

The Keadby Next Generation Power Station Project

Document Ref: 6.3

Planning Inspectorate Ref: EN0110001

The Keadby Next Generation Power Station Development Consent Order [year]

Environmental Statement (ES)

Volume II – Appendix 11E Riparian Mammal Survey Report

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure Regulations 2009 – Regulation 5(2)(l) The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017'

Applicant: Keadby Next Generation Limited

Date: August 2025

Version: V0

Document History

Document Ref	6.3.13 / Appendix 11E
Issue	V0
Document Owner	AECOM

Glossary

Abbreviation/	Description
CIEEM	Chartered Institute of Ecology and Environmental Management
Defra	Department for Environment, Food and Rural Affairs
EclA	Ecological Impact Assessment
EPS	European Protected Species
EPSML	European Protected Species Mitigation Licence
PEA	Preliminary Ecological Appraisal

Contents

CONTENTS.....

0

11E. RIPARIAN MAMMAL SURVEY REPORT

1

11E.1. INTRODUCTION

1

11E.2. RELEVANT LEGISLATION

3

11E.3. METHODS

5

11E.4. RESULTS.....

9

11E.5. CONCLUSIONS AND NATURE CONSERVATION EVALUATION.....

17

11E.6. REFERENCES

19

Figures

Figure 11E.1: Results of the water vole and otter survey 2023.....

21

Figure 11E.2: Results of the water vole and otter survey 2024.....

22

Tables

Table 11E.1: Estimated population density of water voles based on the number of latrines recorded.....

7

Table 11E.2: Aggregated survey results and estimated population density obtained for each waterbody

11

11E. Riparian Mammal Survey Report

11E.1. Introduction

Background

- 11E.1.1. This Riparian Mammal Survey Report has been prepared by AECOM in support of the ecological impact assessment (EclA) of the Proposed Development. The terms of reference used to describe the Proposed Development in this report are consistent with those defined within the main chapters of the Environmental Statement (ES) (**ES Volume I, Application Document Ref. 6.2**).
- 11E.1.2. The Proposed Development Site encompasses an area of approximately 77.1 hectares (ha), of which approximately 26.7ha of land is proposed for construction laydown.
- 11E.1.3. The Site is divided into the following areas of permanent and temporary land use (the proposed use is described in more detail in **ES Volume I Chapter 3: Site and Surrounding Area (Application Document Ref. 6.2)**):
- Main Site;
 - Ancillary Facilities;
 - Water Connections;
 - Electricity Connections;
 - Waterborne Transport Off-loading Area;
 - Construction Laydown Areas;
 - Access routes (emergency, permanent and construction);
 - Connections to Keadby 1 and Keadby 2 power stations; and
 - Additional areas for landscaping and biodiversity provision.
- 11E.1.4. The Proposed Development is an alternative to the Keadby 3 Carbon Capture and Storage (CCS) Power Station ('Keadby CCS Power Station') which has already been consented and would be located within the same Site. AECOM undertook the ecological impact assessment (EclA) for Keadby CCS Power Station in 2021 and this has informed the survey work undertaken for the Proposed Development.
- 11E.1.5. This report accompanies **ES Volume I Chapter 11: Biodiversity (Application Document Ref. 6.2)** and describes the approach and findings of the riparian mammal surveys undertaken in support of the Ecological Impact Assessment (EclA) of the Proposed Development. For the purposes

of this report, riparian mammals are defined as water vole (*Arvicola amphibius*) and otter (*Lutra lutra*).

Survey Scope

- 11E.1.6. An initial Preliminary Ecological Appraisal (PEA) of the ecological constraints and opportunities associated with the Proposed Development Site was made by AECOM in March 2024, including identification of the requirements for further protected species survey. The findings of the habitat and scoping survey were compiled as **ES Volume II Appendix 11C: Preliminary Ecological Appraisal (PEA) Report (Application Document Ref 6.3)**, which should be referred to for a more detailed overview of the site conditions and habitats present.
- 11E.1.7. This habitat information was used to identify locations within the potential zone of influence of the Proposed Development that supported conditions potentially suitable for riparian mammals. Accordingly, the PEA report identified ten waterbodies (locations shown on **Figure 11E.1** requiring further survey and/ or assessment of riparian mammals due to the potential for these waterbodies to experience impacts and effects from construction and operation of the Proposed Development. The waterbodies of potential relevance (as shown on **Figure 11E.1** and retaining the numbering system used previously for Keadby CCS Power Station Development Consent Order (DCO)) are:
- Drain 1 (part of Glew Drain)– field drain associated with Keadby Common, which is to be retained. This was the receptor site for water voles translocated during construction of Keadby 2 Power Station. The aim of the survey was to provide information on the current status of water vole and the suitability of the drain as a potential translocation site for the Proposed Development;
 - Drain 2 – field drain associated with Keadby Common which may need to be partially culverted. Data is needed to inform the EclA;
 - Drain 3 – field drain associated with Keadby Common which is to be retained. Updated information was needed on the suitability of this drain as a receptor site for water vole;
 - Drain 4 – field drain associated with Keadby Common which is to be infilled. Data is needed to inform the EclA;
 - Drain 5– field drain associated with Keadby Common, which is to be retained. Updated information was needed on the suitability of this drain as a receptor site for water vole;
 - Drain A – field drain to be infilled, so data is needed to inform the EclA

- Drain B – minor drain adjacent to the National Grid Substation, information was required to determine if water vole could be affected by the emergency access route;
- Drain C – minor drain adjacent to Chapel Lane, information was required to determine if water vole could be affected by the emergency access route;
- Drain D (part of Glew Drain) arable field drain, information was required to determine if water vole could be affected by the emergency access route; and
- Mabey Bridge (Hatfield Waste Drain) – information was needed to assess if water vole would be affected by the bridge replacement works.

