



Fosse Green Energy

Preliminary Environmental Information Report

VOLUME

3

Appendix 8-I: Riparian Mammals

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Fosse Green Energy Limited

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1. Introduction

1.1 Background

- 1.1.1 This report forms a technical appendix to the Preliminary Ecological Information (PEI) Report, specifically to accompany **PEI Report Volume 1, Chapter 8: Ecology and Nature Conservation**. The report provides information on the presence and distribution of riparian mammals (i.e. Water Vole (*Arvicola amphibius*), Otter (*Lutra lutra*) and American Mink (*Neovison vison*)) relevant to Fosse Green Energy (hereafter referred to as the Proposed Development), including the results of surveys undertaken within the Site.
- 1.1.2 Further information on the Proposed Development is included within **PEI Report Volume 1, Chapter 3: The Proposed Development**.

1.2 Site Description

- 1.2.1 The Proposed Development is located approximately 9 kilometres (km) southwest of Lincoln, Lincolnshire and lies within the administrative district of North Kesteven.
- 1.2.2 The Proposed Development comprises two distinct parcels:
- 'the Principal Site', which is where ground mounted solar PV panels, electrical sub-stations and Battery Energy Storage System (BESS) will be installed; and
 - 'the Cable Corridor', which comprises the underground electrical infrastructure required to connect the Principal Site to the National Grid.
- 1.2.3 The location of the Proposed Development is centred at Ordnance Survey (OS) Grid Reference SK 90388 62514 and is presented in **PEI Report Volume 2, Figure 1-1**.
- 1.2.4 The Site covers an area of approximately 1,426 hectares (ha) and is dominated by arable fields (approximately 90% of the Site) with smaller areas of improved and semi-improved grassland, hedgerows and woodland.

1.3 Scope of the Report

- 1.3.1 The aim of this report is to determine the presence or absence of riparian mammals within the Survey Area (see Section 3.1).
- 1.3.2 The objectives, therefore, are to:
- review existing ecological data to identify any records of riparian mammals occurring within the Study Area (see Section 3.1);

- b. identify and assess watercourses present within the Site Boundary and any areas immediately outside of the Site Boundary where there may be potential for direct or indirect effects (the “Zone of Influence” (Zol)), for their potential to support Water Vole and Otter;
- c. undertake surveys to determine the status of Water Vole and Otter within the Zol; and
- d. ascertain the status of American Mink within Zol (because this can affect the likelihood of Water Vole being present as it is a significant predator of the species).

1.3.3 Combined, this will be used to:

- a. determine the biodiversity importance of the Site for riparian mammals;
- b. determine the potential impacts of the Proposed Development on riparian mammals and any required mitigation; and
- c. to identify opportunities to enhance the Site and its environs for Otter and Water Vole.

2. Relevant Legislation, Policy and Guidance

2.1 Legislation

2.1.1 Water Vole and Otter are both fully protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) (WCA 981) (Ref 1). They are afforded protection under Section 9 parts 9 (1), (2), (4) and (5) of the Act, making it an offence to:

- a. intentionally kill, injure or take these species;
- b. possess or control live or dead individuals of these species or their derivatives;
- c. intentionally or recklessly damage, destroy or obstruct access to any structure or place used for their shelter or protection;
- d. intentionally or recklessly disturb these species whilst occupying a structure or place of shelter used for that purpose;
- e. sell these species or offer or expose for sale or transport for sale; and
- f. publish or cause to be published any advertisement which conveys the buying or selling of these species.

2.1.2 Otter is also classified under the Habitats Directive (92/43/EEC) (Ref 2) as a species requiring strict protection in Europe. In the UK this is enabled by The Conservation of Habitats and Species Regulations 2017 (as amended)

(Habitats Regulations) (Ref 3). Otter is also included in the following international legislation / conventions:

- a. Appendix II and IV of the Habitats Directive, Appendix II of the Bern Convention (Ref 4) and Appendix I of CITES (Ref 5); and
 - b. globally threatened on the IUCN/WCMC Red Data List (Ref 6).
- 2.1.3 American Mink is listed as an invasive species on Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended) (Ref 1) making it an offence to:
- a. release or allow the escape of this species into the wild.
- 2.1.4 Compliance with the above legislation may require the attainment of relevant protected species licences prior to the implementation of the Proposed Development.

2.2 Protected Species Licensing

Water Vole

- 2.2.1 For Water Vole, a licence is required from Natural England where development works have the potential to disturb, damage or destroy their places of shelter (burrows); stop Water Voles from accessing places they use for shelter or protection; kill or injure them; or to take, move, possess or control them.
- 2.2.2 Development and other construction activities may be licensed by Natural England under “*reasons of overriding public interest*”. Such works should be carried out under a Mitigation Licence, issued by Natural England. This licence requires demonstration of a conservation benefit for Water Vole and this benefit can be achieved by delivering a net gain in the amount of habitat available to the Water Vole population. This is typically achieved through habitat creation, improving existing habitat and significantly improving linkages between Water Vole colonies.
- 2.2.3 Minor works may also be undertaken under the supervision of an ecologist registered to use a Natural England Water Vole Class Licence. This approach does not require a specific development licence for Water Vole and would permit the displacement of Water Vole through vegetation removal from areas of bankside habitat not exceeding 50 metres (m). There are seasonal constraints applied to the displacement works, with initial vegetation removal (and thus displacement of Water Vole) only permitted during the period 15 February to 15 April and 15 September to 31 October inclusive.

2.3 Otter

- 2.3.1 Any operations that may impact upon Otters or their places of rest or shelter may require a Natural England European Protected Species (EPS) Mitigation Licence.

