The Sizewell C Project

6.3 Volume 2 Main Development Site Chapter 14 Terrestrial Ecology and Ornithology Appendix 14C6B: Water Vole Licence Method Statement

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1 WATER VOLE – METHOD STATEMENT

1.1 Background Information

a) Introduction

1.1.1 SZC Co. is proposing to build and operate a new nuclear power station on the Suffolk coast, known as Sizewell C Power Station (hereafter referred to as 'Sizewell C') located to the north of the existing Sizewell B Power Station. The Sizewell C main development site is located in Suffolk, centred at the grid reference TM 472 640. The main development site boundary is shown on **Figure 2.2.28** of the **Environmental Statement** (**ES**) Addend, included within **Appendix A**.

1.1.2 A suitably qualified contractor would lead the delivery of the prescriptions of this water vole licence on behalf of the applicant (SZC Co.).

1.1.3 This report presents methods to mitigate potential impacts on water vole (*Arvicola amphibius*) populations present within the main development site for Sizewell C. The purpose of this document is to provide a draft method statement for water vole trapping and displacement that can be used by the Contractor's consultant ecologist, SZC Co. and any relevant subcontractors, in relation to the proposal to build Sizewell C. See **Appendix A**, **Figure 14C6B.1** and **Figure 14C6B.2** for construction Areas and site layout respectively.

1.1.4 SZC Co. and its consultant ecologists are committed to working with Natural England and other stakeholders to develop the approaches outlined within this document to ensure a legally robust approach to protected species before the document is finalised.

b) Description of the Proposed Works

1.1.5 SZC Co. is proposing to build a new nuclear power station at Sizewell in East Suffolk, known as Sizewell C, located on the Suffolk coast, approximately halfway between Felixstowe and Lowestoft; to the north-east of the town of Leiston. The power station, together with the proposed associated developments, is referred to as the Sizewell C Project.

1.1.6 The proposed Sizewell C nuclear power station would comprise two UK EPR™ units and would have an expected electrical capacity of approximately 3,340 megawatts (MW). This would provide enough electricity to supply approximately six million (or approximately 20%) of Britain's homes, and help facilitate the shift to a low carbon economy, using technology which has been used successfully and safely around the world for many years, and has been enhanced by innovations to improve performance and safety.

1.1.7 As part of the wider Sizewell C development, the new power station will be constructed at the main development site, adjacent to the existing Sizewell B power station. The construction of the Sizewell C power station will require substantial amounts of construction material to be transported to the site and a number of off-site associated developments to support the Scheme during its construction and long-term operation.

1.1.8 This licence method statement only applies to impacts within the main development site.

1.1.9 The on-site area includes the main platform and associated power station infrastructure and Sizewell B relocated facilities. Off-site areas include the Green Rail Route, Darsham Park and Ride, Wickham Market Park and Ride, Sizewell Link Road (SLR), Two Village Bypass (TVB) and Yoxford Junction and the Freight Management Facility (FMF).

c) Purpose of the Works

1.1.10 The purpose of the works is to construct a new nuclear power station at the Sizewell site. However, in constructing the power station, the proposed works will impact upon water voles. Water voles are present within the areas within the eastern edge of the Sizewell Marshes SSSI which will be used to create the western edge of the new power station platform and the SSSI Crossing to the north of this. Water vole are protected under Schedule 5 of the W&CA (Ref. 1), and are included under Section 41 of the NERC Act (Ref. 2). As a result, this licence is required to permit the project.

d) Proposed Licensable Activities

1.1.11 In the absence of mitigation, the works proposed have the potential to impact water vole through:

- Direct mortality;
- Fragmentation of habitats;
- Loss of habitats; and
- Disturbance of water vole.

1.1.12 Trapping and displacement activities are proposed under this draft method statement for Water Vole to mitigate potential impacts on water vole in relation to the proposal to build Sizewell C. This licence will permit the development to proceed without triggering offences under wildlife legislation.

e) Planning Status

1.1.13 The project is being submitted as a Nationally Significant Infrastructure Project (NSIP) and if consented, this would be via a Development Control Order (DCO).

f) Compliance with Best Practice

1.1.14 The proposed survey methodology, trapping, displacement techniques and monitoring requirements all comply with the guidance as set out in the latest Water Vole Mitigation Handbook (Dean et al., 2016) (Ref. 3).

1.1.15 The staff named on the licence by the appointed contractor would be members of the Chartered Institute of Ecology and Environmental Management (CIEEM) at the appropriate level and follow their code of professional conduct when undertaking ecological work.

