RWE Renewables UK Dogger Bank South (West) Limited

RWE Renewables UK Dogger Bank South (East) Limited

Dogger Bank South Offshore Wind Farms

Environmental Statement

Volume 7

Appendix 18-9 Water Voles and Otters Report

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peakecology LIMITED
ECOLOGICAL CONSULTANTS

Riparian Mammal Survey 2023

Dogger Bank South (DBS) Offshore Wind Farms

Project No: HASK08.6 Client: Royal Haskoning DHV Date: 22/03/2024

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The information and advice contained in this report has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Peak Ecology is accredited under ISO9001 and as such this report follows the styles and formatting template set out within our Quality Management Form.

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EXECUTIVE SUMMARY

This report has been prepared by Peak Ecology Ltd with Royal Haskoning DHV on behalf of RWE Renewables UK. It provides the results of the Riparian Mammal Surveys (water vole *Arvicola amphibius* and otter *Lutra lutra*) within the Riparian Mammal Survey Area associated with the Dogger Bank South (DBS) Offshore Wind Farms.

Results

Water Vole

A total of 81 watercourses were assessed for the presence of water vole as well as their habitat suitability and potential for water vole. After both the survey visits eight watercourses were found to have evidence of water vole presence. Evidence found included latrines burrows and feeding remains. Of these eight ditches, with the exception of Ditch 8 and Holderness Drain, all were clustered within the central part of the route, north of Beverley either side of the River Hull crossing.

Otter

All 81 watercourses, and associated suitable habitat were also surveyed for the presence of otter. Spraint (droppings) was found on three ditches across the Riparian Mammal Survey Area. No other evidence of otter, including holts or rest sites, was found.

The riparian habitat within the corridor such as the larger drains in particular, provided suitable commuting and foraging habitat for otter. The terrestrial habitat within the Riparian Mammal Survey Area was primarily arable land and considered to be largely unsuitable for otter rest sites or holts, with the exception of the sheltered area of wet woodland area to the south and west of Ditch 59 and north of South Bullock Dike which provided some suitable habitat within the Riparian Mammal Survey Area. However, no evidence of otter rest sites was found there during the survey.

Recommendations

Direct impacts to watercourses containing water vole should be avoided.

Where this is not possible, the displacement of water voles from impacted ditches will be required under a licence.

Updated surveys for both otter and water vole will be required prior to the commencement of works.

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APPENDICES

1 INTRODUCTION

1.1 Scope of Report

This report has been prepared by Peak Ecology Ltd with Royal Haskoning DHV on behalf of RWE Renewables UK. It provides the results of the Riparian Mammal Surveys (water vole *Arvicola amphibius* and otter *Lutra lutra*) within the Riparian Mammal Survey Area associated with the Dogger Bank South (DBS) Offshore Wind Farms.

The purpose of this report is to:

- Detail the methods used to undertake the riparian mammal surveys;
- Include the survey details, surveyors, weather conditions and any constrains to the surveys;
- Provide the results of the surveys, and
- Discuss survey findings, make recommendations and identify any need for additional survey work. As a data report this will not include an evaluation of impacts or details of mitigation; this will be addressed in the EIA.

The approach to this survey follows best practice published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2013) and the British Standards Institution (BSI, 2013). In general, standard accepted survey methods have been followed, details of methods are included in section 2.2 below.

1.2 Proposed Works

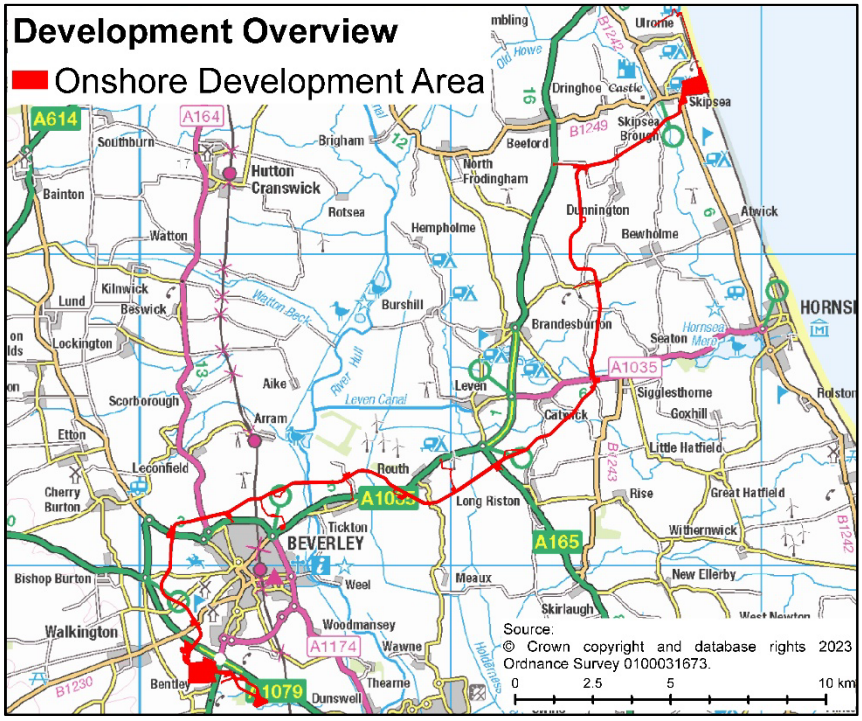
RWE Renewables is intending to develop the proposed DBS East and DBS West offshore wind farm Projects, collectively known and referred to as Dogger Bank South (DBS) offshore wind farms (herein referred to as the Projects). The Projects will require a buried onshore export cable between the landfall location and the onshore grid connection points at Creyke Beck, west of Beverley, this area with associated infrastructure is referred to as the Onshore Development Area.

1.3 Survey Area

The Onshore Development Area has been included on **Figure 1**.

The survey was extended 50m outside of the Onshore Development Area, in order to establish water vole and otter activity in the wider area; this area is referred to as the Riparian Mammal Survey Area.