11E.1.8. The survey completed in 2024 builds on a number of prior riparian mammal surveys completed by AECOM within the zone of influence of the Proposed Development, the results of which are utilised in this report to provide additional context on the level and continuity of riparian mammal activity. The prior surveys completed are:

- 2023 presence/ absence surveys as part of pre-commencement planning for the construction of the Keadby CCS Power Station, and a proposed temporary haul road; and
- 2020 presence/ absence surveys and subsequent update surveys for the Keadby CCS Power Station DCO, the Order Limits for which mirror the Proposed Development Site;

11E.2. Relevant Legislation

Water Vole

11E.2.1. The water vole is protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (the Act) (UK Government, 1981). This makes it an offence to:

- intentionally capture, kill or injure water voles;
- damage, destroy or block access to their places of shelter or protection (on purpose or by not taking enough care);
- disturb them in a place of shelter or protection (on purpose or by not taking enough care); and
- possess, sell, control or transport live or dead water voles or parts of them (excluding water voles bred in captivity).

- 11E.2.2. The Act provides a defence against the offences outlined above. However, the defence is only sustained if it can be argued that the potential offence was “*the incidental result of a lawful operation*” and “*could not reasonably have been avoided*” as set out in the Act. In order to demonstrate these two elements of the defence, as far as is reasonable, appropriate action would need to be taken to safeguard water vole and its shelters to reduce the risk of interfering with them to as low as reasonably practicable. Short-term low-level disturbance which “*allows water vole to flee and then later return*” is not considered likely to trigger an offence under the Act. Where development cannot avoid potential offences then a licence would be required.
- 11E.2.3. The Government has published standing advice (Natural England, 2022a) to guide decision-makers on the determination of proposals with potential to affect water vole. The guidance sets out responsibilities and minimum requirements for survey and mitigation.
- 11E.2.4. The water vole is also considered a ‘Species of Principal Importance for Nature Conservation in England’ pursuant to Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (as amended) (UK Government, 2006). Section 40 of the NERC Act requires that planning authorities further the conservation and enhancement of biodiversity in England, when carrying out their normal functions. Water vole is a target species for such action.
- [Otter](#)
- 11E.2.5. The otter is fully protected as a European Protected Species (EPS) under the provisions of Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended) (UK Government, 2017). It is also protected under Sections 9 and 11 of the Wildlife and Countryside Act 1981 (as amended) (UK Government, 1981). Taken together this legislation makes it an offence to:
- capture, kill, disturb or injure otters (on purpose or by not taking enough care);
 - damage or destroy a breeding or resting place (deliberately or by not taking enough care);
 - obstruct access to their resting or sheltering places (deliberately or by not taking enough care); and
 - possess, sell, control or transport live or dead otters, or parts of otters.
- 11E.2.6. The otter is also a ‘Species of Principal Importance for Nature Conservation in England’ pursuant to Section 41 of the NERC Act 2006 (as amended)

(UK Government, 2006). Therefore there is a requirement to further the conservation of this species.

- 11E.2.7. The Government has published standing advice (Natural England, 2022b) to guide decision-makers on the determination of proposals with potential to affect otter. The guidance sets out responsibilities and minimum requirements for survey and mitigation.
- 11E.2.8. Where development cannot avoid potential offences, then it is possible to apply for a European Protected Species Mitigation Licence (EPSML). A licence is only likely to be granted for developments that can demonstrate compliance with the relevant standing advice.
- 11E.2.9. The disturbance offence within the relevant legislation is not concerned with ‘trivial’ levels of disturbance which would be unlikely to adversely affect otter. There would only be a conflict with the above legislation where disturbance is of sufficient extent or magnitude to:
- impair the ability of otter to survive, to breed or reproduce, or to rear or nurture their young; or
 - affect significantly the local distribution or abundance of the species.
- 11E.2.10. There is no evidence that otters are particularly vulnerable to disturbance, except where this closely coincides with habitat features used by otters for breeding or resting. Otters will select resting sites where there is limited risk of direct physical disturbance, but otherwise are tolerant of and do not necessarily avoid areas subject to human activity (Chanin, 2003).

11E.3. **Methods**

Desk Study

- 11E.3.1. A desk study was undertaken as part of the scope of works for **ES Volume II Appendix 11C: Preliminary Ecological Appraisal Report (Application Document Ref 6.3)** that accompanies **ES Volume I Chapter 11: Biodiversity (Application Document Ref 6.2)**. Recent (last 10 years) riparian mammal records were obtained from Lincolnshire Environmental Records Centre (LERC) for a search radius of 1km out from the Proposed Development Site.
- 11E.3.2. AECOM has previously surveyed the relevant watercourses coinciding with the Proposed Development Site and wider surrounding land for riparian

mammals over recent years for the Applicant. The results of these previous AECOM surveys have been considered when preparing this report.

- 11E.3.3. The results of other surveys commissioned by the Applicant have also been considered. Specifically, pre-construction data for the period 2018 to 2020 was obtained from the Keadby 2 water vole licence application (Environmental Resources Management Ltd (ERM), 2020), and post-construction data from the Keadby 2 post-construction water vole monitoring report (ERM, 2022).

Field Survey

- 11E.3.4. The water vole and otter survey of the identified relevant waterbodies (see Section 1) was undertaken with reference to guidance given in Strachan *et al.* (2011) for water vole, and Chanin (2003) and Crawford (2010) for otter.
- 11E.3.5. Current good practice requirements for water vole survey (Dean *et al.*, 2016), normally requires two survey visits at each waterbody. However, as set out in the Scoping Report and agreed through the Scoping Opinion, the 2024 survey involved a late summer survey only. These surveys were completed on 28th and 29th August 2024.
- 11E.3.6. As noted previously, there is already a robust time series of data available for this site, and therefore it was not considered proportionate to undertake two survey visits in 2024. Especially, given the Applicant would need to conduct further survey work prior to implementation of the Proposed Development. One survey visit timed to coincide with the post-breeding period, when water vole numbers would be expected to be at their largest, was considered sufficient to understand the current status of the species and the associated requirements for mitigation and licences.
- 11E.3.7. The relevant waterbodies were surveyed from within the channel where possible (this included the use of a boat to survey Hatfield Waste Drain). Where this was not possible, the survey was from the bank face or bank top (as access and safety considerations permitted).
- 11E.3.8. The survey involved searches for the following field signs that would indicate the presence of water vole or otter:
- water vole
 - direct sightings;
 - burrows and nests;
 - faeces and latrines;
 - feeding remains;
 - lawns – around burrows there is often an area of grazed vegetation;

- footprints; and
- runways – low tunnels within the vegetation.
- otter
 - direct sightings;
 - suitable habitat for holts (breeding sites);
 - feeding remains;
 - footprints;
 - slides;
 - spraints (faeces); and
 - evidence of couches (resting or laying-up sites).