1.2 Site information and survey

a) Introduction

1.2.1 This section briefly outlines the results of relevant previous surveys conducted on the application site in 2007, 2009, 2014, 2018 and updated surveys in 2020. Refer to Appendix B for the previous survey reports.

b) Previous Survey Results

i. 2007

1.2.2 A walkover survey of the site was undertaken in October 2007, in conjunction with the surveys for otter (Appendix B.1). Twenty potentially suitable ditches were surveyed. Suitable terrestrial and aquatic habitat along these ditches were assessed for potential to support water vole and searched for field signs including a search of the bankside vegetation (where conditions were suitable) for latrines/droppings, feeding stations, burrows and footprints. Nineteen of the twenty ditches surveyed in 2007 were found to contain field evidence of water vole activity. Burrows were identified on three of the ditches; these were widely distributed across Sizewell Marshes SSSI.

ii. 2009

1.2.3 Further water vole surveys of 16 ditches, using the same methodology as in 2007, were carried out in 2009, aimed at obtaining a better understanding of how water voles use the habitats across the EDF Energy Estate and to establish a generalised population assessment (Appendix B.1). Additionally, five transects (approximately 500m in length) were surveyed within the reedbeds in the Sizewell Marshes SSSI. Artificial latrine sites were installed

at a density of one every 10m; these were left in place undisturbed for two to three weeks prior to the surveys. Each reedbed transect was surveyed twice in 2009, between 20th and 21st August 2009, and again between 13th and 14th October 2009. Any field signs of water vole were recorded. Evidence of water vole activity was found in 14 of 16 ditches surveyed in 2009. High densities of field signs were found in four of these ditches. Water vole field signs were found on all of the five reedbed transect routes surveyed in 2009. All field signs were found in close proximity to ditches or other areas of open water, indicating that water voles were not active within the drier areas of reedbed, but restricted to the wetter margins. The average population size for the ditches surveyed in 2009 was estimated by Wood Group at 8.1 individual voles per 100m ditch, based on latrine counts within the breeding season. The density was, however, found to vary significantly, being dependent on the quality of the surrounding habitat. In the lowest quality habitat (heavy over-shading by adjacent woodland limiting growth of aquatic vegetation and heavy poaching of banks by cattle reducing bankside vegetation and restricting burrowing opportunities), this was estimated at only 3.5 individuals per 100m ditch, rising to 17.1 individuals per 100m for optimal habitat. Estimated water vole densities in England range from 2.4 to 14.0 per 100m of bank, with a UK average of 6.1 individuals per 100m. The average population size for the ditches surveyed in 2009 within Sizewell Marshes was estimated at 5.2 individuals per 100m ditch, which is close to the national average density. See **Appendix A**, **Figure 14C6B.3** for a summary of the results.

iii. 2010

1.2.4 In 2010, Wood Group surveyed all watercourses at Aldhurst Farm, using five transects, to identify evidence of water vole activity using the same survey methodology (Appendix B.2). At the time of survey the site comprised arable fields, with access tracks, boundary hedgerows and small plantation woodland and shelter belts (mainly comprising mature hybrid poplar (*Populus* sp.) although some veteran oak (*Quercus* sp.), Ash (*Fraxinus excelsior*) and willow (*Salix* sp.) were present).

1.2.5 Four out of five sections of ditches surveyed at Aldhurst farm provided suitable aquatic habitat for water voles and yielded field signs for water voles.

iv. National Key Sites Monitoring Programme

1.2.6 As part of the National Key Sites Monitoring Programme initiative, 12 transects within the EDF Energy Estate are monitored annually for water voles for the Sizewell National Key Site, and 24 transects are also monitored by the RSPB at the Minsmere National Key Site, to the north of the Sizewell Key Site. The Sizewell surveys were carried out in the spring and autumn up to 2009, in the autumn between 2010 and 2014 inclusively, and then from

the spring from 2015 onwards. Positive sightings of water vole signs were recorded, and the results presented as the percent of the 12 or 24 transects surveyed each time that showed positive signs. The data is published in the NGL Sizewell Land Management Reports. RSPB (*pers. comm.*) provided the Minsmere survey results.

v. 2014

1.2.7 Surveys were undertaken by Hyder in 2014 at Aldhurst Farm and comprised searching the ditches and other wetland habitats at Aldhurst Farm to identify all evidence of water vole activity, following recognised survey methodologies (Appendix B.3). Three ditches showed signs of water vole activity and were found to have good habitat suitability for water voles.