- 2.3.2 An EPS Mitigation Licence is required where development/ and or construction activity will impact Otter through:
- a. capturing, killing, disturbing or injury;
 - b. damaging or destroying their breeding/ resting place; or
 - c. obstructing access to their resting/ sheltering place.
- 2.3.3 In the first instance impacts to Otter should be avoided through considerate construction practices (e.g., minimising work to daylight hours) and through the implementation of “buffer zones” from known places of shelter. Where breeding holts are affected, the buffer zone would need to be 200m, but for other shelters this can be reduced to 30m (Ref 7).
- 2.3.4 Where such buffer zones cannot be implemented it is likely that the works will require a licence from Natural England.
- 2.3.5 The licence will stipulate how Otter will benefit from mitigation measures, habitat creation, habitat management and habitat maintenance.

2.4 Priority Species

- 2.4.1 In addition to the above legislation, Water Vole and Otter are listed as being Species of Principal Importance (SPI) for conservation in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (Ref 8). These species are of material consideration during the planning process.
- 2.4.2 The NERC list of SPI (Ref 8) is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the NERC Act (in this context, the Secretary of State). Under Section 40, every public authority (e.g., a local authority or local planning authority) must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity, including restoring or enhancing a population or a habitat.
- 2.4.3 The UK Biodiversity Action Plan (UKBAP) (Ref 9) was launched in 1994 and established a framework and criteria for identifying species (and habitat types) of conservation concern. From this list, action plans for Priority Species of conservation concern were published. The UKBAP was subsequently succeeded by the UK Post-2010 Biodiversity Framework (July 2012) (Ref 10), and then again by the UK Biodiversity Framework 2024 (Ref 11). This latest Framework has been published in response to the Kunming-Montreal Global Biodiversity Framework (Ref 12), which was agreed at the Fifteen Conference of the Parties (COP15) in December 2022, which is relevant in the context of Section 40 of the NERC Act. These species are identified as those of conservation concern, due to their rarity or a declining population trend.

2.5 Local Biodiversity Action Plan

- 2.5.1 The Proposed Development is located within the county of Lincolnshire. Formerly, the Lincolnshire Biodiversity Action Plan (BAP) (3rd edition) (Ref 13) provided context to inform identification of threatened or uncommon species of local relevance, alongside priorities for conservation and enhancement targeted at a local level. However, under the Environment Act 2021 (Ref 14), BAPs are being replaced by Local Nature Recovery Strategies (LNRSs), which are a system of spatial strategies for nature which will support delivery of biodiversity net gain (BNG) and provide more focussed action for nature recovery. Whilst this is still being developed for Lincolnshire and with no specific habitat or species plans currently in place, this report references those species formerly included on the Lincolnshire BAP.
- 2.5.2 Water Vole is included as a local priority species on the Lincolnshire BAP, (Ref 13) however Otter is not.
- 2.5.3 The following threats to Water Vole populations in Lincolnshire have been identified by the Lincolnshire BAP:
- a. damage to (and loss of) habitat due to insensitive routine maintenance of channel and bankside vegetation and the engineering of watercourses;
 - b. developments within the floodplain can result in the direct loss of water vole habitat;
 - c. fluctuations in water level due to land drainage, flood control, irrigation schemes and drought. When water levels are lowered in the winter, burrow entrances can be left exposed and vulnerable to predation;
 - d. population fragmentation leaves colonies remote from their neighbours. Colonies isolated by lack of continuity of habitat are more at risk of local extinctions with no chance of repopulation;
 - e. predation, particularly by American Mink;
 - f. pollution of the aquatic environment by contaminants discharged from industry, agriculture and urban waste treatment; and
 - g. persecution through the improper use of rodenticides.

3. Methods

3.1 Characterising the Baseline

- 3.1.1 Within this report, the following terminology is used when referring to the geographic areas within which assessments were made:
- Study Area – the area within the Site and a 2 km radius which was subject to collection of background information e.g., collation of desk study records to supplement the findings of the survey work;
 - Zone of Influence (Zol) – the area over which riparian mammals may be affected by the Proposed Development which, using professional judgement is typically no more than 2 km around the Site, but kept through review of likely impacts of the Proposed Development and results of the desk study, which was then used to define the scope of field surveys; and
 - Survey Area – the area within which survey work was undertaken (the Site plus up to 50m and 200m upstream/downstream of watercourses (i.e. rivers, drains) for Water Vole and Otter respectively and within 5m and 100m for Water Vole and Otter holts respectively of waterbodies (i.e. ponds) and adjacent to watercourses (where suitable habitat exists).

3.2 Desk Study

- 3.2.1 A desk study was undertaken as part of the Preliminary Ecological Appraisal (PEA) in 2023 (see **PEI Report Volume 3, Chapter 8: Appendix 8-B**). This desk study obtained records of riparian mammals within the Study Area from Greater Lincolnshire Nature Partnership (GLNP) and this was sufficient in determining the presence or likely absence of riparian mammals occurring within the Zol.
- 3.2.2 Only records of riparian mammals up to ten years from the data request date were considered within the assessment, as any records older than ten years are unlikely to be still representative of presence in the local area.

3.3 Field Survey

Habitat Suitability Assessment

- 3.3.1 A walkover of the Survey Area was undertaken by an experienced surveyor in May 2023 to undertake a habitat suitability assessment of watercourses and waterbodies for riparian mammals, comprising Water Vole and Otter. Four watercourses and two waterbodies were identified within the Survey Area (see **Figure 8-I-1, Annex A**).
- 3.3.2 The habitat suitability assessment for Water Vole was undertaken based on “A Method for Assessing Water Vole Habitat Suitability” (Ref 15) and with reference to the indices presented in **Table 1**. For Otter, the indices

presented in **Table 1** were assessed, based on criteria presented in “Monitoring the Otter” (Ref 16).

