



Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Environmental Statement

Volume 3

Appendix 20.13 – Riparian Mammals (Water Vole and Otter) Survey Report

August 2022

Document Reference: 6.3.20.13

APFP Regulation: 5(2)(a)

| Report produced by | Produced on behalf of |
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| <p>Written by: William Riddett BA ACIEEM</p> <p>Checked by: Alexander Lowe BSc MArborA</p> <p>Authorised by: Graham Riley BSc ACIEEM Robert Yaxley BSc CEnv CEcol MCIEEM</p> <p>Final edit authorised by: William Riddett BA ACIEEM</p> | <p>Equinor New Energy Limited Forusbeen 50 4035 Stavanger Norway</p> |
| <p>Wild Frontier Ecology Ltd. Unit 2, Cold Blow Farm Great Snoring, Fakenham Norfolk, NR21 0HF Tel: 01328 864633 will@wildfrontier-ecology.co.uk</p> | |

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Company Registered in England and Wales No 4942219.

VAT Reg No. 887 4692 54

Registered Office: Saxon House, Hellesdon Park Road, Drayton High Road, Norwich NR6 5DR

Director: Robert Yaxley BSc (Hons) CEcol CEnv MCIEEM.

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This report conforms to the British Standard 42020:2013 Biodiversity - Code of practice for planning and development.

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LIST OF ACRONYMS

| | |
|-------|---|
| CEZ | Construction Exclusion Zone |
| DCO | Development Consent Order |
| DEP | Dudgeon Offshore Wind Farm Extension Project |
| EP1HS | Extended Phase 1 Habitat Survey |
| ETG | Expert Topic Group |
| GPS | Geographic Positioning System |
| HDD | Horizontal Direction Drill/Drilling |
| NBIS | Norfolk Biodiversity Information Service |
| OS | Ordnance Survey |
| SEP | Sheringham Shoal Offshore Wind Farm Extension Project |
| WCA | Wildlife and Countryside Act, 1981 (as amended) |
| WFE | Wild Frontier Ecology Ltd. |

GLOSSARY OF TERMS

| Term | Definition |
|---|---|
| DCO boundary / Order Limits | The area subject to the application for development consent, including all permanent and temporary works for SEP and DEP. |
| Dudgeon Offshore Wind Farm Extension Project (DEP) | The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure. |
| DEP onshore site | The Dudgeon Offshore Wind Farm Extension onshore area consisting of the DEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area. |
| European site | Sites designated for nature conservation under the Habitats Directive and Birds Directive. This includes candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas, and is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017. |
| Evidence Plan Process (EPP) | A voluntary consultation process with specialist stakeholders to agree the approach, and information to support, the EIA and HRA for certain topics. |
| Expert Topic Group (ETG) | A forum for targeted engagement with regulators and interested stakeholders through the EPP. |
| Horizontal directional drilling (HDD) zones | The areas within the onshore cable route which would house HDD entry or exit points. |
| Jointing bays | Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts. |
| Landfall | The point at the coastline at which the offshore export cables are brought onshore, connecting to the onshore cables at the transition joint bay above mean high water |
| Onshore cable corridor | The area between the landfall and the onshore substation sites, within which the onshore cable circuits will be installed along with other temporary works for construction. |
| Onshore export cables | The cables which would bring electricity from the landfall to the onshore substation. 220 - 230kV. |
| Onshore Substation | Compound containing electrical equipment to enable connection to the National Grid. |
| PEIR boundary | The area subject to survey and preliminary impact assessment to inform the PEIR. |
| Sheringham Shoal Offshore Wind Farm Extension Project (SEP) | The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure. |
| SEP onshore site | The Sheringham Shoal Wind Farm Extension onshore area consisting of the SEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area. |
| Study area | Area where potential impacts from the project could occur, as defined for each individual Environmental Impact Assessment (EIA) topic. |
| The Applicant | Equinor New Energy Limited |

EXECUTIVE SUMMARY

Wild Frontier Ecology Ltd. (WFE) was commissioned by Equinor New Energy Ltd. to complete surveys for otter and water vole at all suitable watercourses within the Development Consent Order (DCO) boundary associated with the proposed Sheringham Shoal Offshore Wind Farm Extension Project (SEP) and Dudgeon Offshore Wind Farm Extension Project (DEP). The surveys were preceded by a screening exercise during which watercourses within the DCO boundary which were found to be suitable for otter and/or water vole were screened in as requiring further surveys. In total, ten watercourses were screened in and were subsequently surveyed.

The screening exercise was based on information obtained on watercourses during the Extended Phase 1 Habitat Surveys (EP1HS) completed between 2020 and early 2021. The EP1HS covered all accessible parts of the Preliminary Environmental Information Report (PEIR) boundary. From 2020 to 2021, the results of the EP1HS, along with results of other ecological surveys underway at the same time, were used to inform the site selection process. The PEIR boundary was accordingly refined into the narrower Development Consent Order (DCO) boundary. Data from the EP1HS (and other surveys) informed this site selection process, allowing the DCO boundary to avoid (or reduce impacts upon) particularly sensitive areas or features which had been identified within the PEIR boundary. Full results of the EP1HS are provided in **Appendix 20.1: Extended Phase 1 Habitat Survey Technical Appendix**. Riparian mammal surveys took place in summer 2021 on watercourses which intersected a preliminary DCO boundary, and which had been assessed as providing suitable habitat for otters and/or water voles.

The survey itself comprised a search for signs of otter and/or water vole within and around the watercourses. This included signs such as burrows/holts, latrines/droppings, feeding remains, footprints or direct sightings. The survey was completed by WFE ecologists within the accepted survey season, between May and September 2021. Signs of otter and water vole were found in one watercourse (the River Tiffey). Signs of water vole (but not otter) were found in eight other watercourses. No signs of either species were recorded in one surveyed watercourse near Ketteringham.