11E.3.9. In most cases the presence of faeces/ latrines and (in the case of otter) footprints are the most reliable field evidence for riparian mammals, in the absence of direct sightings. Not all of the other field signs are necessarily definitive to species level, or other factors may prevent a conclusive identification. Where the latter evidence was detected, in the absence of these more reliable field signs, then this evidence has been used with caution to infer the presence of riparian mammals.

11E.3.10. Where found to be present, an estimate of the population density of water voles was undertaken as explained in **Table 11E.1** (after Dean *et al.*, 2016). This method can only be used to estimate the relative population density and not the absolute numbers of water voles.

Table 11E.1: Estimated population density of water voles based on the number of latrines recorded

Relative population density	Approximate number of latrines per 100m of habitat	
	First half of survey season (mid-April to end of June)	Second half of survey season (July to October)
High	10 or more	20 or more
Medium	3 - 9	6 - 19
Low	≤ 2 (or none, but with other confirmatory signs)	≤ 5 (or none, with other confirmatory signs)

11E.3.11. The presence/ absence of the American mink (*Neovison vison*) and brown rat (*Rattus norvegicus*) was also recorded through their field signs, where present. These species may influence habitat suitability for water vole in

particular and their presence may help to explain an absence of field signs in habitats that otherwise appear to be highly suitable.

Nature Conservation Evaluation

- 11E.3.12. Evaluation of the relative nature conservation value of the identified ecological features within a site (encompassing nature conservation designations, ecosystems, habitat and species) is required to inform EcIA. This report presents the evaluation for riparian mammals and the impact assessment is presented in **ES Volume I Chapter 11 (Application Document Ref 6.2)**.
- 11E.3.13. The method of evaluation that has been utilised has been developed with reference to the Chartered Institute of Ecology and Environmental Management (CIEEM) *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2024). These guidelines give advice on scoping and carrying out environmental assessments and place appraisal in the context of relevant policies. Data received through consultation, desk-based studies and field-based surveys are used to allow ecological features of nature conservation value or potential value to be identified, and the main factors contributing to their value described and related to available guidance. This data can also be used to identify other relevant values e.g. socio-economic or ecosystem services values, but this is beyond the remit of this report and requires the involvement of other relevant specialists.
- 11E.3.14. The value of faunal species, such as riparian mammals, may relate, for example, to its geographic location (species may be rare and more valued towards the edge of their geographic range), the extent to which the component species are threatened throughout their range, or their rate of decline. The value of the riparian mammal species populations associated with the Proposed Development Site has been defined with reference to the geographical level at which it is considered to matter. This assessment has been made with reference to published guidance and criteria where available e.g. criteria to assess relative value within the context of Lincolnshire are given in Greater Lincolnshire Nature Partnership (2013).

Limitations

- 11E.3.15. All of the surveys were undertaken at an appropriate time of year when the water vole and otter are active, and during suitable weather conditions. There was no substantive rainfall prior to the surveys that might have washed field signs away.
- 11E.3.16. The vegetation on the off-side bank of Drain 1 (part of Glew Drain) (i.e. the bank in the control of a third party landowner) had recently been cut prior to the survey visit in 2024. However, water voles had begun to re-establish latrines. The vegetation cut aided the search for water vole burrows, but

other evidence for both otter and water vole (feeding remains, lawns, runs, paths and couches) may have been lost as a consequence. Given the large numbers of field signs recorded within this watercourse, enough evidence was collected to understand the water vole population present and as such this is not considered a significant limitation.

- 11E.3.17. The survey within parts of Drain B were potentially limited, due to a combination of deep water, recent bankside vegetation cutting and steep banks. Therefore some field signs may have been missed. However, enough of the drain could be surveyed to determine water vole presence and provide an estimate of population density. So, there is no significant limitation on the data gathered for Drain B.

11E.4. Results

Desk Study

Water Vole

- 11E.4.1. The desk study returned over 25 individual water vole records made in the vicinity of the Proposed Development Site since 2010. Most of the records returned relate to drains within Keadby Wind Farm to the north and east of the Proposed Development Site. Records were also made from a drain next to the existing 400kV National Grid Substation off Chapel Lane, Keadby.
- 11E.4.2. The previous baseline surveys undertaken by AECOM as reported in Appendix 11F: Riparian Mammal Survey Report of the Keadby CCS Power Station DCO (AECOM, 2020), found limited water vole evidence within Drains 1, 2 and 4. It was concluded that these drains supported a water vole population that was small and perhaps transitory. No evidence of water vole was recorded within Hatfield Waste Drain survey area at Mabey Bridge.
- 11E.4.3. Unrelated to the Authorised Development, predicted impacts from the construction and operation of Keadby 2 Power Station (ERM, 2018), led to water voles being translocated away from this area into Drain 1 (part of Glew Drain). This translocation work was completed in Autumn 2020 (under water vole licence 2020-45487-SCI-SCI (ERM, 2020)) after the completion of the baseline survey work by AECOM in 2020.
- 11E.4.4. Post-construction surveys of Drain A in 2022 (ERM, 2022), as required under the Water Vole Protection Plan for Keadby 2 Power Station, identified evidence of water vole at this previously unidentified location (habitat changes as a consequence of construction of Keadby 2 Power Station appear to have improved water supply to this drain over the intervening period). This survey found low levels of water vole activity, suggesting

recent colonisation of this drain. It was not known if this was a permanent population or if the occurrence was transitory only.

