

The Keadby 3 Low Carbon Gas Power Station Project

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The Keadby 3 (Carbon Capture Equipped Gas Fired Generating Station) Order

Land at and in the vicinity of the Keadby Power Station site, Trentside, Keadby, North Lincolnshire

Environmental Statement Volume II -Appendix 11F: Riparian Mammal Survey Report

The Planning Act 2008

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

Applicant: Keadby Generation Limited

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GLOSSARY

Abbreviation	Description					
CIEEM Chartered Institute of Ecology and Environmental Manage						
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					



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1.0 INTRODUCTION

1.1 Background

- 1.1.1 This report accompanies Chapter 11: Biodiversity and Nature Conservation (ES Volume I Application Document Ref. 6.2) and describes the approach and findings of the riparian mammal surveys undertaken in support of the Ecological Impact Assessment (EcIA) of the Proposed Development. For the purposes of this report, riparian mammals are defined as water vole (Arvicola amphibius) and otter (Lutra lutra).
- 1.1.2 The terms of reference used to describe the Proposed Development in this report are broadly consistent with those defined within the main chapters of the Environmental Statement (ES) (ES Volume I Application Document Ref. 6.2).
- 1.1.3 The Proposed Development Site encompasses an area of approximately 69.4 hectares (ha) which includes circa 20.7ha of land for construction laydown.
- 1.1.4 The Proposed PCC Site comprises an area of approximately 18.7ha of the Proposed Development Site within the wider Keadby Power Station site that is located within Keadby Common. Overhead electricity transmission lines associated with the existing National Grid 400kV Substation bisect the Proposed PCC Site. Land to the south of these overhead lines within the Proposed PCC Site is proposed for administration/ control room/ warehouse buildings and car parking areas and an above ground installation (AGI) for the gas connection. The area of the Proposed PCC Site on which the power generation (CCGT), carbon capture and compression (CCP) and associated stacks will be developed is referred to as the 'Main Site' herein.

1.2 Survey Scope

- 1.2.1 An initial Preliminary Ecological Appraisal (PEA) of the ecological constraints and opportunities associated with the Proposed Development Site was made by AECOM in March 2020, including identification of the requirements for further protected species survey. The findings of the habitat and scoping survey were compiled as a Preliminary Ecological Appraisal (PEA) report (submitted as Appendix 11C (ES Volume II Application Document Ref. 6.3)), which should be referred to for a more detailed overview of the site conditions and habitats present.
- 1.2.2 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 16 waterbodies (locations shown on Figure 11F.1 (ES Volume II Application Document Ref. 6.3)) requiring further survey and/ or assessment due to the potential for these waterbodies to experience impacts and effects from



construction, operation and/or decommissioning of the Proposed Development. The waterbodies of potential relevance are:

- five field drains (Drains 1 (Glew Drain), 2, 3, 4 and 5) in association with the Main Site, where construction works for the Proposed Development would be focused:
- the Stainforth and Keadby Canal due to it being considered as the preferred Canal Water Abstraction Option;
- the River Trent in the vicinity of the River Water Abstraction Option and Water Discharge Corridor;
- the North Soak Drain as it is located within the Proposed Development Site.
 While this waterbody would not be directly affected, it is located adjacent to a potential construction access route to the Potential Water Abstraction Option on the Stainforth and Keadby Canal;
- Hatfield Waste Drain as it is proposed that the existing Mabey Bridge would be replaced at the proposed access point off the A18;
- Keadby Common Drain adjacent to Chapel Lane, where a potential connection to the 132kV Northern Powergrid substation may involve an electrical cable being installed across the drain using open cut methods; and
- six field drains (Drains 7a-7c and 8-10) dividing arable fields at Pilfrey Farm that will be used for temporary construction.
- 1.2.3 The other waterbodies associated with the Proposed Development Site, all of which are minor ditches and drains, were scoped out as they will not be affected and are located at distance from proposed construction works. These other waterbodies are not considered further in this report.
- 1.2.4 The purpose of the riparian mammal surveys and this report is to:
 - provide data on the level, nature and location of water vole and otter activity associated with the relevant waterbodies and adjacent land;
 - present the above data in a manner that allows the results to be used to support an assessment of relative nature conservation value, including review against relevant criteria (see Section 2 of this report); and
 - inform the options for impact avoidance, mitigation and/or compensation to be considered during design of the Proposed Development.
- 1.2.5 The purpose of this report is to provide baseline technical information only. It does not seek to include recommendations, specify mitigation, or make an ecological impact assessment (EcIA) of the Proposed Development. The formal EcIA is provided as Chapter 11: Biodiversity and Nature Conservation (ES Volume I Application Document Ref. 6.2), and this riparian mammal report comprises an appendix to that chapter.



2.0 METHODS

2.1 Desk Study

- 2.1.1 A desk study was undertaken as part of the PEA (included as **Appendix 11C** (ES Volume II **Application Document Ref. 6.3**)) that was completed in advance of the riparian mammal surveys and informed the scoping of requirements for further survey.
- 2.1.2 Desk study results of relevance to the assessment have been carried forward into this report, and where appropriate this data is presented in more detail or re-interrogated for the needs of the current assessment.

2.2 Riparian Mammal Survey

- 2.2.1 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 (2003a) and Crawford (2010) for otter.
- 2.2.2 To meet current good practice requirements for water vole survey, two survey visits were completed (Strachan *et al.*, 2011). These surveys were completed on 19th May and 12th August 2020.
- 2.2.3 Some waterbodies (Hatfield Waste Drain, Keadby Common Drain at Chapel Lane) were not identified as relevant until September 2020, so only one survey visit was possible, and this was completed on 20th October 2020.
- 2.2.4 The relevant waterbodies were surveyed from within the channel where possible, or on the bank face or bank top (as access and safety considerations permitted) if not, and searched for the following 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;
- runways low tunnels within the vegetation; and
- auditory noises characteristic 'plop' sound as animals enter a waterbody.



Otter

- direct sightings;
- suitable habitat for holts (breeding sites);
- feeding remains;
- footprints;
- slides;
- spraints (faeces); and
- evidence of couches (resting or laying-up sites).
- 2.2.5 In most cases the presence of faeces/ latrines and footprints are the most reliable field evidence for riparian mammals, in the absence of direct sightings. Not all 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.
- 2.2.6 The presence/ absence of 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 may help to explain an absence of field signs in habitats that otherwise appear to be highly suitable.

2.3 Nature Conservation Evaluation

- 2.3.1 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 **Chapter 11**: Biodiversity and Nature Conservation (ES Volume I **Application Document Ref. 6.2**).
- 2.3.2 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 Terrestrial, Freshwater and Coastal and Marine Second Edition (CIEEM, 2019). 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.



2.3.3 The value of a 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).

2.4 Limitations

- 2.4.1 All of the surveys were undertaken at an appropriate time of year and during suitable weather conditions. There was no substantive rainfall prior to the surveys that might have washed field signs away.
- 2.4.2 The bankside vegetation along the northern bank of Drain 1 had recently been cut prior to the second survey visit. Although this did aid the search for water vole burrows along this bank, other evidence for both otter and water vole such as feeding remains, lawns, runs, paths and couches may have been lost as a consequence. However, this is unlikely to have impacted the search for reliable in-channel features to identify presence such as latrines/ spraints and footprints. Similarly, if water vole had been present, it would still have been possible to find field signs on the immediately opposite unaffected bank. As such, the cutting of one bank is not considered a significant limitation.
- 2.4.3 North Soak Drain was not surveyed during the first visit as access was not available. On the second visit, access was obtained but due to safety constraints, could only be surveyed from the top of the bank as the water depth was greater than 1m deep and much of the bank face was covered by bramble scrub. This may have meant that field signs were missed, however as the Proposed Development will not directly impact on this drain, this is not considered a limitation. Habitat quality was considered poor as described in Section 4 and shown in the photographs provided in **Annex B**. This drain will not be affected by the Proposed Development.
- 2.4.4 There was also no access to survey the eastern section of Drain 2 during the first survey. This is not a limitation, given that access was possible during the second visit. If water vole was present in this drain, then the second visit would have coincided with the peak in water vole activity (which tends to be towards the end of the survey season, after breeding).
- 2.4.5 Hatfield Waste Drain, Keadby Common Drain at Chapel Lane, and field drains in the proposed construction laydown area south of the Stainforth and Keadby Canal and north of the A18 were surveyed only once and relatively late in the year (20th October 2020). While the timing of the survey was not optimal, it was not possible to survey earlier in 2020 and water voles would still have been



active (if present) when the survey took place. Access to the banks of Hatfield Waste Drain was also poor, due to the steepness of the banks and the depth of the water within the drain. These are not considered limitations either at Chapel Lane or Mabey Bridge given the limited construction works proposed in these areas (installation of electrical connections and replacement of Mabey Bridge).

2.4.6 The drains associated with proposed temporary Construction Laydown Areas south of the Stainforth and Keadby Canal and north of the A18 will be subject to appropriate stand-offs and it is anticipated that access can be achieved without new crossing of these drains. A precautionary approach has been taken in the subsequent ecological impact assessment, including a commitment to resurvey all relevant drains prior to construction (regardless of prior survey effort applied to re-confirm the baseline).



3.0 LEGISLATION, PLANNING POLICY AND RELATED GUIDANCE

- 3.1.1 The following wildlife legislation, planning policy and guidance is specifically relevant to the identification and assessment of potential constraints posed by the presence of riparian mammals. At this stage of assessment, this legislation, policy and guidance is primarily listed to demonstrate that an appropriate level of survey and assessment has been undertaken to meet likely data requirements for future decision-making regarding these material considerations.
- 3.1.2 Wider relevant biodiversity legislation, policy and guidance is detailed in **Appendix 11A**: Biodiversity and Nature Conservation Legislation and Planning Policy (ES Volume II **Application Document Ref. 6.3**).

3.2 Water Vole

- 3.2.1 The water vole is protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (the Act). 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).
- 3.2.2 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 their shelters to ensure there is as little risk as possible of interfering with them. 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 may be required.
- 3.2.3 The Government has published standing advice (Natural England and Department for Environment, Food and Rural Affairs (Defra), 2015) to guide decision-makers on the determination of proposals with potential to affect protected species such as water vole. The guidance sets out responsibilities and minimum requirements for survey and mitigation.
- 3.2.4 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. Section 40 of the NERC Act requires



that local planning authorities have regard to the conservation of biodiversity in England, when carrying out their normal functions. The water vole is also included as a priority species for nature conservation within the Lincolnshire Local Biodiversity Action Plan (LBAP) (Lincolnshire Biodiversity Partnership, 2011).

3.3 Otter

- 3.3.1 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). It is also protected under Sections 9 and 11 of the Wildlife and Countryside Act 1981 (as amended). 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.
- 3.3.2 The otter is also a 'Species of Principal Importance for Nature Conservation in England' pursuant to Section 41 of the NERC Act 2006.
- 3.3.3 The Government has published standing advice (Natural England and Defra, 2019) to guide decision-makers on the determination of proposals with potential to affect protected species such as otter. The guidance sets out responsibilities and minimum requirements for survey and mitigation.
- 3.3.4 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.
- 3.3.5 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.
- 3.3.6 It should be noted that 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, 2003b).