A biological records search was also completed with the Norfolk Biodiversity Information Service (NBIS). This returned 53 records of otter presence and 28 records of water vole presence within 2 kilometres (km) of the PEIR boundary. Of these records, one record of otter and one record of water vole are located within the DCO boundary; both are records of spraints/droppings on the River Bure and date from 2005. Records of both species are clustered along certain watercourses in the vicinity of the DCO boundary, including Spring Beck at Weybourne the River Bure and the River Wensum. Other watercourses such as The Quag (north of Kelling), the River Yare and its tributaries and the River Tas have records of otters but not water voles, and the River Tud has records of water voles but not otters.

The 2021 otter and water vole survey data coupled with the desk study data confirm that both species are present in numerous watercourses throughout the DCO boundary. Construction proposals for SEP and DEP include a commitment to adopt trenchless installation techniques (namely Horizontal Directional Drilling [HDD]) beneath all relevant watercourses. This construction technique will avoid direct impacts to watercourses and riparian habitat, and therefore avoid impacting otters and water voles. No further surveys for otter and water vole are expected to be required. Best-practice mitigation measures will be adopted throughout the construction phase of the onshore elements of SEP and DEP, which will address the potential for disturbance to wildlife including riparian mammals. The possibility of bentonite breakouts and the

mitigation approach involved in addressing this is outlined within the **Outline Ecological Management Plan** (document reference 9.19).

1. BACKGROUND

Equinor New Energy Limited (hereafter Equinor) is proposing to extend the existing operational Sheringham Shoal and Dudgeon Offshore Wind Farms, named the Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Project (hereafter SEP and DEP). SEP and DEP will consist of a number of offshore and onshore elements including the offshore wind turbines, offshore export cables and offshore substation. The offshore export cables will connect to shore on the North Norfolk coast, with onshore infrastructure connecting the offshore wind farms to the National Grid, which will comprise underground cables from landfall to an onshore substation and National Grid connection at Norwich Main. A full description of SEP and DEP is provided within **ES Chapter 4 Project Description** (document reference 6.1.4).

In 2021, WFE was commissioned by Equinor to undertake surveys to establish the presence and/or likely absence of otter *Lutra lutra* and water vole *Arvicola amphibius* in watercourses within the DCO boundary to inform an ecological impact assessment of the proposed onshore grid connection for the SEP and DEP. Maps showing the survey area (i.e. the DCO boundary and relevant watercourses within it) are provided in **Figure 1** to **Figure 6**, below.

The surveys were preceded by a screening exercise based on the EP1HS data, collated throughout 2020 and early 2021, which included an appraisal of the suitability of all surveyed watercourses for riparian mammals. The EP1HS covered all accessible parts of the PEIR boundary. From 2020 to 2021, the results of the EP1HS, along with results of other ecological surveys underway at the same time, were used to inform the site selection process. The PEIR boundary was accordingly refined into the narrower Development Consent Order (DCO) boundary. This refinement process drew on information obtained during the EP1HS (and other ecological surveys) with the aim of avoiding or minimising impacts on areas and features identified as being of relatively high ecological value. Full results of the EP1HS are provided in **Appendix 20.1: Extended Phase 1 Habitat Survey Technical Appendix**. Riparian mammal surveys took place on the watercourse crossing points within the preliminary DCO boundary, which had been assessed as providing suitable habitat for otter and/or water vole. Any watercourses which may have provided suitable riparian mammal habitat outside the DCO boundary but within the PEIR boundary were not subject to further surveys because the site selection process had ensured SEP and DEP avoided any such watercourses.

This report outlines the aims, methods and results of the surveys for otter and water vole which have been completed in 2021.

2. RELEVANT LEGISLATION AND POLICY BACKGROUND

The otter is protected in accordance with Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (WCA), and under Schedule 2 of the Conservation of Habitats and Species Regulations 2017. It is an offence to intentionally kill, injure or take an otter from the wild, or to intentionally or recklessly damage, destroy or obstruct access to any habitat used by otters or to disturb the otters which make use of those habitats.

The water vole is protected in accordance with Schedule 5 of the WCA. It is an offence to intentionally damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection, or to disturb water voles whilst they are using such a place. It is also an offence to kill, injure, capture or possess water voles.

3. SURVEY METHODS

3.1. Desk Study

During the Terrestrial Ecology and Ornithology Expert Topic Group (ETG) meeting on 28th January 2020, attended by Natural England, the Environment Agency, Broadland District Council, Norfolk County Council, North Norfolk District Council and South Norfolk District Council, it was agreed that suitable watercourses within the PEIR boundary would be surveyed to determine the presence or likely absence of otter and water vole.

Watercourses within the PEIR boundary were identified from a desk-based review of Ordnance Survey (OS) maps and other freely available mapping software such as Google Earth. Between March 2020 and January 2021, an EP1HS of all accessible parts of the PEIR boundary was completed; this included appraisals of the suitability for otter and water vole of all accessible watercourses. The appraisal of the suitability of watercourses was based on size/permanence (seasonal watercourses which are dry for much of the year were considered unsuitable), water quality (watercourses with poor quality, stagnant water were also considered unsuitable) and suitable marginal/surrounding habitat; water voles require grassy/reedy vegetation on the banks of watercourses as their food source and to provide some shelter/protection.

Although information was collected on the suitability of all accessible watercourses within the PEIR boundary, by the time of the riparian mammal surveys in summer 2021, the site selection process had refined the Order Limits to become a preliminary DCO boundary. Therefore, it was only those suitable and accessible watercourses within the preliminary DCO boundary which were targeted for further surveys. Any sections of watercourses which may have been suitable for riparian mammals but were within the PEIR boundary (but outside the DCO boundary) did not need to be surveyed as they were at no risk of being impacted by SEP and DEP.

3.1.1. Norfolk Biodiversity Information Service Data Search

A data search was completed with NBIS in January 2021 for all biological records (including of otter and water vole) within the PEIR boundary and surrounding 2km area. The data search was based on the PEIR boundary because this was the extent of the Order Limits at the time of the search.

3.1.2. WFE Records

A review of WFE's past surveys (completed for other projects) of watercourses within the DCO boundary was also completed to obtain any relevant records of otter or water vole.