Otter

- 11E.4.5. Just four records of otter were returned and all date back to 2000. These records relate to just two locations. These are the Stainforth and Keadby Canal (in the vicinity of Vazon Bridge, off Chapel Lane, Keadby) 100m to the south of the Proposed Development Site, and the Warping Drain 420m northeast of the Proposed Development Site. Given these records, it should be assumed that otters may explore other minor waterbodies or make use of suitable bankside terrestrial habitats within the vicinity of the canal and Proposed Development Site.
- 11E.4.6. The previous baseline surveys completed by AECOM up to and including those in 2023 found no evidence of otter across any of the watercourses coinciding with the Proposed Development Site.
- 11E.4.7. However, it was assumed for the purposes of the Proposed Development that they were present within the wider area and would likely be moving and/or foraging along many of the watercourses present, but particularly Hatfield Waste Drain as a larger watercourse.

Water Vole Survey - Results for 2023 and 2024

- 11E.4.8. **Figures 11E.1 and 11E.2** shows the locations of the waterbodies surveyed and the associated locations of water vole field signs recorded in 2023 and 2024 respectively.
- 11E.4.9. A summary of the results is provided in **Table 11E.2** below, with further information on each drain in the following sections. Representative photographs from the 2024 survey are provided in **Annex 1**.

Table 11E.2: Aggregated survey results and estimated population density obtained for each waterbody

Waterbody	Length of waterbody	1 st Survey 30 th May 2023	2 nd Survey 31 st July 2023	3 rd Survey 28/29 August 2024	Estimated Population Density (Based on 2024 data)
Drain 1 (part of Glew Drain)	400m				High
Drain 2	430m	No evidence		No evidence	Likely absent
Drain 3	350m			No evidence	Likely absent
Drain 4	400m				Low
Drain 5	85m	No evidence			Low
Drain A	275m				Low
Hatfield Waste Drain	Zone of influence only	No evidence	No evidence	No evidence	Likely absent
Drain B	100 m	Not Surveyed	Not Surveyed		Medium
Drain C	300 m	Not Surveyed	Not Surveyed		High
Drain D (part of Glew Drain)	70 m	Not Surveyed	Not Surveyed	No evidence	Likely absent

Drain 1 (Glew Drain) (Keadby Common)

11E.4.10. This drain is located on the northern boundary of the Main Site. It has a channel width of between 1 and 2m and variable water depths that are less than 0.6m throughout. The banks are of earth, so are suitable for water vole

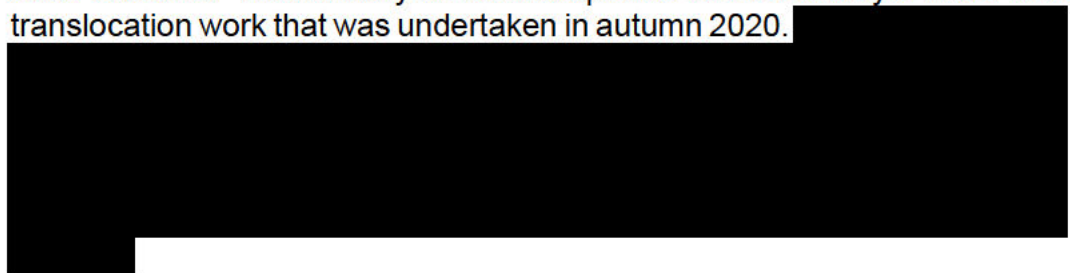
The Keadby Next Generation Power Station Project

Environmental Statement

Volume II: Appendix 11E Riparian Mammal Survey Report

burrowing. The drain and its banks support extensive stands of suitable foodplants, including emergent grasses and sedges (**Annex 1**, Photograph 1). Bankside trees are absent and there is no shading of the channel.

- 11E.4.11. Drain 1 is connected at both its eastern and western extent to a network of drains in the wider landscape (including Drain B), such that it provides a potential movement corridor for water voles allowing them to access other areas of suitable habitat. The other drainage ditches associated with the Main Site (Drains 2 to 5) are connected to Drain 1.
- 11E.4.12. Evidence of water vole across 2023 and 2024 was greater than the previous 2020 baseline. This is likely as a consequence of the Keadby 2 water vole translocation work that was undertaken in autumn 2020.



Drain 2 (Keadby Common)

- 11E.4.13. This drain is located on the southern boundary of the Main Site and is separated into two discrete sections by a temporary construction haul road crossing associated with Keadby 2 Power Station. This crossing would be made permanent for the Proposed Development.
- 11E.4.14. The western section of the drain is approximately 2-3m wide with water depths of between 0.2 and 0.5m in 2023 although it was dry in 2024 (**Annex A**, Photograph 2). This section of drain has earth banks. The southern bank is dominated by dense willow scrub, which overhangs the drain and casts heavy shade over approximately 70% of the channel, reducing the cover of wetland plant species and by so doing, making the habitat sub-optimal for water vole. The northern bank supports unmanaged rank, semi-improved grassland. In-channel and bank vegetation suitable to sustain water voles is restricted to the 30% of the channel where shading is reduced. The eastern section of the drain is narrower (approximately 1-2m wide) and is dominated by reeds (**Annex 1**, Photograph 3), so contains extensive suitable food plants for water vole. The earth banks support rank semi-improved grassland. This whole section is dry and is judged to only support water during the wetter months of the year.
- 11E.4.15. Evidence of water vole in 2023 was restricted to a 60m section of the drain (), immediately downstream of the crossing. A total of eight latrines were recorded within this area with

these results consistent with the 2020 baseline survey. No evidence was present in 2024.

- 11E.4.16. The limited number of latrines found in 2023 and the concentration of these in one short section of the drain indicated a low population density. The lack of evidence of water vole in 2024 indicates that water voles have not persisted at this location.

Drain 3 (Keadby Common)

- 11E.4.17. This drain is located on western boundary of the Main Site. It has a channel width of 1-2m. In 2023, the water depth was between 0.2 and 0.5m but the whole length was dry during the 2024 survey. The drain is dominated by reeds along its entire length (**Annex A**, Photograph 4), so contains suitable food plants for water vole. The drain has earth banks approximately 0.5 - 1m in height, one of which supports dense scrub, shading approximately 20% of the channel. The other supports unmanaged, rank semi-improved grassland.