Figure 1: Onshore Development Area



1.4 Legislation

Water voles are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended); therefore, it is an offence to:

- Deliberately capture, injure or kill;
- Disturb a water vole whilst it is in its breeding or resting place;
- Damage, destroy or obstruct a water vole's breeding or resting place.

Water voles are also identified as a priority species under the UK Post-2010 Biodiversity Framework and therefore measures must be taken to maintain the species conservation status.

Otters receive protection at a European level under the Conservation of Habitats and Species Regulations 2010; they are also listed on the Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). It is therefore, an offence to;

- Deliberately capture, injure or kill;
- Disturb an otter; and
- Damage, destroy or obstruct an otter's breeding or resting place.

1.5 Terminology

Within this report the terms “watercourse” and “ditch” are used. Watercourse refers to all ditches, dikes, drains and rivers that were identified within the survey area through online mapping or on the ground scoping.

All watercourses were assigned an ID number, and most will be referred to as such. Due to an early error in the mapping, three ditches were assigned two number IDs each, these are 31 and 32, 38 and 39, and, 54 and 55. Where IDs are used to refer to these ditches, IDs 31, 38 and 54, respectively, will be used; IDs 32, 39 and 55 have not been used. The following larger named drains and rivers will be referred to by name and ID number within the text, as follows:

- Stream Dike – ID 24
- Holderness Drain – ID 29
- The River Hull – ID 44
- Beverley Barmston Drain – ID 46
- Monk Dike – ID 47
- Meaux and Routh East Drain – ID 50
- South Bullock Dike – ID 54

2 METHODOLOGY

2.1 Desk Study

A desk study was undertaken using records provided by the North and East Yorkshire Ecological Data Centre (NEYEDC). Additionally, MAGIC was used to obtain any Riparian Mammal European Protected Species (EPS) licence returns from Natural England that were within the Riparian Mammal Survey Area. The desk study has been reported in a standalone document (Peak Ecology, 2022) but relevant information is included in this report. In addition to this a review of previous survey work completed by Peak Ecology in the area was also conducted and relevant records were also included within the desk study.

All existing ecological data referring to otters, water voles and American mink *Neovison vison* from within 2km of the survey area have been included at the time of writing. American mink is an invasive species on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and are a persistent predator of water vole and are one cause attributed to the national decline of water vole in the UK.

2.2 Field Survey

2.2.1 *Survey Methods*

Water Vole

The water vole surveys were undertaken in accordance with the standard methodology (Dean et al. 2016). Two survey visits are generally required: the first between mid-April and end June and the second between July and September (inclusive). Watercourses within the Riparian Mammal Survey Area were identified by desktop surveys and mapped using ARC GIS software.

All watercourses within the Riparian Mammal Survey Area, as well as those within a 50m buffer, were assessed for their suitability to support water vole. The watercourses were considered to provide either, optimal, good, suitable but poor or negligible, as laid out by Dean (2021, **Table 1**: Water vole habitat suitability (as per Dean, 2021)). Watercourses which provided, optimal, good or "suitable but poor" habitat suitability were surveyed for the presence and/or evidence of water vole.

Table 1: Water vole habitat suitability (as per Dean, 2021)

Habitat suitability	Description and Rationale
Optimal (*all criteria must be met)	a) Steep (approaching 1:1) earth or peat banks on at least one side, b) no noticeable variation in water levels during summer months, banks not over topped regularly c) Continuous swathe of luxurious riparian vegetation 90-100% cover. Marginal and emergent species are present. Tussocky grassland species present on banks d) permanent water

Habitat suitability	Description and Rationale
Good (*all criteria must be met)	a) Banks steep (approaching 1:1) may be earth or peat, or stoney or reinforced given that gaps are present providing access to earth behind b) no noticeable variation in water levels during summer months, banks not over topped regularly c) constant swathe of tall emergent or bankside vegetation providing 60% ground cover may be dominated by grasses and weeds rather than riparian species d) permanent water, or routinely wet for at least 2-3 months in the summer AND where other good habitat is present in immediately adjacent areas with permanent water
Suitable but poor	All watercourses that fall short of good but do not meet that of negligible value
Unsuitable	a) banks that were too shallow or vertical and/or rocky, gravel or well-sealed reinforced banks with no burrowing opportunities present b) considerable variation in water level throughout the breeding season c) no or limited bankside and marginal vegetation as a result of shading i.e., from hedgerow or other permanent features. Ditches choked with bramble, nettle willowherb and other terrestrial species were considered to unsuitable for water vole d) all dry ditches were considered unsuitable for water vole

.

The banks of the watercourses were surveyed either by foot from within the ditch or by boat for signs of water vole presence including;

- Burrow holes;
- Latrines;
- Feeding stations;
- Footprints; and
- Commuting paths (runs) within the vegetation.

Visit 1

The majority of the first visits were undertaken between April and the end of June. However due to access restrictions (detailed in section 2.3) a number of watercourses were surveyed for the first time in early August (see section 2.2.2 for survey timings).

Visit 2

Due to the steep sided banks and densely vegetated channels in many watercourses, encountered during Visit 1, access to the banks was limited and, in some instances, the standard survey methodology, described above, was considered to be insufficient or inadequate to detect presence of water voles. In these situations, where optimal or good

habitat was present, as well as in those which connected to known water vole colonies, rafts were deployed, to increase water vole detection rate. Rafts consisted of 30cm x 60cm boards of wall insulation, 2.5cm thick which were anchored to the bank, these provided platforms for water vole to latrine on that are easier to access for surveyors, allowing signs to be detected.

The guidance for raft spacing indicates that rafts should be placed every 10m within a watercourse (Dean et al 2016). However, for the purposes of this survey, spacing of 20m was thought to be sufficient, based on the understanding that water voles have a minimum home range of 50m (Dean at al 2016). Therefore, it was assumed that at least two rafts could be placed within a single potential territory. Once deployed, rafts were left on site for a minimum of two weeks (See **Figure 2**). After this period, rafts were checked for latrines by suitably qualified ecologists and retrieved.