Table 1: Summary of riparian mammal habitat suitability assessment criteria

Otter	Water Vole
a. proximity to the site; b. presence of barriers to dispersal and movement through the territory; c. habitats present and suitability for use by Otter (including terrestrial habitats); d. availability of food sources (such as fish); e. adjoining land use and level of disturbance; f. features of watercourse or water body (estimated depth, level of flow, width of channel); g. connectivity with other areas of suitable or sub-optimal habitat; and h. pollution.	a. connectivity to other watercourses; b. extent of suitable emergent and bankside herbaceous vegetation for shelter, food and nesting material; c. year-round availability of food sources; d. rate of water flow; e. bank profile; f. degree of shading from overhanging trees or scrub; g. levels of site disturbance (e.g. proximity to public rights of way, farm vehicle access tracks or road traffic); h. potential for the waterbody or watercourse to dry out; i. suitability of bank substrates for burrowing; and j. pollution and water quality.

3.3.3 Water Vole typically inhabit slow-moving streams, canals, ditches, dykes and rivers, feeding mostly on waterside vegetation. They are active in daylight hours and leave several indications of their presence and these signs can be used to identify the presence of Water Vole.

3.3.4 With reference to **Table 1**, the suitability of each watercourse and water body to support Water Vole was defined as:

- a. **Optimal** – Watercourses and waterbodies that were identified as being ‘optimal’ for Water Vole included those that were wet throughout the survey period; had sufficient year-round food sources; had steep banks suitable for burrowing and with the presence of a berm or sufficient bankside cover.
- b. **Sub-optimal** – Watercourses and waterbodies had a small number of features that could be suitable to support Water Vole.
- c. **Unsuitable** – Watercourses and waterbodies that were identified during the habitat suitability assessment as being dry; were heavily shaded; were in heavy agricultural use with no marginal vegetation; or where there were significant barriers to movement between the water body or

watercourse and the site, were considered as being unsuitable for Water Vole as they lack the food, cover and habitat features necessary for the species.

- 3.3.5 For Otter, whilst the criteria presented in **Table 1** were referenced to determine the suitability of each watercourse and waterbody to support this species, it should be noted that Otter is a mobile species of riparian mammal and has a large home range (up to 32 km). Therefore, any watercourse may potentially be used by this species for commuting.

Water Vole Survey

- 3.3.6 The aim of the survey was to identify evidence of Water Vole activity along a bank and up to 5 m from the bank of the surveyed watercourse or waterbody. Field surveys were based on the standard methods as described by Strachan *et al.* (2011) (Ref 17) and Dean *et al.* (2016) (Ref 18). Field signs searched for included:
- a. latrine sites – distinct piles of Water Vole droppings found near burrows, at the ranges of territorial boundaries and where the animals enter and leave the water;
 - b. feeding stations – areas with distinct neat piles of chewed lengths of vegetation along pathways or haul out platforms along the water's edge;
 - c. burrows – burrow entrances are typically wider than high with a diameter between 4 and 8 cm. Burrow entrances are generally located at the water's edge;
 - d. lawns – short, grazed areas at the entrances to burrows;
 - e. prints – identifiable prints in soft margins of the watercourse; and
 - f. runways – low tunnels that are pushed through the vegetation and often leading to burrows or feeding stations.
- 3.3.7 In accordance with the guidance set out in the Water Vole Mitigation Handbook (Ref 18), one survey should be conducted in the second half of the breeding season (between July and September) and a second survey should be carried out in the first half of the breeding season (April to June). Surveys were carried out on 25th and 26th May 2023 (with limitations, see Section 3.5), 4th to 6th September 2023 and 8th to 9th May 2024. All surveys were undertaken during suitable weather conditions and by experienced AECOM ecologists.
- 3.3.8 Any information gathered during the survey on Water Vole signs were used to calculate and estimate Water Vole population and, or activity within those specific waterbodies or watercourses. The presence or absence of American Mink (*Neovison vison*) and Brown Rat (*Rattus norvegicus*) was also recorded if the species or signs of their presence were noted.
- 3.3.9 It is not possible to make robust estimates of the number of Water Voles from latrine counts, but latrines do provide an indication of activity suitable for assessment of impacts and designing mitigation (Ref 18).