1.2.8 Aldhurst Farm was identified as having ditches with suitable aquatic habitat for water vole, and evidence of water vole field signs. Surveys were conducted in 2010 at this location to determine its suitability as a receptor site, as well as to identify the enhancement measures that would be required in order to receive water vole as part of any translocation exercise Habitat enhancement and creation measures were implemented in 2014 to 2016 which included four new lagoons. One of the new lagoons was fenced to prevent water vole colonising this area.

vi. 2018

1.2.9 Subsequent surveys of Aldhurst Farm in 2018 confirmed the absence of water vole from the proposed receptor site, a fenced-off lagoon to the west of Aldhurst Farm. The lagoon had been fenced off to ensure no natural colonisation by water vole in order to ensure that the lagoon would remain suitable to receive translocated water vole from the main development site.

vii. 2019

1.2.10 Water vole surveys were undertaken in 2019 of the ditches within 250m of the proposed Sizewell B Relocated Facilities site close to Coronation Wood. In 2019, only one of the six watercourses south of Coronation Wood was considered suitable for water voles. No burrows were identified within 100m of the site boundary, and only one water vole latrine was identified. This was recorded approximately 57m west of the site boundary, on the same watercourse (11) where Wood Group carried out surveys in 2009.

c) Updated Survey Results (2020)

1.2.11 The water bodies on the main development site and within 50m of the application site boundary (see **Appendix A**, **Figure 2.9.C5.1**) were surveyed on 3rd-5th June, 8th-12th June 2020 and again on 17th-21st August and 24th-28th August 2020 by experienced Senior Ecologist (GradCIEEM) and an

Ecologist (GradCIEEM) to assess the value of the site for both otter and water vole (Appendix B.4).

1.2.12 A site visit was also carried out on the 21st August by two suitably experience ecologists, one a nationally recognised specialist, to assess habitat conditions across the site including the receptor areas.

1.2.13 Surveyors searched for otter field signs including spraints, footprints, feeding remains, potential holt sites, pathways and resting sites.

1.2.14 The surveyors searched for water vole field signs including a search of the bankside vegetation (where conditions were suitable) for latrines/droppings, feeding stations, burrows and footprints The signs were mapped using Global Positioning System (GPS) to allow for an estimation of the population size. The survey work was conducted in accordance with the 'Water Vole Mitigation Handbook' (Ref. 3).

1.2.15 Due to access limitations during the June and August water vole surveys, water vole float surveys were undertaken in September and October 2020. The water vole floats were deployed between 21st and 25th September and were checked twice: between 30th September and 2nd October and 12th and 13th October. The mink rafts were deployed on 30th September and were also checked on 12th and 13th October. The locations of the floats were chosen to provide a more detailed understanding of water vole populations within areas that will be significantly impacted by the development. Water vole floats were also deployed at Aldhurst Farm to be able to more precisely understand the carrying capacity of the proposed receptor site.

1.2.16 Mink raft surveys were also undertaken in combination with the water vole float surveys to confirm if American mink are present within the EDF Estate.

1.2.17 The number of latrines recorded during the surveys was used to provide an indication on relative population sizes of water vole present at each waterbody (Ref. 3).

Table 1.1: Water vole population density criteria

Relative population density	Approximate number of latrines per 100m of bankside habitat	
	Survey season (mid-April – June)	Survey season (July-September)
High	10 +	20 +
Medium	3-9	6-19
Low	≤ 2 (or none but with other confirmatory field signs)	≤ 5 (or none but with other confirmatory field signs)

1.2.18 A number of watercourses could not be surveyed (detailed in **Appendix A** on **Figure 2.9.C5.1**), this was due to health and safety restrictions including deep water, steep banks and impenetrable dense vegetation.

1.2.19 Water vole surveys were not undertaken at Aldhurst Farm in June 2020 due to the presence of nesting marsh harrier (*Circus aeruginosus*) but were undertaken in late August, September and October 2020.

1.2.20 See Tables 1.2, 1.3 and 1.4 and refer to **Appendix A, Figure 2.9.C5.1** for updated results.

Table 1.2: Water vole survey results 2020

Ditch/Pond Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations June	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations August	Assessment of Potential Population Density
Watercourse 5	TM 46298 66024	1 possible water vole burrow	N/A	None	Low
	TM 46075 66082	1 feeding station 1 latrine	N/A	None	
	TM 46061 66086	1 feeding station	N/A	None	
	TM 46090 66078	1 feeding station 1 latrine	N/A	None	
	TM 46091 66080	1 feeding station 1 latrine	N/A	None	
	TM 46097 66074	1 feeding station 1 latrine	N/A	None	
	TM 46094 66079	1 feeding station	N/A	None	
Watercourse 13	N/A	None	TM 45448 63470	Small mammal runs	Low
Watercourse 14	N/A	None	TM 45187 63535	Feeding signs Small mammal runs	Low