4.0 RESULTS

4.1 Desk Study

- 4.1.1 The desk study returned 25 individual water vole records made in the vicinity of the Proposed Development Site the period 2010-2020. Most of the records returned relate to drains within Keadby Wind Farm to the north and east of the Proposed Development Site. Two records were made from a drain next to the existing 400kV National Grid Substation off Chapel Lane, Keadby in the approximate vicinity of the route of the proposed Emergency Vehicle Access Road.
- 4.1.2 Previous water vole surveys of field drains bordering the former Keadby Ash Tip by AECOM in 2017 also found limited evidence of water vole in the vicinity of the Proposed Development Site. Two latrines and one water vole burrow, and associated feeding remains, were found on a short section of the minor field drain on the western boundary of the former Keadby Ash Tip.
- 4.1.3 These recent records indicate that water vole is widely distributed within the network of drains and other freshwater waterbodies in the vicinity of the Proposed Development Site.
- 4.1.4 In comparison, 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 terrestrial habitats within the vicinity of the canal and Proposed Development Site.
- 4.1.5 No evidence of otter was found by AECOM in 2017 when surveying waterbodies associated with the former Keadby Ash Tip.

4.2 Water Vole Survey Results

- 4.2.1 Figure 11F.1 (ES Volume II Application Document Ref. 6.3) contained within this report shows the locations of the waterbodies surveyed and the associated locations of water vole field signs. A summary of results within each of the waterbodies surveyed for water vole is provided below and summarised in Table 1. Further information (including details on individual field signs, rather than peak counts) is provided on the survey forms within Annex A. Representative photographs of each waterbody are provided in Annex B.
- 4.2.2 Where present, an estimate on the number of water vole territories within each waterbody is provided to allow inference of the likely population size present.



Main Site - Drain 1 (Glew Drain)

- 4.2.3 This drain, located on the northern boundary of the Main Site, 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 burrowing. The drain and its banks support extensive stands of suitable foodplants, including emergent grasses and sedges (**Annex B**, Photograph 1). Bankside trees are absent and there is no shading of the channel.
- 4.2.4 Drain 1 is connected at both its eastern and western extent to a network of drains in the wider landscape, such that it provides a potential movement corridor for water vole between other areas of suitable habitat. The other drainage ditches associated with Keadby Common (Drains 2 to 5) are connected to Drain 1.
- 4.2.5 Evidence of water vole was found within Drain 1 at three discrete sections along the length of the drain (refer to **Figure 11F.1** (ES Volume II **Application Document Ref. 6.3**)). These locations are:
 - between SE 81847 12227 to SE 81944 12212 (approximately 100m total drain length) two latrines and three burrows were found;
 - between SE 82006 12202 to SE 82057 12199 (approximately 50m length of drain), two latrines and one burrow were found; and
 - at SE 82152 12185 where a single latrine was present.
- 4.2.6 Given the limited number of burrows and latrines found, and the concentration of these in relatively discrete areas of the drain, it is considered that this drain supports a maximum of four water vole territories.

Main Site - Drain 2

- 4.2.7 This drain, located on the southern boundary of the Main Site, is separated into two discrete sections by a temporary construction haul road crossing for Keadby 2 Power Station.
- 4.2.8 The western section of the drain is approximately 2-3m wide with water depths of between 0.2 and 0.5m (**Annex B**, 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.
- 4.2.9 The eastern section of the drain is narrower (approximately 1-2m wide) and is dominated by reeds (**Annex B**, 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.
- 4.2.10 Evidence of water vole was present within a 60m section of the drain (between SE 81933 11872 and SE 81993 11873). A total of four latrines and three burrows were recorded within this area. Additional evidence of water vole presence and activity was present in the form of 30 feeding stations.
- 4.2.11 Given the limited number of burrows and latrines found, and the concentration of these in one short section of drain, it is considered that this drain supports a maximum of two water vole territories (and potentially just one).

Main Site - Drain 3

- 4.2.12 This drain, located on western boundary of the Main Site, has a channel width of 1-2m. During the first survey, the water depth was between 0.2 and 0.5m but the whole length was dry during the return survey. The drain is dominated by reeds along its entire length (**Annex B**, Photograph 4), so contains suitable food plants for water vole.
- 4.2.13 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.
- 4.2.14 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.

Main Site - Drain 4

- 4.2.15 This drain bisects the Main Site. The channel width is approximately 0.5m 1m; the drain, has earth banks, and during the initial survey the water depth was very shallow (0.1m) and the channel was locally dry. By the second survey, the whole drain was dry. The drain is dominated by reeds along its entire length (Annex B, Photograph 5) so contains suitable food resources for water vole. Bankside trees are absent and there is no shading of the channel.
- 4.2.16 Very limited evidence of water vole was found, which was restricted to a single burrow with some associated feeding remains. This limited field evidence indicates the presence of only a single water vole territory. Given that the drain is subject to regular and prolonged drying, it is considered sub-optimal for water vole.

Main Site - Drain 5

4.2.17 This drain, on the eastern boundary of the Main Site has earth banks, a channel width of approximately 1-2m, and was dry during both surveys (a maximum depth of 10cm was recorded at the time of the preceding PEA, **Appendix 11C** (ES Volume II - **Application Document Ref. 6.3**)). The drain is dominated by



- reeds along its entire length (**Annex B**, Photograph 6). Bankside trees are absent and there is no shading of the channel.
- 4.2.18 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.

North Soak Drain

- 4.2.19 The section of the drain associated with the Proposed Development Site is approximately 10m wide and is greater than 1m in depth. The drain supports occasional small stands of reeds with the open water areas but is otherwise devoid of vegetation suitable to sustain water vole (**Annex B**, Photograph 7).
- 4.2.20 The drain has steep earth banks approximately 1-2m in height. The southern bank between North Soak Drain and the Stainforth and Keadby Canal supports dense bramble scrub, while the other bank supports rank, unmanaged semi-improved grassland with tall ruderals. Bankside trees are absent and there is no shading of the channel.
- 4.2.21 There was no evidence of water vole associated with this drain. There is minimal food resource for water vole and as such the drain is considered to be suboptimal for this species. Previous surveys for Keadby 2 Power Station also did not find water vole in this drain.

Stainforth and Keadby Canal

- 4.2.22 At the location of the Proposed Development Site, the canal is approximately 40m wide and greater than 1m in depth. The water column is dominated by submerged aquatic plants, with isolated stands of reeds present in the margins (**Annex B**, Photograph 8).
- 4.2.23 The banks of the canal are vertical and where visible were concrete. Bankside trees and scrub are present on the northern bank of the canal, however given its width, shading to the channel is negligible.
- 4.2.24 Given the prevailing habitat conditions, a water vole survey was not conducted. The banks are unsuitable for water vole and there is minimal food resource. The canal was therefore deemed unsuitable for water vole and was scoped out.

River Trent

4.2.25 At the location of the existing Keadby 1 Power Station cooling water intake and outfall structures, the River Trent is a large (approximately 150m wide) tidal river (**Annex B**, Photograph 9) and is therefore unsuitable for water vole. Water vole is therefore scoped out in relation to the River Trent.



Hatfield Waste Drain

- 4.2.26 At the location of the existing Mabey Bridge crossing, the drain is approximately 10m wide and greater than 1m deep. The only aquatic vegetation apparent at the time of survey was a narrow marginal fringe of reed sweet-grass (*Glyceria maxima*) (**Annex B**, Photograph 10).
- 4.2.27 The drain has steep earth banks approximately 1-2m in height. 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.
- 4.2.28 There was no evidence of water vole associated with this drain, but survey access was poor due to the steep banks. Water vole is unlikely to be relevant given the proposed works are restricted to the replacement of the existing Mabey Bridge, but if the construction approach changes then a re-survey by boat prior to construction may be required to inform the planning of construction works.

Keadby Common Drain Adjacent to Chapel Lane

- 4.2.29 At the location of the potential 132kV connection to the Northern Powergrid Substation, the drain is over-deepened. It has a channel width of between 1 and 2m and variable water depths that are less than 0.5m throughout. The banks are of earth, so are suitable for water vole burrowing. The drain and its banks support extensive stands of suitable foodplants, including emergent grasses and sedges (**Annex B**, Photograph 11). Bankside trees are absent and there is no shading of the channel.
- 4.2.30 The banks of the drain are very steep and eroded/ slumping in places with exposed bare earth. Where vegetation is present, this is dominated by rank grasses and herbs.
- 4.2.31 Evidence of water vole was found in scattered locations along a 75m stretch of this drain within the Proposed Development Site (Figure 11F.1 (ES Volume II -Application Document Ref. 6.3)). The distribution of field signs was:
 - between SE 82761 11971 to SE 82797 11967 (approximately 35m total drain length) three latrines and three burrows were found;
 - at SE 82815 11959 one latrine was found; and
 - at SE 82834 11959 one latrine and one burrow were present.
- 4.2.32 Given the limited number of burrows and latrines found, and the concentration of these in relatively discrete areas of the drain, it is considered that this section of drain supports a maximum of four water vole territories.



Construction Laydown Area – Drains 7a-7c and 8-10

- 4.2.33 These drains comprise a cohesive network of field drains within land at Pilfrey Farm (Annex B, Photograph 12 to 17). They are all approximately 2m wide and steep earth banks dominated by rank grasses and ruderal herbs. Water levels are variable, with Drains 7b and 8 completely dry and only likely to hold water during the winter, and the remaining drains with water depths of less than 0.5m (generally much less than this, except in localised areas). None of the drains are shaded by trees.
- 4.2.34 Given the shallow water depths, all of these drains were easily accessed for survey. There was no evidence of water vole associated with any of these drains.

Table 1: Water vole field signs recorded within each waterbody

Waterbody	Evidence	Water Vol	e Field Sig	ns (Peak Count))
Reference*	of Water Vole Found?	Burrows	Latrines	Other Field Signs	Estimate of Water Vole Territories
1 (Glew Drain)	Yes	4	5	2 feeding remains	4
				1 feeding remains	
				None	
2	Yes	3	4	30 feeding remains	2
3	No	0	0	None	0
4	Yes	1	0	1 feeding remains	1
5	No	0	0	None	0
North Soak Drain	No	0	0	None	0
Hatfield Waste Drain	No	0	0	None	0
Keadby Common Drain	Yes	4	5	None	4
7a	No	0	0	None	0
7b	No	0	0	None	0



7c	No	0	0	None	0
8	No	0	0	None	0
9	No	0	0	None	0
10	No	0	0	None	0

^{*} refer to Figure 11F.1 and Figure 11C.3 presented in Appendix 11C – ES Volume II – Application Document Ref. 6.3)

4.3 Otter Survey Results

Main Site (Drains 1, 2, 3, 4 and 5)

- 4.3.1 No evidence of otter was found in association with the minor waterbodies on the Main Site, or in adjacent terrestrial habitats.
- 4.3.2 While otters will explore small waterbodies in their territories, such use would be transitory only, unless there were suitable habitat features to encourage more regular use. In this case, the habitat conditions present are sub-optimal for otter given most of the drains dry up during the summer and only hold shallow water during the wetter months of the year. Most of the drains are therefore not suitable to sustain a regular presence of fish, and therefore do not provide represent attractive foraging habitat for otter. Drain 1 (Glew Drain) holds permanent water but is still a very minor waterbody and is only likely to support minor fish species.
- 4.3.3 Cover was also poor along most drains, making it unlikely that otter would use the waterbodies of Keadby Common for lying-up or for holts. Only Drains 2 and 3 had any substantive bankside cover, and this was dense scrub with little cover at ground level. No evidence of otter, or habitat features suitable for use by otter, was found in association with this scrub.
- 4.3.4 Given the above habitat conditions, it is considered that otter will not make any substantive use of the drains associated with Keadby Common.