3.2. Presence/Likely Absence Survey

Each screened-in watercourse (i.e. an accessible watercourse which provided suitable habitat for otter and/or water vole) within the preliminary DCO boundary was surveyed to determine the presence or likely absence of these species. Signs of these animals indicate that they are present within a watercourse, and the absence of signs (following a thorough survey) indicates that they are likely to be absent.

At each watercourse, a pair of surveyors walked along the banks of the watercourse while visually searching for signs of otter or water vole presence. In places where bank-side vegetation was too dense or impenetrable for surveyors to walk through, or if the

banks were too steep or otherwise unsafe, surveyors either entered the watercourse channel and continued the survey, or walked around the feature (away from the watercourse) until the banks became accessible again. Surveys focused on the accessible sections of watercourses within the DCO boundary only. In some cases, this meant larger sections of watercourses were surveyed than are now relevant, because at the time of the surveys the DCO boundary was wider than it is now.

The survey methodology followed standard guidelines for otter¹ and water vole². Signs indicating the presence of these species include:

- Direct sightings/carcasses;
- Otter holts or couches/water vole burrows;
- Feeding remains;
 - For otter, this typically includes fish, amphibians, crustaceans (e.g. crayfish), small birds/mammals (including water vole) and invertebrates. Otters will often discard certain parts of the prey such as fish heads/scales, shells of mussels and crabs, amphibian skin and crayfish claws.
 - For water vole, feeding signs are taken as the part-eaten shoots of vegetation (grasses, reeds and sedges), chewed at a distinctive 45° angle and usually left in small piles at 'feeding stations' on the banks of watercourses.
- Otter spraints (or anal jelly)/water vole droppings/latrines; and,
- Footprints or other tracks such as slides and runs which can be used by these animals when moving around the banks of watercourses.

Any signs were noted for location onto a paper map and the position was marked using a Geographic Positioning System (GPS) device. Signs were also photographed where possible.

Surveys were completed by the following WFE staff (working in pairs) on 12th, 14th, 19th and 28th May 2021:

- Ptolemy McKinnon BSc MSc
- Justin Parry BSc
- Graham Riley BSc ACIEEM
- Katrina Salmon BSc

Weather conditions were acceptable for surveys during all four dates, with no precipitation (which can eradicate some signs of riparian mammal presence, such as by raising water levels).

¹ Chanin, P. (2003). Monitoring the Otter *Lutra lutra*. *Conserving Natura 2000 Rivers Monitoring Series No. 10*. English Nature, Peterborough.

² Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series)*. The Mammal Society, London.

One of the surveys of a southern section of Spring Beck near Weybourne was surveyed by G. Riley and P. McKinnon on 15th September 2021, also during suitable weather conditions. This survey was completed later than the other surveys (but still within the optimal survey window of April to October) because it was the first time surveyor access had been granted by the landowner.

The preliminary DCO boundary was subject to minor refinements in 2021 and 2022, so some of the surveyed sections of watercourses are now outside the final, fixed DCO boundary. Therefore, some survey coverage extended beyond the Order Limits of the DCO boundary shown in Figure 1 to Figure 6 (hence longer lengths of watercourses were surveyed than are now within the DCO boundary).

4. RESULTS

4.1. Desk Study

The following ten watercourses were screened in for targeted otter and water vole surveys based on the presence of suitable habitat for these species:

- Spring Beck (the DCO boundary crosses this watercourse in two locations, both of which were surveyed);
- Unnamed ditch south of Little Barningham, which is part of a tributary of the River Bure;
- River Bure;
- Unnamed tributary of the River Wensum east of the village of Swannington;
- River Wensum;
- River Tud;
- River Yare;
- River Tiffey;
- Unnamed tributary of the River Yare at Furze Meadow east of the village of Ketteringham; and,
- Unnamed tributary of the River Yare south of Valley Farm near Swardeston.

The surveys covered the accessible parts of these watercourses at the point they intersect with the DCO boundary. Photographs of surveyed watercourses and selected survey results are provided in Annex 1.

4.1.1. Norfolk Biodiversity Information Service Otter and Water Vole Records

The NBIS data search returned 53 records of otter presence and 28 records of water vole presence within 2km of the PEIR boundary. All of these records are from within the past 16 years (since 2005). Data was obtained on the basis of the PEIR boundary because at the time of the data search in January 2021, this constituted the Order Limits. The data has subsequently been reviewed for records of relevance to the narrower DCO boundary.

One of the records of otter and one of the records of water vole are within the final DCO boundary; both records relate to spraints/droppings on the River Bure and date from 2005. All other records are located outside of the DCO boundary. However, many of the records outside the DCO boundary appear to be clustered around/associated with watercourses which intersect with it, as follows:

- The Quag (north of Kelling) (otters only);
- Spring Beck at Weybourne;
- River Bure;
- River Wensum;

- River Tud (water voles only);
- River Yare and its tributaries (otters only); and,
- River Tas (otters only).

4.1.2. WFE Records

WFE has conducted various surveys over the past 15 years of the Rivers Bure, Wensum, Tud, Yare and Tiffey, and has recorded multiple signs of otters and water voles at various sections of these rivers.

4.2. Presence/Likely Absence Surveys

Survey results are summarised in Table 1, below. Maps showing the locations of records and the survey sites are provided in Figure 1 to Figure 6.