- 11E.4.18. [REDACTED]. As such, this record is considered to represent population flux from the more suitable habitats present within Drain 1 (. Although not previously recorded within this drain, these results are consistent with the 2020 baseline survey indicating that the majority of the drain is sub-optimal for water vole. No evidence was recorded in 2024, which also supports the position that water vole presence is opportunistic and transitory only within this drain.

Drain 4 (Keadby Common)

- 11E.4.19. This drain bisects the Main Site. The channel width is approximately 0.5m - 1m; the drain, has earth banks, and was dry during the surveys. The drain is dominated by reeds along its entire length (**Annex 1**, Photograph 5) so contains suitable food resources for water vole. Bankside trees are absent and there is no shading of the channel.

- 11E.4.20. Very limited evidence of water vole was found in 2023 and 2024, which was restricted to [REDACTED], indicating a low population density. This is consistent with the findings of the previous 2020 baseline survey.

Drain 5 (Keadby Common)

- 11E.4.21. This drain is on the eastern boundary of the Main Site has earth banks, a channel width of approximately 1-2m, this supported water in 2023 but was dry in 2024. The drain is dominated by reeds along its entire length (**Annex**

1, Photograph 6). Bankside trees are absent and there is no shading of the channel.

11E.4.22.

[REDACTED] Given the wetter weather conditions of 2023, the subsequent increase in water depth (to c. 0.2m) had likely provided water vole with more suitable conditions than previously recorded in 2020. However, in a typical year this drain would still be subject to drying and therefore would be sub-optimal for water vole. This was evident with the data collected in 2024 when the drain was dry and where only minimal evidence was recorded (2 latrines restricted to where this drain meets Drain 1). As such, these higher densities recorded in 2023 are likely to represent population flux from the more suitable habitats present within Drain 1. These results therefore indicate a low population density.

Drain A (Keadby Common)

11E.4.23. This drain was surveyed for the first time in 2023 and is located south of Keadby Common, adjacent to the former Keadby 2 Power Station laydown area. The channel width is approximately 1m, has earth banks, with water depths of approximately 0.2m depth. The drain is dominated by reeds along its entire length (**Annex 1**, Photograph 7) so contains suitable food resources and cover for water vole. Bankside trees are occasional but there is only limited shading of the channel.

11E.4.24.

[REDACTED] These results are in line with the ERM survey conducted in 2022. Available data indicates that this drain supports a low population density.

Drain B

11E.4.25. This field drain was surveyed for the first time in 2024 and is located east of the National Grid Substation, adjacent to the proposed emergency haul route. It is 1-2m in width with fluctuating depths up to 0.8m (**Annex 1**, Photographs 8 & 9). It has steep earth banks, which had recently been cut prior to the survey. Bankside trees are absent.

11E.4.26.

[REDACTED]

Drain C

11E.4.27. This field drain was surveyed for the first time in 2024 and is located adjacent to Chapel Road and is associated with the proposed emergency

haul route. The channel is 1m wide with water depth of approximately 0.4m (**Annex 1**, Photograph 10). It has earth banks and is fringed with marginal reeds so contains suitable food resources and cover for water vole. Bankside trees are absent.

11E.4.28.



Drain D (part of Glew Drain)

11E.4.29. This field drain was surveyed for the first time in 2024 and is located between two arable fields northeast of the National Grid Substation and is associated with the proposed emergency haul route. The channel is approximately 0.5 m wide and was dry along the majority of its length, with it only supporting localised pooled water (**Annex A**, Photograph 11). It has earth banks, no bankside trees and supports reeds throughout its length, although these had recently been cut prior to the survey.

11E.4.30. There was no evidence of water vole associated with this drain. Given that the drain is regularly subject to drying, it is considered sub-optimal for water vole

Hatfield Waste Drain (Mabey Bridge)

11E.4.31. This drain is located adjacent to the A18. The drain is approximately 10m wide and greater than 1m deep with steep earth banks approximately 1-2m in height supporting a marginal fringe of reed sweet-grass (*Glyceria maxima*). The banks are dominated by rank grasses, tall ruderal herbs and in places scrub. Bankside trees are absent and there is no shading of the channel.

11E.4.32. No evidence of water vole was recorded in 2023 or 2024 within the immediate vicinity of the bridge (20m either side) which is considered the likely reasonable extent of the footprint for the permanent works to replace the existing bridge. However, a single latrine was recorded away from this

area [REDACTED] in 2023, approximately 30m from the bridge, confirming the presence of the water vole within the watercourse.

[Otter Survey – Results for 2023 and 2024](#)

Keadby Common (Drains 1 – 5 and Drain A)

- 11E.4.33. No evidence of otter was found in either the 2023 or 2024 surveys in association with these drains, which is consistent with the previous 2020 AECOM baseline surveys.
- 11E.4.34. Bankside cover was also consistent with the previous 2020 baseline surveys, providing limited cover and therefore making it unlikely that otter would use adjacent habitats for lying-up or for holts.

Hatfield Waste Drain (Mabey Bridge)

- 11E.4.35. Limited evidence of otter was recorded (a slide and a spraint) across Hatfield Waste Drain (**Figure 11E.1**) in the 2023 surveys, but no evidence was found to suggest that Mabey Bridge is of specific importance for otter. No evidence was observed during the 2024 survey. No evidence of otter resting places was found in association with the scrub on the bank of the drain next to Mabey Bridge. Furthermore, consideration was also given to potential resting places within the zone of disturbance (circa 100m either side of the bridge), but the lack of bankside trees and scrub meant that there were no features that otter could use for shelter.
- 11E.4.36. These results are consistent with the previous 2020 AECOM baseline assessment. Whilst otter may be present and may forage along this watercourse, the absence of resting habitat and the limited extent and construction requirements for the proposed bridge works together mean that otter is not a relevant constraint.

11E.5. Conclusions and Nature Conservation Evaluation

Overview

- 11E.5.1. This section provides an assessment of the riparian mammals recorded in association with the Proposed Development Site to determine their relative nature conservation value. It does not intend to provide an assessment of impacts or advise on mitigation, as that is provided in **ES Volume I Chapter 11: Biodiversity (Application Document Ref 6.2)**.

