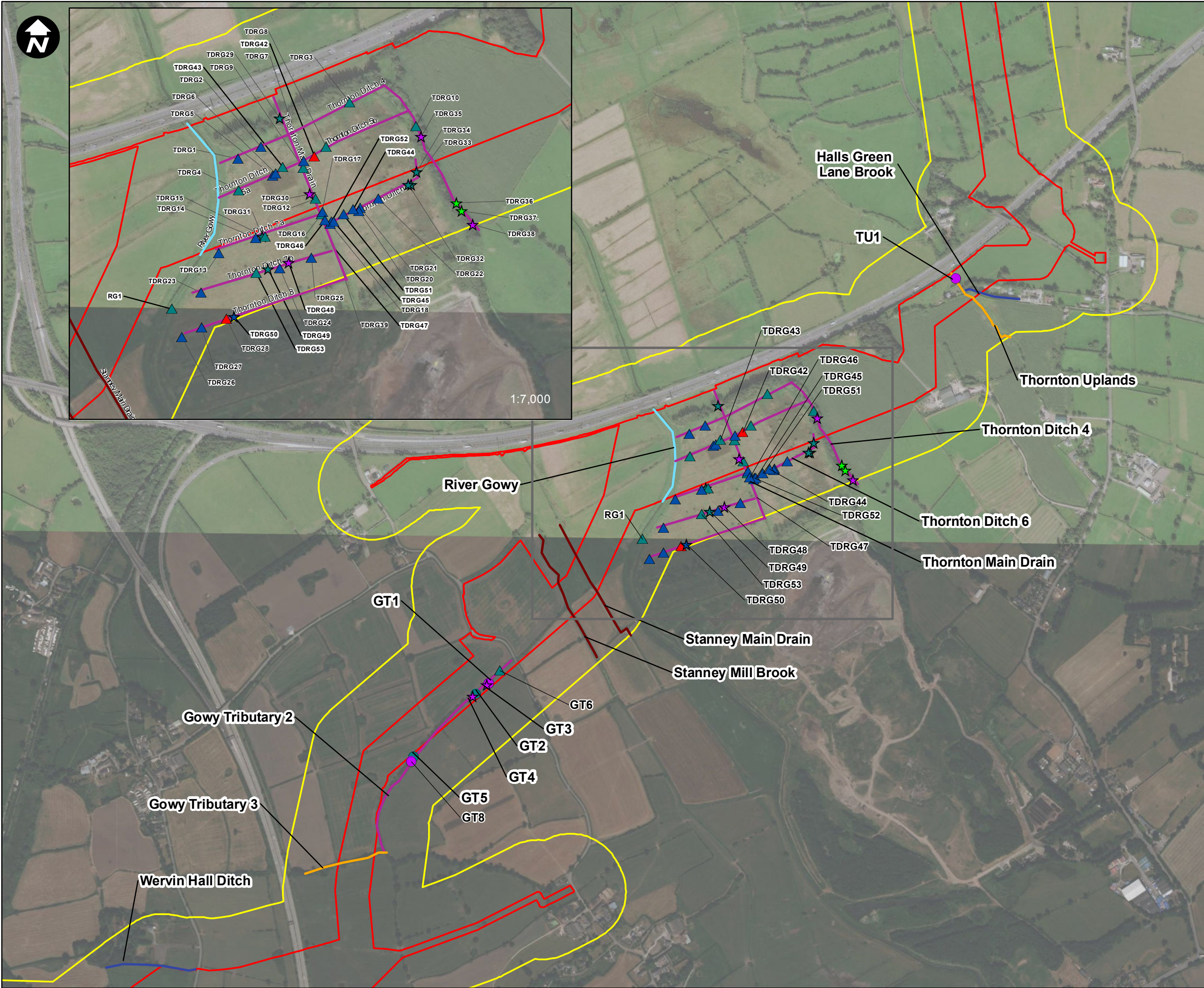
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**EN070007-APP-ES-9.6.1-Sheet 1**





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## HyNet North West

PROJECT TITLE  
**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE  
**Figure 9.6.2  
Riparian Mammals (Water vole)  
Sheet 2 of 12**

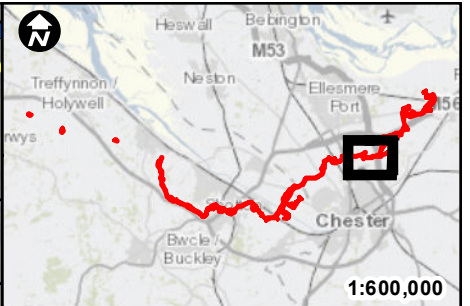
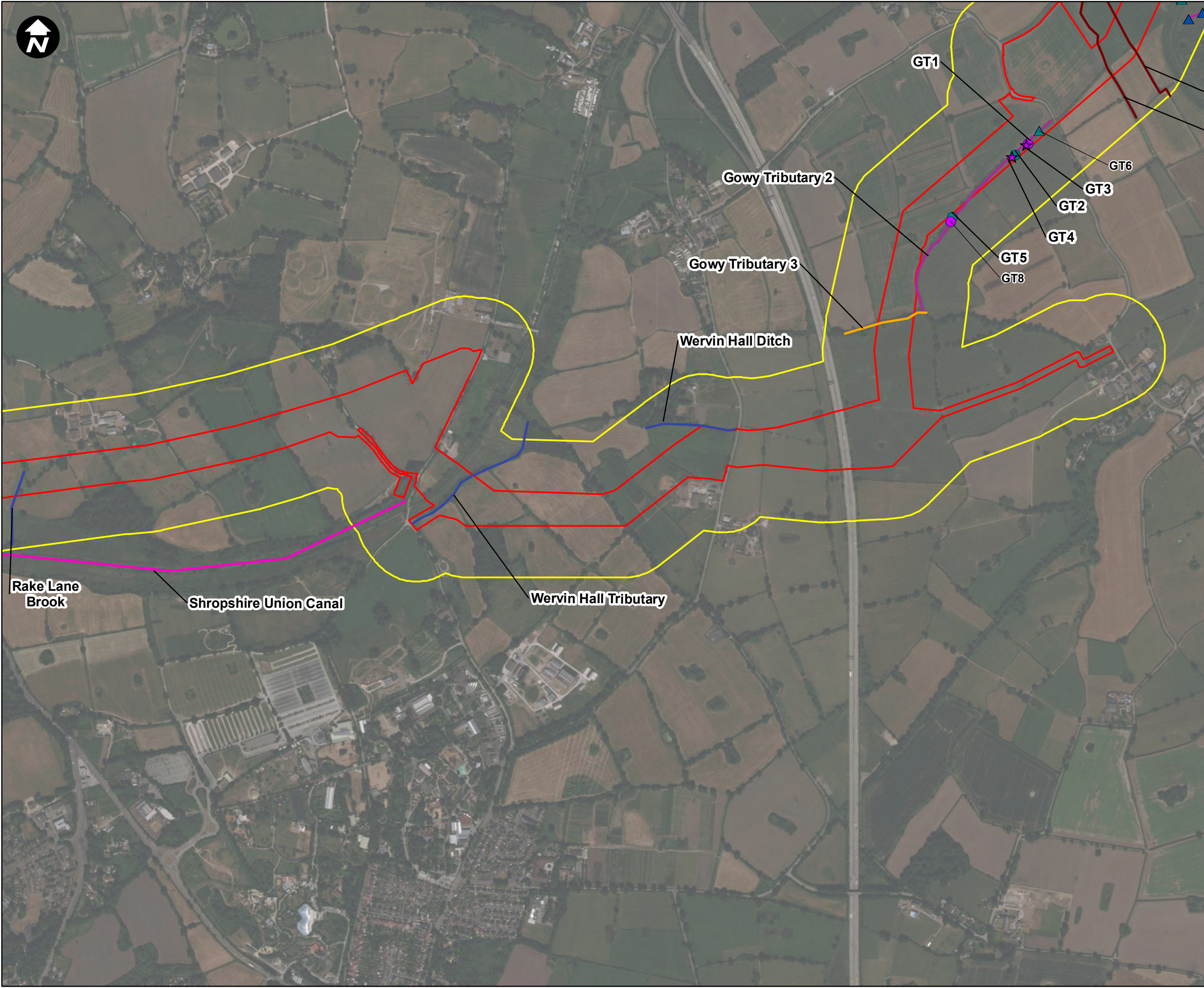
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SCALE @ A3 SIZE 1:10,000	DATE 21/01/2023	REVISION B
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DRAWING NUMBER  
**EN070007-APP-ES-9.6.2-Sheet 2**





**Key:**

- Newbuild Infrastructure Boundary
- Survey Area

**Suitable for Water Vole**

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Burrowing
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

Water Vole	Mink
Burrow	Footprint
Feeding station	<b>Other/Unkown</b>
Footprint	Burrow
Latrine	Feeding station
<b>Rat</b>	Footprint
Burrow	Latrine
Footprint	Mammal path
Other	Other

0 0.050.1 0.2 0.3  
Kilometres

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**HyNet North West**

PROJECT TITLE

**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE

Figure 9.6.2  
Riparian Mammals (Water vole)  
Sheet 3 of 12

DRAWING STATUS

FOR INFORMATION

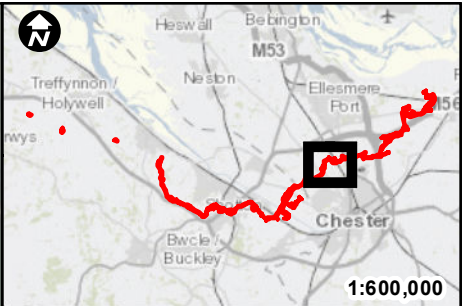
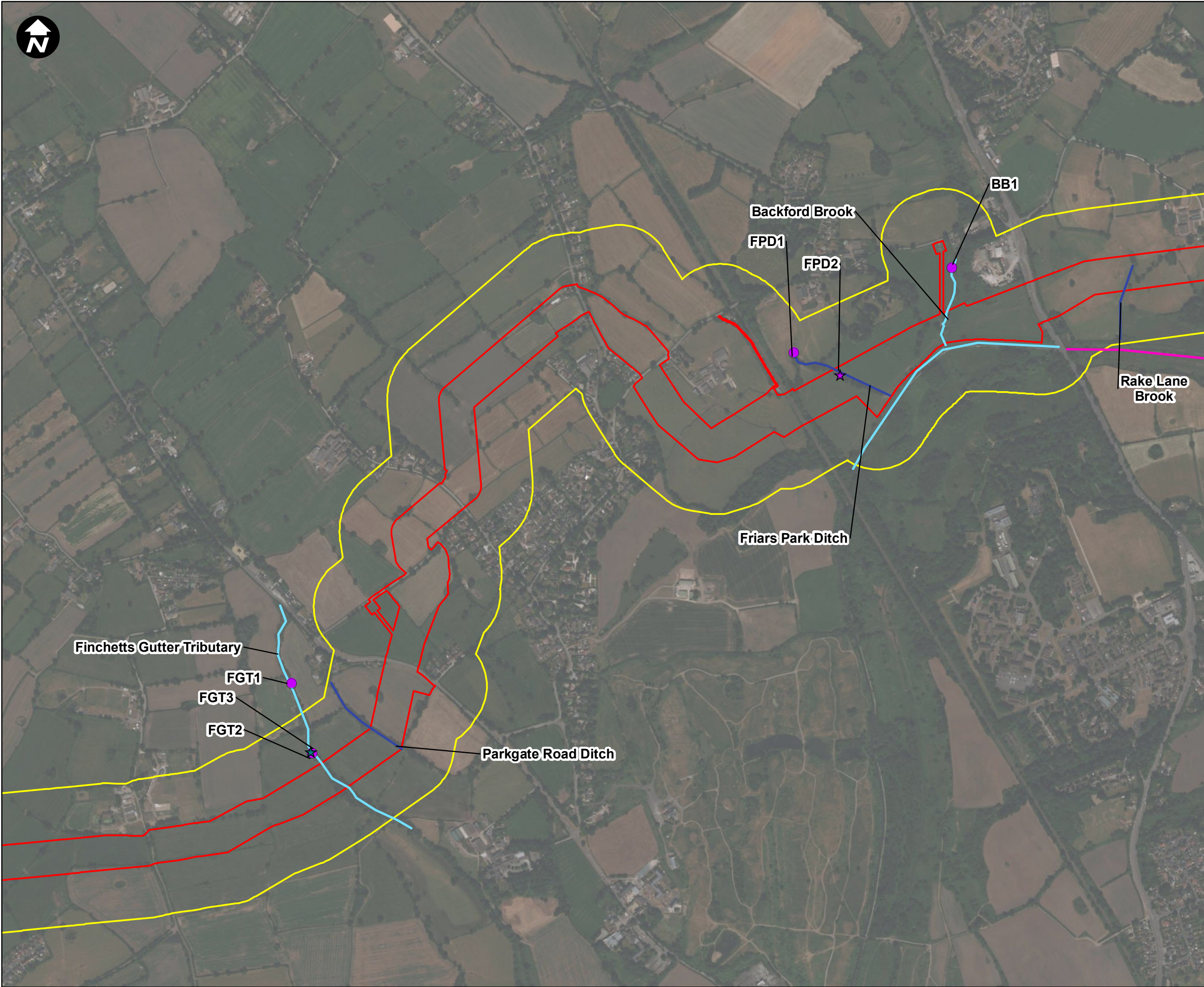
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SCALE @ A3 SIZE 1:10,000	DATE 21/01/2023	REVISION B
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DRAWING NUMBER

EN070007-APP-ES-9.6.2-Sheet 3





**Key:**

- Newbuild Infrastructure Boundary
- Survey Area

**Suitable for Water Vole**

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Burrowing
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

**Water Vole**

- Burrow
- Feeding station
- Footprint
- Latrine

**Rat**

- Burrow
- Footprint
- Other

**Mink**

- Footprint
- Other/Unkown
- Burrow
- Feeding station
- Footprint
- Latrine
- Mammal path
- Other

0 0.050.1 0.2 0.3 Kilometres

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**HyNet North West**

PROJECT TITLE

**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE

**Figure 9.6.2  
Riparian Mammals (Water vole)  
Sheet 4 of 12**

DRAWING STATUS

**FOR INFORMATION**

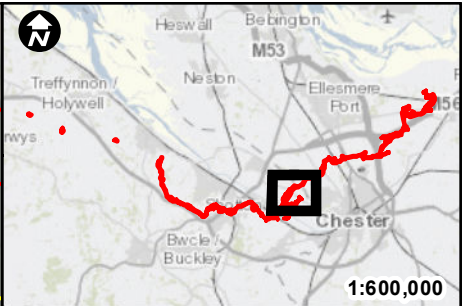
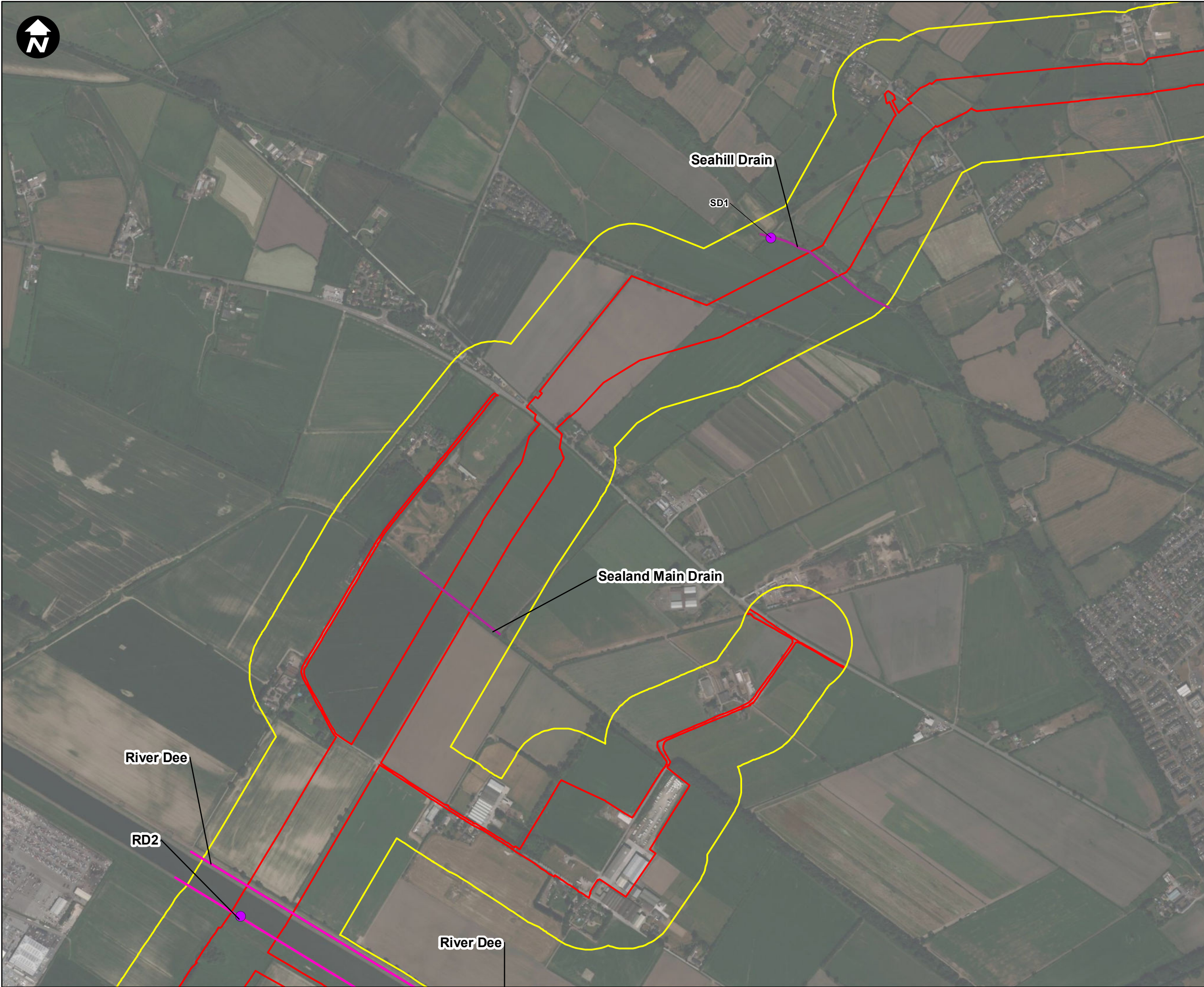
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NG	ImcQ	JOK	SP