Table 1: Survey Results (to be read in conjunction with Figure 1 to Figure 6)

| Watercourse | Approximate survey location description | Approximate central National Grid Reference | Otter signs | Water vole signs |
|-----------------------------------|--|---|-------------|-------------------------------------|
| Spring Beck | West of Beach Lane, north of Weybourne | TG 1098 4353 | None | Limited feeding signs |
| | West of Station Road, south of Weybourne | TG 1144 4210 | None | None |
| Ditch near Little Barningham | South of Little Barningham | TG 1350 3269 | None | Feeding signs |
| River Bure | At Saxthorpe Hall, east of Saxthorpe | TG 1308 2987 | None | Burrows, latrines and feeding signs |
| Unnamed tributary of River Wensum | South of Church Lane, east of Swannington | TG 1410 1893 | None | Burrows and feeding signs |
| River Wensum | South of the A1067 Fakenham Road at Attlebridge | TG 1288 1650 | None | Latrines and feeding signs |
| River Tud | Unnamed plantation woodland north-west of Easton | TG 1245 1154 | None | Burrows, latrines and feeding signs |
| River Yare | South-east of Colton Wood | TG 1186 0847 | None | Burrows |
| River Tiffey | East of Barford | TG 1195 0757 | Spraints | Burrows and feeding signs |
| Unnamed tributary of River Yare | Furze Meadow, east of Ketteringham | TG 1772 0304 | None | None |
| Unnamed tributary of River Yare | South of Valley Farm, west of Swardeston | TG 1937 0264 | None | Limited feeding signs |

In summary, the surveys confirmed the presence of water vole in nine of the ten surveyed watercourses, with only the unnamed tributary of the River Yare at Furze Meadow showing no signs of presence. Otter signs were found only at the River Tiffey.

Figure 1: Riparian Mammal Survey Results Map (Spring Beck, Weybourne)

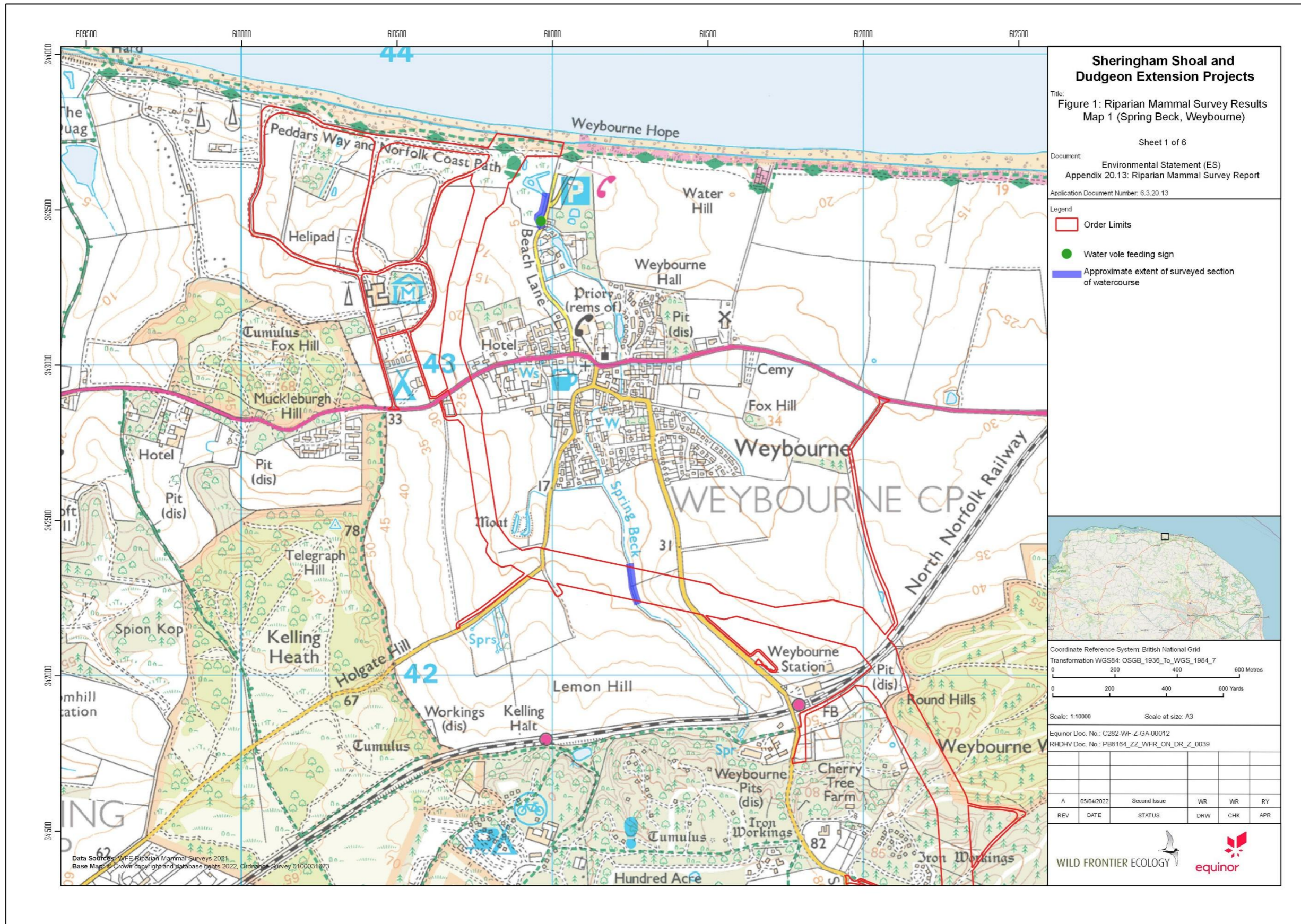


Figure 2: Riparian Mammal Survey Results Map (Ditch near Little Barningham and River Bure)