Figure 2 - Example of raft in place

Watercourses which were considered to offer “suitable but poor” habitat for water vole were surveyed a second time using standard methods. In some cases, the habitat suitability was downgraded after the second visit if the habitat conditions were considered to have changed enough to render the watercourse unsuitable for water vole.

Watercourses were then found to have either confirmed presence of water vole or classified as high potential, moderate potential or low potential based on the wider context of the environment, including presence of water vole colonies nearby (**Table 2**). Where disused burrows were found with no other signs, water voles were considered to be present as a precautionary measure.

Table 2: Water vole status definitions

Water Vole Status	Definition
Present	**Watercourses were surveyed for water vole and presence has been confirmed through direct sighting or clear field evidence**. Where either old or disused water vole burrows were found, these were classified as having water vole present as a precautionary measure.
High potential	**Watercourses offering suitable habitat that adjoin those with either confirmed presence or historical records of water vole**. Rafts were used in addition to standard methods to increase confidence of negative results. These watercourses could become colonised in future years.
Moderate potential	**Watercourses offering optimal or good habitat and surveyed for the presence of water vole**. Rafts were used in addition to standard methods to increase confidence of negative results. No evidence of this species was found and there are no known colonies within adjoining watercourses.
Low potential	**Watercourses offering suitable, but poor habitat and surveyed for water vole using standard methods**. No evidence of this species was found and there are no known colonies within adjoining watercourses.
Negligible potential	Watercourses were assessed but not surveyed as they were found to be dry or otherwise unsuitable for water vole.

Otter

The otter survey included the recording of important habitat features in order to assess habitat suitability and included a systematic search for evidence of otter presence. All watercourses were assessed in accordance with the methodology set out by Chanin (2003).

Surveyors assessed the channel, water depth, marginal and riparian vegetation as well as the habitat in the wider area and connectivity to key habitats which may be outside of the Riparian Mammal Survey Area.

The systematic searches of features likely to be used by otter such as bridges, culverts and prominent rocks within the channel aimed at identifying spraints (used for sent marking of territories), footprints, slides, feeding remains, couches (laying-up areas) and holts (permanent places of shelter).

Otter surveys can be undertaken all year round, but Spring is generally considered the best time when water levels tend to be lower, and vegetation has not taken over making access easier. The survey was undertaken between mid-April 2023 and the end of June 2023.

2.2.2 *Survey Dates*

The riparian mammal surveys were undertaken between April and September 2023 inclusive. Details can be seen in **Table 3**.

Table 3: Survey Dates

Survey Dates		
Visit	Date	Watercourses assessed (IDs)
1	05/04/2023	11 12 13 14 21 22 33 34 35 36 37 41 43 45 48 51
1	06/04/2023	27 28 30 40
1	13/04/2023	1 2 3 4 5 6 7 8 9 10 31 32 38 39 42 49 52 53 56 57 80
1	14/04/2023	75 76
1	26/04/2023	15 16 17 25 26 29 61 66 68 69 70 71 72 73 81 82
1	06/06/2023	18 46
1	07/06/2023	19 20 23 24 47 50
1	14/06/2023	74 77 78 79 83
1	27/06/2023	44
1	18/07/2023	63 64
1*	01/08/2023	54 58 60 62 67
1*	02/08/2023	65
2	16/08/2023	Raft deployment: 44 45 46 54
2	17/08/2023	Raft deployment: 58 59 62
2	22/08/2023	Raft deployment: 29 30 47 50 24 20 5 2
2	06/09/2023	Raft collection: 2 5 44 45 46 54 58 59 62 Standard survey: 8 15 17 33 51 61 67 68
2	07/09/2023	Raft collection: 20 24 29 30 47 50 Standard survey: 22 23 25 27 31 38 40 52 80

*Watercourses impacted by marsh harrier buffer zone

2.3 Limitations

Schedule 1 Birds

Breeding marsh harrier *Circus aeruginosus,* were confirmed within the survey area. Marsh harrier is a protected species under Schedule 1 of the Wildlife & Countryside Act 1981, and it is an offence to intentionally or recklessly disturb birds or their young at, on or near an 'active' nest. Therefore, a buffer zone was put in place to prevent any disturbance to these birds. Six watercourses were impacted by this buffer and therefore could not be assessed for their presence of water vole until after the birds had fledged. Ditch 59 was in immediate proximity to the nest and so could only be accessed once the nest was no longer active, therefore only one visit was possible on this ditch.

Weather

All surveys were conducted under suitable weather conditions avoiding heavy rain and avoiding surveys for at least five days after heavy rain which can wash water vole and otter signs away. The conditions on the first visit to Stream Dike were considered unsuitable due to the high level of the water up the bank covering up any potential burrow entrances and washing away any possible evidence. Therefore, an extra, standard survey visit was conducted on this ditch under optimal conditions.

2.3.1 *Survey Methods*

Dense Vegetation

Due to the nature of many of the watercourses, access to the banks to conduct a thorough search of water vole and otter field signs was limited due to dense swathes of heavy vegetation. Additionally, in some cases large sections of the channel were also inaccessible. Furthermore, due to the possible presence of breeding birds in many of these habitats it was not always possible to access the banks without causing disturbance and potentially damage to active bird nests. It is possible that, due to very dense vegetation restricting access, water vole and otter signs may have been missed.

To mitigate this, where no water vole evidence was found and habitat was considered optimal or good, or if the watercourse was connected to a known colony of water voles, an additional methodology involving floating rafts was employed to increase the chance of water vole colonies being detected in these challenging habitats (see section 2.2).

Rafts

Water vole rafts were made from 2.5cm wide sheets of insulation board cut into 60x30cm sections and tethered to the bank using garden canes. (For images of rafts in place see **Figure 2** in section 3.2.2) In some instances, rafts appeared to have been moved out of their original positions either intentionally, such as by a land owner or member of the public, or inadvertently as a result of ditch management practices or falling water levels (see **Table 5** in section 3.2.2). Just three ditches had significant numbers of rafts found in unsuitable locations (5, 62 and Stream Dike). Due to the significant drop in water level in Ditches 5 and 62 this was not considered a significant limitation to the survey, as both were subjected to a second standard survey and the habitat suitability was subsequently downgraded in both instances. For stream Dike however, four of eight rafts appeared to have been interfered with either by a flail or moved by a landowner. As a result, only half the intended number of rafts were in suitable positions. Unfortunately, second standard survey was not possible on this ditch due to the dense vegetation and limited access to the bank.