Ditch/Pond Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations June	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations August	Assessment of Potential Population Density
	N/A	None	TM 45192 63536	Latrine Feeding signs	
	N/A	None	TM 45367 63446	Small mammal runs	
	N/A	None	TM 45386 63466	Small mammal runs	
	N/A	None	TM 45413 63499	Small mammal runs	
	N/A	None	TM 45419 63511	Latrine Feeding signs Small mammal runs	
	N/A	None	TM 45420 63516	Latrine Feeding station	
	N/A	None	TM 45420 63507	Feeding signs Small mammal runs	
	N/A	None	TM 45414 63523	Feeding signs Small mammal runs	
	N/A	None	TM 45408 63529	Water vole burrow Latrine Feeding signs Small mammal runs	
Watercourse 16	N/A	None	TM 44828 63468	Feeding signs Feeding station Small mammal runs	Low
	N/A	None	TM 44842 63468	Feeding signs	
	N/A	None	TM 44853 63470	Feeding signs	

Ditch/Pond Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations June	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations August	Assessment of Potential Population Density
	N/A	None	TM 44861 63473	Feeding signs	
	N/A	None	TM 44884 63482	Feeding signs	
	N/A	None	TM 44889 63484	Feeding signs	
	N/A	None	TM 45017 63505	Feeding signs	
	N/A	None	TM 45050 63497	Feeding signs	
Watercourse 17	N/A	None	TM 45238 63386	Feeding signs Small mammal runs	Low
	N/A	None	TM 45240 63380	Feeding signs Small mammal runs	
	N/A	None	TM 45238 63373	Feeding signs Small mammal runs	
	N/A	None	TM 45237 63354	Feeding signs Small mammal runs	
	N/A	None	TM 45217 63424	Feeding signs Small mammal runs	
	N/A	None	TM 45189 63454	Feeding signs Small mammal runs	
Watercourse 18	TM 46268 66043	2 water vole burrows	N/A	None	Low
	TM 46277 66041	1 feeding station	N/A	None	
Watercourse 26	TM 46415 65786	1 feeding station	N/A	None	Low
Watercourse 43	TM 47197 64481	3 water vole burrows	N/A	None	Low

Ditch/Pond Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations June	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations August	Assessment of Potential Population Density
(Leiston Drain)	N/A	None	TM 46860 64545	Feeding signs	
Watercourse 47	TM 46552 64441	1 water vole burrow	N/A	None	Low
Watercourse 87	TM 46876 63225	1 feeding station	N/A	None	Low
Watercourse 90	TM 46873 63118	1 feeding station	N/A	None	Low
Watercourse 93	TM 46907 63005	1 feeding station	N/A	None	Low
Watercourse 101	TM 46632 63068	Feeding station	N/A	None	Low
	TM 46634 63072	Feeding station	N/A	None	
		Latrine	N/A	None	
	TM 46637 63077	Feeding stations	N/A	None	
Watercourse 103	TM 46485 63419	1 water vole burrow	N/A	None	Low
Watercourse 108	TM 46569 63623	1 water vole burrow	N/A	None	Low
Watercourse 111	N/A	None	TM 45515 63516	Water vole burrow Feeding signs Small mammal runs	Low
	N/A	None	TM 45525 63521	Latrine Water vole burrows Small mammal runs Feeding signs	
	N/A	None	TM 45530 63525	Water vole burrow Feeding signs	

Ditch/Pond Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations June	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations August	Assessment of Potential Population Density
	N/A	None	TM 45537 63529	Water vole burrow Feeding signs	

Table 1.3: Water vole survey results receptor area August 2020

Ditch/Pond Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations	Assessment of Potential Population Density
Aldhurst Farm Watercourse 109	TM 45358 63419	Feeding signs	Low
	TM 45344 63407	Feeding station	
	TM 45342 63406	Feeding signs	
	TM 45340 63405	Latrine	
	TM 45261 63332	Feeding signs	
Aldhurst Farm Watercourse 110	TM 45335 63424	Feeding signs	Low
	TM 45330 63426	Feeding signs	
Aldhurst Farm Lagoon A	TM 45055 63502	Feeding signs	Low
	TM 45018 63509	Feeding signs	
	TM 44894 63491	Feeding signs	
	TM 44889 63490	Feeding signs	
	TM 44870 63480	Feeding signs	
	TM 44862 63477	Feeding signs	
	TM 44849 63473	Feeding signs	
	TM 44826 63471	Feeding station Small mammal runs	
Aldhurst Farm Lagoon B	TM 45186 63538	Run Feeding signs	Low
	TM 45191 63539	Latrine Feeding signs	
	TM 45404 63534	Feeding signs	
	TM 45409 63530	Latrine Feeding signs Runs Burrow	
	TM 45419 63523	Feeding signs Runs (recent and old)	
	TM 45419 63517	Latrine Feeding station (on floating vegetation raft)	