Otter Survey

- 3.3.10 The aim of the survey was to determine the presence or absence of Otter on waterbodies and watercourses deemed suitable for Otter, following the habitat suitability assessment. The method used was in accordance with guidance in the New Rivers and Wildlife Handbook (Ref 19); the Environment Agency's Fifth Otter Survey of England 2009-2010 (Ref 20) and Monitoring the Otter (Ref 16).
- 3.3.11 Otter surveys can be carried out at any time of year, though the period May to September is optimal when water levels are less variable. Surveys were not undertaken following periods of heavy rain and / or high-water levels as it can obscure or remove signs of Otter and result in false negative survey results. Ideally, there should be a period of at least five days without rain before surveying. Therefore, surveys were undertaken during appropriate weather conditions for survey at the same time as the Water Vole surveys in May 2023, September 2023 and May 2024.
- 3.3.12 Due to the low likelihood of making an actual observation of Otter, the survey concentrated on locating field signs indicating Otter presence or use within the Survey Area. Such field signs include:
- spraints (droppings) – characteristic sweet-smelling, black tar-like (where fresh / relatively recent i.e., within a few weeks) or grey crumbly (when old) faecal deposits usually containing fish scales, bones and occasionally invertebrate exoskeleton and bird feathers;
 - footprints – in good substrate typically asymmetrical and showing five toes arched around a large pad and, depending on substrate, webbing and claw marks. Poorer, generally coarser substrates do not often enable the identification of Otter footprints. Additional signs of Otter presence may occur, although without additional evidence is not usually conclusive proof of current Otter presence;
 - feeding remains – feeding remains may include partially eaten fish, frogs, piles of mussel shells or crayfish remains;
 - slides / haul-outs – routes into and out of the water, which are usually associated with terrestrial routes such as short cuts around meanders or along traditionally used otter paths / routes;
 - couches / hovers – above ground resting places. Usually associated with cover such as dense scrub, rushes or reed, flood debris or fallen trees. Many couches are rarely used whilst others more so. Difficult to prove use without radio tracking; and
 - holts – below ground resting site, usually associated with sprainting. Sometimes used with greater frequency than couches and can be important for breeding (natal holts) where other signs are usually absent. Notoriously difficult to find or prove without radio tracking.

3.4 Biodiversity Importance

- 3.4.1 An essential prerequisite step to allow ecological impact assessment of the Proposed Development was an evaluation of the relative biodiversity importance of the Survey Area for riparian mammals. This is necessary to set the terms of reference for the subsequent ecological impact assessment.
- 3.4.2 The method of evaluation that was utilised has been developed with reference to the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines (Ref 21). This gives guidance on scoping and carrying out environmental assessments and places appraisal in the context of relevant policies and at a geographical scale at which feature matters (i.e., international, national, regional, county, district, local or site). Data received through desk study and field-based surveys were used to identify the importance of the species addressed in this report. Professional judgement was also applied, where necessary. Relevant published national and local guidance and criteria has been used, where available, to inform the assessment of biodiversity importance and to assist consistency in evaluation.

3.5 Assumptions and Limitations

Desk Study

- 3.5.1 The aim of the desk study was to help characterise the baseline context of the Proposed Development and provide valuable background information that would not be captured by site surveys alone. Information obtained during the course of the desk study was dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular species does not necessarily mean that the species does not occur in the study area. Likewise, the presence of records of species does not automatically mean that these still occur within the area of interest or are relevant in the context of the Proposed Development.

Field Survey

- 3.5.2 Access to the channels of River Brant, River Witham and Wet Drain 18 was not possible as the water levels were too high making for deep water, or the bed substrate was unsuitable to wade in. This would be the same at any time of the year. Presence or likely absence surveys on these watercourses were restricted to areas of accessible bankside habitat where it was safe to do so, and as a result field signs on these watercourses could be missed.
- 3.5.3 The presence of dense vegetation in the summer months poses a constraint to surveyors as access to banksides can be restricted and field signs can be missed. During the late May 2023 surveys vegetation was tall and obscured views of the banks in places. To address this limitation an additional survey was carried out in early May 2024 when bank vegetation was lower.

- 3.5.4 Therefore, these limitations are not considered a restraint on the efficacy of the surveys.

4. Results

4.1 Desk Study

- 4.1.1 Records of Water Vole and Otter within 2 km of the Site and from the last ten years were returned from the data search. There were no American Mink records.
- 4.1.2 Most of the records for both Otter and Water related to Whisby Pits located 339m to the north of the Site. There were two Otter records recorded within the Site along the River Witham near Bassingham. There were no records of Water Vole within the Site.
- 4.1.3 From the desk study, using maps and aerial photography, six waterbodies were identified for further survey within the Survey Area (as presented in **Figure 8-I-1, Annex A**).

4.2 Field Survey

Habitat Suitability Assessment

- 4.2.1 The habitat suitability assessment was undertaken on six of the watercourses identified with potential suitability for Water Vole and Otter (River Brant, West Brant Syke, River Witham and West Drain 18 and Ponds 8 and 15). This assessment was used to further refine the scope of surveys and determine whether they were suitable (*i.e.*, scoped in for further survey) or unsuitable (*i.e.*, scoped out of further survey) for riparian mammals (**Table 2**).

Table 2: Riparian Mammal Habitat Suitability assessment data

Watercourse Reference (see Figure 8-I-1)	Summary Description of Suitability	Unsuitable / Sub-optimal / Optimal	Photograph
River Brant	Slow-flowing river between arable fields where it is within the Site. Plentiful marginal, ruderal and aquatic vegetation present throughout, including dense reedbeds and floating weeds, with earth banks suitable for burrowing by water vole. Limited opportunities for Otter rest or holt sites where trees are present along the river's banks, and no woodlands are present within 100 m of the watercourse within the Site. No bank poaching by livestock observed. Connects to multiple streams, tributaries and drains along its length, providing excellent commuting and migrating opportunities. Optimal habitat for Otter and Water Vole.	Optimal	

Watercourse Reference (see Figure 8-I-1)	Summary Description of Suitability	Unsuitable / Sub-optimal / Optimal	Photograph
West Brant Syke	Overgrown drain with arable field boundaries, with occasional shading by trees. Plentiful marginal, ruderal and aquatic vegetation present throughout, including dense reedbeds, with steep earth banks suitable for burrowing by Water Vole. Limited opportunities for otter rest or holt sites where trees are present along the ditch, and no woodlands are present within 100 m of the watercourse. No bank poaching by livestock observed. Does not appear to dry out and connects to the River Brant directly, providing good commuting or migrating opportunities. Optimal habitat for Water Vole and suitable for commuting Otters.	Optimal	