Water Vole

- 11E.5.2. Lincolnshire is a stronghold for water vole, supporting a successful and widespread population, and sightings or their associated field signs can be expected in most suitable waterbodies throughout the county (Lincolnshire Biodiversity Partnership, 2011). The desk study undertaken for the PEA identified a large number of similar drains in the local area, which when considered with the number of desk study records, suggests that this species is relatively common in the wider landscape surrounding the Proposed Development Site.
- 11E.5.3. Drain 1 (part of Glew Drain), the only drain on Keadby Common with a reliable water supply and adequate water depth, supported a high population density of water vole. Given the healthy population it is considered to be of district nature conservation value for water vole.
- 11E.5.4. Across the wider Proposed Development Site, Drains B and C associated with the emergency haul route also supported higher populations of water vole (assessed to be of medium and high densities respectively). These drains are also assessed to be of district nature conservation value for water vole.
- 11E.5.5. Fields signs were found in only discrete locations in the other drains, indicating that there is only a small and perhaps transitory population of water voles associated with the other drains within the Proposed Development Site (likely to be less than 14 territories and individuals). It is possible that the sub-optimal drains of the Main Site only support animals displaced from more optimal waterbodies elsewhere, and that there is a high turnover of water voles within the Main Site drains year to year.
- 11E.5.6. The results for the other drains therefore suggest that numbers peak in these drains after breeding, when water voles born that year disperse to find unoccupied territories. The small numbers, and potentially transitory occurrences, of water vole associated with the sub-optimal waterbodies (small drains lacking sufficient water and prone to drying) are likely to make a minor contribution to the wider population, especially given the habitat

conditions present indicate that the territories on the Main Site may not be sustainable over the long-term.

- 11E.5.7. Given the above it is considered that the remaining drains within the Proposed Development Site that would be affected by the Proposed Development support a water vole population of local value.

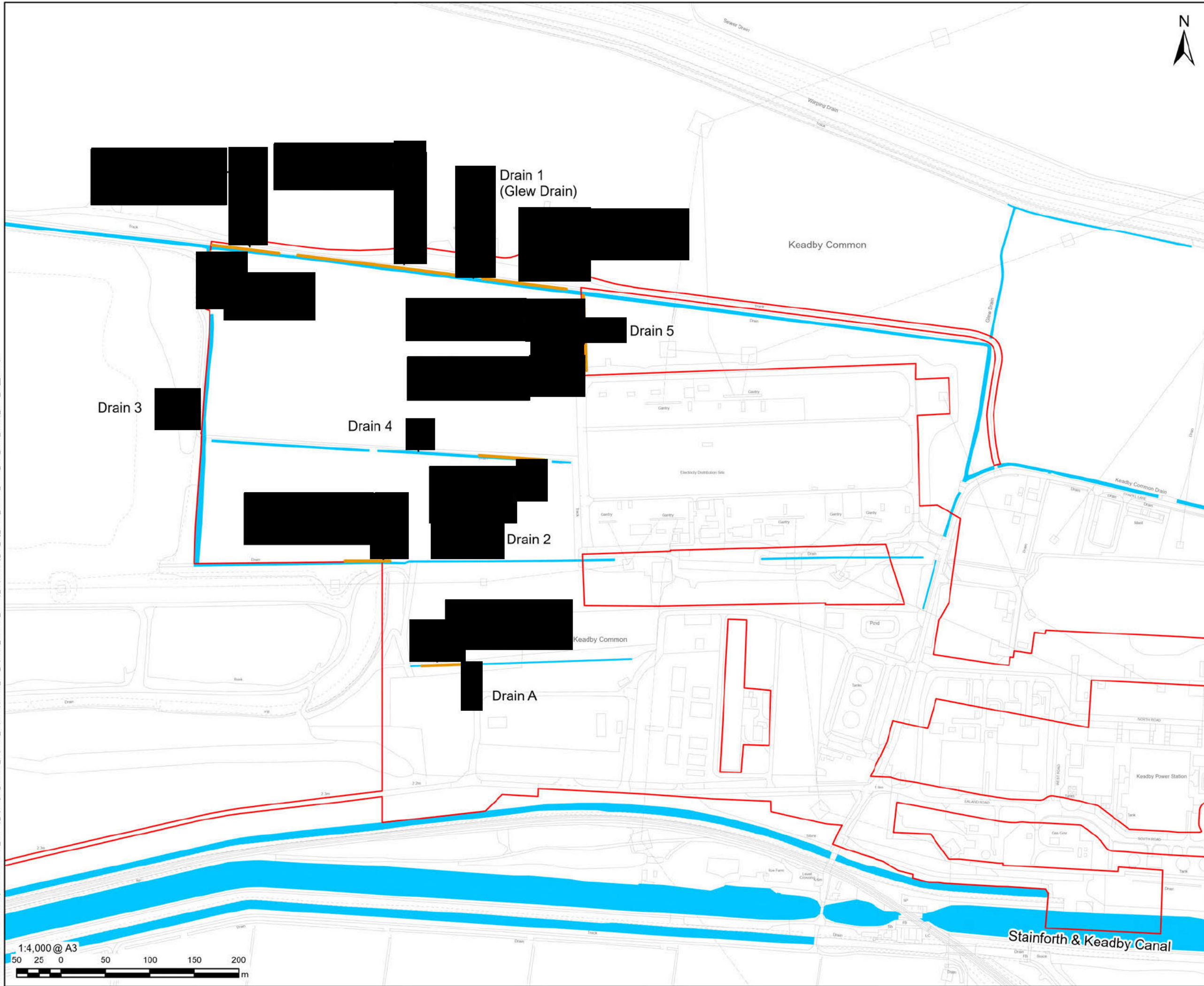
Otter

- 11E.5.8. The surveys found no evidence of otter associated with the Proposed Development Site.
- 11E.5.9. As highlighted within the Section 4, it is assumed that otters are moving and foraging along the River Trent and the Stainforth and Keadby Canal habitat corridor, and potentially the other waterbodies associated with the Proposed Development Site. However, there is no evidence that habitats within the Proposed Development Site are of specific importance for otter and there is no evidence that otter currently uses the habitats associated the Proposed Development Site for breeding or resting.
- 11E.5.10. Otter is not considered to be a constraint to the Proposed Development, so further assessment is not required. However, top-up surveys are likely to be required in future years to reconfirm the status of the species and the suitability of the habitats present.