North Soak Drain and Keadby Canal

- 4.3.5 No evidence of otter was recorded in association with these two waterbodies and their adjacent terrestrial habitats. The areas of mature woodland and scrub next to the Proposed Development Site did not have sufficient cover or other habitat features at ground level suitable for use by otters as couches or holts.
- 4.3.6 Currently the land required for the Proposed Development is subject to ongoing construction works for Keadby 2 Power Station (Annex B, Photograph 18 and 19). Otter has not been identified as a constraint to these construction works, and while construction works are ongoing, this area is unlikely to be attractive to otter.



4.3.7 Otter is not considered a constraint in relation to potential works associated with the Proposed Development in the vicinity of the North Soak Drain and the Stainforth and Keadby Canal.

River Trent

- 4.3.8 The survey for otter was restricted to inspections of suitable terrestrial habitat associated with the Proposed Development Site. The River Trent is only relevant to the Proposed Development because of the option to use its existing water intake and outfall structures. As such, although otter will likely forage along the Trent, the Proposed Development has limited potential to affect the species when it is using this large waterbody.
- 4.3.9 The banks of the Trent in association with the Proposed Development are immediately adjacent to a road and are used for recreation by residents of the village. The banks are predominantly under mown improved grassland, with small and narrow stands of scrub and common reed at the edge of the channel. The latter provides limited cover for otter, making it unlikely that otter would preferentially use these areas for lying-up or for holts given the wider resource of less disturbed habitat along the River Trent.
- 4.3.10 No evidence of otter was recorded in association with the River Trent. Otter is not considered to be a constraint in relation to potential works associated with the Proposed Development on the banks of the River Trent.

Hatfield Waste Drain

- 4.3.11 No evidence of otter was found in association with this drain. The drain runs parallel to a busy road and there is no vegetation in association with the steep banks that otters could use for shelter. Given this, otter may forage along the drain at night, but is unlikely to be present during daylight hours.
- 4.3.12 Given the limited extent and construction requirements for the proposed Mabey Bridge replacement works, otter is not considered a relevant constraint.

Keadby Common Drain Adjacent to Chapel Lane

- 4.3.13 No evidence of otter was found in association with this small drain. The drain runs parallel to a road and is close to residential areas and routes used for public amenity. There is no vegetation in association with the steep banks that otters could use for shelter. Given these conditions, otter is very unlikely to use this drain.
- 4.3.14 Given the limited extent and construction requirements for the proposed connection to the 132kV substation, should this option be selected, otter is not considered a relevant constraint.



Potential Laydown Area – Drains 7a-7c and 8-10

- 4.3.15 No evidence of otter was found in association with the minor waterbodies and adjacent terrestrial habitats are not suitable to be utilised by otter for refuge.
- 4.3.16 Given the habitat conditions present, which are comparable to or less suitable than Drains 1 to 5 as described above, it is considered that otter will not make any more than rare exploratory use of these drains, or as an opportunistic occasional route to move between Hatfield Waste Drain to the south and the Sheffield and South Yorkshire Navigation habitat corridor to the north.



5.0 CONCLUSIONS AND NATURE CONSERVATION EVALUATION

5.1 Overview

5.1.1 This section provides an assessment of the riparian mammals recorded in association with the Proposed Development Site to determine their relative nature conservation value.

5.2 Water Vole

Main Site (Drains 1, 2, 3, 4 and 5) and the connected Keadby Common Drain

- 5.2.1 Given that all these surveyed waterbodies are located in close proximity to each other and are connected, they have been evaluated together.
- 5.2.2 Fields signs were found in a number of discrete locations, indicating that there is only a small and perhaps (at least in the case of the Main Site) transitory population of water voles associated with the 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 in particular 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.
- 5.2.3 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. The small numbers of water voles recorded indicates the relevant sections of drain are of less than county value for the species. The small numbers of water vole recorded 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.
- 5.2.4 Given the above it is considered that these drains within the Proposed Development Site support a water vole population of local value.

5.3 Otter

- 5.3.1 The surveys found no evidence of otter associated with the Proposed Development Site.
- 5.3.2 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.
- 5.3.3 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.



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FIGURE 11F.1 RIPARIAN SIGNS



ANNEX A RIPARIAN MAMMAL SURVEY FORMS



Watercourse Number	Drain	1 1		Dat	e of Su	rvey:			19/0	19/05/2020							
Grid Reference Start:		SE 8	SE 81803 12232					Grid Reference Finished:					SE 82224 12180				
Further Notes:		6.0				381					18%						
						69					•						
						():					:0						
Watercourse Informati	on (results in bo	ld and ita	ilics): /	45		8		161		59	- 1	00	100				
Habitat Type:	Coast	1	Lake	Por	nd	Main Ri	iver		Stream	88	Ditch	Ca	nal	Bo	g/Marsh		
Shore Type:	Boulders	Stones	Grave	l Sa	nd	Silt	Ea	arth	Rock Cliff	s Ear	th Cliffs	Canalized	Poache	d	Reinforced		
Current:	Rapi	d		Fast			SI	ow			Sluggish		5.77 	Static			
Width:	<1m		1-2m		2-5m		5-1	10m		10-20m		20-40m		>40m			
Mean Water Depth:	<	0.5m			0.5-11	n	1-2m					>2m					
Bank Treatment:		Canal	ised		Maintained Wild/Semi-Natu						rai						
Bank Profile	Fla	at <10°			Shallow	<45°	Steep >45° Verti					Vertical/U	tical/Undercut				
Bank-full Height	<	:0.5m			0.5-1r	5-1m 1-2m						>2m					
Water Use:	Water	Powe	er : s	Sail Boating	Manp	ower	Bankside Bank		Banks	ide	Keepere	epered Res		ve None			
33	Abstraction	Boatin	ng	-	Boa	ting	Angling		Shooting		псорон	~ '	(COCIVC		110110		
Bordering Land Use:	1900000	- T	road-	Conifer	Peat Bog	Arable	Salt	Marsh .	Urban	Park	Heat	n Fe	n Ca	tle	Bank		
	Upland Grass /Tem Gras	20 0.000	eaved Voodland	Woodland	. our bog	7110010	Jun		Industrial	Garder				zed	Fenced		
Pollution:	Unj	olluted			Domest	ic			Agri	culture			Indust	rial			
Weed Control:		Mechar	nical	•		13	Cher	nical					None				
Disturbance Factor 1-5	1 (low)			2	2			3			: 4			5 (high)			

Results Overview: Including details of field sign, count and National Grid Reference Numbers

Water Vole	Otter	Other Species (Mink and Rat)
□Sightings	☐ Sightings	☐ Mink Sightings
☑ Latrines 3 - SE 81926 12221, SE 81944 12212 & SE 82006 12202	☐ Spraint	☐ Mink Scat
☑ Burrows 4 - SE 81844 12217, SE 81926 12221, SE 81944 12212 & SE 82006 12202		☐ Mink Footprints/Runs
☐ Footprints	□Footprints/Runs	☐ Rat Sightings
☐ Pathways		☐ Rat Droppings
⊠Feeding Remains 3 - SE 81926 12221, SE 81944 12212 & SE 82006 12202 □ Lawns	☐ Holts/couches	☐ Rat Footprints
	T	

Vegetation Types	DAFORN Rating
Bankside Trees	N
Bankside Bushes	N
Bankside Herbs	0
Submerged Weed	F
Floating Weed	R
Emergents	N
Marginals -	F
Reeds/Sedges/Rushes	
Bankside Grasses	D



Watercourse Numbe	r:		Drain 1				D	ate of Su	irvey:			12/0	8/2020				
Grid Reference Start:			SE 818	03 1223	2	Grid Reference Finished:					SE 82224 12180						
Further Notes: The ba	ank along the	norther	margin	of the dr	rain had r	ecently be	een cut.										
							:										
Watercourse Informat	_										- 10		100		2		
Habitat Type:	Coast		Lal			ond	Main			Stream		itch	-	anal		g/Marsh	
Shore Type:	Boulders	Sto	nes	Grave		Sand	Silt	E	arth	Rock Cli	ffs Earth	Cliffs	Canalized	Poach	ed	Reinforced	
Current:	F	Rapid	Fast			st		S	low			Sluggish		**	Statio		
Width:	<1m	1		1-2m		2-5r	n	5-	10m	n 10-20m			20-40m		>40m		
Mean Water Depth:		< 0.5	ń			0.	0.5-1m 1-2m >2n						2m				
Bank Treatment:	.	(Canalise	d	20	55.	1 - Maintained (recently cut) 1 - Wild/Semi-Natural								a/		
Bank Profile		Flat <	10°	- 20		Shall	Shallow <45° Steep >45°						Vertical/Undercut				
Bank-full Height		<0.5	n			0.	0.5-1m 1-2m						>2m				
Water Use:	Water Abstractio	n	Power Boating		Sail Boati	5	anpower Boating					Keeper	Keepered Re			None	
Bordering Land Use:	Upland Grass	Permane /Tempora Grass	ry leav	ed	Conifer Woodland	Peat Bo	g Arabi	e Salt	Marsh	Urban Industrial	Park Garden	Heat	h F	500 4.5	attle razed	Bank Fenced	
Pollution:		Unpolle	ited		1	Don	nestic			Agr	iculture		1. 18	Indus	strial	12	
Weed Control:		N	echanic	al (one	bank)		32	Che	mical				None (c	ne bank)			
Disturbance Factor 1-5	1	(low)			2		3			:	4			5 (high)			

Results Overview. Including details of field sign, count and National Grid Reference Numbers

Water Vole	Otter	Other Species (Mink and Rat)
□Sightings	☐ Sightings	☐ Mink Sightings
□ Latrines - 4 (SE 81875 12221, SE 81900	☐ Spraint	☐ Mink Scat
12219, SE 82057 12199, SE 82152 12185)		
☑ Burrows 1 (SE 81847 12227)		☐ Mink Footprints/Runs
☐ Footprints	□Footprints/Runs	☐ Rat Sightings
☐ Pathways		☐ Rat Droppings
□Feeding Remains	☐ Holts/couches	☐ Rat Footprints
□ Lawns	0. 20 M 50 M	or per reference as a second constitution