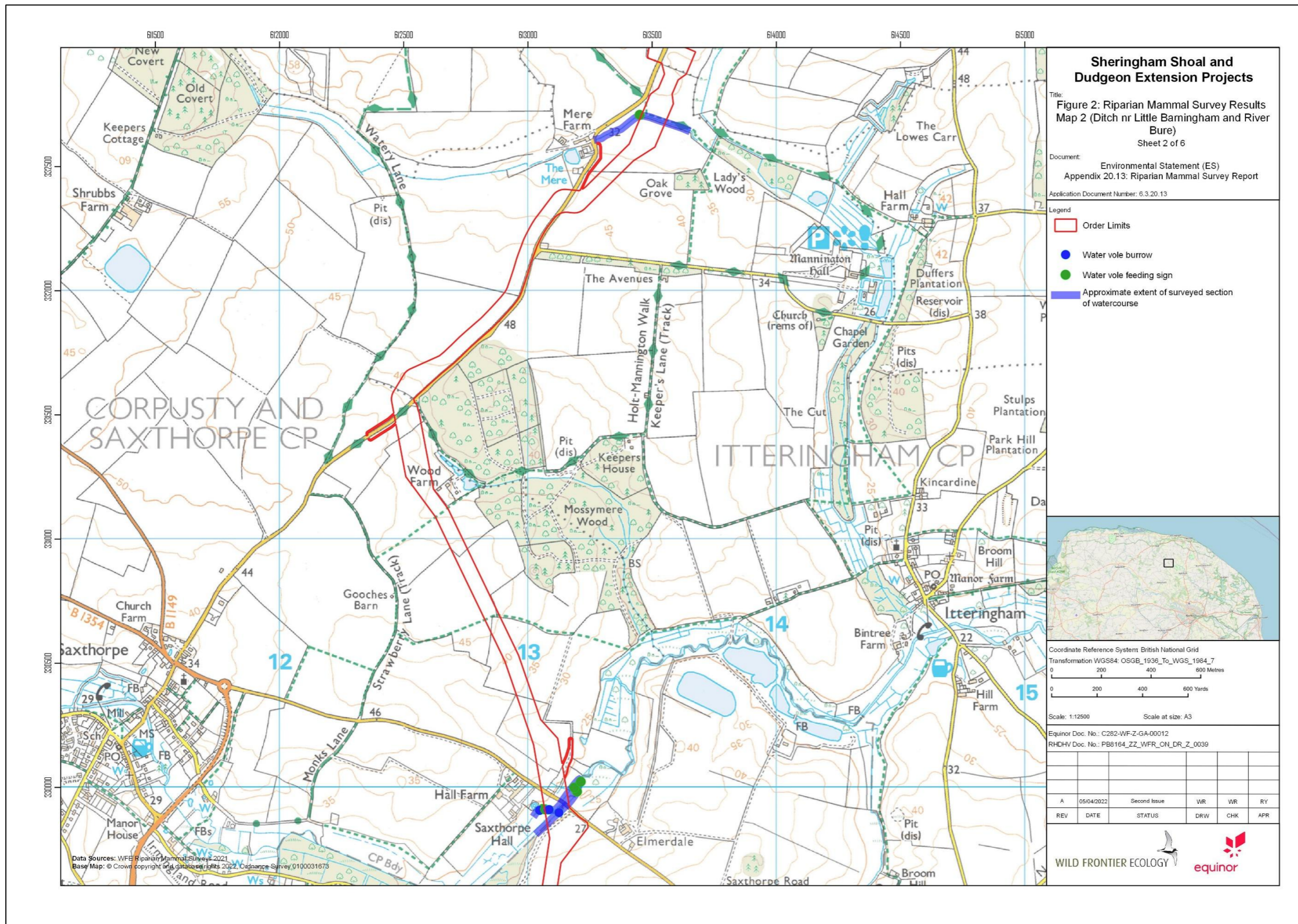


Figure 3: Riparian Mammal Survey Results Map (Tributary of River Wensum at Swannington and River Wensum)