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1:10,000	21/01/2023	B

DRAWING NUMBER

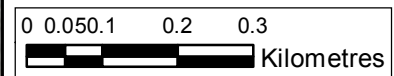
**EN070007-APP-ES-9.6.2-Sheet 4**





- Key:**
- Newbuild Infrastructure Boundary
  - Survey Area
- Suitable for Water Vole**
- Commuting
  - Commuting and Foraging
  - Commuting, Foraging and Burrowing
  - Precautionarily Assessed – Assumed Presence
  - Scoped out
  - Unsuitable

- Water Vole**
- Burrow
  - Feeding station
  - Footprint
  - Latrine
- Rat**
- Burrow
  - Footprint
  - Other
- Mink**
- Footprint
  - Other/Unkown
  - Burrow
  - Feeding station
  - Footprint
  - Latrine
  - Mammal path
  - Other



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## HyNet North West

PROJECT TITLE  
**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE  
**Figure 9.6.2  
Riparian Mammals (Water vole)  
Sheet 5 of 12**

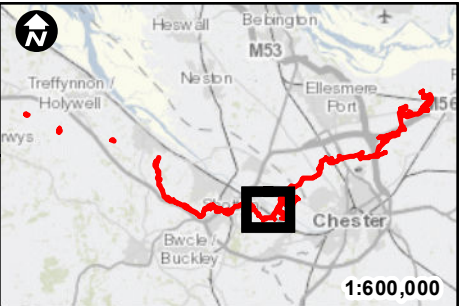
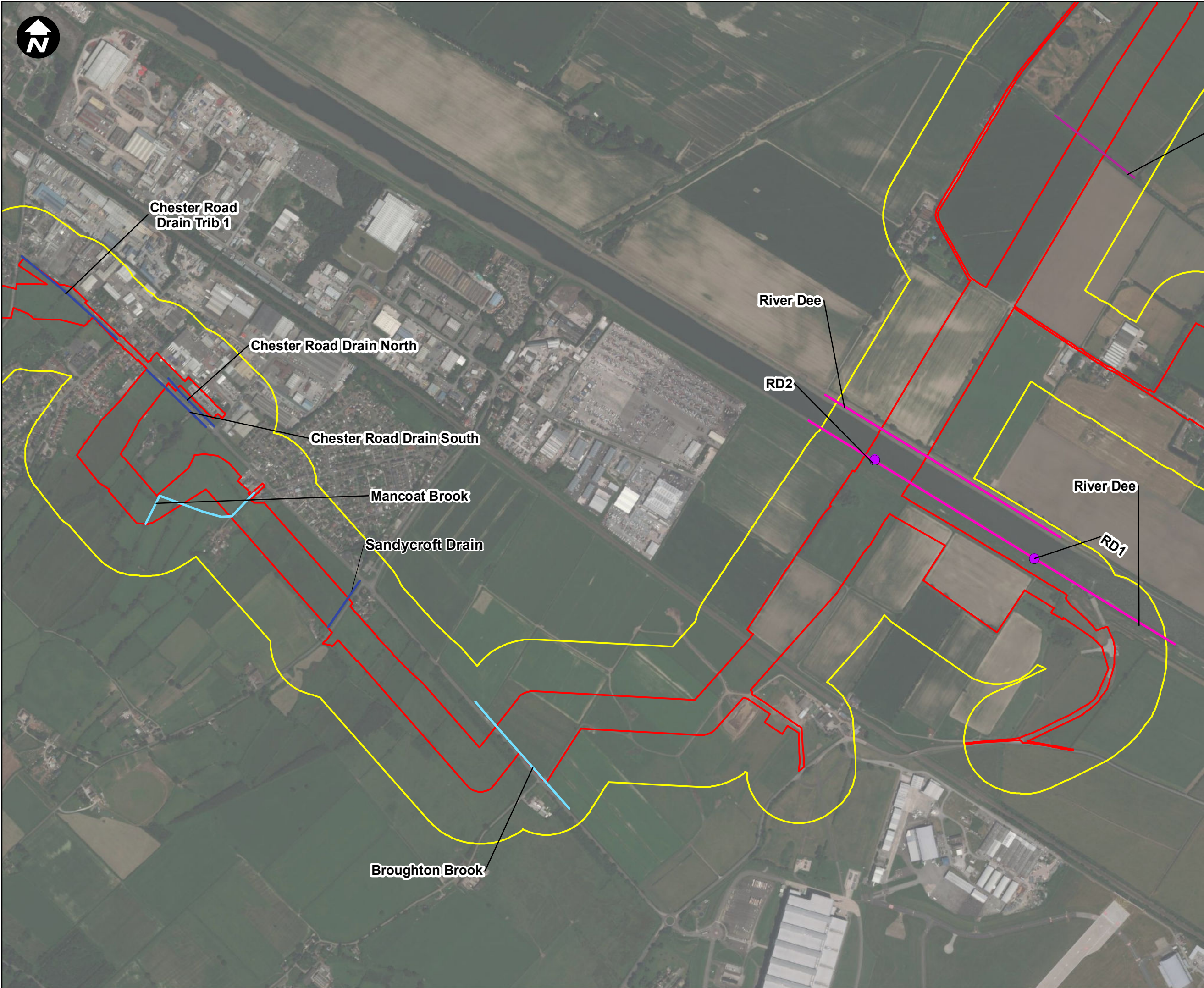
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SCALE @ A3 SIZE 1:10,000	DATE 21/01/2023	REVISION B
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DRAWING NUMBER  
**EN070007-APP-ES-9.6.2-Sheet 5**





**Key:**

- Newbuild Infrastructure Boundary
- Survey Area

**Suitable for Water Vole**

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Burrowing
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

**Water Vole**

- Burrow
- Feeding station
- Footprint
- Latrine

**Rat**

- Burrow
- Footprint
- Other

**Mink**

- Footprint
- Other/Unknown
- Burrow
- Feeding station
- Footprint
- Latrine
- Mammal path
- Other

0 0.050.1 0.2 0.3 Kilometres

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## HyNet North West

PROJECT TITLE  
**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE  
**Figure 9.6.2  
Riparian Mammals (Water vole)  
Sheet 6 of 12**

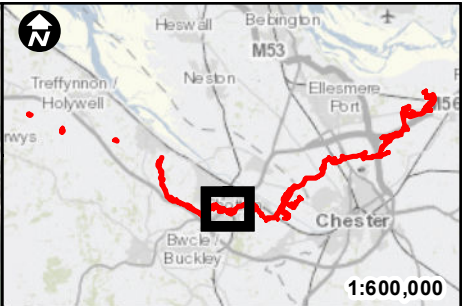
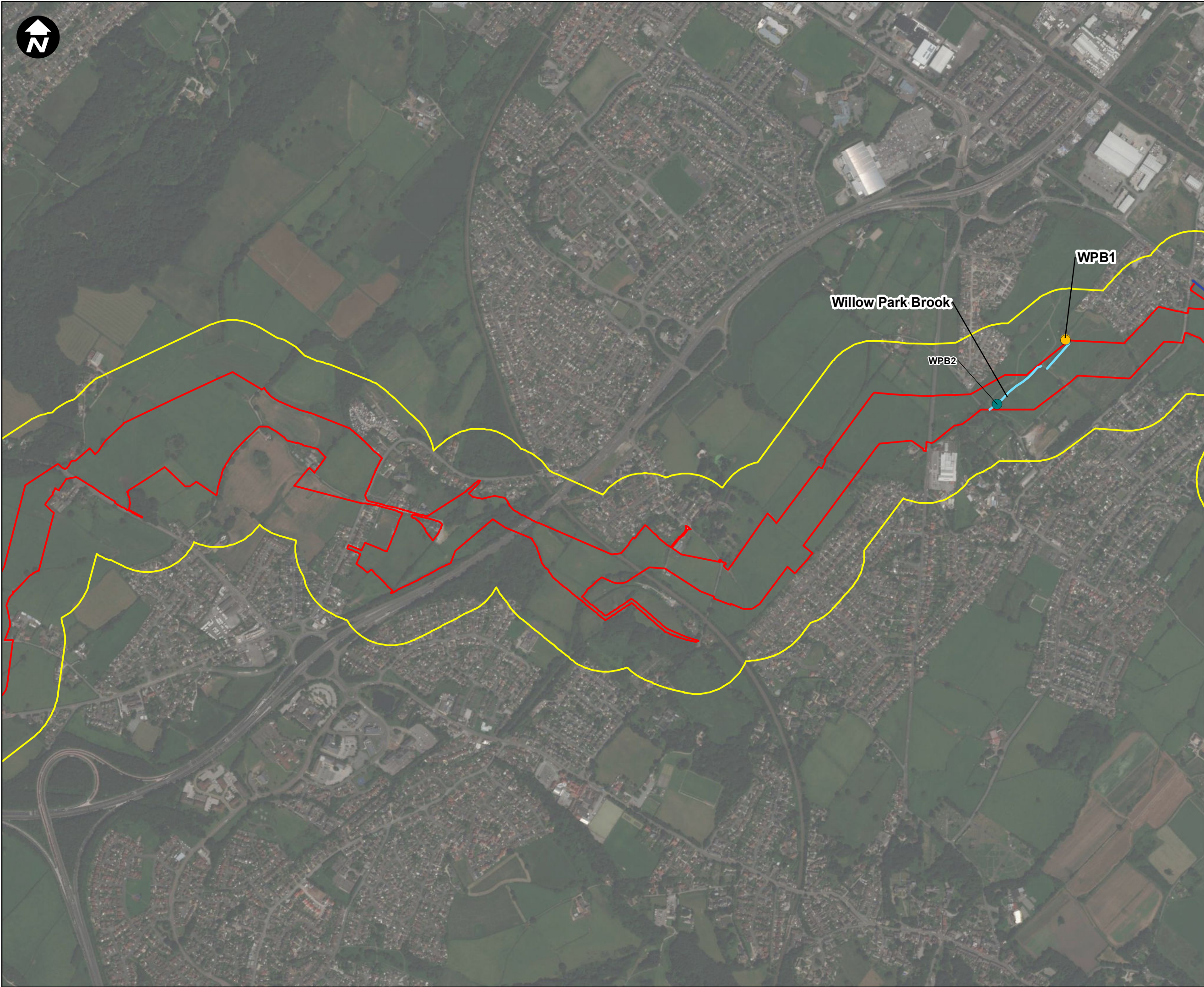
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SCALE @ A3 SIZE 1:10,000	DATE 21/01/2023	REVISION B
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DRAWING NUMBER  
**EN070007-APP-ES-9.6.2-Sheet 6**





**Key:**

- Newbuild Infrastructure Boundary
- Survey Area

**Suitable for Water Vole**

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Burrowing
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

**Water Vole**

- Burrow
- Feeding station
- Footprint
- Latrine

**Rat**

- Burrow
- Footprint
- Other

**Mink**

- Footprint
- Other/Unknown
- Burrow
- Feeding station
- Footprint
- Latrine
- Mammal path
- Other

0 0.050.1 0.2 0.3 Kilometres

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**HyNet North West**

PROJECT TITLE

**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE

Figure 9.6.2  
Riparian Mammals (Water vole)  
Sheet 7 of 12

DRAWING STATUS

FOR INFORMATION

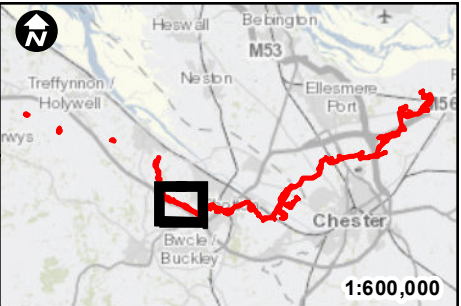
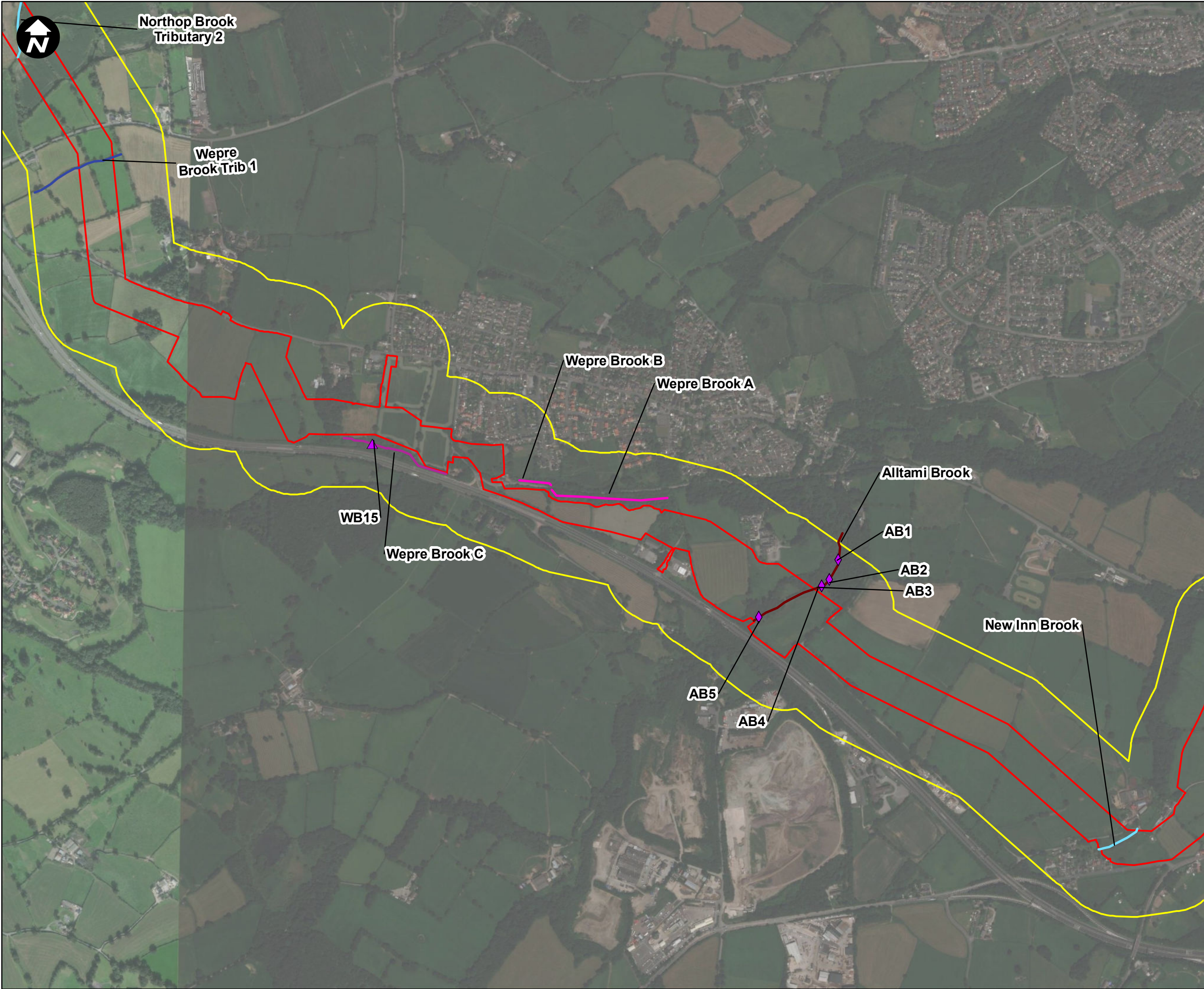
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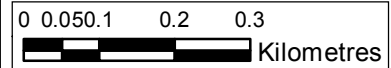
EN070007-APP-ES-9.6.2-Sheet 7





- Key:**
- Newbuild Infrastructure Boundary
  - Survey Area
  - Suitable for Water Vole**
  - Commuting
  - Commuting and Foraging
  - Commuting, Foraging and Burrowing
  - Precautionarily Assessed – Assumed Presence
  - Scoped out
  - Unsuitable

- | Water Vole      | Mink                 |
|-----------------|----------------------|
| Burrow          | Footprint            |
| Feeding station | <b>Other/Unknown</b> |
| Footprint       | Burrow               |
| Latrine         | Feeding station      |
| <b>Rat</b>      | Footprint            |
| Burrow          | Latrine              |
| Footprint       | Mammal path          |
| Other           | Other                |



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**HyNet North West**

PROJECT TITLE  
**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE  
**Figure 9.6.2  
Riparian Mammals (Water vole)  
Sheet 8 of 12**

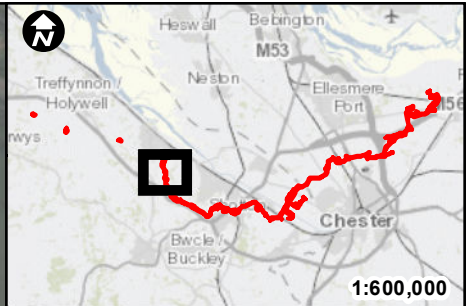
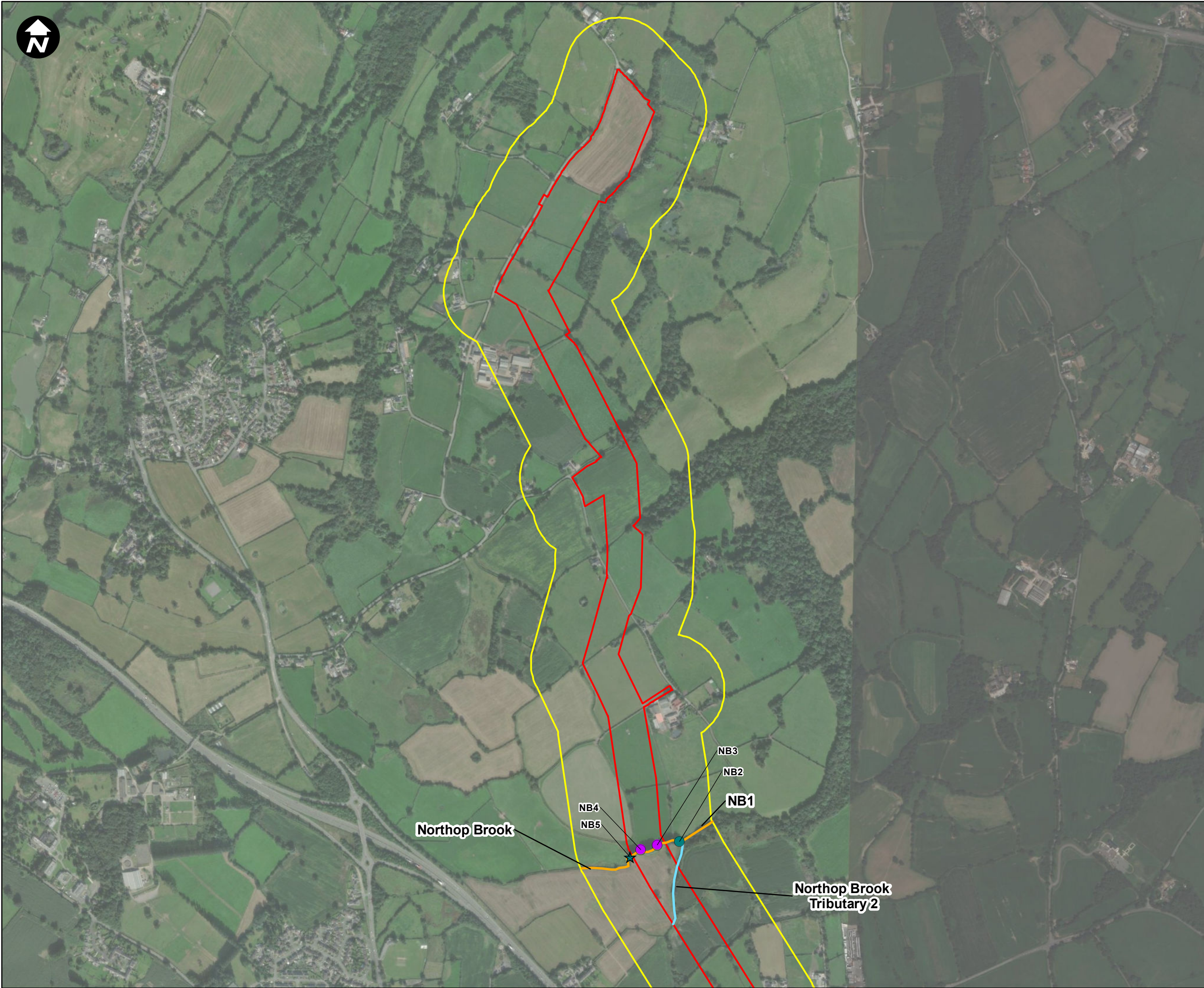
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1:10,000	21/01/2023	B