Vegetation Types	DAFORN Rating	
Bankside Trees	N	
Bankside Bushes	N	
Bankside Herbs	0	
Submerged Weed	F	
Floating Weed	R	
Emergents	N	
Marginals – Reeds/Sedges/Rushes	F	
Bankside Grasses	D	



Watercourse Number	r:		Drain 2				D	Date of Survey:						12/08/2020				
Grid Reference Start:			SE 82302	11884	1		Grid Reference Finished: SE 81788 11878											
Further Notes: Whole	area access	sible for si	irvey. The	easte	rn section	between S	E 82036	11878 a	and SE	82302 1188	34 was o	dry.						
												4						
							:					15						
Watercourse Informati	on (results	in bold a	nd italics)	: /	100	122 102	4.	C (C C C C C C C C C C C C C C C C C C		6596		2%		-	200 Value.	21 MONT. NO.		
Habitat Type:	Coas	st	Lake	10 May 100	P	ond	Main I	River		Stream	il warmen	Ditch	C	anal	Bo	og/Marsh		
Shore Type:	Boulders	Sto	nes	Gravel		Sand	Silt	E	arth	Rock Clif	fs Ea	rth Cliffs	Canalized	Po	ached	Reinforced		
Current:		Rapid	in in		Fas		. 5	low	i	100	Sluggish		100	Stati	C			
Width:	<1	m	1	-2m		2-5m		5-	10m		10-20m	1	20-401	20-40m		>40m		
Mean Water Depth:	<0.5	m (Dry ir	places)			0.5-	1m		•	. 1	-2m		1	`>2m				
Bank Treatment:		(Canalised					Maintained Wild/Semi-Natural										
Bank Profile		Flat <1	O°			Shallow	/ <45°	Steep >45° Vertical/Undercut						cut				
Bank-full Height		<0.5r	n			0.5-	1m	1-2m						>2m				
Water Use:	Water		Power	. 8	ail Boatir	ng Mar	power	Ban	kside	side Bankside		Keeper	ered Rese		Δ .	None		
	Abstracti	on I	Boating			Bo	ating	Ang	gling	Shoo	ting	пссреі	cu	TCSCIV		Hone		
Bordering Land Use:	0.000,000,000	Permenar	Dioud	10	Conifer	Peat Bog	Arable	Sal	Marsh	Urban	Parl	Hea	th	Fen .	Cattle	Bank		
A 3 C C C C C C C C C C C C C C C C C C	Scrub	/Temporal Grass	y leaved Woodla	and \	Voodland	r cut bog	Arabi	, Jun	. IVIUI SII	Industrial	Garde				Grazed	Fenced		
Pollution:		Unpollu				Dome	stic		.9	Agri	culture			In	dustrial			
Weed Control:		М	echanical			0		Chemical					1	None				
Disturbance Factor 1-5	1 (low) 2			į.	3				4 5 (high))					

Results Overview. Including details of field sign, count and National Grid Reference Numbers

Water Vole	Otter	Other Species (Mink and Rat)
□Sightings	☐ Sightings	☐ Mink Sightings
⊠ Latrines 4 − SE 81959 11874, SE 81942 11873, SE 81937 11873, SE 81984 11876	☐ Spraint	☐ Mink Scat
☐ Burrows		☐ Mink Footprints/Runs
☐ Footprints	□Footprints/Runs	☐ Rat Sightings
☐ Pathways		☐ Rat Droppings
⊠ Feeding Remains - 30 discreet areas between SE81916 11877 and SE82007 11878)	☐ Holts/couches	☐ Rat Footprints
☐ Lawns		

Vegetation Types	DAFORN Rating
Bankside Trees	F
Bushes	N
Herbs	N
Submerged Weed	N
Floating Weed	N
Emergents	N
Marginals – Reeds/Sedges/Rushes	F
Tall Grass	N
Short Grass	N



Watercourse Number	r:		Drain 2				Da	ate of Su	irvey:			12/0	12/08/2020					
Grid Reference Start:		-	SE 82302 1	1884			Gi	id Refer	rence F	inished:	SE 81788 11878							
Further Notes: Whole	area acces	sible for s	urvey. The e	astern	section	between S	E 82036	11878 a	ind SE	82302 1188	4 was dry							
Watercourse Informati	on (results	in bold	and italics):	40			į.		200		0.9							
Habitat Type:	Coa		Lake	š	Po	nd	Main F	River		Stream	D	itch	Ca	nal	Bog/Marsh			
Shore Type:	Boulders	Sto	ones G	ravel	el Sand		Silt	E	arth	Rock Cliff	Earth	Cliffs	Canalized	Poached	Reinford			
Current:		Rapid			Fast		1	S	low		S	luggish		S	Static			
Width:	<1	m	1-2	m		2-5m	· .	5-10m 10-20		10-20m		20-40m		>40m				
Mean Water Depth:	<0.	5m (Dry	n places)	10		0.5-1	m			1	-2m	in.	>2m					
Bank Treatment:			Canalised	100	2			Main	tained		i.		Wild/	Semi-Natura	1			
Bank Profile		Flat <	10°	9.0	8	Shallow	<45°		1	Stee	p >45°			Vertical/Un	dercut			
Bank-full Height	No. and and and	<0.5	m			0.5-1	m	1-2m					>2m					
Water Use:	Wate Abstract	200	Power Boating	Sa	il Boatin		power ating	Bankside Banksid Angling Shootir			i keenere		Reserve	None				
Bordering Land Use:	Scrub	/Tempor Grass		We	Conifer codland	Peat Bog	Arable	Salt	Marsh	Urban Industrial	Park Garden	Heat	h Fe	n Cattl Graz	7.70			
Pollution:		Unpoli	uted	9 12		Domes	tic	100		Agric	ulture			Industri	al			
Weed Control:		N	/lechanical	•				Che	mical					None	200			
Disturbance Factor 1-5		1 (low)			2	:				3			:	5 (high)				

Results Overview: Including details of field sign, count and National Grid Reference Numbers

Otter	Other Species (Mink and Rat)
☐ Sightings	☐ Mink Sightings
□ Spraint	☐ Mink Scat
1	☐ Mink Footprints/Runs
□Footprints/Runs	☐ Rat Sightings
	☐ Rat Droppings
☐ Holts/couches	☐ Rat Footprints
	400
	☐ Sightings ☐ Spraint ☐ Footprints/Runs

Vegetation Types	DAFORN Rating
Bankside Trees	F
Bushes	N
Herbs	N
Submerged Weed	N
Floating Weed	N
Emergents	N
Marginals – Reeds/Sedges/Rushes	F
Tall Grass	N
Short Grass	N



Watercourse Number	er:	D	rain 3					Date of Survey:						19/05/2020						
Grid Reference Start:		S	E 81805	1222	3			Grid Reference Finished:						SE 81790 11883						
Further Notes:														50 50						
Watercourse Informat	ion (results in	bold and	d italics):	/	901		- 10					64				75				
Habitat Type:	Coast		Lake		P	ond	Ma	in Ri	iver		Stream	1970.	Ditch	- 10	Car	nal	al Bog/N			
Shore Type:	Boulders	Stone	s	Grave	1	Silt		Ea	rth	Rock Cl	iffs Ea	rth Cliffs	s (Canalized	Poach	ed	Reinforced			
Current:	R	apid	2.4		Fas	st			Slo	w	d: 1	- 1	Slugg	ish	St			;		
Width:	<1m	1000	1-	2m		2-5r	n .	1	5-1	0m	1	10-20m			20-40m	1	>	40m		
Mean Water Depth:		<0.5m				0.	5-1m				· ·	1-2m				>2	2m			
Bank Treatment:		Ca	nalised						Maint	ained)	100	13		Wild/S	emi-Nat	ural			
Bank Profile	· de	Flat <10	ū			Shall	ow <45°		1:	\$	Ste	ep >45°				Vertical/	Underd	ut		
Bank-full Height		<0.5m			1	0.	5-1m	1-2				1-2m	-2m >2m							
Water Use:	Water Abstraction	1000	ower pating		Sail Boatii	0	anpowe Boating	r	Bankside Banksid Angling Shootin			i keebere		d Reserve		·	None			
Bordering Land Use:	Upland Grass /7	ermenant emporary rass	Broad- leaved Woodla	nd	Conifer Woodland	Peat Bo) Ar	able	Salt N	Marsh	Urban Industrial	Parl Gard		Heath	ı Fer	20 0	attle razed	Bank Fenced		
Pollution:		Inpollute	ed			Don	nestic		185		Agi	riculture	100		10 to	Indus	strial	i e		
Weed Control:	10	Med	chanical			9			Chem	nical	97.7		ez.		: 1	Vone				
Disturbance Factor 1-5	1 (low)	:		2	i.	:		3	3			: 4		:	5 (high)				

Results Overview: Including details of field sign, count and National Grid Reference Numbers

Otter	Other Species (Mink and Rat)
☐ Sightings	☐ Mink Sightings
☐ Spraint	☐ Mink Scat
-	
	☐ Mink Footprints/Runs
□Footprints/Runs	☐ Rat Sightings
-	☐ Rat Droppings
☐ Holts/couches	☐ Rat Footprints
	☐ Sightings ☐ Spraint

Vegetation Types	DAFORN Rating	
Bankside Trees	F	
Bankside Bushes	N	
Bankside Herbs	0	60
Submerged Weed	N	
Floating Weed	N	Ĩ
Emergents	N	
Marginals -	D	
Reeds/Sedges/Rushes		
Bankside Grasses	F	-