Ditch Management

Many watercourses had undergone extensive management between the deployment and collection of rafts, including flailing of the banks, to the toe of the bank in some cases. This reduces the habitat suitability for water vole due to the high level of disturbance and makes it difficult to survey because of the presence of cut vegetation potentially covering up signs of water vole presence.

2.3.2 *Lifespan of Data*

The results and recommendations contained within this report are considered to be valid for up to two years from the date of survey, assuming that there are no significant changes to the site condition or management within this period.

3 RESULTS

3.1 Desk Study

One EPS licence was found allowing disturbance to otter between 24/08/2017 and 01/01/2019 within the River Hull (2017-30216-EPS-MIT-1) approximately 3.1 km south of the survey area (grid reference: TA 0559 3950. This indicates the frequent use of this section of the River Hull by otter. **Table 4** below provides a summary of the water vole, otter and American mink records provided by the North and East Yorkshire Environmental Record Centre. Records are included from a buffer of 2km from the survey area boundary at the time of writing.

A map showing the results of the desk study can be found in Appendix A.

Table 4 Summary of species records relevant to the site

Common name	Scientific name	Total Number of Records	Year of records
Water Vole	*Arvicola amphibius*	55	2001-2019
Otter	*Lutra lutra*	14	2009-2016
American Mink	*Neovison vision*	4	2012-2016

3.2 Water Vole

Summary

Eighty-one watercourses were assessed for the habitat suitability and potential for water vole. After both survey visits eight were found to have evidence of water vole presence. Of these eight ditches, with the exception of Ditch 8 and Holderness Drain, all were clustered within the central part of the route, north of Beverley either side of the River Hull crossing.

Ditches 2, 58 and 59 were considered to have high potential for water vole colonisation as a result of good or optimal habitat suitability water vole presence in connected watercourses, or within close proximity.

Stream Dike was also considered to have high potential for water vole colonisation. However, only half the deployed rafts were retrieved from a suitable location on this ditch. Furthermore, heavy vegetation limited access to the banks to access for water vole signs under a standard survey method. Therefore, while no water vole signs were found after three survey visits, extra caution should be applied when interpreting negative results.

Watercourses 20, 30 and Meaux and Routh East Drain were found to have good habitat suitability for water vole but as there were no water vole recordings in any connected watercourses, they were considered to have moderate potential for water voles. Ten watercourses were considered to have low potential for water vole due to their generally poor habitat suitability and limited connection to good quality habitat or known colonies. The remaining 56 were all considered to have negligible potential to support water vole colonies.

The second visit, conducted in September, found evidence of American mink scat on Ditch 5 and Holderness Drain which are over 14 km apart. This suggests that American mink are likely to be present throughout the survey boundary potentially threatening the remaining isolated cluster of water vole colonies in the area.

3.2.1 *Visit 1*

Habitat suitability

In total, 81 watercourses were considered in this survey. After the first visit, 48 watercourses were found to be unsuitable for water vole as the majority were dry and were consequently ruled out for further survey. The field survey identified 20 watercourses considered to offer “suitable but poor” habitat, suitability for water voles in nine watercourses were classed as “Good” and six were considered to have “Optimal” habitat.

The pictures in Appendix B show representative examples of each habitat qualification based on results from the field surveys.

Water vole evidence

Latrines were found on two watercourses, Ditches 45 and 51, and water vole presence was confirmed after Visit 1.

Burrows were found on seven watercourses (Holderness Drain, the River Hull, Monk Dike, South Bullock Dike, as well as Ditches 45, 46, 51) indicating the possible presence of water vole. Water voles were considered to be present on all watercourses which contained old or disused burrows, with no other signs, as a precautionary measure.

Steam Dike was visited twice, due to the first visit finding the ditch to have optimal suitability but survey conditions to be largely unsuitable due to the high level of the water up the bank covering up any potential burrow entrances and washing away any possible evidence.

No evidence of water vole was found on any other watercourses during Visit 1.

3.2.2 *Visit 2*

A total of 37 watercourses were subjected to a second visit. The raft methodology was used on 15 watercourses while the standard ‘on foot’ survey methodology was used on the remaining 22.

Habitat Suitability

Following the second survey visit, nine watercourses (8, 15, 19, 22, 23, 27, 33, 52, 68 and 67) were found to be entirely dry, filled with terrestrial vegetation and were downgraded from "suitable but poor" to "unsuitable". Additionally, Ditch 25 was downgraded from "good" to "suitable but poor" due to the increased shading, heavy vegetation and very shallow water present reducing the suitability for water vole.

Rafts

Table 5 shows the number of rafts deployed and rafts found in suitable locations for each watercourse surveyed.

Table 5: Water Vole Raft Results

ID	No. Rafts	No. found in suitable position	No. with latrines
2	4	4	0
5	2	0	0
20	8	6	0
24	8	4	0
29	7	7	0
30	8	8	0
44west	6	5	0
44east	4	1	1
45	8	8	8
46	8	7	0
47	10	9	0
50	8	8	0
54	4	4	1
58	8	7	0
59	5	5	0
62	5	0	0

Eight rafts were placed in Ditch 45 and all eight were found to have large latrines and some feeding evidence present indicating clear evidence of water vole within this ditch (**Figure 3**).

Figure 3: Examples of latrines and feeding remains found on rafts

Ten rafts were placed at regular intervals along the River Hull, four on the west bank and six on the east bank. On the western bank, a small latrine was found, indicating the presence of water vole on this bank of the River Hull. A small latrine was also found on one raft in South Bullock Dike. No latrines were found on any of the 12 other watercourses in which rafts were deployed.