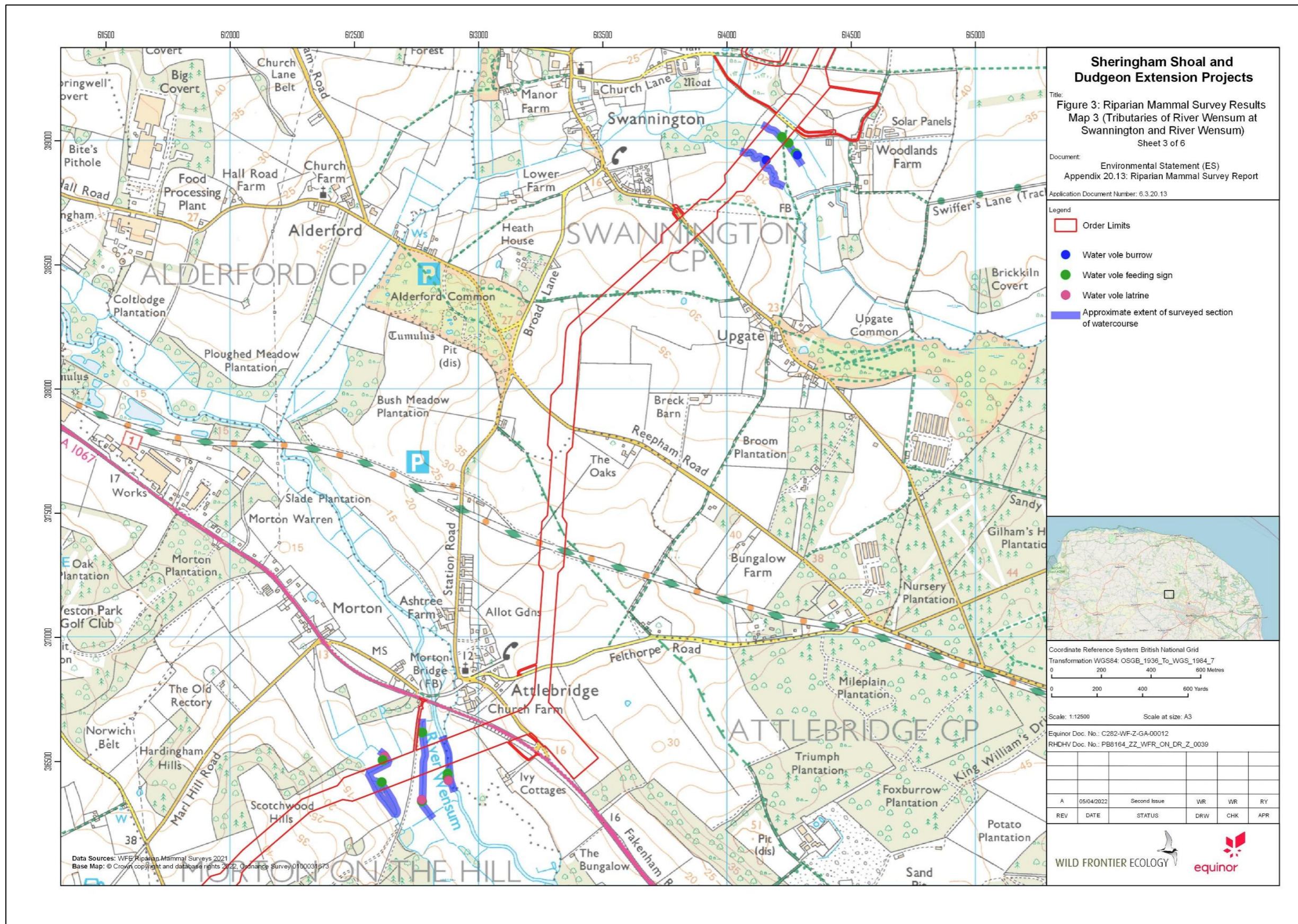


Figure 4: Riparian Mammal Survey Results Map (River Tud)

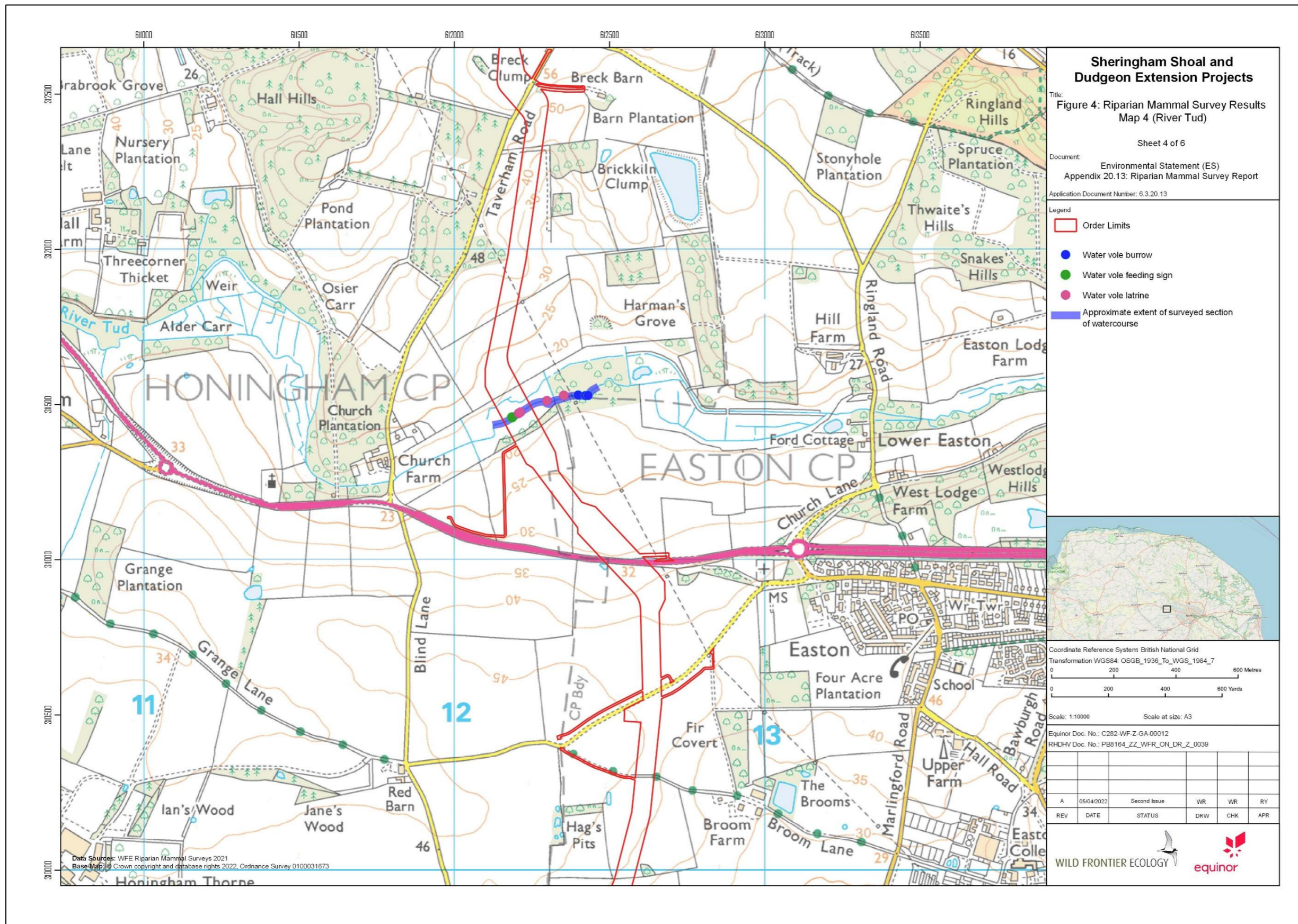


Figure 5: Riparian Mammal Survey Results Map (River Yare and River Tiffey)