Watercourse Number	er:		Drain 3												12/08/2020					
Grid Reference Start:			SE 818	305 1222	23			G	rid Re	eference l	Finished:			SE 8	SE 81790 11883					
Further Notes:																				
		26						100						100 100					ľ	
		100												- 10						
Watercourse Informa						7,17				-	10000		-							
Habitat Type:	Coas			ke		ond		Main I	River	S	Stream			tch		Canal			/Marsh	
Shore Type:	Boulders	200	nes	Grave	022	and		Silt		Earth	Rock C	Cliffs	Earth (Canaliz	ed	Poached	- 1	Reinforced	
Current:		Dry	100		Fast				390	Slow	100	22		uggish		66 86	S	tatic		
Width:	<11		91.0	1-2m				55. S		5-10m			-20m		20-4	10m			0m	
Mean Water Depth:		Dry		40	. 33.2		<0.5r	n				0.5-	1m	00.			1-2m			
Bank Treatment:	• • • • • • • • • • • • • • • • • • • •		Canalis	ed	· ·				M	aintained					и		ni-Natura			
Bank Profile		Flat <				SI	hallow				s	teep			3	Ve	rtical/Und	dercu	t	
Bank-full Height	13	<0.5					0.5-1	m				1-2r			· · ·		>2m			
Water Use:	Water Abstracti		Power Boating		Sail Boatin	g	700000	power ating	Bankside Angling		2/2/10/20	nkside ooting	355	Keepere	ed	Res	erve		None	
Bordering Land Use:	Upland Grass	Permena /Tempora Grass	ry lea	oad- ved odland	Conifer Woodland	Pea	at Bog	Arable	e s	Salt Marsh	Urban Industria	Urban Park Industrial Garder		Heath		Fen	Cattle	00.30	Bank Fenced	
Pollution:		Unpoll	uted		Domestic				- 10		· A	gricul	ture	68	3 3		Industria	al ·		
Weed Control:		M	1echanio	al		Chem										No	ne			
Disturbance Factor 1-5		1 (low)			2				3			4					5 (f	nigh)		
esults Overview: Inclu	ding details o	of field sig	ın. coun	t and Na	itional Grid	Refe	erence	Number	s											
Water Vole	3	-		tter						es (Mink	and Rat)] [/amatati	on Type:			A EODAL	Jatin		
□Sightings				Sighting	s			☐ Mink	Sightir	ngs	100		Bankside		<u> </u>	F	AFORN F	taun	J	
of the doctors and the second								2300.000				_		Bushes		l N				
☐ Latrines				Spraint				☐ Mink \$	Scat				Bankside			0				
												1 1		ed Weed	1	N				
☐ Burrows								☐ Mink i	Footpri	nts/Runs		_	Floating \		•	N				
☐ Footprints					Runs			☐ Rat Si	ightings	3			mergen			N	1 1 2 2			
	2 1 00 pm to											_	1arginals			D	1 15.5			
☐ Pathways								☐ Rat D	ropping	1S				dges/Rus	shes					
														Grasses		F				
□ Feeding Remains			☐ Holts/couches ☐					☐ Rat F	Rat Footprints							1				
☐ Lawns												1								
																			:2	
<u> </u>		- S.			37			I.		***	-	_				-			100	



Watercourse Number	er:	Dra	ain 4				Date of Si	urvey:				19/0	19/05/2020					
Grid Reference Start:		SE	82212 11	990			Grid Reference Finished: SE						SE 81800 12016					
Further Notes:		- 1				2.0												
						:						:						
Watercourse Informat	ion (results in l	old and	italics):															
Habitat Type:	Coast		Lake	4 (4)	Pond	Mair	n River		Stream		Dite	ch	Ca	nal	Во	g/Marsh		
Shore Type:	Boulders	Stones	Gra	ivel	Sand Silt			arth	Rock	Cliffs	Earth C	liffs	Canalized	Poache	d	Reinforced		
Current:	Ra	pid		F	Fast			low			Slu	ggish		Static				
Width:	<1m		1-2n	1	2	-5m	5-	10m		10-	20m		20-40m	i	>40m			
Mean Water Depth:		<0.5m				0.5-1m	1-2m						>21	n				
Bank Treatment:		Can	nalised				Maintained						Wild/s	Semi-Natu	ıral	40.00		
Bank Profile		Flat <10°			Sh	nallow <45°				Steep >	45°			Vertical/U	Inderc	ut		
Bank-full Height		<0.5m	98		62	0.5-1m	1-2m				>2m							
Water Use:	Water	Po	wer	Sail Boa	ating	Manpower	Ban	kside	· Ba	ankside		Keepere	ed F	Reserve	None			
	Abstraction	Boa	ating			Boating	Ang	gling	SI	hooting		коорого		1000110		110110		
Bordering Land Use:		rmenant	Broad-	Conifer	Peat	Bog Ara	ble Salt	Marsh	Urban	9 1	Park	Heati	h Fe	n Ca	ittle	Bank		
0		emporary ass	leaved Woodland	Woodlan	d				Industr	rial	Garden			Gr	azed	Fenced		
Pollution:	U	npollute	d		Domestic				. /	Agricult	ure			Indus	trial			
Weed Control:	U-	Mech	nanical		3			mical			1	None						
Disturbance Factor 1-5	1 (1	ow)	2			3				4 5 (high))				

Results Overview. Including details of field sign, count and National Grid Reference Numbers

Water Vole	Otter	Other Species (Mink and Rat)
□Sightings	☐ Sightings	☐ Mink Sightings
☐ Latrines	☐ Spraint	☐ Mink Scat
☐ Burrows		☐ Mink Footprints/Runs
☐ Footprints	□Footprints/Runs	☐ Rat Sightings
☐ Pathways		☐ Rat Droppings
□Feeding Remains	☐ Holts/couches	☐ Rat Footprints
Lawns		E

Vegetation Types	DAFORN Rating
Bankside Trees	N
Bankside Bushes	N
Bankside Herbs	0
Submerged Weed	N
Floating Weed	N
Emergents	N
Marginals -	D
Reeds/Sedges/Rushes	250
Bankside Grasses	D



Watercourse Number	er:	r: Drain 4			Da	Date of Survey:						12/08/2020						
Grid Reference Start:			SE 82212	11990	0		Gr	id Refer	ence F	inisi	hed:		SE 8	1800 120)16			
Further Notes:							•						•					
		10					186						6/					
1		*					10						3)					
Watercourse Informat	tion (results in	bold an	d italics	: /	15.00	100							-0					
Habitat Type:	Coast	S 040	Lake		Pon	d	Main F	liver	0.00	Stre		Dite	h	С	anal	100	Bog	/Marsh
Shore Type:	Boulders	Ston	es	Gravel	l Sar	Sand		Ea	irth	F	Rock Cliffs	Earth C	liffs	Canalized	Po	oached Reinford		Reinforced
Current:	Di	ry		4	Fast	- 1		SI	OW	274		Slu	ggish		i di	Sta	atic	
Width:	<1m		1	-2m	*8	2-5m	33 30 33	5-1	0m	- 3	10)-20m	30 E2	20-40n	n	>40m		Ͻm
Mean Water Depth:		Dry	,		• • • • • • • • • • • • • • • • • • • •	<0.5n	n				0.5	-1m	80.0	• 5		1-2m	-	
Bank Treatment:	S.	C	analised					Maint	ained					Wild	/Semi-	Natura		
Bank Profile		Flat <1	O ^a	Shallow <45° Steep >45°		30	Vertical/Undercut											
Bank-full Height		<0.5m	1		•3	0.5-1	m	1-2m			m	<u> </u>			>2m			
Water Use:	Water		ower	. 5	Sail Boating	Man	power	Bank	side		Banksid	е .	Keepere	d .	Resen	/e	None	
	Abstraction		oating		107	Boa	ating	Angl	ing		Shooting	g '	toopere		reser		-	
Bordering Land Use:	Upland Grass /T	ermenan emporar rass		and	Conifer Woodland	Peat Bog	Arable	Salt	Marsh	- 556	ban dustrial	Park Garden	Heath	n F	en	Cattle Graze	d	Bank Fenced
Pollution:	U	Inpollu	ted	\$5		Domes	tic				Agricu	ture			IT	ndustria	Ι.	
Weed Control:		Me	chanical	2		1	000	Cher	nical		926				None	13		
Disturbance Factor 1-5	1 (1	low)			2	:	:	3	3		:	. 4			5 (high)			

Results Overview: Including details of field sign, count and National Grid Reference Numbers

Water Vole	Otter	Other Species (Mink and Rat)
□Sightings	☐ Sightings	☐ Mink Sightings
☐ Latrines	☐ Spraint	☐ Mink Scat
Burrows − 1 SE 81837 12013		☐ Mink Footprints/Runs
☐ Footprints	□Footprints/Runs	☐ Rat Sightings
☐ Pathways		☐ Rat Droppings
	☐ Holts/couches	☐ Rat Footprints
□ Lawns	.2	

Vegetation Types	DAFORN Rating					
Bankside Trees	N					
Bankside Bushes	N					
Bankside Herbs	0					
Submerged Weed	N					
Floating Weed	N					
Emergents	N					
Marginals – Reeds/Sedges/Rushes	D					
Bankside Grasses	D					



Watercourse Numbe	r:	Di	rain 5	Date of Survey: 19/05/2020														
Grid Reference Start:		SI	SE 82224 12179 Grid Reference Finished:			SE 8	SE 82228 12091											
Further Notes:		-											-					
		7.0					200						100				ľ	
		55					1						:				ľ	
Watercourse Informati	on (results in bo	old and	litalics):	/									- 10					
Habitat Type:	Coast		Lake		Pon	d	Main F	in River Stream		eam Dito		ch	Ca	nal	Bog/Marsh			
Shore Type:	Boulders	Stones	s Gr	avel	Sai	nd	Silt		arth	R	Rock Cliffs Ear		Cliffs	Canalized	Poacl	ned	Reinforced	
Current:	Dry				Fast				Slow			SI	ıggish			Static		
Width:	<1m	14	1-21	n	.4	2-5m	(8)	5	-10m		10	0-20m		20-40m	100	>	>40m	
Mean Water Depth:	1	Dry		8.5	187	<0.5m	(A)		7		0.5	-1m	**	•	1-	-2m	30	
Bank Treatment:		Ca	nalised	0.000		1		Mai	ntained			1		Wild/	Semi-Na	tural		
Bank Profile	FI	at <10°	Š.			Shallow <	<45°		1		Steep	>45°		•	Vertical	ertical/Undercut		
Bank-full Height		<0.5m				0.5-1r	n		1		1-2	m		>2m				
Water Use:	Water	Po	ower	Sail E	Boating	Manp	ower	Bar	ikside	- 6	Banksid	e ·	Keepere	d F	Reserve	.2	None	
1000 AL 100 17000 170000	Abstraction		ating		- 1	Boa	ting	An	gling		Shootin	g	recepcie	·	1000110		,,,,,,,	
Bordering Land Use:		nenant	Broad-	Con	nifer .	Peat Bog	Arable	Sa	t Marsh	Ur	ban	Park	Heath	ı Fe	n .	Cattle	Bank	
	Upland Grass /Tem Gras	iporary ss	leaved Woodland	Wood						Inc	dustrial	Garden				Grazed	Fenced	
Pollution:	Unj	pollute		i	- 6	Domest	ic	×	1	33	Agricu	lture			Indu	strial		
Weed Control:		Mec	hanical	199				Che	emical						None		30	
Disturbance Factor 1-5	1 (10)	w)			2	:	:		3				4	:		5 (high)	(high)	

Results Overview. Including details of field sign, count and National Grid Reference Numbers

Water Vole	Otter	Other Species (Mink and Rat)
□Sightings	☐ Sightings	☐ Mink Sightings
☐ Latrines	☐ Spraint	☐ Mink Scat
☐ Burrows	â e	☐ Mink Footprints/Runs
☐ Footprints	□Footprints/Runs	☐ Rat Sightings
□ Pathways		☐ Rat Droppings
□Feeding Remains	☐ Holts/couches	☐ Rat Footprints
□ Lawns		

Vegetation Types	DAFORN Rating
Bankside Trees	N
Bankside Bushes	N
Bankside Herbs	0
Submerged Weed	N
Floating Weed	N
Emergents	0
Marginals –	D
Reeds/Sedges/Rushes	
Bankside Grasses	D