Watercourse Reference (see Figure 8-I-1)	Summary Description of Suitability	Unsuitable / Sub-optimal / Optimal	Photograph
River Witham	Slow-flowing river between arable fields where it is within the Site, with a small woodland (>1 ha) adjacent to the south which was not accessed. Plentiful marginal, ruderal and aquatic vegetation present throughout, including dense reedbeds, with earth banks suitable for burrowing by Water Vole. Limited opportunities for Otter rest or holt sites where trees are present along the river's banks, but good opportunities may be present within the adjacent woodland. No bank poaching by livestock observed. Connects to multiple streams, tributaries and drains along its length, providing excellent commuting and migrating opportunities. Optimal habitat for Otter and Water Vole.	Optimal	

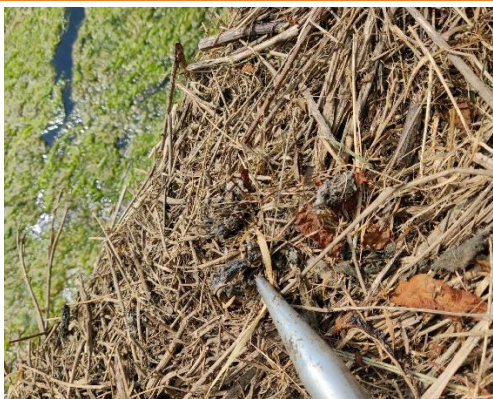
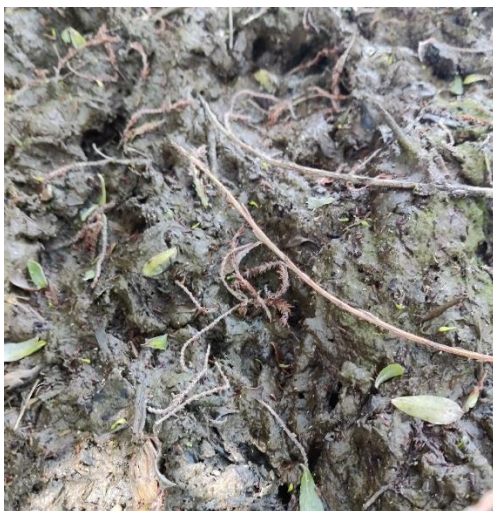
Watercourse Reference (see Figure 8-I-1)	Summary Description of Suitability	Unsuitable / Sub-optimal / Optimal	Photograph
Wet Drain 18	Overgrown drains on arable field boundaries, with occasional shading by trees. Plentiful marginal, ruderal and aquatic vegetation present throughout, including dense reedbeds, with steep earth banks suitable for burrowing by Water Vole. Limited opportunities for otter rest or holt sites where trees are present along the ditch, and no woodlands are present within 100 m of the watercourse. No bank poaching by livestock observed. Does not appear to dry out and extends close to the River Witham, providing good commuting or migrating opportunities. Optimal habitat for Water Vole and suitable for commuting Otters.	Optimal	
Pond 9	Small pond on arable field boundaries, heavily shaded with dense ruderal vegetation and scrub. Found dry on both survey visits. Unsuitable for Water Vole or Otter.	Unsuitable	

Watercourse Reference (see Figure 8-I-1)	Summary Description of Suitability	Unsuitable / Sub-optimal / Optimal	Photograph
Pond 15	Small pond on arable field boundaries, heavily shaded with little marginal vegetation and no aquatic vegetation. Found dry on the second survey visit. Unsuitable for Water Vole or Otter.	Unsuitable	

Riparian Mammal Survey

- 4.2.2 Four watercourses (see **Figure 8-I-1, Annex A**) were scoped in for further survey during the habitat suitability assessment survey, to determine presence, or absence of either Water Vole or Otter. These were the River Brant, West Brant Syke, the River Witham and Wet Drain 18 within the Survey Area. Evidence of Otter was found on the River Brant and the River Witham. Evidence of Water Vole was found along the River Witham, with an estimated 208 visible holes near Bassingham (see **Figure 8-I-2, Annex A**).
- 4.2.3 One potential Otter holt was found in woodland to the east of the River Witham, comprising a hole under the base of a tree within 10m of the river bank.
- 4.2.4 No evidence of American Mink was recorded anywhere within the Site. Mink traps were noted on the River Witham and West Brant Syke, indicating the presence of Mink whilst also providing evidence of an eradication program that should benefit the local Water Vole population.
- 4.2.5 A summary of the field signs observed during the riparian mammal survey is presented in **Table 3** illustrated in **Figure 8-I-2 (Annex A)**.

Table 3: Riparian Mammal survey data

Watercourse Reference (see Figure 8-I-2)	Feature	Location	Photograph
River Brant	Otter spraint (Recent) x4 Otter spraint (Old) x4	On concrete structure for environment agency land	
River Witham	Otter spraint (Old) x1	On exposed roots of a willow tree on a small mud bank	
River Witham	Otter footprints	On exposed mud bank with spraint recorded above.	

Watercourse Reference (see Figure 8-I-2)	Feature	Location	Photograph
River Witham	Potential Otter Holt	Large hole under a tree within woodland c.10m east of the river.	
River Witham	Water Vole Burrows	Located close to the water line in numerous locations along the River Witham to the south of the Site, west of Basingham village. Total estimate of 208 visible holes.	 

5. Evaluation

- 5.1.1 The desk study detailed two Otter records recorded within the Site along the River Witham near Bassingham (see **Figure 8-I-1, Annex A**).
- 5.1.2 There is also record of Water Vole and Otter presence at Whisby Pits located 339m to the north of the Site.