Ditches 5 and 62 had both dried up considerably and no results from the raft deployment obtained. Consequently, standard surveys were then conducted. No water vole evidence was found along the length of either ditch and the habitat suitability was downgraded in both instances to suitable but poor.

Standard Survey

Standard surveys were conducted on 22 watercourses. No water vole evidence was found on any of the watercourses surveyed using this methodology. Whilst Ditch 51 was found to have water vole present on the first visit, but no evidence was found during the second visit likely due to the increase in vegetation height and cover.

3.3 Otter

Otter spraint was found on three watercourses: Stream Dike, Beverley Barmston Drain and Ditch 80 indicating that otters are present in the area (see **Figure 4**). No other evidence of otter was found during any of the survey visits. However, many of the watercourses lacked features such as bridges, weirs, discharge pipes or prominent rock features within the channel which are commonly favoured by otters to spraint.

Figure 4: Spraint found under bridge on Ditch 24

No footprints, feeding remains or evidence of slides, couches or holts were found on any watercourse.

The habitat suitability for otter was assessed during the surveys. The riparian habitat within the corridor such as the larger drains including, the Holderness Drain and the Beverley Barmston Drain, Monk Dike and Meaux and Routh East Drain as well as the River Hull in particular, provided suitable commuting and foraging habitat for otter. Moreover, fish were noted to be present in these watercourses during the surveys providing a suitable food source for this species.

The habitat within the Riparian Mammal Survey Area was primarily arable land and considered to be largely unsuitable for otter rest sites or holts. The sheltered area of wet woodland area to the south and west of Ditch 59 and north of South Bullock Dike provided some suitable habitat for otter due to its more isolated position within the landscape and good connection to riparian corridors. However, no evidence of otter couches was found there during the survey.

Table 6 below shows summarised evidence, habitat suitability and potential for water vole for watercourses with water vole and/or otter present. A full table and survey maps showing detailed results of all watercourses assessed can be found in Appendix C and D respectively.

Table 6: Brief Summary of water vole and otter evidence

ID	Water Vole					Otter	
	Habitat Suitability	Water Vole	Visit 1	Visit 2			
				Survey method	Evidence found	Evidence	Grid ref
8	**Suitable But Poor**	**present**	One burrow with some feeding remains found.	Standard Survey	N/A	N/A	N/A
24	**Optimal**	**High**	N/A	Rafts	N/A	**Spraint**	TA 13578 44977
29	**Good**	**Present**	One burrow was found.	Rafts	N/A	N/A	N/A
44	**Optimal**	**Present**	Two disused burrows found.	Rafts	1/10 rafts had latrines.	N/A	N/A
45	**Optimal**	**Present**	Many latrines burrows and feeding remains found along length of ditch.	Rafts	8/8 rafts had large latrines. Feeding evidence also found.	N/A	N/A
46	**Optimal**	**Present**	Five burrows found	Rafts	N/A	**Spraint**	TA 05289 42745
47	**Good**	**Present**	Five Burrows found. Feeding remains close to burrow.	Rafts	N/A	N/A	N/A
51	**Suitable But Poor**	**Present**	Latrines and burrows found clustered by the culvert.	Standard survey	N/A	N/A	N/A
54	**Optimal**	**Present**	Two burrows and a feeding station	Rafts	1/4 rafts had a small latrine	N/A	N/A
84	**Suitable But Poor**	**Low**	N/A	Standard survey	N/A	**Spraint**	TA 07341 43174

3.4 Other wildlife

American Mink, scat was found on Ditch 5 and Holderness Drain. Indicating the presence of this species within the wider area. American mink is a predator of water vole and, generally, where American mink is present, water vole do not occur. Evidence of brown rat *Rattus norvegicus*, field vole *Microtus agrestis* and bank vole *Myodes glareolus* were also found throughout the survey area.

Fish, an important food source for otters, were noted in several of the watercourses including the River Hull, Beverley Barmston Drain, South Bullock Dike, Monk Dike and Meaux and Routh East Drain.

4 CONCLUSIONS AND GENERAL RECOMMENDATIONS

Water vole

The results discussed in this report show that water vole are present within the Riparian Mammal Survey Area. Colonies were primarily clustered within the central part of the route north of Beverly either side of the River Hull crossing, with the exception of Holderness Drain and Ditch 8.

It is therefore recommended that direct impacts to these watercourses should be avoided. For example, through the use of horizontal directional drilling under the watercourses with water vole present. Where this not possible, the displacement of water vole from impacted ditches will be required under a licence.

The data presented in this report is valid for two years, it is understood that the commencement of works will take place after this period. Therefore, updated surveys will be required prior to the commencement of works.

Otter

Despite the relative lack of evidence of otter from these surveys, the presence of spraint within the Riparian Mammal Survey Area, as well as records within the desk study, indicate otter were present.

Given the extensive otter records from the desk study; large home ranges of this species (up to 10km for a single otter), the presence of suitable commuting and foraging routes, as well as the confirmed presence of otter within three watercourses within the survey area, it is considered highly likely that otter are present and pass through the corridor.

While the habitat within the Riparian Mammal Survey Area was considered largely unsuitable for otter couches or holts, and no evidence of such sites were found during the survey, their presence cannot be ruled out.

Updated surveys will be required prior to the commencement of works, to check for the presence of otter within the corridor to avoid committing an offence under WCA.

Should evidence of otter holts be found within the corridor an EPS licence may be required.