11E.6. References

- AECOM (2020) *The Keadby 3 Low Carbon Gas Power Station Project. Environmental Statement Volume II - Appendix 11F: Riparian Mammal Survey Report*. Available online: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010114/EN010114-000406-Keadby%203%20Examination%20Library.pdf> [accessed July 2024].
- Chanin, P. (2003) *Ecology of the European Otter. Conserving Natura 2000 Rivers*.
- CIEEM (2024) *Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine, Version 1.3*. CIEEM, Winchester.
- Crawford, A. (2010) *Fifth Otter Survey of England 2009 – 2010*. Environment Agency.
- Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). *The Water Vole Mitigation Handbook (Mammal Society Mitigation Guidance Series)*.
- Environmental Resources Management (2018) *Keadby 2 Environmental Statement Chapter 7 – Ecology and Keadby 2 Environmental Statement Annex-E – Ecology*.
- Environmental Resources Management (2020) *Method Statement in Support of a Water Vole Licence Application. Amendment request to Water Vole Licence - 2020-45487-SCI-SCI, dated 31 July 2020*.
- Environmental Resources Management (2022) *Water Vole Survey at Keadby 2 Power Station, Scunthorpe*. Internal Survey Report to the Applicant.
- Greater Lincolnshire Nature Partnership (2013) *Local Wildlife Site Guidelines for Lincolnshire, 3rd Edition*. Greater Lincolnshire Nature Partnership.
- Natural England (2022a) *Water voles: surveys and mitigation for development projects*. Available online: <https://www.gov.uk/guidance/water-voles-protection-surveys-and-licences> [Accessed: 11 July 2024].
- Natural England (2022b) *Otters: Surveys and Mitigation for Development Projects*. Available online: <https://www.gov.uk/guidance/otters-protection-surveys-and-licences> [Accessed: 11 July 2024].
- Strachan, R., Moorhouse, T. & Gelling, M. (2011). *Water Vole Conservation Handbook, 3rd edition*. WildCRU, Oxford.
- UK Government (1981) *Wildlife and Countryside Act 1981 (as amended)* (SI 1981 c. 39). Available online: <https://www.legislation.gov.uk/ukpga/1991/39/contents> [accessed 11 July 2024].
- UK Government (2006) *Natural Environment and Rural Communities Act 2006 (as amended)* (SI 2006 c. 16). Available online: <https://www.legislation.gov.uk/ukpga/2006/16/contents> [accessed 11 July 2024].
- 1. UK Government (2017) *The Conservation of Habitats and Species Regulations 2017 (as amended)* (SI 2017 No. 1072). Available online:

<https://www.legislation.gov.uk/uksi/2017/1012/contents/made>. [accessed 11 July 2024].



AECOM

PROJECT

**KEADBY
NEXT GENERATION
POWER STATION**
Hydrogen-enabled flexible power

A collaboration between SSE Thermal and Equinor

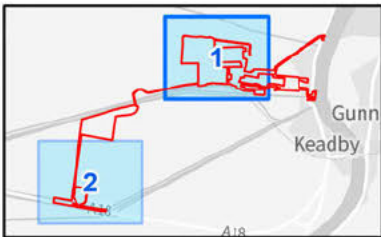
CONSULTANT

AECOM Limited
Midpoint,
Alencon Link,
Basingstoke, RG21 7PP
www.aecom.com

LEGEND

- Proposed Development Site
- Running Water

Riparian Mammal Field Signs



NOTES

Reproduced from Ordnance Survey digital map data
© Crown copyright 2025. All rights reserved.
Licence number AC0000808122
Map Basemap © Contains OS data © Crown
Copyright and database right 2025
Contains data from OS Zoomstack

ISSUE PURPOSE

**RIPARIAN MAMMAL SURVEY
REPORT**

PROJECT NUMBER

60721867

FIGURE TITLE

Results of the Water Vole and Otter
Survey 2023
(Page 1 of 2)

FIGURE NUMBER

Figure 11E.1

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.



AECOM

PROJECT

**KEADBY
NEXT GENERATION
POWER STATION**

Hydrogen-enabled flexible power

A collaboration between SSE Thermal and Equinor

CONSULTANT

AECOM Limited
Midpoint,
Alencon Link,
Basingstoke, RG21 7PP
www.aecom.com

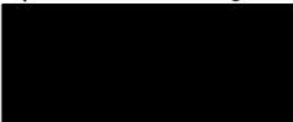
LEGEND

Proposed Development Site

Running Water

Boat Launch Location

Riparian Mammal Field Signs



NOTES

Reproduced from Ordnance Survey digital map data
© Crown copyright 2025. All rights reserved.
Licence number AC0000808122.
Map Basemap © Contains OS data © Crown
Copyright and database right 2025
Contains data from OS Zoomstack