Watercourse Number	r:	100	Drain 5					Date of S	urvey:			12/0	08/2020				
Grid Reference Start:		321	SE 82224	12179	9			Grid Refe	erence F	inished:		SE	82228 120	91			
Further Notes:		· ·					198					- 6					
		1					100					- 88					
							:					:					
Watercourse Informat	ion (results	in bold ai	nd italics):	1					900		5-9		400	500			
Habitat Type:	Coas	t	Laké		Po	nd	Maii	n River		Stream	1	Ditch	Ca	ınal	Во	g/Marsh	
Shore Type:	Boulders	Stor	ies (Gravel	S	and	Silt		arth	Rock Clif	fs Eartl	n Cliffs	Canalized	Poach	ed	Reinforced	
Current:		Dry	21. 4.0		Fast	i i	1		Slow			Sluggish		10	Static		
Width:	<1r	n	1-	2m	• 7	2-5m	i .	5	-10m		10-20m	X22533	20-40m	R	>	40m	
Mean Water Depth:		Dry		ĵ		<0.	5m			. (.5-1m	-2.0		1-:	2m		
Bank Treatment:		(Canalised		100			Ma	ntained				Wild/	Semi-Nat	ural		
Bank Profile		Flat <1	O°			Shallo	w <45°			Ste	ep >45°			Vertical/l	Jnderc	ut	
Bank-full Height		<0.5n	n	9		0.5	-1m		•	1	-2m		.7	>2	m		
Water Use:	Water		Power	S	ail Boating	g Ma	anpower	Bar	kside	Bank	side	Keeper	ed	Reserve	1	None	
	Abstracti	on E	Boating			E	Boating	An	gling	Shoo	ting	Кссрсі	cu	ACSCI VC		None	
Bordering Land Use:	Upland Grass	Permanen /Temporar Grass		id \	Conifer Woodland	Peat Bog	Ara	ble Sa	lt Marsh	Urban Industrial	Park Garden	Hear	th Fe	2003	attle razed	Bank Fenced	
Pollution:		Unpollu	ted	10 1	19. Al	Dom	estic	194		Agri	culture	à		Industrial			
Weed Control:		M	echanical			1	1795	Ch	emical	30	é			None			
Disturbance Factor 1-5	1 (low)			2		3			: 4			5 (high)					

Water Vole	Otter	Other Species (Mink and Rat)
□Sightings	☐ Sightings	☐ Mink Sightings
☐ Latrines	☐ Spraint	☐ Mink Scat
Burrows		☐ Mink Footprints/Runs
□ Footprints	□Footprints/Runs	☐ Rat Sightings
☐ Pathways		☐ Rat Droppings
□Feeding Remains	☐ Holts/couches	☐ Rat Footprints
☐ Lawns	26	20 00
	V-5	

Vegetation Types	DAFORN Rating	
Bankside Trees	N	
Bankside Bushes	N	
Bankside Herbs	0	
Submerged Weed	N	
Floating Weed	N	
Emergents	0	
Marginals -	D	
Reeds/Sedges/Rushes		
Bankside Grasses	D	



Watercourse Number	er:		lorth Soak E				irvey:		12/08/2020									
Grid Reference Start:		5	SE 82516 11	544		Grid	d Refer	ence Fi	inished:		SE	32747 11	508					
Further Notes: The w	ater was too	deep to su	rvey from th	e within the <u>ct</u>	annel so	surveys we	ere con	ducted	from the	bank.								
Watercourse Informat	ion (results	in bold an	d italics):	-200	07			v.		500	140	400		70				
Habitat Type:	Coas	Coast Lake Pond Main River Stream										С	anal	В	og/Marsh			
Shore Type:	Boulders	Stone	es Gra	ivel Sa	nd	Silt	Ea	arth	Rock C	liffs E	arth Cliffs	Canalized	Poac	hed	Reinforce			
Current:		Dry		Fast	8.	188	S	low		1.5	Sluggish		3.5	Stat	ic			
Width:	<11	n	1-2n	ı İ	2-5m		5-1	10m		10-20	n i	20-40r	m		>40m			
Mean Water Depth:		Dry		3	< 0.5	5m			90	0.5-1m	100		>	1m				
Bank Treatment:		C	analised	T. C.	, in		Main	tained			ŀ	Wild	Wild/Semi-Natural					
Bank Profile		Flat <10	Ja	38	Shallov	v <45°			St	eep >45		Vertical/Undercut						
Bank-full Height	1	<0.5m			0.5-	1m				1-2m			>	2m				
Water Use:	Water Abstracti	2000	ower oating	Sail Boating	5%	npower pating	Bank Ang		93.03	kside oting	Keeper	ed	Reserve	20.00	None			
Bordering Land Use:	Upland Grass	Permenant /Temporary Grass	Broad- leaved Woodland	Conifer Woodland	Peat Bog	Arable	Salt	Marsh	Urban Industrial	Pa Gard		h i		Cattle Grazed	Bank Fence			
Pollution:	1	Unpollut	ed		Dome	estic	*		Ag	riculture			Indu	ıstrial	100			
Weed Control:	-	Me	chanical	e e		64	Chei	mical	100	35.	:	1	None					
Disturbance Factor 1-5		1 (low)	÷	2			,	3			4	5 (high)						

Water Vole	Otter	Other Species (Mink and Rat)	1	Anna de la companya d
	1		Vegetation Types	DAFORN Rating
□Sightings	☐ Sightings	☐ Mink Sightings	Bankside Trees	N
			Bankside Bushes	D
☐ Latrines	☐ Spraint	☐ Mink Scat	Bankside Herbs	F
	_		Submerged Weed	0
☐ Burrows		☐ Mink Footprints/Runs	Floating Weed	N
☐ Footprints	□Footprints/Runs	☐ Rat Sightings	Emergents	R
			Marginals –	R
☐ Pathways		□ Rat Droppings	Reeds/Sedges/Rushes	88
			Bankside Grasses	A
□Feeding Remains	☐ Holts/couches	☐ Rat Footprints		166 14
☐ Lawns			1	
2	60	10		· · · · · · · · ·



Watercourse Number	er:	Н	atfield Dra	in			Da	te of Su	urvey:				20/	10/2020	0/2020				
Grid Reference Start:		S	E 80421 1	0012			Gr	id Refe	rence F	inished:			SE	80149 1	0057				
Further Notes:		-0.					•												
		100					•												
		3.																3	
Watercourse Informat	ion (results in	n bold and	litalics):										22						
Habitat Type:	Coast		Lake	36	Pone	d	Main River			Stream	18	D	itch		Canal		Bog	/Marsh	
Shore Type:	Boulders	Stone	s G	ravel	San	nd	Silt	E	arth	Rock (Cliffs	Earth	Cliffs	Canalize	d	Poached	R	Reinforced	
Current:		Rapid	80 10		Fast	- 4		S	low	10		S	luggish			St	atic		
Width:	<1m	1	1-2	m		2-5m	ciks is	5-	10m		10	-20m	2000 to 1	20-40	m .	>40m		0m	
Mean Water Depth:		<0.5m	607 576			0.5-1	m	e-000 (Ca		1.0	1-2r	m			ISM TEXASION	>2m	- 100		
Bank Treatment:		Ca	nalised	60			M	laintaine	ed			7		100	Wild	Semi-Nat	ural		
Bank Profile	•	Flat <10°				Shallow	/ <45°		•	S	teep:	>45°			Ve	ertical/Und	ercut	t	
Bank-full Height	•	<0.5m		, S		0.5-1	m			- 13	1-21	m		11		>2m			
Water Use:	Water Abstractio	10000	ower ating	Sail Bo	ating	1000	power ating		kside Iling	3,500,00	nkside ooting	90	Keepe	red	Res	erve	-	None	
Bordering Land Use:	Upland Grass	Permanent Temporary Grass	Broad- leaved Woodland	Conife		Peat Bog	Arable	Salt	Marsh	Urban Industria	ıl .	Park Garden	Hea	ath	Fen	200000000000000000000000000000000000000	Cattle Ba Grazed Fen		
Pollution:		Unpolluted	d	Mi M	122	Domes	stic	194		Α	gricu	lture	(0)	1.33		Industria	L	A	
Weed Control:		Med	hanical					Che	mical					None	2	N.	2.2		
Disturbance Factor 1-5	1 (low) 2			2	:	3						4 5 (high)							

Water Vole	Otter	Other Species (Mink and Rat)
□Sightings	☐ Sightings	☐ Mink Sightings
☐ Latrines	☐ Spraint	☐ Mink Scat
☐ Burrows		☐ Mink Footprints/Runs
☐ Footprints	□Footprints/Runs	☐ Rat Sightings
☐ Pathways		☐ Rat Droppings
□Feeding Remains	☐ Holts/couches	☐ Rat Footprints
Lawns		

Vegetation Types	DAFORN Rating
Bankside Trees	R
Bankside Bushes	R
Bankside Herbs	0
Submerged Weed	R
Floating Weed	R
Emergents	R
Marginals –	A
Reeds/Sedges/Rushes	
Bankside Grasses	F



Watercourse Number	er:	Kea	dby Comm	on Drain		Da	te of Su	ırvey:			20/	10/2020				
Grid Reference Start:		SE	82893 119	41		Gri	id Refer	rence F	inished:		SE	82701 11	983			
Further Notes:											100					
															-	
		20				- N										
Watercourse Informat	ion (results in bo	old and i	talics):			63				100						
Habitat Type:	Coast	3.6	Lake	P	ond	Main River			Stream	15	Ditch	C	Canal		og/Marsh	
Shore Type:	Boulders	Stones	Grav	el S	Sand	Silt	E	arth	Rock Cli	ffs Ea	arth Cliffs	Canalized	Po	ached	Reinforced	
Current:	Rap	oid	18.14.16.1	Fas	st .		S	low	200	4.5	Sluggish		(d)	Stat	ic	
Width:	<1m		1-2m		2-5m		5-	10m		10-20n	n [20-40r	n		>40m	
Mean Water Depth:	1	<0.5m	201007 609		0.5-	1m	000000 000		0.3.30	1-2m	300 - 30	5 00 00	110-00 W 2000	`>2m	20.0	
Bank Treatment:		Cana	alised	178	7	M	aintaine	ed					Wild/Se	mi-Natuı	ral	
Bank Profile	F	lat <10°			Shallov	v <45°			Ste	ep >45°	á.	3	Vertic	al/Under	cut	
Bank-full Height		<0.5m			0.5-	1m		1	191	1-2m		3		>2m		
Water Use:	Water	Pov	ver	Sail Boatin	ng Ma	npower	Bank	side	Bank	side	Keepe	rod	Reserv		None	
	Abstraction	Boat	ting		B	pating	Ang	ling	Shoo	ting	Keepe	leu	Reserv	5	None	
Bordering Land Use:		manent	Broad-	Conifer	Peat Bog	Arable	Salt	Marsh .	Urban	Par	k Hea	ath I	Fen .	Cattle	Bank	
	Upland Grass /Tem Gras	nporary	leaved Woodland	Woodland	. our bog	7110270			Industrial	Gard				Grazed	Fenced	
Pollution:	· Un	polluted		ŀ	Dome	estic	•		Ag	riculture	· ·		ln	Industrial		
Weed Control:	•	Mecha	anical		12	-0.5	Che	mical	0.000			None				
Disturbance Factor 1-5	1 (low) 2				3				4	4 5 (high)						
			- 3													