5 REFERENCES

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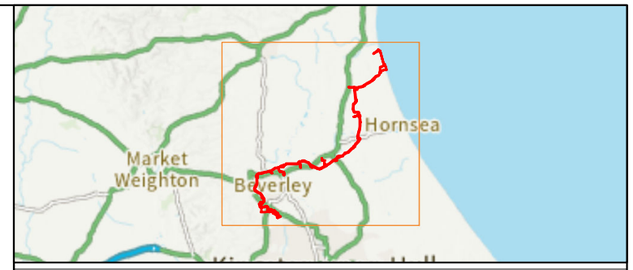
APPENDIX A: Desk Study Map



Search Data - Riparian Mammal Species	
	Onshore Development Area
	Mink
	Otter
	Water vole

Search Data - Record Location Accuracy	
	10m accuracy
	100m accuracy
	1,000m accuracy
	Peak Ecology Survey - Water Vole Present 2012

N

0 500 1,000 2,000 3,000
Metres

PROJECT TITLE

DOGGER BANK SOUTH

DRAWING TITLE

Appendix A: Water Vole and Otter Desk Study Records

VER	DATE	REMARKS	Drawn	Checked
3.0	04/04/24	Search - Riparian	MP	JD

DRAWING NUMBER:

PeakEcology/RiparianSearch

peakecology LIMITED
ECOLOGICAL CONSULTANTS
Arden House,
Deepdale Business Park,
Bakewell,
Derbyshire.
DE45 1GT.
www.peakecology.co.uk

DATUM	OSGB
PROJECTION	BNG
PLOT SIZE	A3
SCALE	1:87,500

APPENDIX B: Example photographs of Watercourses

ID	Habitat suitability	Justification	Photograph
35	Unsuitable	Dry	
66	Unsuitable	Dry	
40	Suitable But Poor	Shallow water, shaded, no riparian vegetation	

ID	Habitat suitability	Justification	Photograph
5	Suitable But Poor	Very shallow variable water, dense vegetation more open in some places	
51	Suitable But Poor (water vole present)	Limited forage, shallow water approximately 10cm, wooden revetment.	

ID	Habitat suitability	Justification	Photograph
29	Good (water vole present)	Fairly shaded by hedgerow along much of its length, but wide ditch with permanent deep water and constant swathe of riparian vegetation	
58	Good	Dense vegetation in patches, becomes quite shallow but permanent water connected to other good quality and optimal habitat	

ID	Habitat suitability	Justification	Photograph
46	Optimal (water vole present)	Wide and open ditch with steep earth banks, lush riparian vegetation and good quality, permanent, flowing water.	
45	Optimal (water vole present)	Permanent water constant swathe of lush vegetation with more open areas present. good forage along steep earth banks.	

APPENDIX C: Detailed water vole Survey Results

ID	Habitat Suitability	Water Vole Potential	Visit 1	Visit 2	
				Survey method	Evidence found
1	**Suitable But Poor**	**Low**	No evidence of water vole.	Standard survey	No evidence of water vole.
2	**Good**	**high**	No evidence of water vole.	Rafts	No evidence of water vole.
3	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
4	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
5	**Suitable But Poor***	**Low***	No evidence of water vole.	Rafts/standard survey	No evidence of water vole.
6	**Suitable But Poor**	**Low**	No evidence of water vole.	Standard survey	No evidence of water vole.
7	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
8	**Suitable But Poor**	**present**	One burrow with some feeding remains found.	Standard Survey	No evidence of water vole.
9	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
10	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
11	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
12	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
13	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
14	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
15	**Unsuitable†**	**Negligible†**	No evidence of water vole.	Standard survey	No evidence of water vole.
16	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
17	**Suitable But Poor**	**Low**	No evidence of water vole.	Standard survey	No evidence of water vole.
18	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA

ID	Habitat Suitability	Water Vole Potential	Visit 1	Visit 2	
				Survey method	Evidence found
19	**Unsuitable†**	**Negligible†**	No evidence of water vole.	Standard survey	No evidence of water vole.
20	**Good**	**Moderate**	No evidence of water vole.	Rafts	No evidence of water vole.
21	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
22	**Unsuitable†**	**Negligible†**	No evidence of water vole.	Standard survey	No evidence of water vole.
23	**Unsuitable†**	**Negligible†**	No evidence of water vole.	Standard survey	No evidence of water vole.
24	**Optimal**	**High**	No evidence of water vole.	Rafts	No evidence of water vole.
25	**Suitable But Poor***	**Low***	No evidence of water vole.	Standard survey	No evidence of water vole.
26	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
27	**Unsuitable†**	**Negligible†**	No evidence of water vole.	Standard survey	No evidence of water vole.
28	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
29	**Good**	**Present**	**One burrow** was found at water level approximately halfway along the ditch.	**Rafts**	No evidence of water vole.
30	**Good**	**moderate**	Possible feeding remains found along length of the bank. **Not conclusive**.	rafts	No evidence of water vole
31	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
32	**Same Watercourse As 31**				
33	**Unsuitable†**	**Negligible†**	No evidence of water vole.	Standard survey	No evidence of water vole.
34	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
35	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
36	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA

ID	Habitat Suitability	Water Vole Potential	Visit 1	Visit 2	
				Survey method	Evidence found
37	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
38	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
39	Same Watercourse As 38				
40	**Suitable But Poor**	**Low**	No evidence of water vole.	Standard survey	No evidence of water vole.
41	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
42	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
43	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
44	**Optimal**	**Present**	Two disused burrows found on southern half of the River	Rafts	One small latrine present on raft on west bank
45	**Optimal**	**Present**	Latrines burrows and feeding remains found along length of ditch. Latrines more clustered in the northern section. **Confirmed presence.**	Rafts	All eight rafts had large latrines across and small amounts of feeding evidence present.
46	**Optimal**	**Present**	**Five burrows** of the correct size and shape along the surveyed length.	**Rafts**	No evidence of water vole.
47	**Good**	**Present**	Five Burrows along surveyed length. Feeding remains close to burrow.	Rafts	No evidence of water vole.
48	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
49	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
50	**Good**	**moderate**	No evidence of water vole.	Rafts	No evidence of water vole.