ISSUE PURPOSE

**RIPARIAN MAMMAL SURVEY
REPORT**

PROJECT NUMBER

60721867

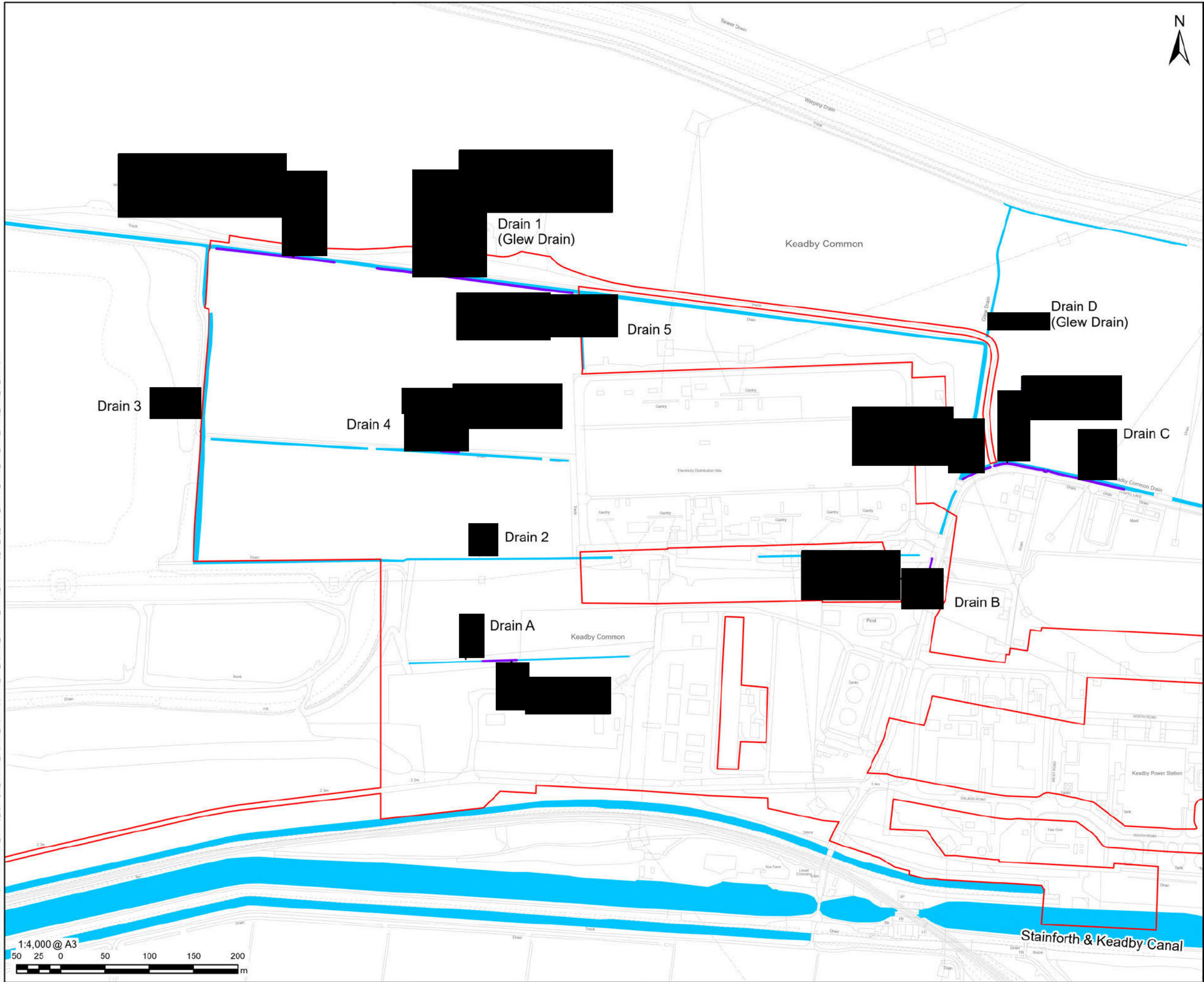
FIGURE TITLE

Results of the Water Vole and Otter
Survey 2023
(Page 2 of 2)

FIGURE NUMBER

Figure 11E.1

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.



AECOM

PROJECT

**KEADBY
NEXT GENERATION
POWER STATION**
Hydrogen-enabled flexible power

A collaboration between SSE Thermal and Equinor

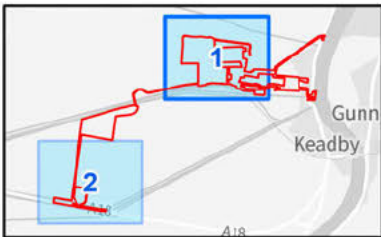
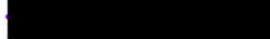
CONSULTANT

AECOM Limited
Midpoint,
Alencon Link,
Basingstoke, RG21 7PP
www.aecom.com

LEGEND

- Proposed Development Site
- Running Water

Riparian Mammal Field Signs



NOTES

Reproduced from Ordnance Survey digital map data
© Crown copyright 2025. All rights reserved.
Licence number AC0000808122
Map Basemap © Contains OS data © Crown
Copyright and database right 2025
Contains data from OS Zoomstack

ISSUE PURPOSE

**RIPARIAN MAMMAL SURVEY
REPORT**

PROJECT NUMBER

60721867

FIGURE TITLE

Results of the Water Vole and Otter
Survey 2024
(Page 1 of 2)

FIGURE NUMBER

Figure 11E.2

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.



AECOM

PROJECT

**KEADBY
NEXT GENERATION
POWER STATION**
Hydrogen-enabled flexible power

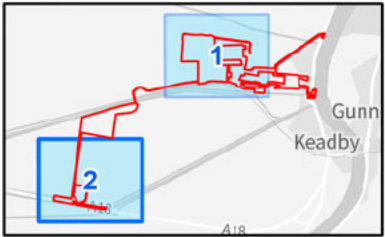
A collaboration between SSE Thermal and Equinor

CONSULTANT

AECOM Limited
Midpoint,
Alencon Link,
Basingstoke, RG21 7PP
www.aecom.com

LEGEND

- Proposed Development Site
- Running Water
- Boat Launch Location



NOTES

Reproduced from Ordnance Survey digital map data
© Crown copyright 2025. All rights reserved.
Licence number AC0000808122
Map Basemap © Contains OS data © Crown
Copyright and database right 2025
Contains data from OS Zoomstack

ISSUE PURPOSE

RIPARIAN MAMMAL SURVEY
REPORT

PROJECT NUMBER

60721867

FIGURE TITLE

Results of the Water Vole and Otter
Survey 2024
(Page 2 of 2)

FIGURE NUMBER

Figure 11E.2

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.

Annex 1– Representative Site Photographs



Photograph 1 – Drain 1 (part of Glew Drain)



Photograph 3 – Drain 2 (western section)



Photograph 3 – Drain 2 (eastern section)



Photograph 4 – Drain 3



Photograph 5 – Drain 4



Photograph 6 – Drain 5



Photograph 7 – Drain A



Photograph 8 – Drain B



Photograph 9 – Drain B



Photograph 10 – Drain C



Photograph 11 – Drain D (part of Glew Drain)