Water Vole	Otter	Other Species (Mink and Rat)
□Sightings	Sightings	☐ Mink Sightings
☑ Latrines – SE 82762 11971, SE 82785 11970, SE 82797 11967, SE 82815 11959, SE 82834 11961	☐ Spraint	☐ Mink Scat
☑ Burrows <u>- SE</u> 82785 11970, SE 82797 11967, SE 82834 11961		☐ Mink Footprints/Runs
☐ Footprints	□Footprints/Runs	☐ Rat Sightings
☐ Pathways		☐ Rat Droppings
	☐ Holts/couches	☐ Rat Footprints
☐ Lawns		

Vegetation Types	DAFORN Rating	
Bankside Trees	N	
Bankside Bushes	N	- 8
Bankside Herbs	A	
Submerged Weed	F	5.
Floating Weed	F	
Emergents	0	
Marginals –	R	
Reeds/Sedges/Rushes		
Bankside Grasses	A	



☐ Latrines

☐ Burrows

☐ Footprints

☐ Pathways

☐ Lawns

☐Feeding Remains

Watercourse Number	er:	Dito	ch 7a				, C	Date of Su	ırvey:				20/1	/10/2020					
Grid Reference Start:		SE	80665 11	039			(Grid Refe	rence F	inished:			SE 8	30647 109°	12				
Further Notes:		83					100						90						
		8					**												
							10						3.5						
Watercourse Informat	tion (results in bo	old and it	talics):	10.00	100		•	2000					U.e		9.50		KANANDO NO		
Habitat Type:	Coast	-1	Lake	1	Pond		Main	River		Stream		Dit	ch	Ca	nal	Во	g/Marsh		
Shore Type:	Boulders	Stones	Gra	vel	Sand	d	Silt	E	arth	Rock (Cliffs	Earth (Cliffs	Canalized	Poache	d	Reinforced		
Current:	Rap	id			Fast			S	low	95. 1		Slu	ıggish	200	10%	Static			
Width:	<1m		1-2n	1		2-5m	39	5-	10m		10-	20m		20-40m		>	40m		
Mean Water Depth:		<0.5m			3%	0.5-1	m		į.	15	1-2m	n	20	•	:>2r	n			
Bank Treatment:	1	Cana	alised	100		3		Maintaine	ed			144		W	ild/Semi-N	latura	I		
Bank Profile	FI	at <10°		9.0		Shallow	<45°	9.	•	S	teep >	45°			Vertical/U	nderc	ut		
Bank-full Height		<0.5m		S •16		0.5-1	m	9.			1-2n	n		•	>2r	n			
Water Use:	Water	Pow	ver	Sail Bo	oating	Manp	oower	Bank	side	Bar	ıkside	3 1 1	Keepere	.d [Reserve		None		
000 00 00 00 00 00 00 00 00 00 00 00 00	Abstraction	Boat	ting		140764	Boa	ating	Ang	ling	She	ooting		rechere	u i	reserve		None		
Bordering Land Use:	Upland Grass /Tem	porary	Broad- leaved	Conife Woodla		eat Bog	Arab	ble Salt	Marsh	Urban Industria		Park Garden	Heatl	h Fe	2000	ttle azed	Bank Fenced		
D. H. et	Gras		Woodland	- Troound	and			-		100000000000000000000000000000000000000	9.0				A 2000		1 011000		
Pollution:	Unj	polluted			-	Domes	tic		· ·	А	gricul	ture	•		Indust	rial	1.0		
Weed Control:		Mecha	anical	•33				Che	mical		8	•		None					
Disturbance Factor 1-5	1 (lov	v)			2	:	1		3		į.	i.	4		5 (high)				
esults Overview: Inclu	ding details of fiel	d sign, co	ount and N	Vational	Grid Re	eference l	Numbe	rs								74			
Water Vole			Otter				Other	Species (Mink	and Rat)			n Types	\$	DAFORN	Rati	ng		
□ Sightings			Sightin	ne			☐ Min	k Sightings			B	ankside	Trees		N				

☐ Mink Scat

□ Rat Sightings

☐ Rat Droppings

□ Rat Footprints

☐ Mink Footprints/Runs

☐ Spraint

□Footprints/Runs

☐ Holts/couches

Bankside Bushes

Submerged Weed Floating Weed

Marginals – Reeds/Sedges/Rushes

Bankside Grasses

Bankside Herbs

Emergents

Ν

0

N

0

R

Α



Watercourse Number	r:		itch 7b										20/	20/10/2020					
Grid Reference Start:		S	SE 80896	11177	7		Grid Reference Finished:							SE 80874 10866					
Further Notes:		150					100												
		3.5											10						
		33											144						
Watercourse Informat	ion (results in b	old and	d italics):	89															
Habitat Type:	Coast		Lake		Pon		Main R			Stream			itch		Canal	1 2	Bog/Marsh		
Shore Type:	Boulders	Stone	es (Gravel		nd	Silt	Ea	irth	Rock	Cliffs	100000000000000000000000000000000000000	Cliffs	Canalize	d P	pached	Reinforced		
Current:	Rap	oid	19 4		Fast			SI	ow	55		S	luggish		1 10	St	atic		
Width:	<1m		1-	2m		2-5m		5-1	0m		10	0-20m		20-40	m		>40m		
Mean Water Depth:		<0.5m	8			0.5-					1-2	m				>2m			
Bank Treatment:		Ca	analised		•		M	1aintaine	d			in the second		.5	Wild/Se	mi-Nat	ural		
Bank Profile	F	lat <10	P			Shallov	v <45∘		.2		Steep	>45°			Verti	cal/Und	ercut		
Bank-full Height		<0.5m		69	2	0.5-	1m	EZ 216% E-	 3.00 (c)	50	1-2	m		1 100		>2m			
Water Use:	Water	P	ower .	. 8	Sail Boating	Mar	power	Bank		. В	anksid	e	Keepe	red .	Reser	ve .	None		
	Abstraction		oating			Bo	ating	Angl	ling	S	hootin	g	Пооро		110001				
Bordering Land Use:	Upland Grass /Ter	manent nporary	Broad- leaved		Conifer Noodland	Peat Bog	Arable	Salt	Marsh	Urban	32000	Park Garden	Hea	ath	Fen	Cattle			
D. H. C	Gra		Woodlar	nd '	T T T T T T T T T T T T T T T T T T T	-										2			
Pollution:	Un	pollute		- 85		Dome	stic	8			Agric	ulture	į.		<u> </u>	ndustria	_ 10		
Weed Control:		Me	chanical		15	•		Cher	nical			3.5		None					
Disturbance Factor 1-5	1 (lo	w)	:		2	•		3	3				4		:	5 (h	igh)		
: Results Overview: Inclu	ding details of fie	ld sign.	count an	d Nat	ional Grid F	eference	Numbers								:				

Water Vole	Otter	Other Species (Mink and Rat)
□Sightings	Sightings	☐ Mink Sightings
☐ Latrines	☐ Spraint	☐ Mink Scat
☐ Burrows		☐ Mink Footprints/Runs
☐ Footprints	□Footprints/Runs	☐ Rat Sightings
☐ Pathways		☐ Rat Droppings
□Feeding Remains	☐ Holts/couches	☐ Rat Footprints
Lawns		Abstract tension.
□ Lawns		2702000

Vegetation Types	DAFORN Rating	
Bankside Trees	N	
Bankside Bushes	N	
Bankside Herbs	0	- 1
Submerged Weed	N	
Floating Weed	N	
Emergents	N	
Marginals –	R	
Reeds/Sedges/Rushes	2000 C	
Bankside Grasses	A	



Water Vole

Watercourse Numbe	r:	İ	Ditch 7c				[Date of	Survey:					20	/10/20	020				
Grid Reference Start:			SE 81018	3 10835	5		(Grid Re	ference	Fini	shed:			SE	SE 81070 11198					
Further Notes:		, in												100					7.	
														i)						
Watercourse Informat	ion (results	in bold a	nd italics):			167	00000000		22000					-		303			
Habitat Type:	Coas	it	Lake	1	Poi	nd	Main	River			eam		D	itch		Can	al	Вс	g/Marsh	
Shore Type:	Boulders	Sto	nes	Gravel	Sa	and	Silt		Earth		Rock C	liffs	Earth	Cliffs	Can	alized	Poac	hed	Reinforced	
Current:		Rapid		8	Fast			- 65	Slow	- 56			S	luggish				Stati	C	
Width:	<1r	m	1	1-2m		2-5m		ļ k	5-10m		100	10	-20m	750000 · 5	2	20-40m		>	40m	
Mean Water Depth:		<0.5r	n	35	ia Bi	0.5-	1m	â.	Š		100	1-2r	n	9%			`>	2m		
Bank Treatment:		(Canalised		5/			Mainta	ined						(8)	Wil	d/Sem	-Natura	al .	
Bank Profile	•	Flat <1	O°	100		Shallo	w <45∘				St	eep:	>45°				Vertical	/Underc	ut	
Bank-full Height		<0.5r	n	35	•	0.5-	1m					1-2r	n				>	2m		
Water Use:	Water		Power	S	Sail Boating	Ma	npower	Ba	nkside		Bar	ıkside		Keepe	ered	. R	eserve	1	None	
40	Abstracti	on	Boating	1 0000	200	В	oating	Α	ngling		Sho	oting	lg	псср	JICU	- 10	COCIVC		710770	
Bordering Land Use:	Unland Crees	Permanen		5.0	Conifer	Peat Bog	Arai	ble S	alt Marsh	i i	Urban		Park	He	eath	Fen		Cattle	Bank	
	Upland Grass	/Temporar Grass	y leaved Woodl		Voodland		3333.33				Industria	ı	Garden	- 100		10.000	23	Grazed	Fenced	
Pollution:		Unpollu	ted			Dome	estic			e e	A	gricu	lture		100	58	Ind	ustrial		
Weed Control:		М	echanical	H.				C	nemical		50000		-		: N	one				
Disturbance Factor 1-5		1 (low)			2	9			3					4				5 (high)	
: Results Overview: Includ	dina details a	of field sig	n count a	and Nat	ional Grid	Reference	Numbe	are												

□Sightings	Sightings	☐ Mink Sightings
☐ Latrines	☐ Spraint	☐ Mink Scat
□ Burrows		☐ Mink Footprints/Runs

Otter

☐ Latrines	☐ Spraint	☐ Mink Scat
Burrows		☐ Mink Footprints/Runs
☐ Footprints	□Footprints/Runs	☐ Rat Sightings
☐ Pathways		☐ Rat Droppings
□Feeding Remains	☐ Holts/couches	☐ Rat Footprints
☐ Lawns		