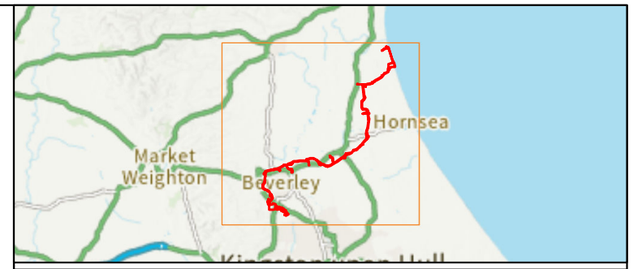
ID	Habitat Suitability	Water Vole Potential	Visit 1	Visit 2	
				Survey method	Evidence found
51	**Suitable But Poor***	**Present**	Latrines and burrows found clustered by the culvert at TA 06390 42606. One found behind wooden revetment in this section. **Confirmed presence**	Standard survey	No evidence of water vole.
52	**Unsuitable†**	**Negligible†**	No evidence of water vole.	Standard survey	No evidence of water vole.
53	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
54	**Optimal**	**Present**	**Two burrows and a feeding station** found on the eastern end by entrance from 46	**Rafts**	1 possible latrine – no intact droppings
55	Same Watercourse As 54				
56	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
57	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
58	**Good**	**high**	No evidence of water vole.	Rafts	No evidence of water vole.
59	**good**	**high**	No first visit	Rafts	No evidence of water vole.
60	**Suitable But Poor**	**Low**	No evidence of water vole.	Standard survey	No evidence of water vole.
61	**Suitable But Poor**	**Low**	No evidence of water vole.	Standard survey	No evidence of water vole.
62	**Unsuitable†**	**Negligible†**	No evidence of water vole.	Standard survey	No evidence of water vole.
63	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
64	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
65	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
66	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA

ID	Habitat Suitability	Water Vole Potential	Visit 1	Visit 2	
				Survey method	Evidence found
67	**Unsuitable†**	**Negligible†**	No evidence of water vole.	Standard survey	No evidence of water vole.
68	**Unsuitable†**	**Negligible†**	No evidence of water vole.	Standard survey	No evidence of water vole.
69	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
70	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
71	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
72	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
73	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
74	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
75	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
76	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
77	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
78	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
79	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
80	**Suitable But Poor**	**Low**	No evidence of water vole.	Standard survey	No evidence of water vole.
81	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
82	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
83	**Unsuitable**	**Negligible**	No evidence of water vole.	NA	NA
84	**Suitable But Poor**	**Low**	No evidence of water vole.	Standard survey	No evidence of water vole.

* Habitat suitability downgraded from “good” to “suitable but poor” after second visit

† Habitat suitability downgraded from “suitable but poor” to “negligible” after second visit

APPENDIX D: Survey Maps



Ditch Survey Results

- Onshore Development Area
- Optimal suitability and water vole present
- Optimal suitability and high water vole potential
- Good suitability and water vole present
- Good suitability and high water vole potential
- Good suitability and moderate water vole potential
- Suitable but poor with water vole present
- Suitable but poor with low water vole potential
- Unsuitable with negligible water vole potential
- Otter spraint ditches and locations
- Mink scat records

Source:
Ordnance Survey © Crown copyright 2024, All rights reserved. License Number 100049837.

N

0 500 1,000
Metres

PROJECT TITLE

DOGGER BANK SOUTH

DRAWING TITLE

Appendix D. Survey Results Map - Section A

VER	DATE	REMARKS	Drawn	Checked
2.0	04/04/24	Ditch Survey - Overview	MP	JD

DRAWING NUMBER:

PeakEcology/Ditch

peakecology LIMITED
ECOLOGICAL CONSULTANTS
Arden House,
Deepdale Business Park,
Bakewell,
Derbyshire.
DE45 1GT.
www.peakecology.co.uk

DATUM	OSGB
PROJECTION	BNG
PLOT SIZE	A3
SCALE	1:87,000

Ditch Survey Results	
	Onshore Development Area
	Optimal suitability and water vole present
	Optimal suitability and high water vole potential
	Good suitability and water vole present
	Good suitability and high water vole potential
	Good suitability and moderate water vole potential
	Suitable but poor with water vole present
	Suitable but poor with low water vole potential
	Unsuitable with negligible water vole potential
O	Otter spraint ditches and locations
M	Mink scat records

Source:
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N

0 130 260
Metres

PROJECT TITLE

DOGGER BANK SOUTH

DRAWING TITLE

Appendix D. Survey Results Map - Section B

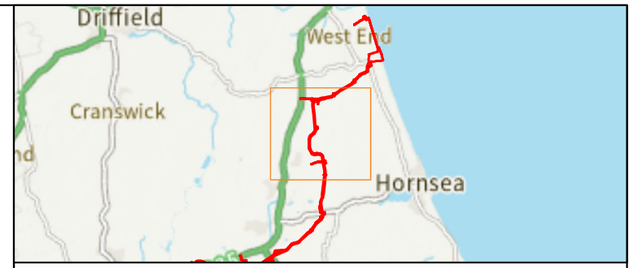
VER	DATE	REMARKS	Drawn	Checked
2.0	04/04/24	Ditch Survey - Section 1	MP	JD

DRAWING NUMBER:

PeakEcology/Ditch

peakecology LIMITED
ECOLOGICAL CONSULTANTS
Arden House,
Deepdale Business Park,
Bakewell,
Derbyshire.
DE45 1GT.
www.peakecology.co.uk

DATUM	OSGB
PROJECTION	BNG
PLOT SIZE	A3
SCALE	1:20,000



Ditch Survey Results	
	Onshore Development Area
	Optimal suitability and water vole present
	Optimal suitability and high water vole potential
	Good suitability and water vole present
	Good suitability and high water vole potential
	Good suitability and moderate water vole potential
	Suitable but poor with water vole present
	Suitable but poor with low water vole potential
	Unsuitable with negligible water vole potential
O	Otter spraint ditches and locations
M	Mink scat records

N

0 130 260
Metres

PROJECT TITLE

DOGGER BANK SOUTH

DRAWING TITLE

Appendix D. Survey Results Map - Section C

VER	DATE	REMARKS	Drawn	Checked
2.0	04/04/24	Ditch Survey - Section 2	MP	JD

DRAWING NUMBER:

PeakEcology/Ditch

peakecology LIMITED
ECOLOGICAL CONSULTANTS
Arden House,
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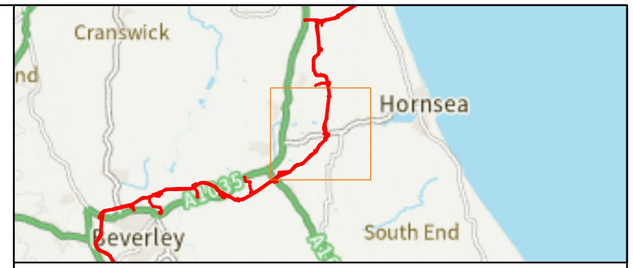
Bakewell,
Derbyshire.
DE45 1GT.
www.peakecology.co.uk

DATUM	OSGB
PROJECTION	BNG
PLOT SIZE	A3
SCALE	1:20,000



Ditch Survey Results	
	Onshore Development Area
	Optimal suitability and water vole present
	Optimal suitability and high water vole potential
	Good suitability and water vole present
	Good suitability and high water vole potential
	Good suitability and moderate water vole potential
	Suitable but poor with water vole present
	Suitable but poor with low water vole potential
	Unsuitable with negligible water vole potential
O	Otter spraint ditches and locations
M	Mink scat records

N

0 130 260
Metres

PROJECT TITLE

DOGGER BANK SOUTH

DRAWING TITLE

Appendix D. Survey Results Map - Section D

VER	DATE	REMARKS	Drawn	Checked
2.0	04/04/24	Ditch Survey - Section 3	MP	JD

DRAWING NUMBER:

PeakEcology/Ditch

peakecology LIMITED
ECOLOGICAL CONSULTANTS
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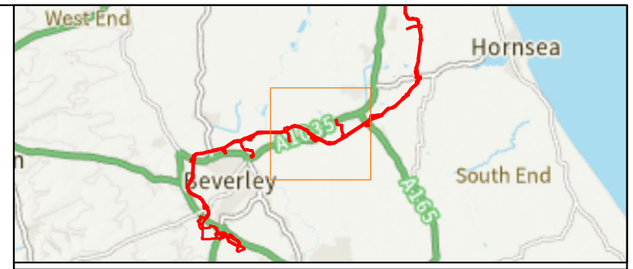
Derbyshire.
DE45 1GT.
www.peakecology.co.uk

DATUM	OSGB
PROJECTION	BNG
PLOT SIZE	A3
SCALE	1:20,000



Ditch Survey Results

	Onshore Development Area
	Optimal suitability and water vole present
	Optimal suitability and high water vole potential
	Good suitability and water vole present
	Good suitability and high water vole potential
	Good suitability and moderate water vole potential
	Suitable but poor with water vole present
	Suitable but poor with low water vole potential
	Unsuitable with negligible water vole potential
O	Otter spraint ditches and locations
M	Mink scat records

N

0 130 260
Metres

PROJECT TITLE

DOGGER BANK SOUTH

DRAWING TITLE

Appendix D. Survey Results Map - Section E

VER	DATE	REMARKS	Drawn	Checked
2.0	04/04/24	Ditch Survey - Section 4	MP	JD

DRAWING NUMBER:

PeakEcology/Ditch

peakecology LIMITED
ECOLOGICAL CONSULTANTS
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Deepdale Business Park,
Bakewell,
Derbyshire.
DE45 1GT.
www.peakecology.co.uk

DATUM	OSGB
PROJECTION	BNG
PLOT SIZE	A3
SCALE	1:20,000

Ditch Survey Results

	Onshore Development Area
	Optimal suitability and water vole present
	Optimal suitability and high water vole potential
	Good suitability and water vole present
	Good suitability and high water vole potential
	Good suitability and moderate water vole potential
	Suitable but poor with water vole present
	Suitable but poor with low water vole potential
	Unsuitable with negligible water vole potential
O	Otter spraint ditches and locations
M	Mink scat records

Source:
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N

0 130 260
Metres

PROJECT TITLE

DOGGER BANK SOUTH

DRAWING TITLE

Appendix D. Survey Results Map - Section F

VER	DATE	REMARKS	Drawn	Checked
2.0	04/04/24	Ditch Survey - Section 5	MP	JD

DRAWING NUMBER:

PeakEcology/Ditch

peakecology LIMITED
ECOLOGICAL CONSULTANTS
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Deepdale Business Park,
Bakewell,
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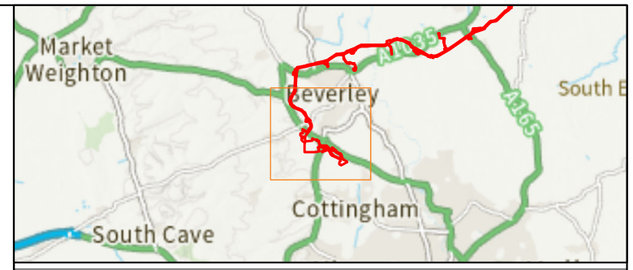
DE45 1GT.
www.peakecology.co.uk

DATUM	OSGB
PROJECTION	BNG
PLOT SIZE	A3
SCALE	1:20,000



Ditch Survey Results	
	Onshore Development Area
	Optimal suitability and water vole present
	Optimal suitability and high water vole potential
	Good suitability and water vole present
	Good suitability and high water vole potential
	Good suitability and moderate water vole potential
	Suitable but poor with water vole present
	Suitable but poor with low water vole potential
	Unsuitable with negligible water vole potential
O	Otter spraint ditches and locations
M	Mink scat records

Source:
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N

0 130 260
Metres

PROJECT TITLE

DOGGER BANK SOUTH

DRAWING TITLE

Appendix D. Survey Results Map - Section G

VER	DATE	REMARKS	Drawn	Checked
2.0	04/04/24	Ditch Survey - Section 6	MP	JD

DRAWING NUMBER:

PeakEcology/Ditch

peakecology LIMITED
ECOLOGICAL CONSULTANTS
Arden House,
Deepdale Business Park,
Bakewell,
Derbyshire.
DE45 1GT.
www.peakecology.co.uk

DATUM	OSGB
PROJECTION	BNG
PLOT SIZE	A3
SCALE	1:20,000