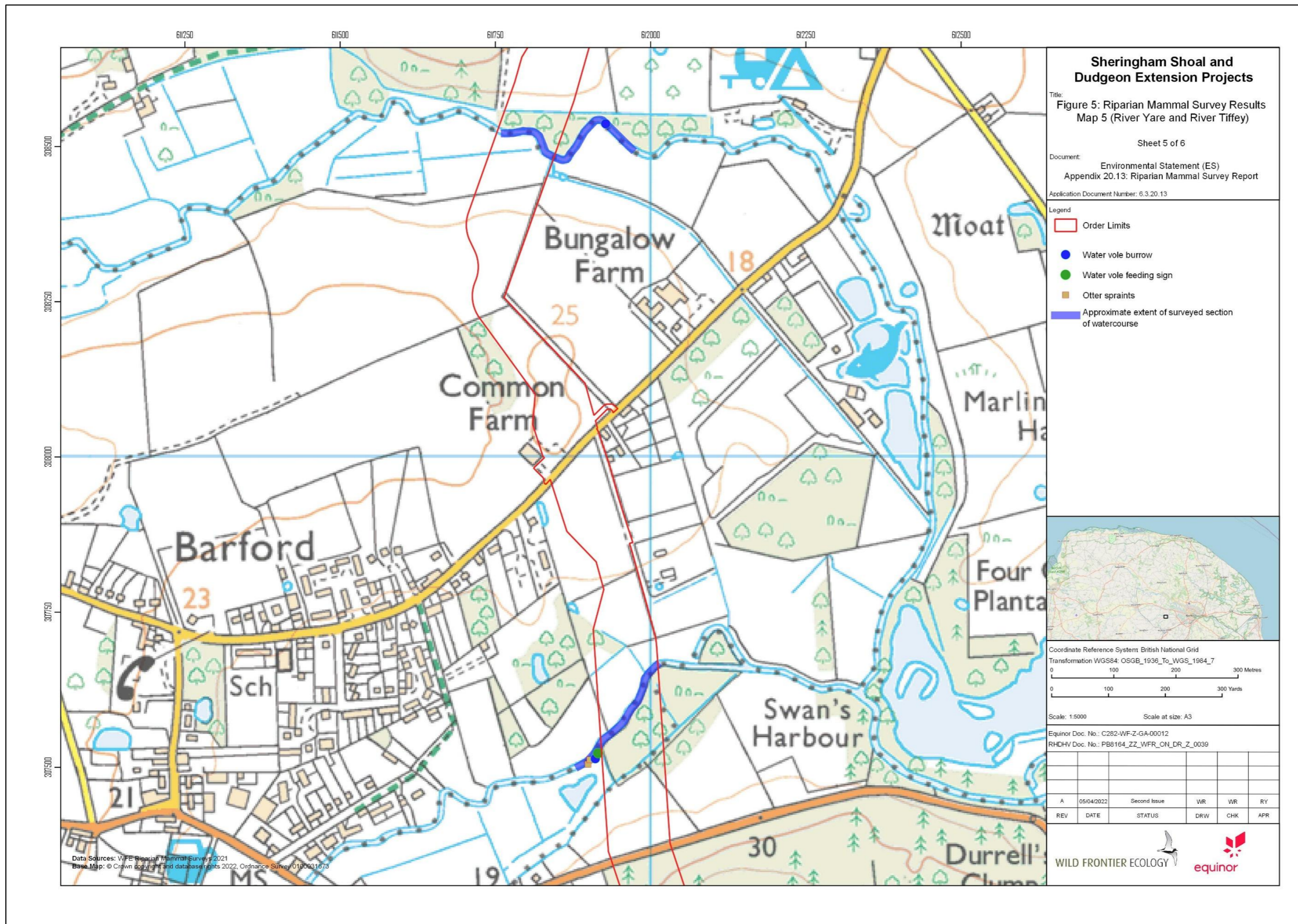
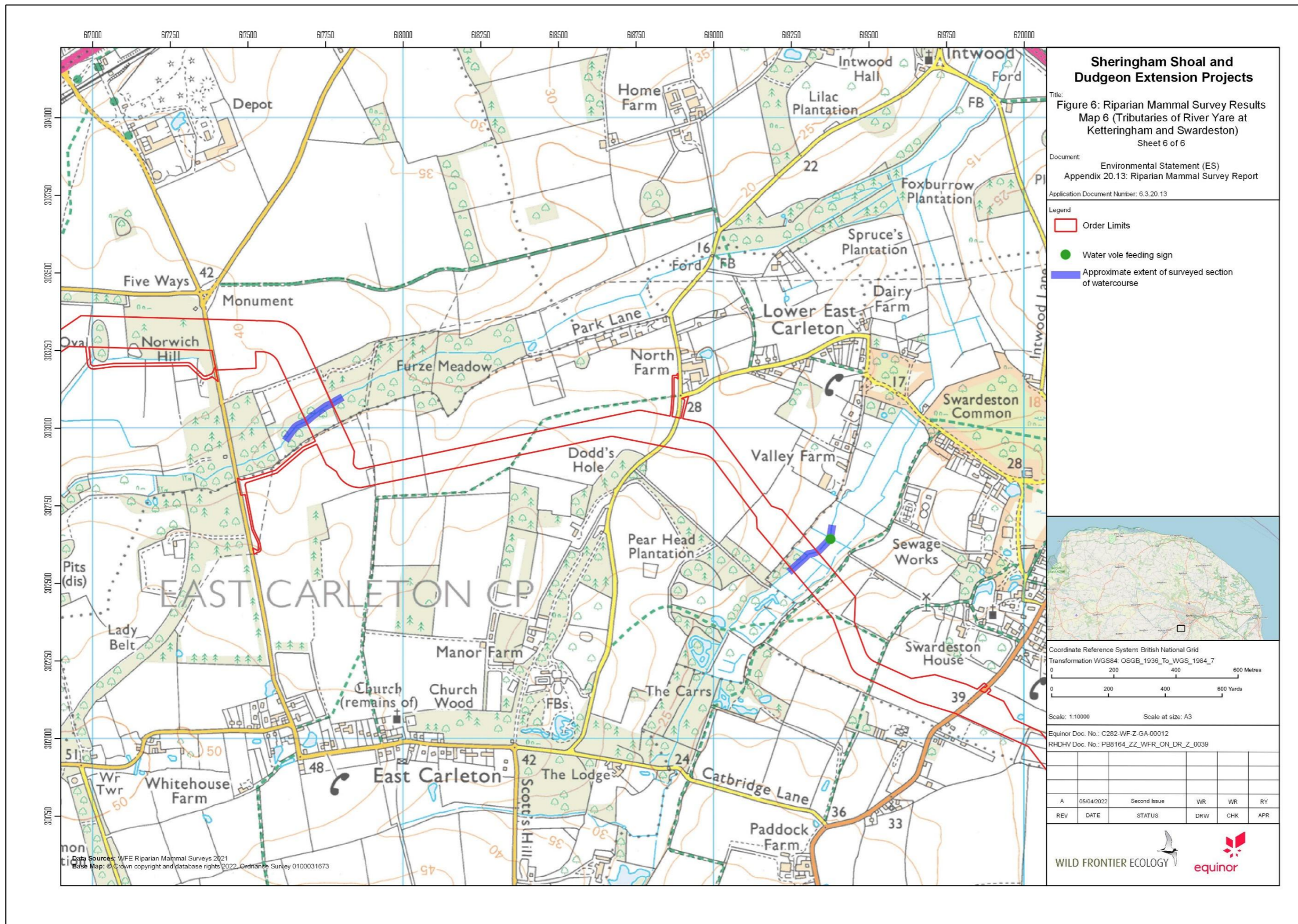