5.2 Water Vole

- 5.2.1 Surveys of watercourses and waterbodies within the Site identified the presence of Water Vole along a section of the River Witham to the south of the Site, near to Bassingham (see **Figure 8-I-2, Annex A**). Whilst it is not possible to estimate Water Vole population from burrows, the presence of at least 200 burrows within a 1km length of the river, suggests a relatively high density of Water Vole.
- 5.2.2 Whilst Water Vole is restricted in its distribution across the Site, although potentially locally abundant, in consideration of this species' declining status in a national and county context, the population of Water Vole along the River Witham is of District importance.

5.3 Otter

- 5.3.1 Surveys of watercourses and waterbodies within the Site identified the presence of Otter along the River Witham and River Brant. One woodland (to be buffered and protected from the Proposed Development) was deemed suitable for Otter holts with a large hole recorded under a tree within 10m of the bank during surveys of terrestrial areas. The data search returned records (from within the last ten years) of Otter along the River Witham and River Brant.
- 5.3.2 Otter was recorded using the River Witham and Brant, with one potential holt recorded within woodland adjacent to the River Witham, that would be protected and buffered as part of the Proposed Development (see **Figure 8-I-2, Annex A**).
- 5.3.3 Otter has an estimated British population of 11,000 (Ref 22), with an increasing population size and range and are of IUCN Least Concern Status in England. Therefore, in consideration of the limited number of records of Otter (restricted to the River Witham and Brant), the Site is of value to a population of Otter at a Local level (within approximately 2km of the Site).

5.4 Potential Impacts, Avoidance and Mitigation

- 5.4.1 It is assumed that adverse impacts to the rivers will be avoided either:
 - a. by the use of horizontal directional drilling for the Cable Corridor; or
 - b. buffered from the solar PV and other infrastructure through the avoidance of watercourses and woodland adjacent to these

watercourses by establishing appropriate buffers (i.e. no less than 10m from the centre-line of the watercourse or 15m from the woodland edge).

- 5.4.2 These measures would ensure that the potential for deliberate harm and injury to Water Vole and Otter will be avoided such that the Proposed Development will not have adverse impact on riparian mammals. This would be formalised through a Framework Construction and Environment Management Plan (CEMP).
- 5.4.3 Mitigation is required to:
- ensure compliance with relevant legislation; and
 - avoid impacts that would give rise to a potential “significant effect”, therefore contrary to planning policy and biodiversity obligations of the NERC Act (Ref 8).

5.5 Enhancement

- 5.5.1 The Proposed Development presents the opportunity for enhancement of riparian habitats for Water Vole and Otter. This could include pond/ditch restoration and enhancement of bankside/woodland habitats for these species. Wider buffer zones and leaving uncut margins along the rivers would benefit these species.

6. Conclusions

- 6.1.1 The primary purpose of this report is to provide an assessment of the presence or absence of Water Vole and Otter and their biodiversity importance within the Site to inform **Chapter 8: Ecology and Nature Conservation** of the **PEI Report Volume 1**. An assessment of potential impacts (considering embedded mitigation), any additional mitigation and residual effects on these species has been undertaken and is included within **Chapter 8: Ecology and Nature Conservation** of the **PEI Report Volume 1**. Where any changes in the distribution or abundance of these species are recorded during any further ecological surveys undertaken for the Proposed Development, then this report will be updated accordingly to include with the ES chapter as part of the DCO application.
- 6.1.2 The desk study returned records of Water Vole and Otter within 2 km of the Site and from the last ten years including Otter along the River Witham along the Site boundary but there were no desk study records of either species within the Site.
- 6.1.3 The surveys undertaken in May and September 2023, and May 2024, identified the presence of Water Vole and Otter within the Site.
- 6.1.4 Based on the results to date, the Proposed Development will be able to embed sufficient avoidance and mitigation measures, formalised through a

Construction and Environmental Management Plan (CEMP), to ensure that Water Vole and Otter occurring within the Site are not negatively impacted upon, in line with legislation, policy and guidance as described in Section 2 of this report.

- 6.1.5 The Proposed Development presents an opportunity to include habitat creation within the design that would enhance the populations of Water Vole and Otter within the Site and its environs.

7. References

- Ref 1 His Majesty's Stationery Office (HMSO) (1981). Wildlife & Countryside Act 1981 (as amended). HMSO, London. Available at: <https://www.legislation.gov.uk/ukpga/1981/69>.
- Ref 2 European Council (EC) (1992). Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. EC, Brussels. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31992L0043>.
- Ref 3 HMSO (2018). The Conservation of Habitats and Species Regulations 2017 (as amended). HMSO, London. Available at: <https://www.legislation.gov.uk/uksi/2017/1012/contents/made>.
- Ref 4 Anon (2001). Appendices of the Convention and Amendments to the Appendices. Bern Convention, Council of Europe.
- Ref 5 Anon (2020). Appendices I, II and III. CITES.
- Ref 6 International Union for the Conservation of Nature (IUCN) (2020). The IUCN Red List of Threatened Species.
- Ref 7 Standing advice for planning consultations: Otter. Nature Scot. Available at: <https://www.nature.scot/doc/standing-advice-planning-consultations-otters>.
- Ref 8 HMSO (2006). Natural Environment and Rural Communities Act 2006. HMSO, London. Available at: <https://www.legislation.gov.uk/ukpga/2006/16/contents>.
- Ref 9 HMSO (1994). Biodiversity The UK Action Plan. HMSO, London. Available at: <https://data.jncc.gov.uk/data/cb0ef1c9-2325-4d17-9f87-a5c84fe400bd/UKBAP-BiodiversityActionPlan-1994.pdf>.
- Ref 10 Joint Nature Conservation Committee (JNCC) and Department for Environment, Food and Rural Affairs (DEFRA) (2012). UK Post-2010 Biodiversity Framework. Available at: http://jncc.defra.gov.uk/pdf/UK_Post2010_Bio-Fwork.pdf.
- Ref 11 JNCC (2023). UK Biodiversity Framework 2024. Available at <https://data.jncc.gov.uk/data/19a729f6-440e-4ac6-8894-cc72e84cc3bb/uk-biodiversity-framework.pdf>
- Ref 12 United Nation (2022). Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity. Available at: <https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf>
- Ref 13 Lincolnshire Biodiversity Partnership (2011). Lincolnshire Biodiversity Action Plan 2011-2020 (3rd edition). Available at: <http://www.southkesteven.gov.uk/CHttpHandler.ashx?id=7371&p=0>.