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**EN070007-APP-ES-9.6.2-Sheet 8**





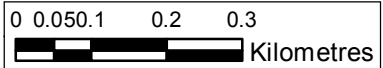
Key:

- Newbuild Infrastructure Boundary
- Survey Area

Suitable for Water Vole

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Burrowing
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

- | Water Vole      | Mink            |
|-----------------|-----------------|
| Burrow          | Footprint       |
| Feeding station | Other/Unkown    |
| Footprint       | Burrow          |
| Latrine         | Feeding station |
|                 | Footprint       |
|                 | Latrine         |
|                 | Mammal path     |
|                 | Other           |



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HyNet North West

PROJECT TITLE  
HyNet North West  
Carbon Dioxide Pipeline DCO

DRAWING TITLE  
Figure 9.6.2  
Riparian Mammals (Water vole)  
Sheet 9 of 12

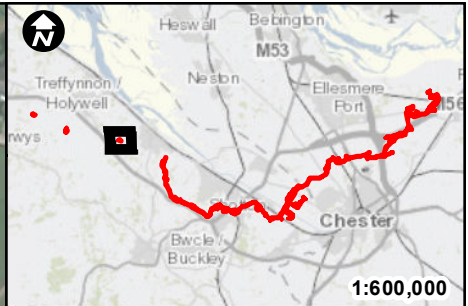
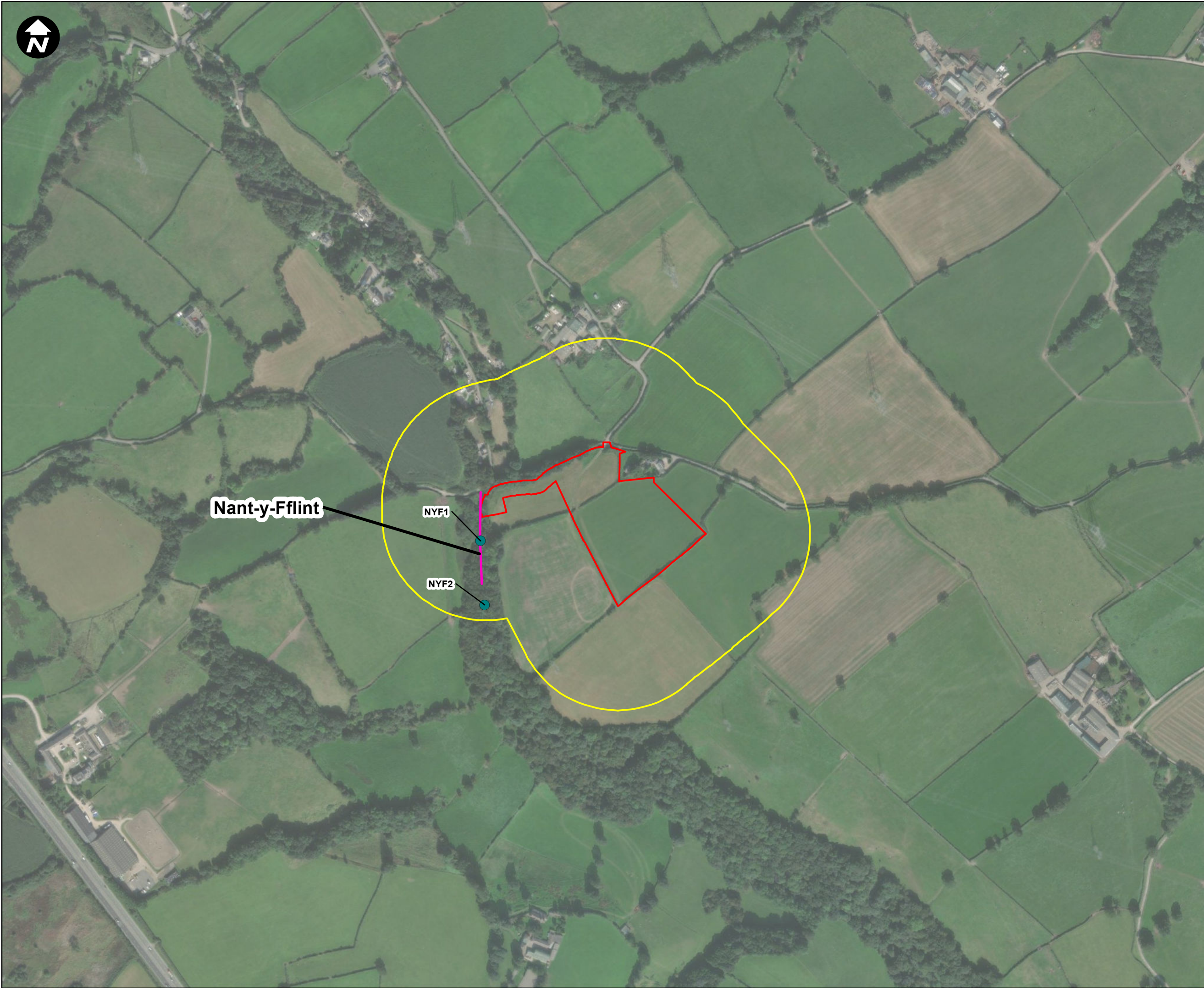
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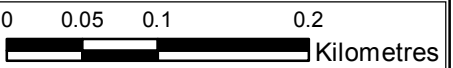
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EN070007-APP-ES-9.6.2-Sheet 9





- Key:**
- Newbuild Infrastructure Boundary
  - Survey Area
  - Suitable for Water Vole**
  - Commuting
  - Commuting and Foraging
  - Commuting, Foraging and Burrowing
  - Precautionarily Assessed – Assumed Presence
  - Scoped out
  - Unsuitable

- | Water Vole        | Mink                |
|-------------------|---------------------|
| ▲ Burrow          | ◆ Footprint         |
| ▲ Feeding station | <b>Other/Unkown</b> |
| ▲ Footprint       | ★ Burrow            |
| ▲ Latrine         | ★ Feeding station   |
| <b>Rat</b>        | ★ Footprint         |
| ● Burrow          | ★ Latrine           |
| ● Footprint       | ★ Mammal path       |
| ● Other           | ★ Other             |



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**HyNet North West**

PROJECT TITLE  
**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE  
**Figure 9.6.2  
Riparian Mammals (Water vole)  
Sheet 10 of 12**

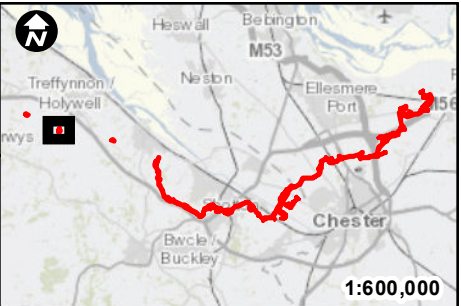
DRAWING STATUS  
**FOR INFORMATION**

DRAWN	CHECKED	APPROVED	AUTHORISED
NG	ImcQ	JOK	SP

SCALE @ A3 SIZE	DATE	REVISION
1:5,000	21/01/2023	B

DRAWING NUMBER  
**EN070007-APP-ES-9.6.2-Sheet 10**





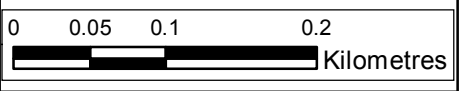
**Key:**

- Newbuild Infrastructure Boundary
- Survey Area

**Suitable for Water Vole**

- Commuting
- Commuting and Foraging
- Commuting, Foraging and Burrowing
- Precautionarily Assessed – Assumed Presence
- Scoped out
- Unsuitable

Water Vole	Mink
▲ Burrow	◆ Footprint
▲ Feeding station	Other/Unknown
▲ Footprint	★ Burrow
▲ Latrine	★ Feeding station
	★ Footprint
<b>Rat</b>	★ Latrine
● Burrow	★ Mammal path
● Footprint	★ Other
● Other	



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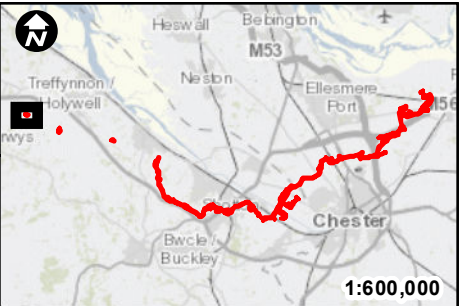
# HyNet North West

PROJECT TITLE  
**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE  
**Figure 9.6.2  
Riparian Mammals (Water vole)  
Sheet 11 of 12**

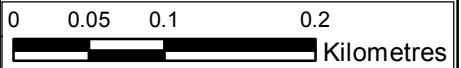
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SCALE @ A3 SIZE		DATE	REVISION
1:5,000		21/01/2023	B
DRAWING NUMBER			
EN070007-APP-ES-9.6.2-Sheet 11			





- Key:**
- Newbuild Infrastructure Boundary
  - Survey Area
- Suitable for Water Vole**
- Commuting
  - Commuting and Foraging
  - Commuting, Foraging and Burrowing
  - Precautionarily Assessed – Assumed Presence
  - Scoped out
  - Unsuitable

- | Water Vole        | Mink                 |
|-------------------|----------------------|
| ▲ Burrow          | ◆ Footprint          |
| ▲ Feeding station | <b>Other/Unknown</b> |
| ▲ Footprint       | ★ Burrow             |
| ▲ Latrine         | ★ Feeding station    |
|                   | ★ Footprint          |
| <b>Rat</b>        | ★ Latrine            |
| ● Burrow          | ★ Mammal path        |
| ● Footprint       | ★ Other              |
| ● Other           |                      |



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**HyNet North West**

PROJECT TITLE  
**HyNet North West  
Carbon Dioxide Pipeline DCO**

DRAWING TITLE  
**Figure 9.6.2  
Riparian Mammals (Water vole)  
Sheet 12 of 12**

DRAWING STATUS  
**FOR INFORMATION**

DRAWN NG	CHECKED ImcQ	APPROVED JOK	AUTHORISED SP
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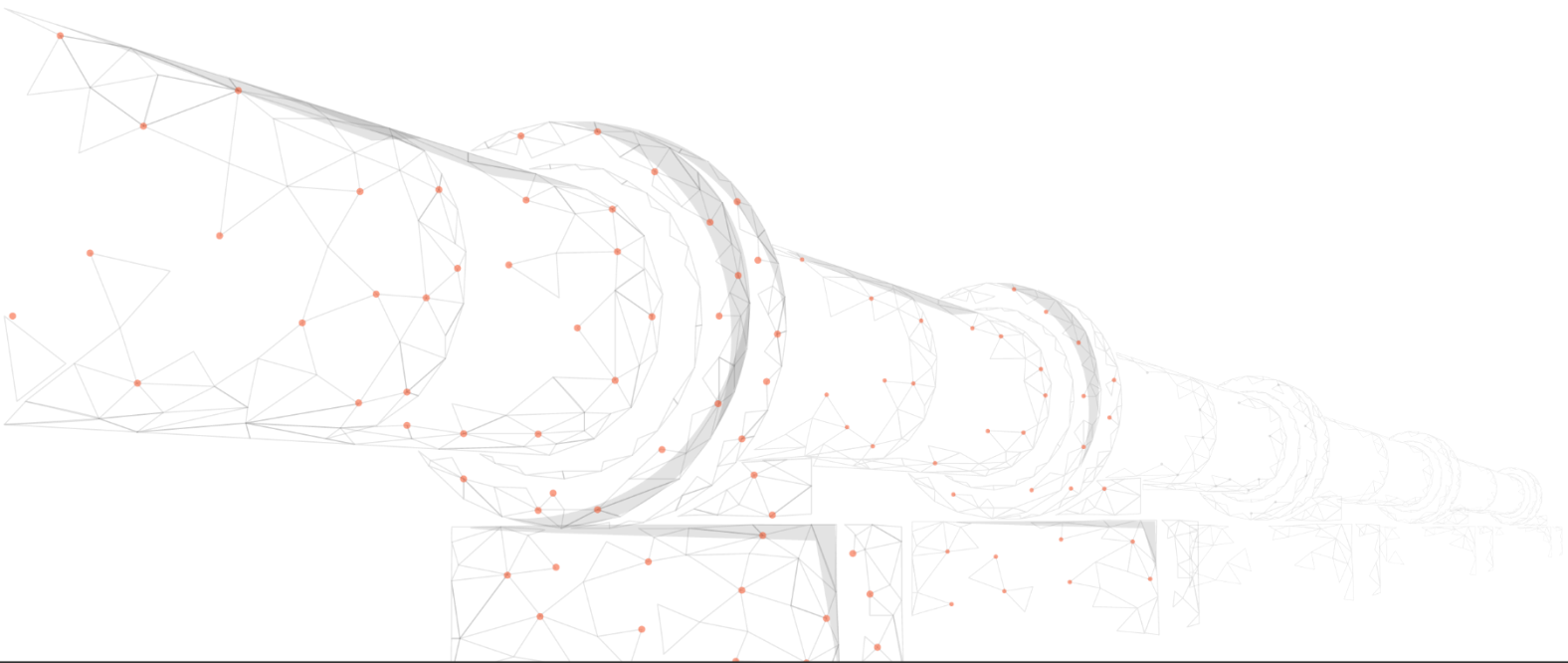
SCALE @ A3 SIZE 1:5,000	DATE 21/01/2023	REVISION B
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DRAWING NUMBER  
**EN070007-APP-ES-9.6.2-Sheet 12**



# ANNEX B

## DESK STUDY RECORDS

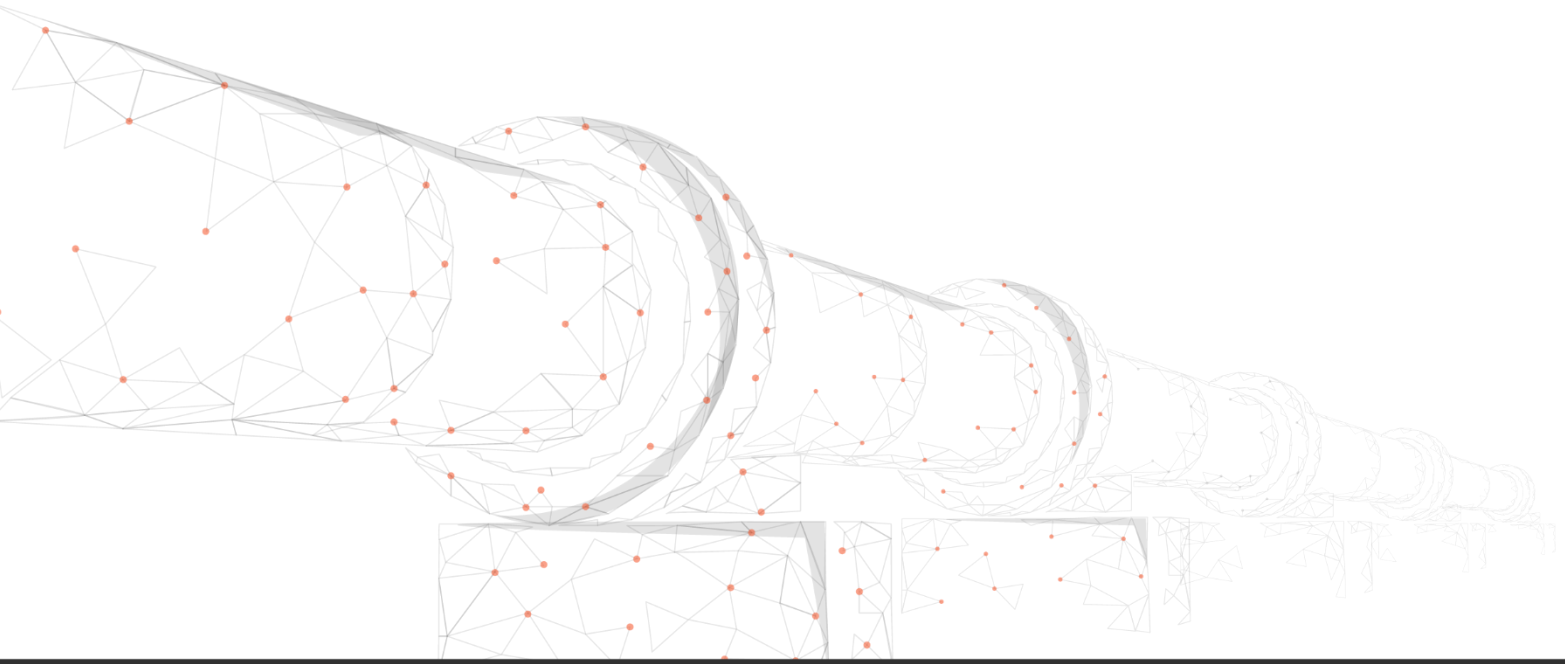


**Table 3 - Records of Otter and Water Vole Identified Within 2km in the Last 10 Years**

Common name	Latin name	Grid Reference	Distance and orientation from Newbuild Infrastructure Boundary	Year	Record type
European otter	<i>Lutra lutra</i>	SJ 44000 71500	619 m south and east	2012	Latrine
European otter	<i>Lutra lutra</i>	SJ 44000 71500	619 m south and east	2013	Photograph of individual otter
European otter	<i>Lutra lutra</i>	SJ 43910 71720	634 m south and east	2014	Spraint
European otter	<i>Lutra lutra</i>	SJ 44090 71530	708 m south	2014	Spraint
European otter	<i>Lutra lutra</i>	SJ 44090 71530	708 m south	2015	Sighting of 1 adult otter
European otter	<i>Lutra lutra</i>	SJ 25550 72080	938 m north	2017	Spraint
European otter	<i>Lutra lutra</i>	SJ 43419 74301	1 km north and west	2014	Spraint
European otter	<i>Lutra lutra</i>	SJ 43150 74381	1.3 km north and west	2014	Spraint
European otter	<i>Lutra lutra</i>	SJ 44941 71042	1.63 km south east	2014	Spraint
European otter	<i>Lutra lutra</i>	SJ 39400 68500	1.82 km south	2015	Sighting of 1 adult otter
European otter	<i>Lutra lutra</i>	SJ 45116 70856	1.86 km south	2014	Spraint
Water vole	<i>Arvicola amphibius</i>	SJ 41300 70300	731 m south	2014	Burrow
Water vole	<i>Arvicola amphibius</i>	SJ 41300 70200	831 m south	2012	Sighting of 17 water vole
Water vole	<i>Arvicola amphibius</i>	SJ 34100 64890	1.29 km south	2016	Feeding remains, latrines.
Water vole	<i>Arvicola amphibius</i>	SJ 33750 64650	1.48 km south	2016	Feeding remains, latrines.
Water vole	<i>Arvicola amphibius</i>	SJ 33670 64600	1.52 km south	2016	Feeding remains, latrines, burrows.
Water vole	<i>Arvicola amphibius</i>	SJ 23900 71900	1.53 km north	2017	Regular sightings of water vole
Water vole	<i>Arvicola amphibius</i>	SJ 37940 66980	1.8 km south	2014	Latrine