Figure 6: Riparian Mammal Survey Results Map (Tributaries of River Yare at Ketteringham and Swardeston)



4.3. Constraints and Limitations of Survey

The main constraint to the surveys, particularly for otter, is their fairly narrow coverage, examining only the sections of watercourses which broadly overlap with the DCO boundary. Otters can have wide ranges extending up to 20km (length of watercourse)³, meaning signs of presence may be thinly distributed throughout their territory. Therefore, surveys which have focused only on the sections of these watercourses where they overlapped with the preliminary DCO boundary (which typically amount to approximately 100-200 metres (m) length of a watercourse) may not detect signs of otter presence simply because of the absence of signs within this narrow search zone. This constraint may have been a factor in limited detection of otters (with the species only recorded in one of ten surveyed watercourses), despite there being historical records of otter presence in many of them, such as the Rivers Bure, Wensum and Yare.

Water voles generally have much small territorial ranges than otters, meaning signs of presence are typically more detectable on a section of watercourse where the species is present. Indeed, signs of the species were recorded at all but one of the surveyed watercourses.

These constraints are not considered to have had a substantial impact on the reliability of the survey results and therefore the results are considered to be sufficiently accurate and reliable to inform the ecological impact assessment and any mitigation requirements for riparian mammals.

4.4. Further Survey Requirements, Expiry Dates and Mitigation/Licensing Options

Construction of the onshore elements of SEP and DEP includes a commitment to adopt trenchless installation techniques in the form of HDD beneath all ten surveyed watercourses. The proposed HDD includes separation distances between the closest extent of above-ground construction works and the banks of watercourses well in excess of 5m, with separation distances typically in excess of 50m. Therefore, there is considered to be no realistic potential for direct harm or mortality to otters or water voles, or potential for destruction or damage to relevant riparian habitats.

The potential for bentonite breakouts associated with HDD is addressed and a mitigation approach is provided within the **Outline Ecological Management Plan**.

Construction activities in the vicinity of watercourses may cause disturbance to wildlife nearby, potentially including riparian mammals within and around watercourses. In order to mitigate this possible impact, Construction Exclusion Zones (CEZ) will be established within 10m of all ten watercourses (i.e. all watercourses which provide suitable habitat for riparian mammals, including the one at Furze Meadow near Ketteringham in which no signs were found). Within these CEZs (which will be approximately 20m wide, plus the width of the watercourse itself) all construction activity will be prohibited, including movement of construction vehicles and storage of materials or machinery. This measure is expected to fully mitigate the potential for disturbance to any wildlife using the watercourses, including riparian mammals.

³ [REDACTED]

If adopting and observing a CEZ around the unnamed tributary of the River Yare at Furze Meadow near Ketteringham proves to be problematic for construction, the requirement for the CEZ could be removed. However, this would only be acceptable if an updated survey completed within no more than 12 months prior to construction works commencing (scheduled for 2024-25) reconfirms the absence of both otters and water voles from this watercourse. Other than this possible scenario at the Furze Meadow near Ketteringham watercourse, there is considered to be no requirement for further surveys for riparian mammals. The adoption of HDD and the CEZs around watercourses will effectively mitigate any realistic risks posed to otters and water voles and therefore negate any requirement for the survey data to be updated prior to construction works commencing.

Based on current survey data and the proposed construction programme, there will be no requirement for any mitigation measures which would require Natural England licensing.



5. CONCLUSIONS

The otter and water vole surveys have confirmed that these species are present within the DCO boundary. The River Tiffey near Barford has been confirmed as supporting both species. Eight other watercourses have been confirmed as supporting water vole. No evidence of otters or water voles was found in one surveyed watercourse. However, NBIS records and historical data collected by WFE on some of the watercourses confirms otters are present within many of the watercourses where no signs were found, specifically the Rivers Bure, Wensum and Yare (plus their tributaries).

Given the commitment to adopt HDD installation beneath and around all ten relevant watercourses (i.e. those which provide suitable habitat for riparian mammals), no further surveys for otter or water vole are expected to be necessary, assuming appropriate CEZs around these watercourses are established and observed. The approach to mitigate potential bentonite breakouts is provided in the **Outline Ecological Management Plan**.

Annex 1: Watercourse Photographs



Photo 1: Spring Beck south of Weybourne, at the approximate DCO boundary intersection.



Photo 2: Ditch south of Little Barningham (aligned with trees).



Photo 3: River Bure at the approximate DCO boundary intersection.



Photo 4: Unnamed stream (tributary of the River Wensum) near Swannington at the approximate DCO boundary intersection.



Photo 5: The River Wensum at the approximate DCO boundary intersection.



Photo 6: The River Tud at the approximate DCO boundary intersection.



Photo 7: The River Yare at the approximate DCO boundary intersection.



Photo 8: The River Tiffey at the approximate DCO boundary intersection.



Photo 9: Unnamed tributary of the River Yare in Furze Meadow near Ketteringham at the approximate DCO boundary intersection.



Photo 10: Unnamed tributary of the River Yare south of Valley Farm, Swardeston at the approximate DCO boundary intersection.



Photo 11: Water vole latrine on the banks of the River Tud.



Photo 12: Water vole feeding signs on the banks of the River Tiffey.



Photo 13: Otter spraints on the banks of the River Tiffey