- Ref 14 HMSO (2021). The Environment Act 2021. HMSO, London. Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>.
- Ref 15 Harris, J., Markwell, H. and Raybould, B. (2009). In Practice Issue 65: Training and Education. Chartered Institute of Ecology and Environmental Management (CIEEM), Hampshire.
- Ref 16 Chanin, P. (2003). Monitoring the Otter: Conserving Natura 2000 Rivers Ecology Series No.10. Peterborough, English Nature.
- Ref 17 Strachan, R., Moorhouse, Y. and Gelling, M. (2011). The Water Vole Conservation Handbook. 3rd edition. WildCRU, University of Oxford.
- Ref 18 Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Editors Fiona Mathews and Paul Chanin. The Mammal Society, London.
- Ref 19 Holmes, N., Ward, D. and Jose, P. (2001). The New Rivers and Wildlife Handbook. Royal Society for the Protection of Birds.
- Ref 20 Crawford, A. (2011). Fifth otter survey of England 2009 – 2010: Technical Report. Environment Agency.
- Ref 21 Chartered Institute of Ecology and Environmental Management (CIEEM). (2018). Guidelines for Ecological Impact assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Available at: <https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf>
- Ref 22 GOV.UK (2022). Otters: advice for making planning decisions. Available at: <https://www.gov.uk/guidance/otters-advice-for-making-planning-decisions>.

Annex A Figures

PEI Report Volume 3, Figure 8-I-1: Riparian Mammal Survey Area

PEI Report Volume 3, Figure 8-I-2: Riparian Mammal Field Survey Results

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☐ Solar and Energy Storage Park