# ANNEX C

## DETAILED WATERCOURSE SURVEY RESULTS



**Table 4 - Detailed Results of the Riparian Mammal Field Surveys**

<b>Watercourse reference</b>	<b>Watercourse group</b>	<b>Watercourse assessment - Visit 1</b>	<b>Watercourse assessment - Visit 2</b>	<b>Evidence of Otter and/or Water vole</b>	<b>Suitability assessment</b>
<b>East Central Drain</b> SJ 46932 76188	Group 1	<p>Conducted in June 2021.</p> <p><u>Disturbance:</u> Low</p> <p><u>Water speed:</u> Slow</p> <p><u>Depth:</u> 0.5-1 m</p> <p><u>Width:</u> 5-10 m</p> <p><u>Shore/Bank:</u> Earth, steep to vertical.</p> <p>A ditch along the southern boundary of a car park adjacent to an industrial estate</p> <p>Little vegetation within the watercourse. Banks dominant in reed spp./sedges spp. <i>Carex spp.</i> and tall grasses. Lined with trees.</p> <p>Not safe to enter due to depth and sinking mud substrate. Much of the watercourse is fenced off and therefore inaccessible.</p>	<p>Conducted in May 2022.</p> <p><u>Disturbance:</u> Low to none</p> <p><u>Water speed:</u> Slow</p> <p><u>Depth:</u> 102 m</p> <p><u>Width:</u> 5-10 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>Steep sloping banks down to the water. Some in stream iris. North bank has lots of overhanging hawthorn trees and poplar <i>Populus sp.</i> with nettle and common Reed <i>Phragmites</i>. South bank has common nettle, thistle <i>Cirsium sp</i> and short grass with rare reeds.</p>	No evidence or field signs recorded.	<p>Suitable for foraging, commuting and burrowing water vole</p> <p>Suitable for foraging and commuting otter.</p>
<b>Elton Lane Ditches 1-6</b> SJ 46944 75893	Group 1	<p>Conducted in May 2022.</p> <p><u>Disturbance:</u> None</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> &lt;0.5-1 m</p> <p><u>Width:</u> 1-5 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>Ditches 1 and 5 were dry. Other ditches varied in depths and widths, with steep banks in places and often choked by bulrush. Little to no visibility of water. Yellow flag <i>Iris pseudacorus</i>, iris <i>Iris sp.</i>, soft rush <i>Juncus effusus</i> and tall grass present on banks. Parts heavily shaded by dominant hawthorn bushes and bramble.</p>	No access for visit 2 due to access restrictions.	None following Visit 1.	<p>Suitable for commuting otter</p> <p>Suitable for foraging and commuting water vole.</p>
<b>West Central Drain A</b> SJ 46758 76022	Group 1	<p>Conducted in May 2022.</p> <p><u>Disturbance:</u> None</p> <p><u>Water speed:</u> Static</p>	No access for visit 2 due to access restrictions.	A water vole burrow was identified within the bank during Visit 1.	Suitable for commuting otter

Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
		<u>Depth:</u> 1-2 m <u>Width:</u> 2-5 m <u>Shore/Bank:</u> Earth Bordering pasture and arable fields. Large deep ditch with no flow. Some in channel vegetation. Banks are shallow on either side covered in tall grasses, nettles and some soft rush. Deep by the bridge and shallower further up. Some tadpoles and fish.			Suitable for foraging, commuting and burrowing water vole.
<b>Elton Marsh 1-6</b> SJ 46975 75534	Group 2	Conducted in April 2022. <u>Disturbance:</u> Some disturbance from livestock <u>Water speed:</u> N/A <u>Depth:</u> <0.5 m <u>Width:</u> 1 m <u>Shore/Bank:</u> Earth A network of connecting dry ditches boarding pasture fields. Ephemeral mostly dry ditches boarding grazed pasture fields, linking to Elton Marshes West and West Central Drain at either end. Vegetation comprised reed sweet grass, duckweed <i>Lemnoideae</i> sp., occasional willow trees <i>Salix</i> sp., rush sp. and hawthorn.	Conducted in July 2022. <u>Disturbance:</u> Some disturbance from livestock <u>Water speed:</u> N/A <u>Depth:</u> <0.5 m <u>Width:</u> 1m <u>Shore/Bank:</u> Earth Most of the ditches during this assessment were dry. The fields were actively grazed. Vegetation at the time of survey included dominant reeds and sedges, and abundant grass. Soft rush <i>Juncus effusus</i> abundant on slope with occasional Hawthorn and willow sp Bankside dominated by soft rush, some sweet reed grass <i>Glyceria maxima</i> within ditch	None following Visit 1. None following Visit 2.	Suitable for commuting water vole. Unsuitable otter
<b>Elton Marshes West</b> SJ 47107 75550	Group 2	Conducted in April 2022. <u>Disturbance:</u> Poached by sheep <u>Water speed:</u> Static <u>Depth:</u> <0.5 m <u>Width:</u> 1-2 m <u>Shore/Bank:</u> Earth. An ephemeral, shallow ditch running through grazed pasture. Soft rush abundant on the	Conducted in July 2022. <u>Disturbance:</u> Grazing <u>Water speed:</u> N/A <u>Depth:</u> N/A <u>Width:</u> N/A <u>Shore/Bank:</u> Poached At the time of survey, the ditch was dry. The bankside contained various grass and rush species.	None following Visit 1. None following Visit 2.	Suitable for commuting water vole Unsuitable for otter

Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
		banks, with some hawthorn and willow species. The ditch was full of grass.			
<b>West Central Drain B</b> SJ 46886 75432	Group 2	<p>Conducted in April 2022.</p> <p><u>Disturbance:</u> Poached by sheep in places.</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1-2 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>A ditch running between pasture field boundaries. Reed sweet grass, nettles, soft rush and an algae layer on the water surface. Duckweed and water mint <i>Mentha aquatica</i> also present. Some sections overgrown/shaded. The eastern side was more vegetated, with mammal paths.</p>	<p>Conducted in July 2022.</p> <p><u>Disturbance:</u> Heavily poached</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> 1-2 m</p> <p><u>Width:</u> 5-10m</p> <p><u>Shore/Bank:</u> Poached</p> <p>At the time of survey, the ditch was heavily disturbed with steep banks, mud and sludge present. There was evidence of rat burrows and bank vole evidence.</p>	<p>One water vole burrow recorded on Visit 1 within the Newbuild Infrastructure Boundary, appeared disused.</p> <p>None following Visit 2.</p>	<p>Suitable for foraging, commuting and burrowing water vole</p> <p>Suitable for commuting otter</p>
<b>Elton Marsh 12-14</b> SJ 46682 75386	Group 2	<p>Conducted in April 2022.</p> <p><u>Disturbance:</u> Some poaching by sheep</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1-2 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>Ditches running between pasture field boundaries. Connected to the West Central Drain B and Hapsford Brook at either end. Sweet reed grass and other grass sp. present throughout. Rush sp. on the banks. Only surveyed from the north-west side due to a grid wire fence restricting access.</p>	<p>Conducted in July 2022.</p> <p><u>Disturbance:</u> Some poaching by sheep</p> <p><u>Water speed:</u> N/A</p> <p><u>Depth:</u> N/A</p> <p><u>Width:</u> N/A</p> <p><u>Shore/Bank:</u> Earth</p> <p>Ditch dry at time of survey. Occasional Oak trees and hawthorn hedges.</p>	<p>None following Visit 1.</p> <p>None following Visit 2.</p>	<p>Suitable for foraging and commuting water vole</p> <p>Unsuitable otter</p>
<b>Hapsford Brook</b> SJ 46682 75386	Group 2	<p>Conducted in April 2022.</p> <p><u>Disturbance:</u> Mostly undisturbed, some vehicle tracks leading into the ditch</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> 0.5-1 m</p>	<p>Conducted in July 2022.</p> <p><u>Disturbance:</u> Disturbed on eastern edge by sheep grazing. The ditch had signs of being poached in areas.</p> <p><u>Water speed:</u> Sluggish</p>	<p>Two terrestrial water vole burrows, two burrows just above the water edge and three feeding stations identified during Visit 1.</p> <p>Several within the Newbuild</p>	<p>Suitable for foraging, commuting and burrowing water vole.</p> <p>Suitable for commuting otter.</p>



Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
		<p><u>Width:</u> 2-5 m</p> <p><u>Shore/Bank:</u> Earth, bank profile variable from 90degrees to flat.</p> <p>A ditch between two field boundaries. Heavily vegetated with mostly sweet reed grass. Bank access restricted in places due to steep profile and dense vegetation. One side of the bank had much less vegetation.</p>	<p><u>Depth:</u> 0.5 m – 1m</p> <p><u>Width:</u> 2-5m</p> <p><u>Shore/Bank:</u> Earth</p> <p>The vegetation was thick at the time of survey along the western edge of the bank, whilst the eastern side was poached and showed nutrification. Frequent short grass was found along the bankside. A burrow was recorded considered to be that of rat. Multiple bank vole burrows and latrines were present along the ditch bank. Feeding station noted.</p>	<p>Infrastructure Boundary, otherwise adjacent within the Survey Area.</p> <p>No field signs for otter recorded during Visit 1.</p> <p>None specifically noted following Visit 2.</p>	
<p><b>Gale Brook</b></p> <p>SJ 45003 74408</p>	Group 3	<p>Conducted in October 2021.</p> <p><u>Disturbance:</u> Mostly undisturbed, however borders an arable field. Vegetation had been strimmed in places.</p> <p><u>Water speed:</u> Static/Slow</p> <p><u>Depth:</u> 0.5-1 m to 1-2 m</p> <p><u>Width:</u> 1-2 m</p> <p><u>Shore/Bank:</u> Earth, steep.</p> <p>A ditch running along the boundary of arable and pasture fields. Grass short on the side of the arable field, otherwise dense with reed canary grass, bulrush, with occasional scrub. Inaccessible in places due to hedgerow or thick vegetation. Deep sediment. Some duckweed and starwort sp. <i>Callitriche sp.</i> present.</p>	<p>Conducted in May 2022.</p> <p><u>Disturbance:</u> Mostly undisturbed, however borders an arable field. Vegetation had been strimmed in places.</p> <p><u>Water speed:</u> Static/Slow</p> <p><u>Depth:</u> 0.5-1 m to 1-2 m</p> <p><u>Width:</u> 1-2 m</p> <p><u>Shore/Bank:</u> Earth, steep.</p> <p>Quite shallow in places, some sections choked by weeds and vegetation. Depth varies. Cow parsley, nettle, and tall grasses on one bank, bramble, reeds, hawthorn and bulrush on the other.</p>	<p>No evidence or field signs recorded following Visit 1.</p> <p>Possible water vole burrows were identified during Visit 2, where the bank was undercut. No other evidence of water vole was observed on either visit, so unable to confirm water vole presence. This was recorded outside of the Newbuild Infrastructure Boundary but within the Survey Area.</p> <p>No field signs for otter were recorded during Visit 1 or 2.</p>	<p>Suitable for foraging and commuting water vole. Suitable for burrowing in places where the banks are steeper, and the vegetation is dense.</p> <p>Suitable for commuting otter.</p>
<p><b>Halls Green Lane Brook</b></p> <p>SJ 44583 73264</p>	Group 4	<p>Conducted in April 2022.</p> <p><u>Disturbance:</u> Undisturbed</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1 m</p> <p><u>Shore/Bank:</u> Earth.</p>	<p>Scoped out of further survey following Visit 1 due to unsuitable habitat.</p>	<p>None found on Visit 1.</p>	<p>Unsuitable for otter and water vole.</p>

Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
		A small ditch running along a minor side lane. Full of vegetation and dead wood. Very shallow at western end and completely dry at the eastern end. Bankside vegetation comprised nettle, wild garlic <i>Allium ursinum</i> , red campion <i>Silene dioica</i> , ivy sp. <i>Hedera sp.</i> , elder <i>Sambucus nigra</i> , hawthorn, with sycamore <i>Acer pseudoplatanus</i> and oak trees <i>Quercus sp.</i>			
<b>Thornton Uplands</b> SJ 44572 73215	Group 4	<p>Conducted in April 2022.</p> <p><u>Disturbance:</u> Undisturbed</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1 m</p> <p><u>Shore/Bank:</u> Silt</p> <p>A ditch running from under the motorway into pasture fields, culverted twice. May have been recently dug out and was largely unvegetated. Evidence of eutrophication caused by field run-off. Bankside vegetation included cock's-foot <i>Dactylis glomerata</i>, hawthorn, horsetail <i>Equisetum arvense</i>, willowherb sp.</p>	<p>Conducted in August 2022.</p> <p><u>Disturbance:</u> Undisturbed</p> <p><u>Water speed:</u> Static/slow</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1 m</p> <p>Shore bank: Earth</p> <p>The ditch was dry during the visit. An otter spraint was found on a rock on the lane. A fallen tree was recorded which had potential for use as a lay-up, holt and/or slide. A small mammal hole was found on the southern bank, with bank vole and rat droppings found.</p>	<p>No evidence recorded during Visit 1.</p> <p>During Visit 2:</p> <ul style="list-style-type: none"> <li>-An otter spraint was found on a rock on the lane.</li> <li>-A fallen tree was recorded which had potential for use as a lay-up, holt and/or slide.</li> <li>-A small mammal hole was found on the southern bank, with bank vole and rat droppings found.</li> </ul>	<p>Unsuitable for water vole.</p> <p>Suitable for commuting otter.</p>
<b>Thornton Main Drain</b> SJ 43884 72742	Group 5	<p>Conducted in April 2022</p> <p><u>Disturbance:</u> No evidence of disturbance</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> 0.5-1 m</p> <p><u>Width:</u> 5-10 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>A main drain within a complex of field drains linking to the River Gow. Canalised field boundary ditch with shallow banks, surrounded by marshy grassland. Dominant in soft rush. Concrete culvert at northern end beneath the motorway which is a barrier to dispersion.</p>	<p>Conducted in August and September 2022</p> <p>Conducted in September 2022</p> <p><u>Disturbance:</u> No evidence of disturbance</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> 0.5-1m</p> <p><u>Width:</u> 5-10m</p> <p><u>Shore/Bank:</u> Earth</p> <p>Channelised field boundary ditch, shallow banks, predominantly marshy grassland cover and dominant soft rush on bank tops. Suitable for water vole. No otter or water vole signs</p>	<p>A high number of field signs for water vole recorded, including:</p> <ul style="list-style-type: none"> <li>- Burrows in the banks at various locations, some with droppings and feeding remains</li> <li>- Feeding stations</li> <li>- Latrines</li> <li>- Footprints</li> <li>-Potential hole.</li> </ul> <p>These were all within the Newbuild Infrastructure</p>	<p>Suitable for foraging, commuting and burrowing water vole.</p> <p>Suitable for commuting and foraging otter.</p>

Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
			found during the survey. Concrete culvert at northern end beneath motorway considered a potential barrier to dispersion.	Boundary or directly adjacent within the Survey Area.	
<b>Thornton Ditches 4, 5a, 5b, 6, 7a, 7b, 8.</b> SJ 43884 72742	Group 5	Conducted in April 2022 <u>Disturbance:</u> No evidence of disturbance <u>Water speed:</u> Slow <u>Depth:</u> 0.5-1 m <u>Width:</u> 2-5 m <u>Shore/Bank:</u> Earth A complex of field drains linking to Thornton Main Drain and the River Gowy. Ditches had low, steep banks with rush sp. and grasses. Bulrush present in some ditches. No fish present. Minimal shading for all ditches.	Conducted in August 2022 <u>Disturbance:</u> Low anthropogenic disturbance, some noted closer than others to footpaths <u>Water speed:</u> Slow/Static <u>Depth:</u> <0.5m - 1m <u>Width:</u> 1- 5m <u>Shore/Bank:</u> Earth Survey was limited due to heavy vegetation, including Typha sp. so limited access to bank profiles and reduced visibility. It was only possible to survey from one side occasionally. Himalayan balsam <i>Impatiens glandulifera</i> present along watercourse. Conducted in September 2022 <u>Disturbance:</u> Low disturbance <u>Water speed:</u> Static/Slow <u>Depth:</u> >0.5m to >2m <u>Width:</u> 1-2m <u>Shore/Bank:</u> Earth Visibility was impacted by heavy vegetation. Some areas were marshy, and too shallow for burrows. Some of the ditches were recorded as having very deep banks, suitable for burrows. In some areas, insufficient opportunities for holt creation, very few laying up locations possible. Some areas more suitable for otter, such as Thornton Ditch 4.	A high number of field signs for water vole recorded along all the ditches, including: - Burrows in the banks - Feeding stations - Latrines Two field signs for otter were recorded: - A potential otter couch on Thornton Ditch 6 - A potential otter holt beneath a tree along Thornton Ditch 4. -A second potential otter holt on Thornton Ditch 4 was found on Visit 2. These were all within the Newbuild Infrastructure Boundary or directly adjacent within the Survey Area.	Suitable for commuting otter only due to lack of holt opportunities and food sources in most cases, other than Ditch 4 which contains two potential holts. Suitable for foraging, commuting and burrowing water vole



Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
<b>River Gowy</b> SJ 43657 72886	Group 5	<p>Conducted in April 2022</p> <p><u>Disturbance:</u> Vehicle track on east side. Grazed on the west side.</p> <p><u>Water speed:</u> Slow</p> <p><u>Depth:</u> 1-2 m</p> <p><u>Width:</u> 2-5 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>The River Gowy, linking to the Thornton Ditches complex. Steep banks on the east side, shallow banks on the west side. Submerged lily sp. <i>Nymphaea sp.</i>, fish not seen.</p>	<p>Conducted in August 2022</p> <p><u>Disturbance:</u> Cattle grazed to the west bank but fenced off. Grass track to the east</p> <p><u>Water speed:</u> Slow - Sluggish</p> <p><u>Depth:</u> &gt;2m</p> <p><u>Width:</u> 5-10m</p> <p><u>Shore/Bank:</u> Earth</p> <p>Cattle grazed on west bank, with a grass track to the east. The bank profile varies from steep to flat. Mammal burrows recorded on western bank. There was limited access due to deep water and dense riparian vegetation. The watercourse was surveyed from the bankside only.</p>	<p>None recorded during Visit 1.</p> <p>Burrows were observed in the banks of the River Gowy during the aquatic surveys, which are likely water vole. These were within the Newbuild Infrastructure Boundary and the wider Survey Area.</p> <p>Field signs noted during Visit 2:</p> <p>Small burrows, thought to be Water Vole, were noted on the western bank. Mammal burrow on western bank of river, clear shelf below. Unable to access due to deep river and steep bank, surveyed from eastern bank of river</p>	<p>Suitable for foraging and commuting water vole.</p> <p>Suitable for foraging and commuting otter</p>
<b>Stanney Main Drain</b> SJ 43435 72429	Group 6	<p>Conducted in July 2022</p> <p><u>Disturbance:</u> High disturbance from cattle fields, subject to runoff.</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> 1-2 m</p> <p><u>Width:</u> 2-5 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>Bordered by pasture, grazed fields. Heavily vegetated watercourse, too deep to enter for survey but fully surveyed from the banks. There was runoff from the fields and signs of pollution. Steep banks with no shelf, very dense vegetation, and poor water quality.</p>	No access for the second survey visit.	None recorded during Visit 1.	<p>Unsuitable for otter</p> <p>Suitable for foraging and commuting water vole.</p>
<b>Stanney Mill Brook</b> <b>SJ 43364 72367</b>	Group 6	<p>Conducted in July 2022</p> <p><u>Disturbance:</u> None</p>	No access for the second survey visit.	None recorded during Visit 1.	Suitable for foraging and commuting water vole in the north

Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
		<u>Water speed:</u> Static <u>Depth:</u> <0.5 m <u>Width:</u> 2-5 m <u>Shore/Bank:</u> Earth Bordered by pasture, grazed fields. Water course had mostly dried up, only dense vegetation remained. Some static water towards north. Dense vegetation and steep bank profile which had limited suitability for burrowing. Bridge at northern end.			where water remained. Unsuitable for otter.
<b>Gowy Tributary 2</b> SJ 42987 72018	Group 6	Conducted in April 2022 <u>Disturbance:</u> Grazing livestock to the south-east, narrow margin to arable field on the north west. <u>Water speed:</u> Slow <u>Depth:</u> <0.5 m <u>Width:</u> 1-2 m <u>Shore/Bank:</u> Earth Bordering sheep grazed pasture fields. Very narrow channel with overgrown banks. The channel was covered by overhanging vegetation in places but more open in others. Some sections had very sheer earth banks and a rockier substrate.	Conducted in July 2022 <u>Disturbance:</u> No signs of disturbance <u>Water speed:</u> Static <u>Depth:</u> <0.5 m <u>Width:</u> 1-2 m <u>Shore/Bank:</u> Earth Dense vegetation in watercourse limiting access for survey. Limited suitability for water vole due to lack of burrowing and foraging habitat. potential for commuting otter, holt creating habitat limited. holding water in sections towards northern end.	None recorded during Visit 1. During Visit 2: -Potential water vole burrow -Potential otter footprint	Suitable for commuting otter Suitable for foraging, commuting, burrowing water vole
<b>Gowy Tributary 3</b> SJ 42706 71625	Group 6	Watercourse dry on Visit 1.	Scoped out from further survey due to unsuitable habitat.	None recorded during Visit 1.	Unsuitable for otter or water vole.
<b>Rake Lane Brook</b> SJ 40198 71097	Group 8	Conducted in April 2022 <u>Disturbance:</u> Undisturbed <u>Water speed:</u> Slow <u>Depth:</u> <0.5 m <u>Width:</u> 1 m <u>Shore/Bank:</u> Earth	Scoped out following Visit 1 due to unsuitable habitat for otter and water vole	None recorded during Visit 1.	Unsuitable for otter or water vole.

Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
		Dry at the southern end, overgrown with nettles, willowherb, water parsnip sp. <i>Berula</i> sp. Small amount of water halfway up the ditch, very shallow and overgrown. Partly inaccessible due to dense scrub, barbed wire fence and livestock in fields but looked to be mostly dry.			
<b>Backford Brook</b> SJ 39720 71127	Group 9	<p>Conducted in April 2022</p> <p><u>Disturbance:</u> Undisturbed</p> <p><u>Water speed:</u> Slow</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1-2 m</p> <p><u>Shore/Bank:</u> Earth, vertical low banks.</p> <p>Ditch running alongside grazing pasture. Some sections were culverted and not suitable, other sections wide and open with shallow vertical earth banks. Joined to the Shropshire Union Canal. Limited aquatic vegetation, some bushes, trees and herbs along the banks, majority short grasses.</p>	<p>Conducted in August 2022</p> <p>Disturbance: Some livestock disturbance was noted.</p> <p><u>Water speed:</u> Slow</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1-2 m</p> <p>During the survey, most of the watercourse was inaccessible due to heavy vegetation. The north of the canal was heavily poached, with small areas of vegetation also present.</p>	<p>None recorded during Visit 1.</p> <p>None recorded during Visit 2.</p>	<p>Unsuitable for otter.</p> <p>Suitable for foraging and commuting water vole.</p>
<b>Friars Park Ditch</b> SJ 39376 70887	Group 9	<p>Conducted in April 2022</p> <p><u>Disturbance:</u> Undisturbed</p> <p><u>Water speed:</u> Slow</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>Ephemeral ditch running through grazed pasture, heavily shaded by scrub, including hawthorn and elder. Hazel <i>Corylus avellana</i> along bankside and occasional oak. No submerged vegetation. Bankside vegetation included: nettles, cleavers <i>Galium aparine</i>, garlic mustard <i>Alliaria petiolata</i>. Inaccessible in some places due to dense vegetation. Likely to dry annually.</p>	Scoped out following Visit 1 due to unsuitable habitat for otter and water vole.	None recorded during Visit 1.	Unsuitable for otter and water vole.



Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
<b>Shropshire Union Canal</b> <b>SJ 39631 70908</b>	Group 10	<p>Conducted in April 2022</p> <p><u>Disturbance:</u> Active canal so fairly disturbed.</p> <p><u>Water speed:</u> Slow</p> <p><u>Depth:</u> &gt;2 m</p> <p><u>Width:</u> 5-10 m</p> <p><u>Shore/Bank:</u> Reinforced (man-made).</p> <p>Shropshire canal bordered by grazing pasture. Occasional submerged aquatic plants (water mint, bull rush). Fairly well-maintained sides, reinforced with metal, with no apparent gaps. Bordered by willow sp and hawthorn. Possible suitable habitat on the northern bank, but also reinforced. Works were occurring during this Site visit which restricted access.</p>	<p>Conducted in September 2022</p> <p><u>Disturbance:</u> Canal boats</p> <p><u>Water speed:</u> Slow</p> <p><u>Depth:</u> &gt;2 m</p> <p><u>Width:</u> 5-10 m</p> <p><u>Shore/Bank:</u> Reinforced (man-made).</p> <p>The western side of the canal was not accessible, being dominated by vegetation, including rushes and sedges and bank side trees. Wider area on western side was a mosaic of arable and grazing pasture for horses. Waterfowl were present and fish presence was considered likely. Western side contained a tow path and species poor hedge.</p>	<p>None recorded during Visit 1.</p> <p>An otter spraint was recorded during Visit 2 22 m outwith the Newbuild Infrastructure Boundary within the Survey Area.</p>	<p>Suitable for commuting and foraging water vole.</p> <p>Suitable for commuting and foraging otter.</p>
<b>Parkgate Road Ditch</b> <b>SJ 37993 69897</b>	Group 11	<p>Conducted in April 2022</p> <p><u>Disturbance:</u> None</p> <p><u>Water speed:</u> N/A</p> <p><u>Depth:</u> N/A</p> <p><u>Width:</u> 0.5-1 m</p> <p><u>Shore/Bank:</u> Earth cliffs</p> <p>Dry ditch along field boundary. Overgrown, full of vegetation, with an abundance of trees on the bank.</p>	<p>Scoped out due to being dry on Visit 1.</p>	<p>None recorded during Visit 1.</p>	<p>Unsuitable for otter and water vole.</p>
<b>Finchetts Gutter Tributary</b> <b>SJ 37851 69847</b>	Group 11	<p>Conducted in April 2022</p> <p><u>Disturbance:</u> Housing waste, rubble dumping and added culvert for access over river.</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 2-5 m</p> <p><u>Shore/Bank:</u> Earth cliffs</p> <p>Dense bramble / scrub, abundant nettles on bank with steep edges, which restricted</p>	<p>Conducted in July 2022</p> <p><u>Disturbance:</u> Lots of building waste and rubble within the watercourse</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> &lt;0.5m</p> <p><u>Width:</u> 1-2 m</p> <p><u>Shore/Bank:</u> Stones</p> <p>Limited access due to giant hogweed <i>Heracleum mantegazzianum</i> in watercourse</p>	<p>None recorded during Visit 1.</p> <p>None recorded during Visit 2.</p>	<p>Suitable for commuting otter</p> <p>Suitable for foraging and commuting water vole</p>

Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
		access. Hogweed, cleavers, willow sp., maple sp. <i>Acer sp.</i> , Sycamore and oak sp. alongside bank. Depth varied, from dry to up to 50 cm.	and dense vegetation. Suitable for commuting otter, limited holt creation habitat but potential for laying up areas within adjacent scrub/woodland.		
<b>Seahill Drain</b> SJ 36478 68960	Group 12	<p>Conducted in June 2022.</p> <p><u>Disturbance:</u> Culverts beneath farm access track</p> <p><u>Water speed:</u> Slow/static</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 2-5 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>Runs along the edge of arable fields. Water surface completely covered by algae. Steep densely vegetated banks, with tall grasses, occasional bankside trees, herbs and submerged weeds.</p>	<p>Conducted in August 2022.</p> <p><u>Disturbance:</u> Bordering arable field, likely often disturbed by farm machinery.</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 2-5 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>Significantly dried ditch with some water remaining on western end. Agricultural run-off likely affecting water quality as duckweed <i>Lemna sp.</i> covered entire water's surface in areas. Ditch was drier towards the eastern end, becoming mud/sludge covered in duckweed. Occasional bulrush <i>Scirpoides holoschoenus</i>, common reed grass <i>Phragmites australis</i>, frequent willowherb and nettle. Rare water mint <i>Mentha aquatica</i> and herb Robert <i>Geranium robertianum</i>. locally dominant bindweed towards eastern end of watercourse. Watercourse was culverted at both ends of Survey Area.</p>	<p>None recorded during Visit 1.</p> <p>None recorded during Visit 2.</p>	<p>Suitable for foraging, commuting and burrowing water vole.</p> <p>Suitable for commuting otter</p>
<b>Sealand Main Drain</b> SJ 35401 67988	Group 13	<p>Conducted in June 2022.</p> <p><u>Disturbance:</u> Culverts beneath farm access track</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1-2 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>Wet ditch bordering agricultural fields, but with thick margins of dense vegetation. Difficult to access in places due to steep banks and</p>	<p>Conducted in August 2022.</p> <p><u>Disturbance:</u> Culverts beneath farm access track</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>The watercourse was noted as drying towards the south east, where it became very shallow (2 cm to 10 cm). The ditch was filled with</p>	<p>None recorded during Visit 1.</p> <p>None recorded during Visit 2.</p>	<p>Suitable for foraging, commuting and burrowing water vole.</p> <p>Suitable for foraging and commuting otter</p>



Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
		<p>dense ruderal vegetation, nettles, Japanese knotweed <i>Reynoutria japonica</i> and hogweed <i>Heracleum sphondylium</i>. Clearly eutrophicated in places due to likely run off from agricultural field. Reed sweet grass, Iris sp., hemlock water dropwort <i>Oenanthe crocata</i>, elder, willow sp. present. Water mostly static but sluggishly running in places. Full access to the Survey Area was not possible due to dense vegetation.</p>	<p>vegetation, including being dominated by tall grasses including reed canary grass.</p> <p>Occasional water droplet hemlock <i>Oenanthe crocata</i> was also present. The bank edge was dominated by common nettle and couch grass <i>Elymus repens</i> with frequent hogweed <i>Heracleum sphondylium</i>, abundant bindweed <i>Calystegia sepium</i>, occasional willowherb <i>Chamaenerion</i> sp. and rare curled dock <i>Rumex crispus</i> on the northern bank. Some duckweed and algae was present in places, with the water partly eutrophicated. The watercourse was difficult to access the water's edge due to dense vegetation. Food sources available for water vole were present but very shallow and dry.</p>		
<p><b>River Dee</b> SJ 34779 67128</p>	Group 14	<p>Conducted in March 2022</p> <p><u>Disturbance:</u> Frequent cyclists, walkers and dogs along tarmac public footpath to north of river.</p> <p><u>Water speed:</u> Slow</p> <p><u>Depth:</u> &gt;2 m</p> <p><u>Width:</u> &gt;40 m</p> <p><u>Shore/Bank:</u> Canalised</p> <p>Top of bank consisted of poor semi-improved neutral grassland with frequent false oat-grass <i>Arrhenatherum elatius</i> and cock's-foot. The sloping lower section of bank consisted of bare muddy expanse with frequent small boulders/large stones with salt-marsh vegetation at the mean high-water mark, including salt-marsh grass <i>Puccinellia maritima</i>, sea purslane <i>Atriplex portulacoides</i>, sea aster <i>Aster tripolium</i>, sea club-rush <i>Bolboschoenus maritimus</i> and sea beet <i>Beta vulgaris</i> ssp. <i>maritima</i>.</p>	<p>Conducted in June 2022.</p> <p><u>Disturbance:</u> Frequent cyclists, walkers and dogs along tarmac public footpath to north of river.</p> <p><u>Water speed:</u> Rapid</p> <p><u>Depth:</u> &gt;2 m</p> <p><u>Width:</u> 20-40 m</p> <p><u>Shore/Bank:</u> Canalised</p> <p>Same conditions and vegetation as Visit 1. Grassy banks now long.</p>	None recorded during Visit 1 or Visit 2.	<p>Suitable for commuting water vole.</p> <p>Suitable for foraging and commuting otter.</p>



Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
<b>Broughton Brook</b> SJ 33772 66206	Group 15	<p>Conducted in June 2022.</p> <p><u>Disturbance:</u> Busy, fast road on the south side.</p> <p><u>Water speed:</u> Slow</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1 m</p> <p><u>Shore/Bank:</u> Earth.</p> <p>Fenced ditch bordering 60 mph road and improved grassland fields. Variable ditch depth 0.5-1 m with variation in depth of mud. Steep, almost vertical mud banks full of vegetation (short grass sp, hogweed, common nettle). The ditch was full of bur reed sp, with lesser water parsnip <i>Berula erecta</i>.</p>	<p>Conducted in September 2022.</p> <p><u>Disturbance:</u> 2 m away from busy road with constant traffic.</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1 m</p> <p><u>Shore/Bank:</u> Earth.</p> <p>Static clear water in the ditch. South side of ditch dominated by hawthorn hedge, also frequent blackthorn <i>Prunus spinosa</i>, brambles <i>rubus sp.</i> ivy <i>Hedera helix</i>, ferns. North side of ditch comprised an earth bank approximately at 90 degrees. Bank dominated by short grass and herbs. No vegetation cover and no food resources for otter or water vole.</p>	<p>None recorded during Visit 1.</p> <p>None recorded during Visit 2.</p>	<p>Suitable for foraging and commuting water vole</p> <p>Suitable for commuting otter (disturbance from road).</p>
<b>Chester Road Drain North</b> SJ 32785 67259	Group 16	<p>Conducted in June 2022.</p> <p><u>Disturbance:</u> High disturbance, alongside busy main road and industrial estate, exposed.</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> 0.5-1 m</p> <p><u>Width:</u> 2-5 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>Not accessible from the road or likely from within the industrial estate as there was a hawthorn hedge on either side blocking view. Mostly earth sides although has been culverted under road.</p>	<p>Scoped out from further survey following Visit 1 due to high levels of disturbance.</p>	<p>None recorded during Visit 1.</p>	<p>Unsuitable for otter or water vole.</p>
<b>Chester Road Drain Tributary 1</b> SJ 32483 67532	Group 16	<p>Conducted in June 2022.</p> <p><u>Disturbance:</u> High disturbance, alongside busy main road.</p> <p><u>Water speed:</u> Static/slow</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1-2 m</p>	<p>Scoped out of further surveys following Visit 1 due to unsuitable habitat and high levels of disturbance.</p>	<p>None recorded during Visit 1.</p>	<p>Unsuitable for otter or water vole.</p>



Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
		<u>Shore/Bank:</u> Earth Ditch bordering field and roadside verge. Hedgerow runs alongside the field margin. Water running south. Cement lined for some of the way, then deep mud at least 30-40 cm. Due to very steep banks / mud, difficult to check for signs. Culverted in some sections. Full of hemlock water dropwort			
<b>Chester Road Drain South</b> SJ 32741 67274	Group 16	Conducted in June 2022. A dry ditch along Chester Road. Culverted under the road in places.	Scoped out of further surveys following Visit 1 due to unsuitable habitat.	None recorded during Visit 1.	Unsuitable for otter or water vole.
<b>Chester Road Drain Tributary 2</b> SJ 33068 66838	Group 17	Conducted in June 2022. At the time of survey, a ditch was recorded which was overgrown with grasses and reed canary grass.	Scoped out of further surveys following Visit 1 due to unsuitable habitat.	None recorded during Visit 1.	Unsuitable for otter or water vole.
<b>Sandycroft Drain SJ 33234 66660</b>	Group 17	Conducted in May 2022 <u>Disturbance:</u> Moderately busy road so quite disturbed. <u>Water speed:</u> N/A <u>Depth:</u> N/A <u>Width:</u> N/A <u>Shore/Bank:</u> Earth  Ditch recorded along hedge and road heavily vegetated with Yorkshire fog <i>Holcus lanatus</i> , Common hogweed <i>Heracleum sphondylium</i> , Cow parsley <i>Anthriscus sylvestris</i> , dock <i>Rumex</i> sp., Willowherb sp. Didn't look very deep but hard to see the water level due to vegetation. Banks are fairly steep but it is right by a moderately busy road so quite disturbed.	Scoped out of further surveys following Visit 1 due to unsuitable habitat.	None recorded during Visit 1.	Unsuitable for otter or water vole.



Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
<b>Mancoat Brook</b> <b>SJ 32780 66956</b>	Group 18	<p>Conducted in May 2022.</p> <p><u>Disturbance:</u> Disturbance from grazing animals – poached in places.</p> <p><u>Water speed:</u> Static/slow</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>A ditch running through grazed pasture fields. Largely low lying with shallow/flat banks, lined with defunct hawthorn hedge and regularly crossed by sheep and cattle. Little aquatic vegetation, approximately 10cm deep. One section runs along a lane where it is heavily vegetated with steep banks.</p>	<p>Conducted in August 2022.</p> <p><u>Disturbance:</u> Heavily poached</p> <p><u>Water speed:</u> Static/slow</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>The ditch changes throughout the length of the Survey Area. Starting as a wet ditch, below a hedgerow dominated by nettle which then runs through pasture, turning into heavily poached mud with bordering thistle and blackthorn scrub; further turning into a slow flowing brook. Occasional trees include oak, and rare Ash <i>Fraxinus excelsior</i>. Shrubs included hawthorn and blackthorn alongside abundant creeping thistle <i>Cirsium arvense</i> and common nettle with occasional willowherb.</p>	<p>None recorded during Visit 1.</p> <p>None recorded during Visit 2.</p>	<p>Suitable for foraging and commuting water vole.</p> <p>Suitable for commuting otter.</p>
<b>Willow Park Brook</b> <b>SJ 31855 67422</b>	Group 19	<p>Conducted in June 2022.</p> <p><u>Disturbance:</u> None</p> <p><u>Water speed:</u> Static/slow</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>Shallow and small ditch running through hedgerow, Horse grazed fields either side. Choked with vegetation in places. Woody nightshade <i>Solanum dulcamara</i>, bindweed sp. <i>Convolvulus</i> sp., common nettle, maple. Where water is present it is very shallow, up to 10 cm. Fairly steep banks on one side, flatter on the other, poached in some locations. Some parts difficult to access due to thick hawthorn hedge</p>	<p>Conducted in August 2022.</p> <p><u>Disturbance:</u> None</p> <p><u>Water speed:</u> Sluggish</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>During the survey it was noted that some areas of the watercourse contained heavy vegetation cover and was heavily shaded. The north of the watercourse was noted as inaccessible, due to the presence of a residential garden. Occasional woody nightshade <i>Solanum dulcamara</i>, bindweed sp, nettle, maple, oak sp, Blackthorn were all recorded during the survey. The water was approximately 10 cm deep with a channel profile approximately 1.5 m wide.</p>	<p>None recorded during Visit 1.</p> <p>None recorded during Visit 2.</p>	<p>Suitable for commuting and foraging water vole.</p> <p>Unsuitable for otter.</p>



Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
<b>New Inn Brook</b> SJ 28607 66449	Group 20	<p>Conducted in June 2022.</p> <p><u>Disturbance:</u> High disturbance, alongside busy main road.</p> <p><u>Water speed:</u> Static/slow</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1-2 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>Only partially accessible due to dense vegetation. Narrow, slow flowing brook with heavily silted channel bed. Channel bed comprised fine sediment and some pebbles, bank profile was steep with a shallow foot. Around the easterly extent the brook was culverted beneath the lane. Heavily vegetated banks overhanging channel, heavily shaded with no evidence of fish.</p>	<p>Conducted in August 2022.</p> <p><u>Disturbance:</u> Culverted both ends</p> <p><u>Water speed:</u> Sluggish</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 1-2 m</p> <p><u>Shore/Bank:</u> Earth</p> <p>The watercourse was noted as being shallow and slow flowing between culverts. Heavy vegetation meant that access was limited in areas.</p>	<p>None recorded during Visit 1.</p> <p>None recorded during Visit 2.</p>	<p>Suitable for foraging and commuting water vole.</p> <p>Suitable for commuting otter.</p>
<b>Alltami Brook</b> SJ 27770 67205	Group 21	<p>Conducted in October 2021.</p> <p><u>Disturbance:</u> Low disturbance, some cattle poaching in a few areas.</p> <p><u>Water speed:</u> Rapid</p> <p><u>Depth:</u> 0.5-1 m</p> <p><u>Width:</u> 2-5 m</p> <p><u>Shore/Bank:</u> Rock cliffs. Steep to vertical banks in most places, has cut into bedrock.</p> <p>A brook running through mixed broadleaved woodland. Abundant mature bankside trees, with bushes and herbs. No aquatic vegetation. Runs from a culvert under a main road through the woodland.</p>	No access for the second survey visit.	<p>Possible otter footprints were recorded during Visit 1, within 20m of the Newbuild Infrastructure Boundary. The prints were heavily eroded by water.</p> <p>No evidence or field signs for water vole recorded during Visit 1.</p>	<p>Suitable for foraging, commuting and resting otter.</p> <p>Suitable for foraging and commuting water vole.</p>
<b>Wepre Brook sections A and B</b> Wepre Brook A SJ 27162 67449	Group 22	<p>Conducted in October 2021.</p> <p>A large stream running through deciduous woodland between pasture fields and a road.</p>	<p>Conducted in June 2022.</p> <p><u>Disturbance:</u> Undisturbed, however a large amount of litter present.</p> <p><u>Water speed:</u> Rapid</p>	<p>No evidence or field signs for water vole recorded during Visit 1 or 2.</p> <p>Fresh otter spraint was recorded on rocks along the</p>	Suitable for foraging, commuting and resting for otter.



Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
Wepre Brook B SJ 26925 67499		<p><u>Disturbance:</u> Undisturbed, however a large amount of litter present.</p> <p><u>Water speed:</u> Rapid</p> <p><u>Depth:</u> 0.5-1 m</p> <p><u>Width:</u> 2-5 m</p> <p><u>Shore/Bank:</u> Stones, rocks and mud. Steep slope.</p> <p>Emerges from a culvert where it is canalised. Turns to natural banks with a further canalised section in the middle. Culverted in various sections where it crosses under roads. Bankside trees, herbs, reeds/sedges <i>Carex</i> sp., tall and short grasses present occasionally.</p>	<p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 2-5 m</p> <p><u>Shore/Bank:</u> Stones, rocks and mud. Steep slope.</p> <p>Fast flowing watercourse ranging between 10 and 40 cm in depth, and 1-3 m in width. Channel bed predominantly pebbles with occasional boulders, several sections of exposed tree roots. Fish present. Channelised section with reinforced concrete banks and straight concrete channel base. Section before bridge at westerly extent has profiled banks with gabion baskets supporting. Dense overhanging ruderal herb vegetation on banks in some locations.</p>	<p>stream, and on a rock under a bridge. Degraded spraint was also recorded. These were within 20m of the Newbuild Infrastructure Boundary, inside the Survey Area.</p> <p>Otter laying up sites and slides were identified, as well as potential holts.</p>	Suitable for commuting water vole.
<b>Wepre Brook section C</b> SJ 26442 67612	Group 22	<p>Conducted in October 2021.</p> <p>A large stream running through deciduous woodland between pasture fields and a road.</p> <p><u>Disturbance:</u> Undisturbed</p> <p><u>Water speed:</u> Slow</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 0.5-2 m</p> <p><u>Shore/Bank:</u> Earth.</p> <p>Within a small woodland between grassland and a main road. Full of vegetation, with scrub and common nettle covering the watercourse. Wide and depth varies.</p>	<p>Conducted in June 2022.</p> <p><u>Disturbance:</u> Adjacent land use is grazing pasture. The motorway is nearby.</p> <p><u>Water speed:</u> Slow to rapid in places.</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 0.5-2 m</p> <p><u>Shore/Bank:</u> Earth.</p> <p>Small stream at edge of deciduous woodland and semi-improved grassland, small vertical banks full of vegetation with some scrub/common nettle covering stream in parts. 100% surveyed. Width and depth vary.</p>	No evidence or field signs for otter or water vole recorded during Visit 1 or 2.	<p>Suitable for commuting otter</p> <p>Suitable for foraging, commuting and burrowing for water vole</p>
<b>Wepre Brook Tributary 1</b> SJ 25591 68397	Group 23	<p>Conducted in June 2022.</p> <p>Dry field boundary ditch, choked with vegetation.</p>	Scoped out of further surveys due to being dry on Visit 1.	None recorded during Visit 1.	Unsuitable for otter or water vole
<b>Northop Brook</b>	Group 24	Conducted in June 2022.	Conducted in August 2022.	An animal crossing point was recorded, possibly otter due	Suitable for commuting otter.



Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
SJ 25522 68992		<p><u>Disturbance:</u> Undisturbed</p> <p><u>Water speed:</u> Slow to rapid in places</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 2-5 m</p> <p><u>Shore/Bank:</u> Earth.</p> <p>Along the boundary of arable and pasture fields. Shallow banks densely vegetated with tall grasses and bankside trees. Bounded to north by a hedgerow. Unable to survey full extent due to dense vegetation.</p>	<p><u>Disturbance:</u> Undisturbed</p> <p><u>Water speed:</u> Slow to rapid in places</p> <p><u>Depth:</u> &lt;0.5 m</p> <p><u>Width:</u> 2-5 m</p> <p><u>Shore/Bank:</u> Earth.</p> <p>Along the watercourse section, outside of the NIB but within the Survey Area, east of the scheme, it was noted that the banks were shallow, with little opportunity for burrows. This area was also noted as being heavily shaded with no aquatic vegetation.</p> <p>Along the watercourse section, outside of the NIB but within the Survey Area, west of the scheme, was noted as being shallow and slow flowing. It was noted that its nature alters, becoming much deeper and wider. Its banks were noted as being steep along its length. The watercourse was also heavily shaded by trees with limited aquatic vegetation present progressing through to being absent of trees and aquatic vegetation being present further west along the watercourse Survey Area.</p> <p>The surveyors were unable to access the western end of the watercourse due to heavy scrub species including hawthorn, bramble and nettle, a barbed wire fence and steep slopes.</p>	<p>to the slide on the northern bank. This was recorded 50 m from the Newbuild Infrastructure Boundary inside the Survey Area.</p> <p>No evidence of water vole recorded following Visit 1.</p> <p>No evidence observed during Visit 2.</p>	Unsuitable water vole.
<p><b>Northop Brook Tributary 2</b></p> <p>SJ 25450 68860</p>	Group 24	<p>Conducted in June 2022.</p> <p><u>Disturbance:</u> Undisturbed</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> N/A</p> <p><u>Width:</u> N/A</p> <p><u>Shore/Bank:</u> Earth.</p> <p>Predominantly dry field boundary tributary between arable fields. Some small areas of wet channel, choked with vegetation.</p>	<p>Conducted in August 2022.</p> <p><u>Disturbance:</u> Undisturbed</p> <p><u>Water speed:</u> Static</p> <p><u>Depth:</u> N/A</p> <p><u>Width:</u> N/A</p> <p><u>Shore/Bank:</u> Earth.</p> <p>The western end of the watercourse was noted as most suitable for water vole but it was</p>	<p>None recorded during Visit 1.</p> <p>None recorded during Visit 2.</p>	<p>Suitable for foraging and commuting water vole</p> <p>Suitable for commuting otter.</p>



Watercourse reference	Watercourse group	Watercourse assessment - Visit 1	Watercourse assessment - Visit 2	Evidence of Otter and/or Water vole	Suitability assessment
			completely inaccessible due to deep mud/silt, making it unsafe to access. A barbed wire fence and steep bank with scrub also present preventing safe access. The east of the watercourse was noted as less suitable for water vole, with lack of suitable banks for burrow construction, but opportunities for foraging and commuting. Possible mink and rat footprints and rat burrows were recorded.		
<b>Nant y Fflint (Cornist Lane BV)</b>	25	<p>Conducted in July 2022.</p> <p><u>Disturbance:</u> Areas of landslip and a public footpath located near to watercourse.</p> <p><u>Water speed:</u> Slow</p> <p><u>Depth:</u> &lt;0.5m</p> <p><u>Width:</u> 1-2m</p> <p><u>Shore/Bank:</u> Earth</p> <p>Varied in profile and depth with a rocky substrate present. Suitable for commuting otter and potential holt creating habitat in adjacent woodland. Eastern bank was sandy and steep with the western bank flatter with a gentle slope. Minimal bare ground and burrowing opportunities for water vole.</p>	<p>Conducted in September 2022.</p> <p><u>Disturbance:</u> Cows, landslip and a public footpath were noted during the survey.</p> <p><u>Water speed:</u> Slow</p> <p><u>Depth:</u> &lt;0.5m</p> <p><u>Width:</u> 1-2m</p> <p><u>Shore/Bank:</u> Earth</p> <p>Low lying stream, approximately 0.5m deep at various locations, much shallower in other areas. Boulders and rocks in stream with bankside vegetation consisting of Alder, goat willow <i>Salix caprea</i>, holly and silver birch trees. The earth banks were flat and unsuitable for burrow creation whilst also being heavily vegetated by tall grasses and herbs including marsh marigold <i>Caltha palustris</i>, water mint, willow herb. No signs of any otter spraint or burrows or signs of water vole present, but watercourse suitable for both species.</p>	<p>None recorded during Visit 1.</p> <p>None recorded during Visit 2.</p>	<p>Suitable for commuting water vole</p> <p>Suitable for commuting otter and potential holt creating habitat in adjacent woodland</p>

# DESCRIPTIONS OF FIELD SIGNS AND PHOTOGRAPHS

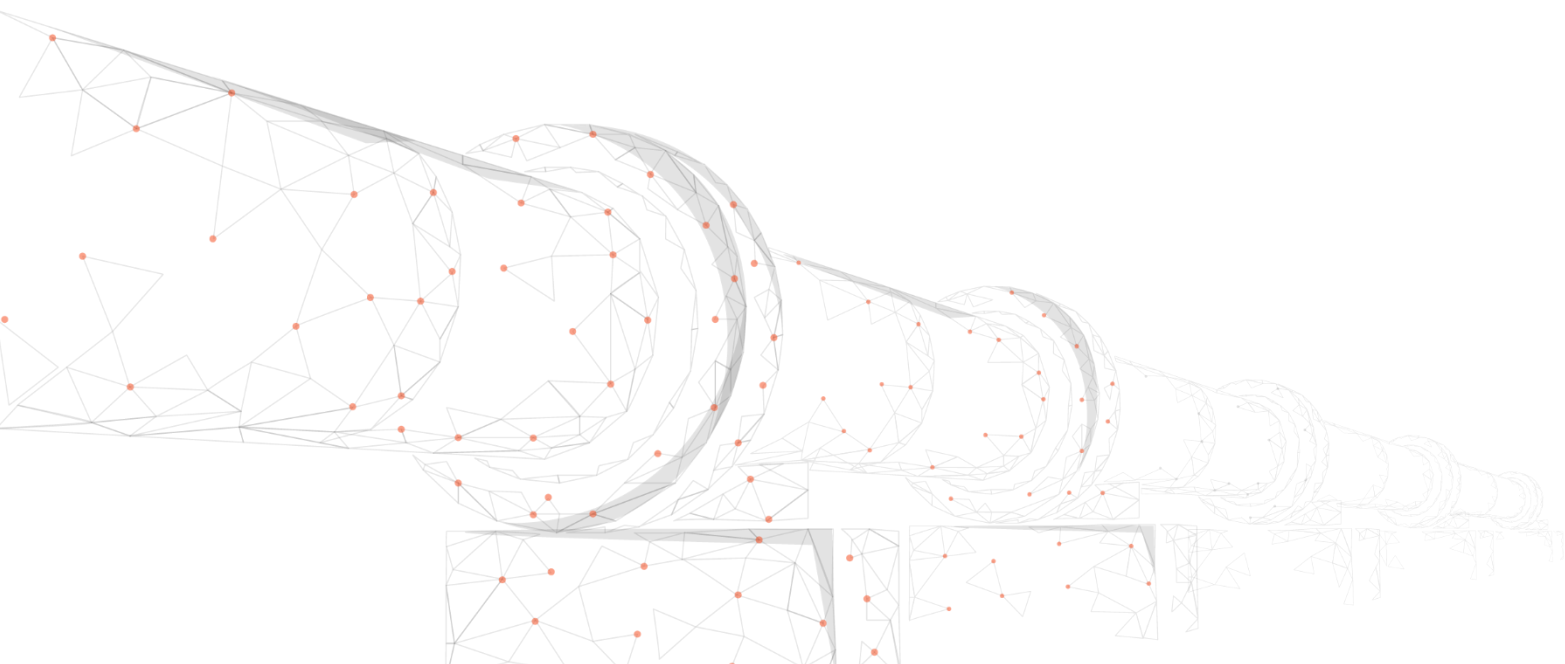










Table 5 - Riparian Mammal  
Field Signs

Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 2: West Central Drain B	WCDB1	Within the Newbuild Infrastructure Boundary	SJ 46867 75487	A water vole burrow, likely disused as no other signs of presence.	
Group 2: West Central Drain B	WCDB2	Within the Newbuild Infrastructure Boundary	SJ4682975567	Terrestrial grasses were recorded as having been eaten at a 45 degree angle. This is a suspected feeding station.	




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 2: West Central Drain B	WCDB3	Within the Newbuild Infrastructure Boundary	SJ4684875514	Rat burrow with run down to water	
Group 2: West Central Drain B	WCDB4	Within the Newbuild Infrastructure Boundary	SJ4684975491	Rat burrow next to bank vole burrow	






Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 2: West Central Drain B	WCDB5	5m from the Newbuild Infrastructure Boundary	SJ4688875463	Feeding station. likely bank vole based on size of vegetation (short terrestrial grass species Poa sp)	



Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
<b>Group 2: West Central Drain B</b>	WCDB6	115m from the Newbuild Infrastructure Boundary	SJ4692175353	Terrestrial and bank side burrow, 10 by 10 cm approx. eroded at edges.	
<b>Group 1: West Central Drain A</b>	WCDA1	Within the Newbuild Infrastructure Boundary	SJ 46765 75978	A water vole burrow located at the top of the bank leading directly into the water. Evidence of torn vegetation in front of hole was also found. Several other burrows were found within 5m.	



Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 2: Elton Marsh 1	EM1.1	Within the Newbuild Infrastructure Boundary	SJ 46927 75613	Possible footprint of a small mammal.	
Group 2: Hapsford Brook	HB1	257 m north of the Newbuild Infrastructure Boundary	SJ 46558 75612	An entrance to a terrestrial water vole burrow found approximately 1 m from the water's edge.	
Group 2: Hapsford Brook	HB2	215 m north of the Newbuild Infrastructure Boundary	SJ 46571 75564	A water vole burrow entrance found in an undercut bank at water level.	



Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 2: Hapsford Brook	HB3	194 m north of the Newbuild Infrastructure Boundary	SJ 46583 75544	A feeding station found amongst rush and sweet reed grass. Vegetation was found to be fairly old.	
Group 2: Hapsford Brook	HB4	171 m north of the Newbuild Infrastructure Boundary	SJ 46593 75529	A burrow entrance found at the water's edge, leading directly into the water course.	
Group 2: Hapsford Brook	HB5	20 m north of the Newbuild Infrastructure Boundary	SJ 46664 75407	A disused entrance to a terrestrial water vole burrow, 7 cm wide.	





Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 2: Hapsford Brook	HB6	99 m south of the Newbuild Infrastructure Boundary	SJ 46763 75201	Location of a water vole feeding station within reed sweet grass <i>Glyceria maxima</i> at the water's edge. Vegetation was freshly chewed at a 45-degree angle.	
Group 2: Hapsford Brook	HB7	140 m south of the Newbuild Infrastructure Boundary	SJ 46764 75159	A water vole feeding station and latrine found along a mammal path by the water's edge and within reed sweet grass. Feeding remains were found to be fresh but droppings were degraded.	



Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 2: Hapsford Brook	HB9	Within the Newbuild Infrastructure Boundary	SJ 46714 75312	Bank vole spotted	N/A
Group 2: Hapsford Brook	HB10	120 m north of the boundary	SJ4662675491	Multiple bank vole burrows	




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 2: Hapsford Brook	HB11	70m north of the boundary	SJ4664875450	Terrestrial burrow, approx. 10 by 10cm. Eroded at edges.	
Group 2: Hapsford Brook	HB12	Within the Newbuild Infrastructure Boundary	SJ4669975363	Bank vole latrine on rock. Size of a grain of rice.	


Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 2: Hapsford Brook	HB13	Within the Newbuild Infrastructure Boundary	SJ4671275305	Water vole feeding station alongside watercourse edge.	
Group 2: Hapsford Brook	HB14	Within the Newbuild Infrastructure Boundary	SJ4672175298	Fresh feeding station with vegetation cut at a 45-degree angle, also some dry feeding remains next to fresh.	





Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 2: Hapsford Brook	HB15	14m south from the Newbuild Infrastructure Boundary	SJ4673275278	Terrestrial burrow, approx. 15 cm by 10 cm, narrows as it descends.	
Group 2: Hapsford Brook	HB16	23m south from the Newbuild Infrastructure Boundary	SJ4673675269	Water vole feeding station with two piles of vegetation.	




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 2: Hapsford Brook	HB17	116m from the Newbuild Infrastructure Boundary	SJ4661875488	Burrow by bankside approx. 20 cm by 20 cm, quite messy with potential trail into water. possibly rat	






Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 2: Hapsford Brook	HB18	Within the Newbuild Infrastructure Boundary	SJ4669575360	Bank vole droppings	
Group 2: Hapsford Brook	HB19	Within the Newbuild Infrastructure Boundary	SJ4671675299	Feeding station at watercourse edge within vegetation.	No image.
Group 2: Hapsford Brook	HB20	Within the Newbuild Infrastructure Boundary	SJ4672175304	Bank vole latrine	No image.

Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
<b>Group 2: Hapsford Brook</b>	HB21	Within the Newbuild Infrastructure Boundary	SJ4672375292	Terrestrial burrow, approx. 10 cm by 10 cm.	
<b>Group 2: Hapsford Brook</b>	HB22	41m south from the Newbuild Infrastructure Boundary	SJ4674875258	Bank vole latrine	No image.
<b>Group 3: Gale Brook</b>	GB1	67 m from the Newbuild Infrastructure Boundary	SJ 45237 74292	An undercut bank with possible burrow entrances directly above water line. No other evidence of water vole along the watercourse on either visit.	









Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 4: Thornton Uplands	TU1	Within the Newbuild Infrastructure Boundary	SJ 44487 73310	Rat footprints present all along the side of the ditch	
Group 4: Thornton Uplands	TU2	Within the Newbuild Infrastructure Boundary	SJ4450773274	Within a rock in the watercourse, two old spraints were recorded. The rock was on the north side of path.	 






Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
<b>Group 4: Thornton Uplands</b>	TU3	Within the Newbuild Infrastructure Boundary	SJ4449273297	A possible otter holt/laying up area underneath a fallen willow. It included several worn entrances leading underneath the willow, with a visibly flattened area leading into the water.	
<b>Group 5: River Gowy</b>	RG1	54 m south east from the Newbuild Infrastructure Boundary	SJ4358072559	Mammal burrow on western bank of the river, clear shelf below. unable to access due to deep river and steep cliff, surveyed from eastern bank of the river	
<b>Group 5: Thornton Ditch 4</b>	TDRG1	Within the Newbuild Infrastructure Boundary	SJ 43723 72870	Two water vole latrines on the edge of the watercourse.	






Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton Ditch 4	TDRG2	Within the Newbuild Infrastructure Boundary	SJ 43771 72893	A water vole latrine.	
Group 5: Thornton Ditch 4	TDRG3	Within the Newbuild Infrastructure Boundary	SJ 43960 72986	Water vole burrows present on the northern bank within overhanging vegetation.	
Group 5: Thornton Ditch 5a	TDRG4	Within the Newbuild Infrastructure Boundary	SJ 43721 72805	A water vole latrine and burrow present on south side of bank.	




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton Ditch 5a	TDRG5	Within the Newbuild Infrastructure Boundary	SJ 43788 72831	A water vole latrine on the south bank of the water body.	
Group 5: Thornton Ditch 5a	TDRG6	Within the Newbuild Infrastructure Boundary	SJ 43796 72839	A water vole latrine and feeding station.	
Group 5: Thornton Ditch 5b	TDRG7	Within the Newbuild Infrastructure Boundary	SJ 43846 72862	A water vole latrine.	






Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton Ditch 5b	TDRG8	Within the Newbuild Infrastructure Boundary	SJ 43895 72889	A water vole latrine found near a burrow in the south side bank.	
Group 5: Thornton Main Drain	TDRG9	Within the Newbuild Infrastructure Boundary	SJ 43847 72846	A water vole feeding station and latrine found amongst soft rush, close to a potential burrow entrance.	
Group 5: Thornton Ditch 4	TDRG10	Within the Newbuild Infrastructure Boundary	SJ 44057 72942	Steep banks, suitable for water voles, found on the western edge of the water course with burrows present.	




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton Ditch 4	TDRG11	Within the Newbuild Infrastructure Boundary	SJ 44073 72926	A potential otter holt on western bank beneath a small tree. No clear slide into water was visible, but the bank from the potential holt to the water's edge was compacted and free of vegetation.	
Group 5: Thornton Main Drain	TDRG12	Within the Newbuild Infrastructure Boundary	SJ 43871 72783	A water vole burrow on west side of bank and latrine directly opposite on eastern bank.	 






Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton Ditch 7a	TDRG13	12 m south of the Newbuild Infrastructure Boundary	SJ 43676 72676	A water vole latrine.	
Group 5: Thornton Ditch 7a	TDRG14	12 m south of the Newbuild Infrastructure Boundary	SJ 43745 72703	A water vole latrine.	
Group 5: Thornton Ditch 7a	TDRG15	12 m south of the Newbuild Infrastructure Boundary	SJ 43764 72706	An entrance to a terrestrial water vole burrow on south side of bank.	




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton Main Drain	TDRG16	12 m south of the Newbuild Infrastructure Boundary	SJ 43879 72764	Multiple water vole burrows leading to water course present on western bank. Potential feeding station and latrine on eastern bank.	
Group 5: Thornton Main Drain	TDRG17	12 m south of the Newbuild Infrastructure Boundary	SJ 43880 72759	Water vole burrow in bank, close to feeding evidence and latrine.	 






Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton Ditch 6	TDRG18	40 m south of the Newbuild Infrastructure Boundary	SJ 43902 72733	Water vole latrine outside burrow in southern bank.	
Group 5: Thornton Ditch 6	TDRG19	35 m south of the Newbuild Infrastructure Boundary	SJ 43956 72762	An area of flattened vegetation, typical of an otter couch.	
Group 5: Thornton Ditch 6	TDRG20	35 m south of the Newbuild Infrastructure Boundary	SJ 43962 72763	A water vole latrine on the bank of the watercourse.	




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton Ditch 6	TDRG21	35 m south of the Newbuild Infrastructure Boundary	SJ 43965 72766	A water vole latrine with small burrows in bank of watercourse and evidence of feeding nearby.	
Group 5: Thornton Ditch 6	TDRG22	30 m south of the Newbuild Infrastructure Boundary	SJ 44001 72784	A water vole latrine with old and fresh droppings. Some evidence of feeding remains nearby.	
Group 5: Thornton Ditch 7b	TDRG23	70 m south of the Newbuild Infrastructure Boundary	SJ 43640 72596	A water vole latrine.	






Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton Ditch 7b	TDRG24	87 m south of the Newbuild Infrastructure Boundary	SJ 43805 72646	A water vole latrine.	
Group 5: Thornton Ditch 7b	TDRG25	93 m south of the Newbuild Infrastructure Boundary	SJ 43863 72664	A water vole latrine	
Group 5: Thornton Ditch 8	TDRG26	125 m east of the Newbuild Infrastructure Boundary	SJ 43595 72506	A water vole latrine, on the northern bank, adjacent to the watercourse edge.	

Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton Ditch 8	TDRG27	125 m south-east of the Newbuild Infrastructure Boundary	SJ 43634 72522	A water vole latrine and feeding station on the northern bank. Some burrows leading to water course visible on opposite bank.	
Group 5: Thornton Ditch 8	TDRG28	128 m east of the Newbuild Infrastructure Boundary	SJ 43692 72541	Water vole feeding station found on northern bank with rushes chewed at a 45 degree angle.	
Group 5: Thornton Main Drain	TDRG29	Within the Newbuild Infrastructure Boundary	SJ 43804 72935	Small mammal burrows in western bank.	






Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton Main Drain	TDRG30	Within the Newbuild Infrastructure Boundary	SJ 43864 72790	Potential water vole or rat prints on the western bank.	
Group 5: Thornton Ditch 7a	TDRG31	12 m south of the Newbuild Infrastructure Boundary	SJ 43768 72710	Small mammal burrows in both northern and southern banks.	
Group 5: Thornton Ditch 6	TDRG32	26 m south of the Newbuild Infrastructure Boundary	SJ 44062 72811	Small burrow on the southern bank, no signs of feeding	




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton Ditch 6	TDRG33	26 m south of the Newbuild Infrastructure Boundary	SJ 44073 72813	Potential water vole burrow on southern bank of watercourse, with some feeding remains on flattened area above. Diagonally chewed rushes.	
Group 5: Thornton Ditch 6	TDRG34	Within 10 m of the Newbuild Infrastructure Boundary	SJ 44070 72843	Small potential WV burrow on northern bank, very round with clear drop into watercourse.	
Group 5: Thornton Ditch 4	TDRG35	Within the Newbuild Infrastructure Boundary	SJ 44073 72927	Potential footprints, unknown as to if rat or water vole, on clay adjacent to the channel. Steep unstable bank above.	






Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton Ditch 4	TDRG36	96 m south of the Newbuild Infrastructure Boundary	SJ 44150 72765	Potential mammal path leading from watercourse east on to arable land. Marks at point of watercourse.	
Group 5: Thornton Ditch 4	TDRG37	116 m south of the Newbuild Infrastructure Boundary	SJ 44163 72751	Mammal path and entrance/exit point into watercourse.	
Group 5: Thornton Ditch 4	TDRG38	150 m south of the Newbuild Infrastructure Boundary	SJ 44188 72726	Multiple footprints at watercourse crossing point - larger mammal prints, potentially badger, some smaller rat or water vole prints alongside.	





Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
<b>Group 5: Thornton Main Drain</b>	TDRG39	130 m south of the Newbuild Infrastructure Boundary	SJ 43950 72575	Larger mammal burrow on eastern bank of watercourse. Thought to be an otter holt.	
<b>Group 5: Thornton Ditch 4</b>	TDRG40	Within the Newbuild Infrastructure Boundary	SJ4405472951	Potential otter holt beneath fallen tree, no spraint or hair, Pathway to watercourse suggesting use.	
<b>Group 5: Thornton Ditch 4</b>	TDRG41	Within the Newbuild Infrastructure Boundary	SJ4409072889	Potential otter holt on western side of bank. Path to waterway, smooth with no vegetation overgrown suggesting use. Observed in August and September 2022.	





Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
<b>Group 5: Thornton Ditch 7b</b>	TDRG42	Within the Newbuild Infrastructure Boundary	SJ4386872867	Water vole feeding remains and droppings on land crossing Thornton Ditch 7b, 10 m east from Thornton Main Drain.	
<b>Group 5: Thornton Ditch 7a</b>	TDRG43	Within the Newbuild Infrastructure Boundary	SJ4380572846	Mammal burrow high potential for water vole (no access for closer photo). Flattened grass outside burrow suggesting lawn/feeding station.	



Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton ditch 6	TDRG44	Within the Newbuild Infrastructure Boundary	SJ4394672760	Water vole droppings on northern side of the ditch.	





Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton ditch 6	TDRG45	Within the Newbuild Infrastructure Boundary	SJ4390772736	Water vole droppings, latrines and burrow. Approximately 6 separate distinct water vole droppings outside a small mammal burrow. Burrow located on the southern side of the ditch.	
Group 5: Thornton Main Drain	TDRG46	Within the Newbuild Infrastructure Boundary	SJ4388972738	Water vole latrines and feeding remains were found. This included three distinct droppings on sedges, found at the SE side of ditch.	




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
<b>Group 5: Thornton Main Drain</b>	TDRG47	Within the Newbuild Infrastructure Boundary	SJ4391072680	Large mammal hole on the bank of the ditch. Thought to have been an otter holt.	
<b>Group 5: Thornton ditch 7b</b>	TDRG48	88m from the Newbuild Infrastructure Boundary	SJ4381772652	Small mammal footprints, thought to be rat.	






Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton ditch 7b	TDRG49	88m from the Newbuild Infrastructure Boundary	SJ4377572639	Small mammal burrow, likely a bank vole.	
Group 5: Thornton ditch 7b	TDRG50	147m south from the Newbuild Infrastructure Boundary	SJ4370672544	Small mammal droppings, no feeding remains, likely bank vole	



Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton ditch 6	TDRG51	33m south from the Newbuild Infrastructure Boundary	SJ4392772749	Single water vole dropping on Northern side of ditch	
Group 5: Thornton ditch 6	TDRG52	33m south from the Newbuild Infrastructure Boundary	SJ4390372735	Water vole latrine, two distinct droppings on a patch of bank/soil on south side of ditch	





Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 5: Thornton ditch 7b	TDRG53	77m south from the Newbuild Infrastructure Boundary	SJ4375172631	Bank vole burrow	
Group 6: Gowy Tributary 2	GT1	Within the Newbuild Infrastructure Boundary	SJ 43138 72155	Potential rat or water vole prints in silt beach within watercourse	
Group 6: Gowy Tributary 2	GT2	Within the Newbuild Infrastructure Boundary	SJ 43133 72154	Potential burrow, indistinguishable prints leading to entrance. Clear drop into watercourse.	



Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 6: Gowy Tributary 2	GT3	Within the Newbuild Infrastructure Boundary	SJ 43109 72128	Prints - rat or water vole	
Group 6: Gowy Tributary 2	GT4	Within the Newbuild Infrastructure Boundary	SJ 43102 72125	Mammal burrow, no other evidence of otter but could potentially be	
Group 6: Gowy Tributary 2	GT5	Within the Newbuild Infrastructure Boundary	SJ 42911 71922	Potential rat or water vole prints over area of mud within watercourse	






Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 6: Gowy Tributary 2	GT6	Within the Newbuild Infrastructure Boundary	SJ4316872181	Burrow set back around 2 m from water on north eastern bank. Potentially rat or water vole approx. 5 cm x 5 cm.	
Group 6: Gowy Tributary 2	GT7	Within the Newbuild Infrastructure Boundary	SJ4313872148	Potential otter print on east bank.	




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 6: Gowy Tributary 2	GT8	6m South from the Newbuild Infrastructure Boundary	SJ4291171918	Rat footprint on mud bank in centre of watercourse	
Group 6: Gowy Tributary 2	GT9	Within the Newbuild Infrastructure Boundary	SJ4313472150	Potential otter footprints on central mud bank. Rat prints also present.	





Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 9: Backford Brook	BB1	27 m east from the Newbuild Infrastructure Boundary	SJ 39714 71189	Multiple rat prints	
Group 9: Friars Park Ditch	FPD1	90 m east and north of the Newbuild Infrastructure Boundary	SJ 39251 70942	Rat footprints	




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
<b>Group 9: Friars Park Ditch</b>	FPD2	Within the Newbuild Infrastructure Boundary	SJ 39395 70878	Small mammal footprint, most likely rat	
<b>Group 10: Shropshire Union Canal</b>	SUC1	26m from the Newbuild Infrastructure Boundary	SJ 39692 70950	Otter spraint on the side of canal	No image.
<b>Group 11: Finchetts Gutter Tributary</b>	FGT1	250 m north of the Newbuild Infrastructure Boundary	SJ 37798 69989	Rat footprints	
<b>Group 11: Finchetts Gutter Tributary</b>	FGT2	40 m north of the Newbuild Infrastructure Boundary	SJ 37864 69787	Burrow in vertical bank. Not currently in use as vegetation is growing in entrance. Approximately 50 cm wide and 30 cm high.	






Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
<b>Group 11: Finchetts Gutter Tributary</b>	FGT3	38 m north of the Newbuild Infrastructure Boundary	SJ 37868 69783	Rat print on bankside	
<b>Group 12: Seahill Drain</b>	SD1	118m west of the Newbuild Infrastructure Boundary	SJ3629869048	Rat footprints	
<b>Group 14: River Dee</b>	RD1 and RD2	From 400 m outside of the Newbuild Infrastructure Boundary along the river bank to within the Newbuild Infrastructure Boundary.	SJ 30548 66906 to SJ 34971 66954	Footprints running along edge of riverbank. Identified as rat No droppings or burrows found during survey. Only other footprints present were of birds.	




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 19: Willow Park Brook	WPB1	6 m from the Newbuild Infrastructure Boundary	SJ 31930 67506	Rat entered water and swam away.	N/A
Group 19: Willow Park Brook	WPB2	Within the Newbuild Infrastructure Boundary	SJ3173467318	Two rat burrows recorded next to each other. One was approximately 10 cm by 10 cm on the north-western bank, its size restricted by roots. Degraded footprints also found on the bank. The second rat burrow was on the south-eastern bank. Approximately 15 cm by 15 cm. A rat chewed hazelnut was also found outside burrow.	
Group 21: Alltami Brook	AB1	110 m north east of the Newbuild Infrastructure Boundary	SJ 27809 67278	Mink prints on bank	






Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 21: Alltami Brook	AB2	59 m north east of the Newbuild Infrastructure Boundary	SJ 27781 67218	Mink footprints	
Group 21: Alltami Brook	AB3	25 m north east of the Newbuild Infrastructure Boundary	SJ 27754 67193	Mink footprint on bank, eroded by water	
Group 21: Alltami Brook	AB4	14 m north east of the Newbuild Infrastructure Boundary	SJ 27746 67194	Possible otter footprints recorded on the bank, heavily eroded by water.	



Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 21: Alltami Brook	AB5	Within the Newbuild Infrastructure Boundary	SJ 27579 67107	Mink footprint on bank, faint but due to substrate. Must be fresh due to recent heavy rain	
Group 22: Wepre Brook A	WB1	16 m north of the Newbuild Infrastructure Boundary	SJ 27017 67456	An otter spraint found on a rock in the stream.	
Group 22: Wepre Brook A	WB2	19 m north of the Newbuild Infrastructure Boundary	SJ 27095 67451	A fresh otter spraint found on a rock in the stream.	




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 22: Wepre Brook A	WB3	15 m north of the Newbuild Infrastructure Boundary	SJ 27174 67452	A fresh otter spraint found on a rock in the stream.	
Group 22: Wepre Brook A	WB4	13 m north of the Newbuild Infrastructure Boundary	SJ 27258 67449	A fresh otter spraint found on a rock in the stream.	
Group 22: Wepre Brook B	WB5	20 m north of the Newbuild Infrastructure Boundary	SJ 27191 67477	A fresh otter spraint found on a rock under the bridge where the stream passes under the road.	




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 22: Wepre Brook A	WB6	29 m north of the Newbuild Infrastructure Boundary	SJ 27301 67440	Possible laying up spot, compacted ground at edge of bank. Also gap beneath small pedestrian bridge (north-western corner) potentially extends in, suitable for otter.	
Group 22: Wepre Brook A	WB7	19 m north of the Newbuild Infrastructure Boundary	SJ 27271 67444	Degraded spraint on boulder within channel	
Group 22: Wepre Brook A	WB8	17 m north of the Newbuild Infrastructure Boundary	SJ 27260 67437	Possible otter lay-up areas. One in an undercut bank, the other in an area of woody debris when the watercourse is high.	





Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
					
Group 22: Wepre Brook A	WB9	15 m north of the Newbuild Infrastructure Boundary	SJ 27244 67441	Slide down bank into water maybe otter possibly badger	



Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 22: Wepre Brook A	WB10	25 m north of the Newbuild Infrastructure Boundary	SJ 27218 67438	Hole in base of tree up from watercourse with flattened vegetation leading to it	 The 'Photograph' column contains two images. The top image shows a close-up of a tree trunk with a hole in its base, surrounded by dense green foliage and ivy. The bottom image shows a wider view of a wooded area with many green plants and trees.





Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 22: Wepre Brook A	WB11	15 m north of the Newbuild Infrastructure Boundary	SJ 27152 67443	Slide with adjacent resting place on northern bank of watercourse	
					
Group 22: Wepre Brook A	WB12	22 m north of the Newbuild Infrastructure Boundary	SJ 27109 67446	Multiple degraded spraints on boulders within stream	


Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 22: Wepre Brook A	WB13	19 m north of the Newbuild Infrastructure Boundary	SJ 27013 67458	Potential holt location - entrance on meander off main watercourse, clear and accessible entrance.	
Group 22: Wepre Brook A	WB14	10 m north of the Newbuild Infrastructure Boundary	SJ 26965 67474	Potential otter holt, gap behind partially collapsed wall which leads back quite far	




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 22: Wepre Brook C	WB15	15 m south of the Newbuild Infrastructure Boundary	SJ 26542 67588	Potential water vole print. No other evidence of presence.	
Group 22: Wepre Brook C	WB16	25 m south of the Newbuild Infrastructure Boundary	SJ 26464 67613	Rat footprint on bank	


Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 24: Northop Brook	NB1	50 m east of the Newbuild Infrastructure Boundary	SJ 25454 68958	Potential mammal crossing point, possibly otter due to slide feature on northern bank.	 




Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 24: Northop Brook	NB2	38m west of the Newbuild Infrastructure Boundary	SJ2545868959	Mammal burrow on southern bank, accompanied by multiple rat footprints along the bank. Approximately 20 cm wide by 15 cm High. D shaped.	 The photograph section contains two images. The top image shows a dark, D-shaped burrow entrance in a soil bank, partially obscured by green plants with lobed leaves. The bottom image is a close-up of a muddy surface showing several distinct, parallel tracks of rat footprints.

Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 24: Northop Brook	NB3	Within the Newbuild Infrastructure Boundary	SJ2539468949	Rat prints covering the bank	



Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 24: Northop Brook	NB4	Within the Newbuild Infrastructure Boundary	SJ2534768934	Highly degraded, possibly mink or rat footprint on southern bank.	

Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 24: Northop Brook	NB5	9 m from the Newbuild Infrastructure Boundary	SJ2531668913	Multiple mammal burrows in the bank. one potential slide into the brook, approximately 10 cm high by 5 cm wide. Two further burrows noted higher up the bank approximately 10 cm by 10 cm all with soil in entrance. Mammal path into field.	



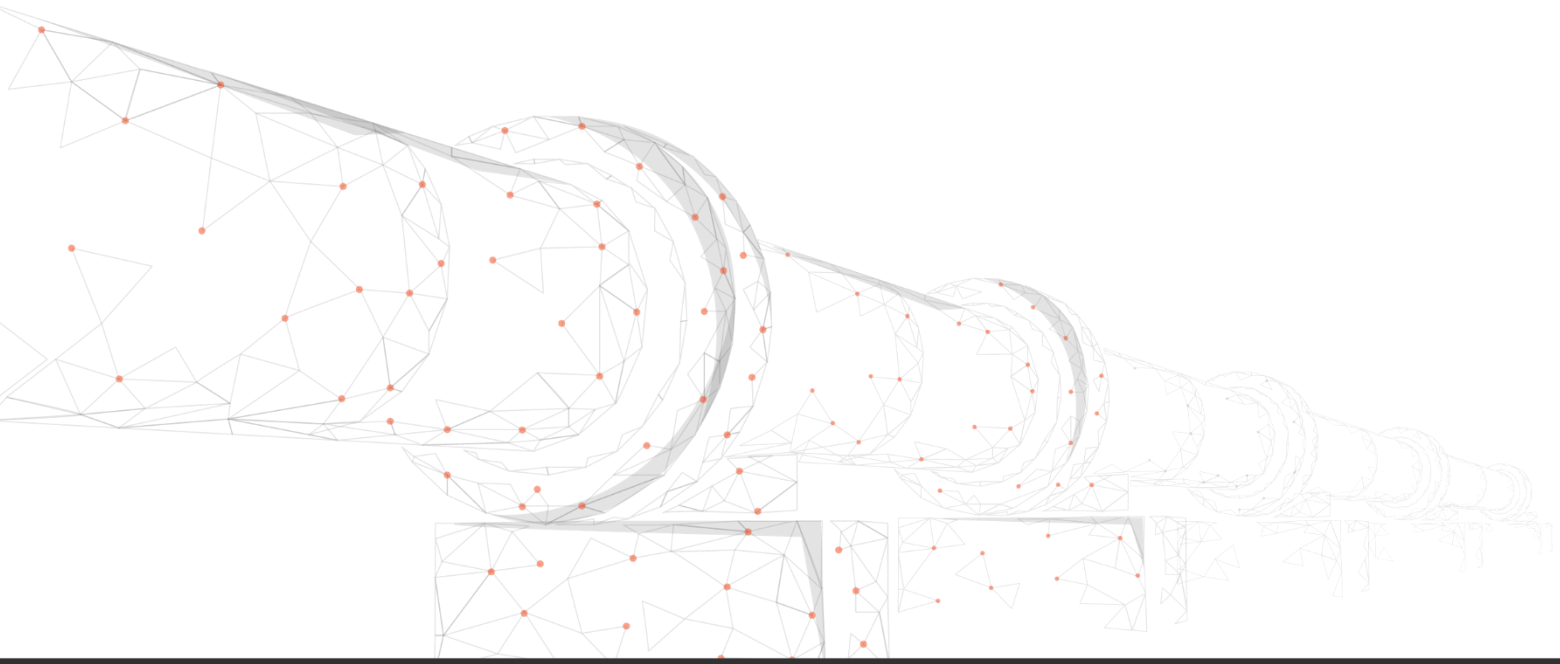
Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 25: Nant-y-Fflint	NYF1	36m south	SJ2152972460	Potential rat burrow	

Watercourse group: Watercourse name	Field sign reference	Location in relation to Newbuild Infrastructure Boundary	Grid reference	Field sign description	Photograph
Group 25: Nant-y-Fflint	NYF2	123m south	SJ2153572367	Potential rat burrow	





# ANNEX D



## FIELD SURVEY PHOTOGRAPHS





**Table 6 - Watercourse Photographs**

Watercourse reference	Field Survey Photographs	
East Central Drain		
	Photos of the East Central Drain, with dense reeds along the banks	



Watercourse reference	Field Survey Photographs	
West Central Drain		
	Photos of the West Central Drain, with shallow/flat banks	

Watercourse reference	Field Survey Photographs	
Hapsford Brook		
	Photos of the Hapsford Brook, with similar habitat to the West Central Drain	



Watercourse reference	Field Survey Photographs	
Elton Marshes		
	Photos of Elton Marshes, shallow/flat banks and narrow channel	

Watercourse reference	Field Survey Photographs	
Elton Lane Ditches		
	Two photos to show the Elton Lane Ditches – all were of similar habitat, shallow/flat banks and heavily vegetated with grass.	



Watercourse reference	Field Survey Photographs	
Gale Brook		
	<p>Photos of Gale Brook, showing the arable side and longer grass pasture side. Some sections with dense bramble and hawthorn.</p>	



Watercourse reference	Field Survey Photographs	
Halls Green Lane Brook		
	Photos of Halls Green Lane Brook, densely vegetated.	



Watercourse reference	Field Survey Photographs	
Thornton Uplands		
	Photos of Thornton Uplands, recently dug with steep banks and little aquatic vegetation	





Watercourse reference	Field Survey Photographs	
Thornton Ditches		
	<p>Photos of the Thornton Ditches, wide drainage channels with rushes, reeds and denser vegetation in places.</p>	




Watercourse reference	Field Survey Photographs	
Thornton Main Drain		
	<p>Photos of Thornton Main Drain, a large wide channel lined with rushes and reeds.</p>	





Watercourse reference	Field Survey Photographs	
River Gowy		
	<p>The section of the River Gowy within the Newbuild Infrastructure Boundary, wide with flat/shallow banks.</p>	





Watercourse reference	Field Survey Photographs	
Stanney Main Drain		
	Photos of Stanney Main Drain, densely vegetated with regular poaching of the banks.	





Watercourse reference	Field Survey Photographs	
Stanney Mill Brook		
	Stanney Mill Brook, densely vegetated banks and mostly dry.	



Watercourse reference	Field Survey Photographs	
Gowy Tributary 2		
	Photos of Gowy Tributary 2, running through a wooded area, with a stony substrate in places.	





Watercourse reference	Field Survey Photographs	
Rake Lane Brook		
	Photos of Rake Lane Brook, very shallow and densely overgrown	





Watercourse reference	Field Survey Photographs	
Backford Brook		
	Photos of the Backford Brook. Culverted in places in roads.	





Watercourse reference	Field Survey Photographs	
Friars Park Ditch		
	Photos of Friars Park Ditch. Mostly ephemeral, with little aquatic vegetation.	





Watercourse reference	Field Survey Photographs	
Shropshire Union Canal		
	<p>Sections of the Shropshire Union Canal within or adjacent to the Newbuild Infrastructure Boundary. An active canal.</p>	



Watercourse reference	Field Survey Photographs	
Parkgate Road Ditch		
	Photos of Pakrgate Road Ditch. Dry during the first survey visit.	



Watercourse reference	Field Survey Photographs	
Finchetts Gutter Tributary		
	<p>Photos of Finchetts Gutter Tributary. Passes through more densely vegetated sections, some parts dry.</p>	




Watercourse reference	Field Survey Photographs	
Seahill Drain		
Photos of Seahill Drain. Steep banks, and densely vegetated.		



Watercourse reference	Field Survey Photographs	
Sealand Main Drain		
	Photos of Sealand Main Drain, with thick margins of dense vegetation.	


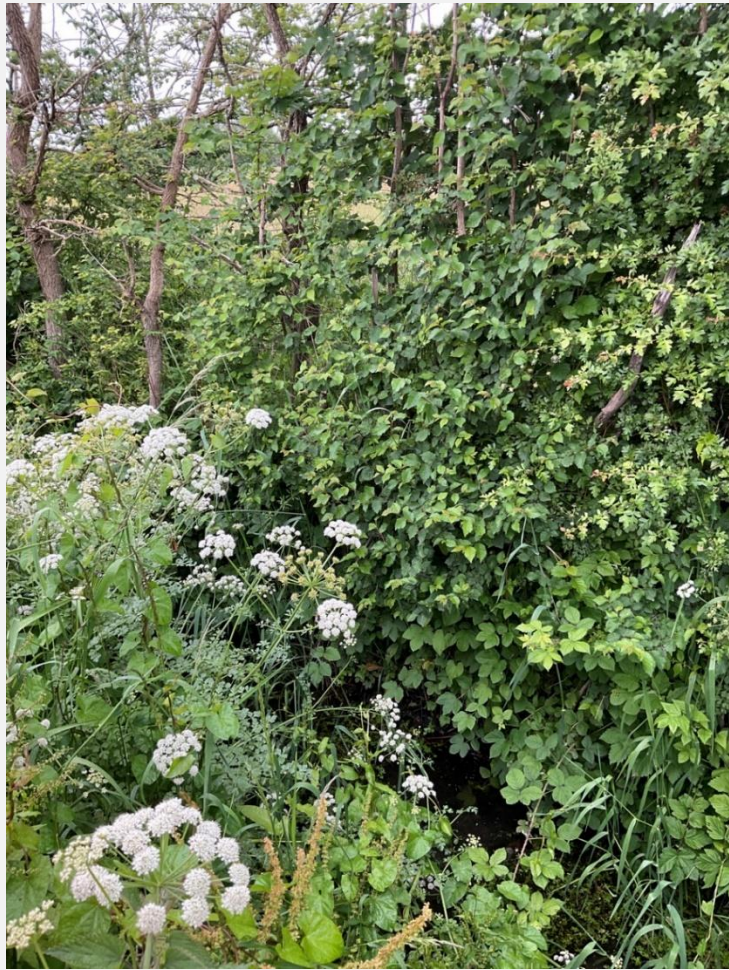


Watercourse reference	Field Survey Photographs	
Broughton Brook		
	Photo of Broughton Brook, fenced from the fields and the road, with dense vegetation along the banks.	





Watercourse reference	Field Survey Photographs	
Chester Road Drain North		
	Photos of Chester Road Drain North, cement lined where it is culverted under the road.	



Watercourse reference	Field Survey Photographs	
Chester Road Tributary 1		
	<p>Photos of Chester Road Drain Tributary 1, with cement lined banks for part of it's length.</p>	





Watercourse reference	Field Survey Photographs	
Chester Road Drain South		
	Photos of Chester Road Drain South, dry most of the length.	



Watercourse reference	Field Survey Photographs	
<b>Chester Road Tributary</b> <b>2</b>		
	Photo of Chester Road Tributary 2, which was recorded as a dry ditch.	





Watercourse reference	Field Survey Photographs	
Sandycroft drain		
	Photo of Sandycroft drain, which was recorded as a dry at the point of survey and unsuitable for either species.	

Watercourse reference	Field Survey Photographs	
River Dee		
	Photos of the River Dee where it lies within the Newbuild Infrastructure Boundary.	



Watercourse reference	Field Survey Photographs	
Mancoat Drain and Tributary		
	<p>Photos of the Mancoat Drain and Tributary. A section along the lane where it is narrow and densely vegetated, and other sections where it is wide and flat, and often poached.</p>	




Watercourse reference	Field Survey Photographs	
Willow Park Brook		
Photos of Willow Park Brook, small and shallow and densely vegetated.		



Watercourse reference	Field Survey Photographs	
New Inn Brook		
	<p>Photos of New Inn Brook, narrow and mostly densely vegetated. Some section was culverted where it passed under the road.</p>	





Watercourse reference	Field Survey Photographs	
Alltami Brook		
Photos of Alltami Brook showing the wide channe with rocky substrate.		





Watercourse reference	Field Survey Photographs	
Wepre Brook sections A and B		
	Photos of Sections A and B of Wepre Brook, where it has a wide channel and a rocky substrate.	





Watercourse reference	Field Survey Photographs	
Wepre Brook section C		
	<p>Photos of Section C of Wepre Brook, where it is much narrower, with dense vegetation and earth banks.</p>	



Watercourse reference	Field Survey Photographs	
Wepre Brook Tributary 1		
	Photos of Wepre Brooke Tributary 1, which was dry.	



Watercourse reference	Field Survey Photographs	
Northop Brook		
	<p>Photos of Northop Brook, showing the narrow channel and dense vegetation.</p>	



Watercourse reference	Field Survey Photographs	
Northop Brook Tributary 2		
	<p>Photos of Northop Brook Tributary 2, which was largely dry, with small sections of wet channel.</p>	



Watercourse reference	Field Survey Photographs	
Nant y Fflint		
	<p>Photos of Nant-y-Fflint showing the rocky banks and dense woodland vegetation.</p>	