Vegetation Types	DAFORN Rating
Bankside Trees	N
Bankside Bushes	N
Bankside Herbs	0
Submerged Weed	N
Floating Weed	N
Emergents	N
Marginals –	R
Reeds/Sedges/Rushes	
Bankside Grasses	Α

Other Species (Mink and Rat)



Watercourse Number	er:	Ditch	8			D	ate of Su	ırvey:			20/	10/2020						
Grid Reference Start:		SE 8	0457 1093	15		G	Grid Reference Finished: SI						SE 80643 10907					
Further Notes:		100				18					83.							
											10							
		- 1				i					100							
Watercourse Informat	ion (results in bo	old and ita	alics):		,	44					53							
Habitat Type:	Coast		Lake	Po	nd	Main F			Stream		Ditch		inal		g/Marsh			
Shore Type:	Boulders	Stones	Grave	el Sa	and	Silt	E	arth	Rock Cliff	s Eartl	n Cliffs	Canalized	Poa	ched	Reinforced			
Current:	Rap	id		Fast			S	low			Sluggish		<u> </u>	Stati	C			
Width:	<1m		1-2m		2-5m		5-	10m		10-20m		20-40m	1	>	40m			
Mean Water Depth:		<0.5m			0.5-1	lm			1	-2m				>2m				
Bank Treatment:		Canal	ised	5	•	N	Maintaine	ed		2		N	/ild/Sem	i-Natura	al			
Bank Profile	FI	at <10∘			Shallow	<45°			Stee	p >45∘		•	Vertica	I/Under	cut			
Bank-full Height		<0.5m	33	100	0.5-1	lm	a 2000 S			-2m		1		>2m				
Water Use:	Water	Powe	er :	Sail Boating	g Man	power	100.000	cside	Banks	ide	Keepe	red .	Reserve		None			
	Abstraction	Boatir	ng		Во	ating	Ang	ling	Shoot	ing	пооро			S-				
Bordering Land Use:			road-	Conifer	Peat Bog	Arabi	le Salt	Marsh	Urban	Park	Hea	ath Fe	en .	Cattle	Bank			
	Gras		Voodland	Woodland	57.0				Industrial	Garden				Grazed	Fenced			
Pollution:	· Un	olluted	al al		Dome	stic		ia.	Agr	culture	·		Ind	ustrial				
Weed Control:		Mechai	nical	•			Che	mical	2000-0			None		100				
Disturbance Factor 1-5	1 (lov	v)		2		1	;	3			4			5 (high)			
	1		1			3			- 9	•		¥						

Water Vole	Otter	Other Species (Mink and Rat)
□Sightings	☐ Sightings	☐ Mink Sightings
☐ Latrines	☐ Spraint	☐ Mink Scat
Burrows		☐ Mink Footprints/Runs
☐ Footprints	□Footprints/Runs	☐ Rat Sightings
☐ Pathways		☐ Rat Droppings
☐Feeding Remains	☐ Holts/couches	☐ Rat Footprints
☐ Lawns		C 400000000000 € 5000000

Vegetation Types	DAFORN Rating	
Bankside Trees	N	
Bankside Bushes	N	П
Bankside Herbs	N	
Submerged Weed	N	
Floating Weed	N	
Emergents	N	
Marginals – Reeds/Sedges/Rushes	N	
Bankside Grasses	A	

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Watercourse Numbe	r:	1	Ditch 9			Da	te of Su	irvey:			20/10/2020					
Grid Reference Start:			SE 80656 10	904		Gr	id Refer	ence Fi	inished:		S	E 8086	31 10869)		
Further Notes:																
		10				188					85					
						:::					:					
Watercourse Informat	ion (results	in bold an	d italics):	-85		58		10:		190		10		(6)		
Habitat Type:	Coas	st	Lake		ond	Main R	liver	5	Stream		Ditch		Cana	al	Bo	g/Marsh
Shore Type:	Boulders	Stone	es Gra	vel	Sand	Silt	E	arth	Rock C	iffs Ear	th Cliffs	Can	alized	Poache	d	Reinforced
Current:		Rapid		Fa	ast		S	low	82.		Sluggish	i		100	Static	
Width:	<1	m	1-2n	1	2-5	m	5-1	10m	1 8	10-20m	ė		0-40m		>4	40m
Mean Water Depth:		<0.5m	70×700 1200		0.	.5-1m	7770 2000		2.	1-2m	2.5	20 100	2010/07/201	>2r	n	
Bank Treatment:		C	Canalised Maintained Wild/Semi-No							atura	I					
Bank Profile		Flat <10)°	1	Shal	low <45°		•	St	eep >45°			\	/ertical/U	nderci	ut
Bank-full Height		<0.5m	L.		0.	5-1m		. 63		1-2m		15 - 25	100	>2r	n	
Water Use:	Water	· F	ower	Sail Boat	ing N	/lanpower	Bank	side	Ban	kside	Keep	ered	. R	eserve	:	None
2010 CO CO CO CO CO CO CO CO CO CO CO CO CO	Abstracti	ion B	oating			Boating	Ang	ling	Sho	oting	псср	Cica	110	30170		None
Bordering Land Use:		Permanent	Broad-	Conifer	Peat Bo	og Arable	Salt	Marsh	Urban	Park	Н	eath	Fen	Ca	ttle	Bank
883	Upland Grass	/Temporary Grass	leaved Woodland	Woodland	1 001 5	Industrial			Garde				0.55	azed	Fenced	
Pollution:		Unpollute			Do	mestic			Ac	riculture		-		Indust	rial	
Weed Control:			chanical				Che	mical		1		: N	one			
Disturbance Factor 1-5		1 (low)	:	2		į	;	3		:	4		÷	5	(high)	l,

Water Vole	Otter	Other Species (Mink and Rat)
□Sightings	☐ Sightings	☐ Mink Sightings
Latrines	☐ Spraint	☐ Mink Scat
□ Burrows		☐ Mink Footprints/Runs
☐ Footprints	□Footprints/Runs	☐ Rat Sightings
☐ Pathways		☐ Rat Droppings
□Feeding Remains	☐ Holts/couches	☐ Rat Footprints
☐ Lawns		•

Vegetation Types	DAFORN Rating	
Bankside Trees	N	
Bankside Bushes	N	
Bankside Herbs	0	
Submerged Weed	R	
Floating Weed	R	
Emergents	0	
Marginals -	0	
Reeds/Sedges/Rushes		
Bankside Grasses	A	



Watercourse Numbe		Ditch 10					Date of Survey:					20/10/2020						
Grid Reference Start:	SE 81073 11220					G	Grid Reference Finished:					SE 82101 11326						
Further Notes:		68					- 1						585					
							20						-03					
		- 1					i.											
Watercourse Informat	ion (results	in bold ar	nd italics):				50						238					
Habitat Type:	Coas	it	Lake	31,385	Pond	b	Main	River	5	Stream		Ditch		С	anal	E	log/Marsh	
Shore Type:	Boulders	Boulders Stones Grave		avel	San	ıd	Silt	Ea	rth	Rock Cliffs		Earth Clif	rth Cliffs Ca		analized Poa		Reinforced	
Current:		Rapid	d Fast			811	Slow				Sluggish				Static			
Width:	<1m 1-2m				2-5m	2-5m 5-10m				10-2	10-20m			20-40m		>40m		
Mean Water Depth:	<0.5m				0.5-1m				1-2m	-2m			>2m					
Bank Treatment:	Bank Treatment: Canalised					Maintained Wild/Semi-Nat						ni-Natura	al					
Bank Profile	Flat <10°				Shallow <45°			Steep >45∘				15∘	Vertical/Undercut					
Bank-full Height	<0.5m			. 158		1-2m				89.	>2m							
Water Use:	Water Power			Sail	Sail Boating Manpov						Bankside Keepe		eenere	red Reserv		e None		
00-00-00-00-00-00-00-00-00-00-00-00-00-	Abstracti	on E	Boating		76%	Во	ating	Angl	ling	Sho	ooting		оорого	-	1100011			
Bordering Land Use:	Unland Crass	Permanent		Co	onifer .	Peat Bog	Arab	le Salt	Marsh	Urban	·	Park	Heath	· · · F	en	Cattle	Bank	
	Upland Grass	/Temporary Grass	leaved Woodland	Moo	odland					Industria	l G	arden				Grazed	Fenced	
Pollution:		Unpollut	v 100	a. 120	66	Dome	stic	-	14 12	A	gricultu	ure			İr	dustrial		
Weed Control:		M	echanical					Cher	nical					None				
Disturbance Factor	1 (low)		2			3				. 4			5 (high)					
1-5	I (IOW)				2			3				4			5 (High)			
	:																	
	:	1 (low)	a sount and	Nation		oforonoo	Numbor		3			. 4	6			5 (hig	h)	

Water Vole	Otter	Other Species (Mink and Rat)
□Sightings	☐ Sightings	☐ Mink Sightings
☐ Latrines	☐ Spraint	☐ Mink Scat
Burrows		☐ Mink Footprints/Runs
☐ Footprints	□Footprints/Runs	☐ Rat Sightings
☐ Pathways		☐ Rat Droppings
□Feeding Remains	☐ Holts/couches	☐ Rat Footprints
☐ Lawns		

Vegetation Types	DAFORN Rating	
Bankside Trees	N	
Bankside Bushes	N	
Bankside Herbs	0	
Submerged Weed	R	
Floating Weed	0	
Emergents	R	
Marginals –	R	
Reeds/Sedges/Rushes	APC APC APC APC APC APC APC APC APC APC	
Bankside Grasses	A	

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ANNEX B PHOTOGRAPHS



Photograph 1 - Drain 1 (Glew Drain)



Photograph 2 - Drain 2, western section



Photograph 3 - Drain 2, eastern section



Photograph 4 – Drain 3



Photograph 5 - Drain 4



Photograph 6 – Drain 5



Photograph 7 – North Soak Drain



Photograph 8 – Stainforth and Keadby Canal



Photograph 9 - River Trent



Photograph 10 - Hatfield Waste Drain



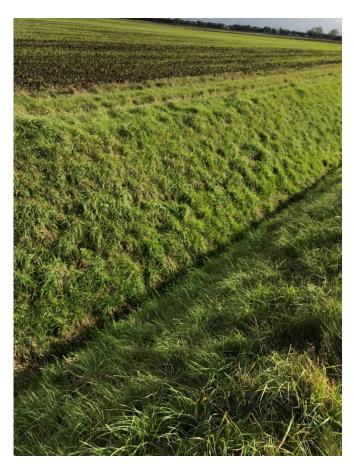
Photograph 11 – Keadby Common Drain adjacent to Chapel Lane, Keadby



Photograph 12 – Drain 7a



Photograph 13 – Drain 7b



Photograph 14 – Drain 7c



Photograph 15 – Drain 8



Photograph 16 – Drain 9



Photograph 17 - Drain 10



Photograph 18 – Area of woodland cleared for construction of the Keadby 2 Power Station water intake on the Stainforth and Keadby Canal



Photograph 19 – Aerial view of the construction area for the Keadby 2 Power Station water intake on the Stainforth and Keadby Canal, drone footage taken November 2020