 Land Not Included In Site Boundary

 Grid Connection Corridor

 2km Study Area

Riparian Mammal Survey Area

— Watercourse

- Pond

Riparian Mammal Desk Study Records
(within 2km) Otter Water Vole

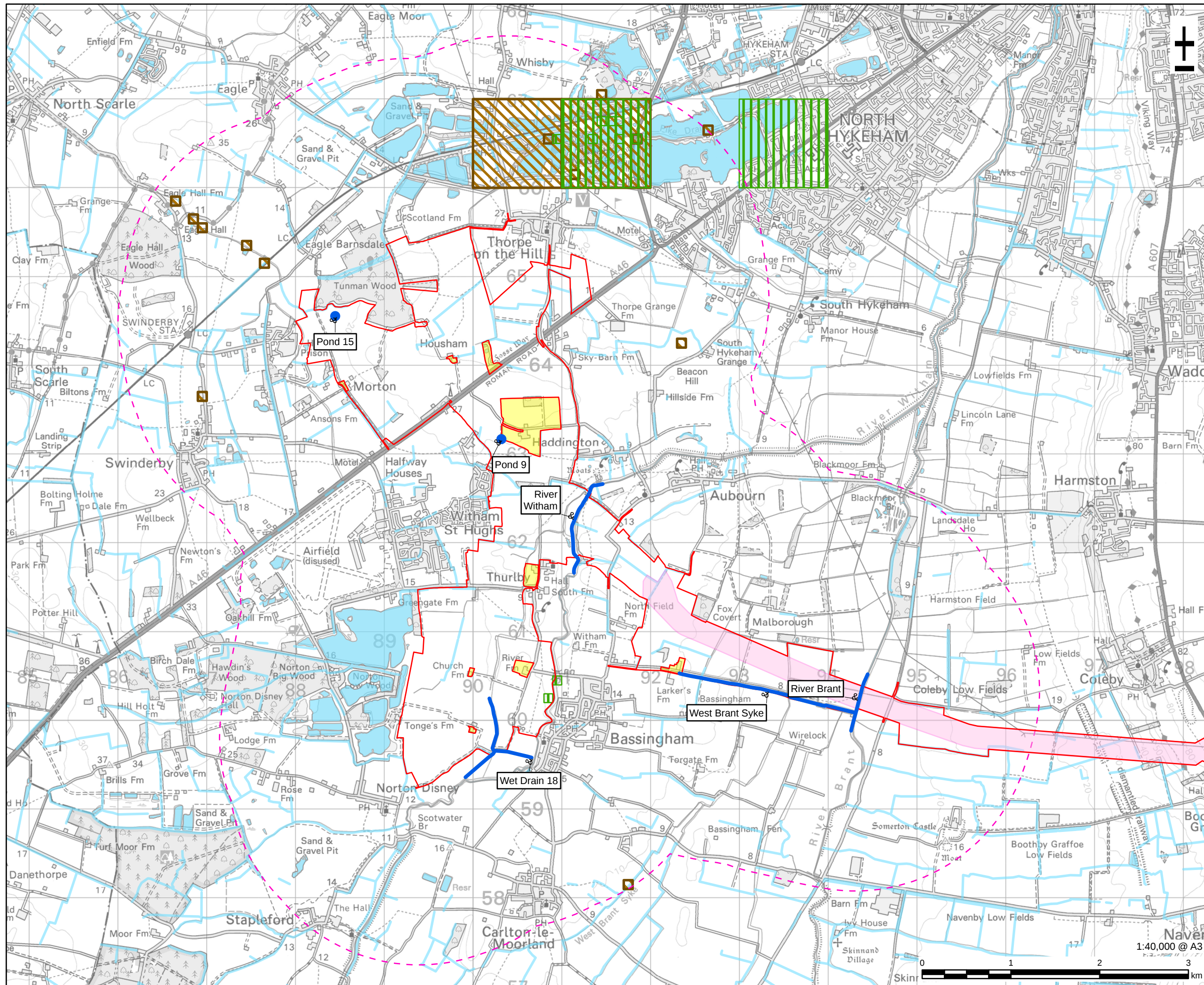
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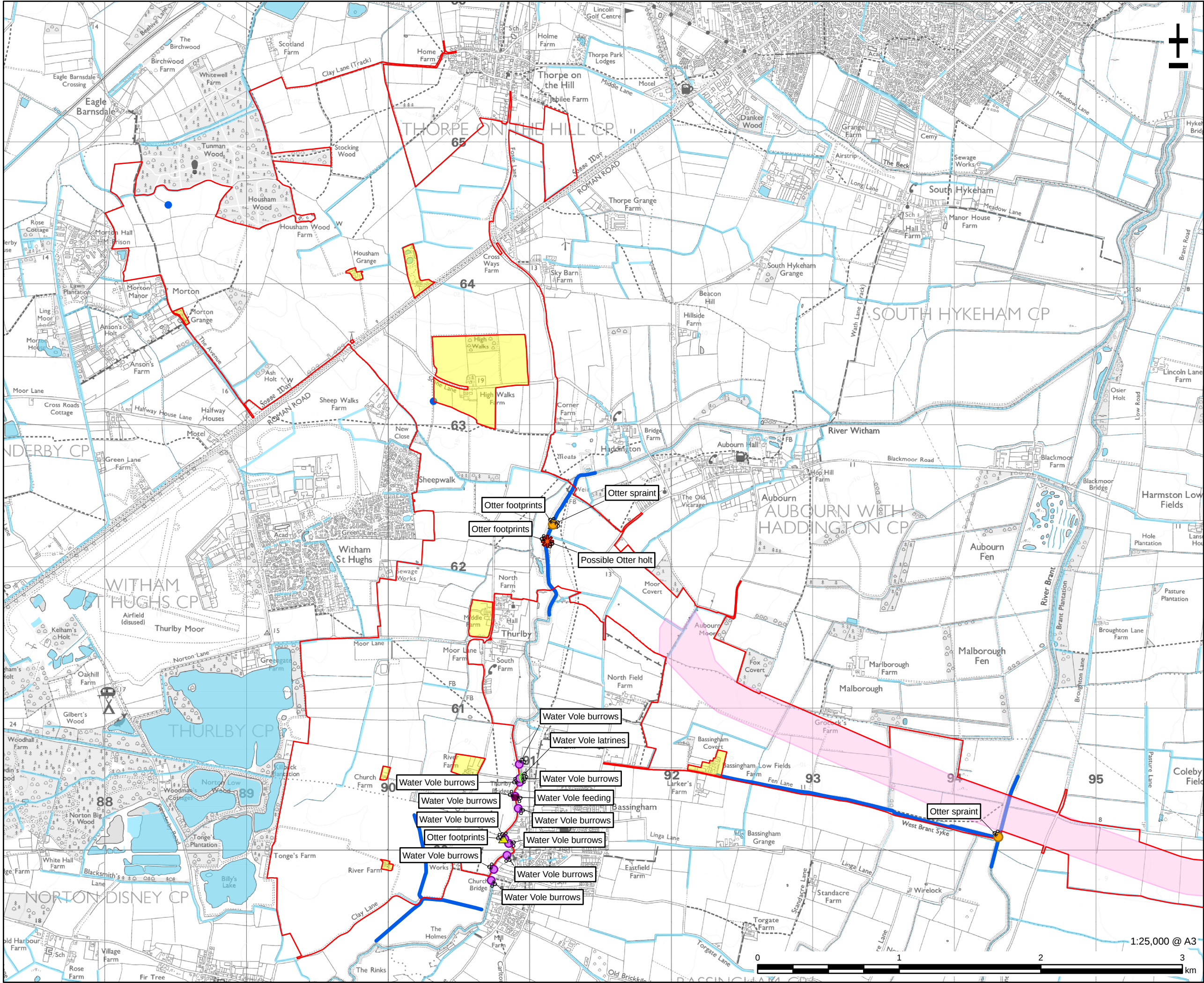
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Riparian Mammal Survey Area

Figure 8-I-1





PROJECT

Fosse Green Energy

CLIENT

Fosse Green Energy Ltd

CONSULTANT

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LEGEND

- Solar and Energy Storage Park
- Land Not Included In Site Boundary
- Grid Connection Corridor

Riparian Mammal Survey Results

- Possible Otter Holt
- Otter Spraint
- Otter Footprints
- Water Vole Burrows
- Water Vole Feeding
- Water Vole Latrines

Riparian Mammal Survey Area

- Watercourse
- Pond

NOTES

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FIGURE TITLE

Riparian Mammal Field Survey Results

FIGURE NUMBER

Figure 8-1-2