Ditch/Pond Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations	Assessment of Potential Population Density
	TM 45421 63515	Feeding signs Runs	
	TM 45422 63503	Latrine Feeding signs Runs	
	TM 45391 63470	Runs	
	TM 45369 63447	Runs	
Aldhurst Farm Lagoon C	TM 45185 63463	Feeding signs Runs	Low
	TM 45216 63433	Feeding signs Runs	
	TM 45241 63390	Feeding signs Runs	
	TM 45241 63386	Feeding signs Runs	
	TM 45240 63384	Feeding signs Runs	
	TM 45238 63353	Feeding signs Runs	
Aldhurst Farm Lagoon D	TM 45447 63472	Runs	Low

Table 1.4: Water vole float and mink raft survey results September and October 2020.

Float/Raft Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations
30th September – 2nd October 2020		
Aldhurst Farm AF1	TM 45423 63513	Feeding signs Droppings
Aldhurst Farm AF2	TM 45416 63529	Droppings
Aldhurst Farm AF3	TM 45407 63539	Droppings
Aldhurst Farm AF4	TM 45389 63538	Feeding station Latrine
Aldhurst Farm AF5	TM 45377 63525	Droppings
Aldhurst Farm AF6	TM 45368 63516	Droppings
Aldhurst Farm AF7	TM 45350 63507	Droppings
Aldhurst Farm AF8	TM 44831 63465	Feeding signs Droppings
Aldhurst Farm AF9	TM 44848 63472	Droppings
Aldhurst Farm AF10	TM 44853 63471	Droppings
Aldhurst Farm AF11	TM 44860 63475	Feeding station

Float/Raft Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations
		Droppings
Aldhurst Farm AF12	TM 44869 63480	Feeding station Droppings
Aldhurst Farm AF13	TM 44901 63493	Feeding signs Droppings
Aldhurst Farm AF14	TM 44918 63495	Droppings
Aldhurst Farm AF17	TM 45210 63437	Droppings
Aldhurst Farm AF18	TM 45223 63428	Droppings
Aldhurst Farm AF19	TM 45233 63407	Droppings
Aldhurst Farm AF20	TM 45237 63391	Droppings
Leiston Drain B1	TM 47299 64519	Droppings
Leiston Drain B4	TM 47260 64504	Droppings
Leiston Drain B6	TM 47225 64493	Feeding station
Leiston Drain B8	TM 47187 64479	Droppings
12th October 2020		
Aldhurst Farm AF1	TM 45423 63513	Feeding signs Droppings
Aldhurst Farm AF2	TM 45416 63529	Feeding signs Droppings
Aldhurst Farm AF3	TM 45407 63539	Droppings
Aldhurst Farm AF5	TM 45377 63525	Droppings
Aldhurst Farm AF6	TM 45368 63516	Feeding signs (on adjacent vegetation) Droppings
Aldhurst Farm AF7	TM 45350 63507	Droppings (likely WV but washed out)
Aldhurst Farm AF8	TM 44831 63465	Droppings
Aldhurst Farm AF10	TM 44853 63471	Droppings
Aldhurst Farm AF11	TM 44860 63475	Feeding signs Droppings
Aldhurst Farm AF12	TM 44869 63480	Feeding signs Droppings
Aldhurst Farm AF13	TM 44901 63493	Feeding signs Droppings
Aldhurst Farm AF15	TM 45169 63468	Feeding signs Droppings
Aldhurst Farm AF17	TM 45210 63437	Feeding signs Droppings
Aldhurst Farm AF18	TM 45223 63428	Feeding signs Droppings
Aldhurst Farm AF19	TM 45233 63407	Droppings
Aldhurst Farm AF20	TM 45237 63391	Feeding signs Droppings
SSSI Triangle Lagoon A8	TM 47083 64360	Feeding signs (adjacent to float) Droppings
SSSI Triangle Lagoon A10	TM 47086 64346	Feeding signs Droppings
Leiston Drain B4	TM 47260 64504	Feeding signs

Float/Raft Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations
		Droppings
Leiston Drain B6	TM 47225 64493	Feeding signs Droppings
Mink Raft 6AF	TM 45174 63469	Water vole droppings Water vole footprints
13th October 2020		
Aldhurst Farm AF1	TM 45423 63513	Droppings
Aldhurst Farm AF5	TM 45377 63525	Droppings
Aldhurst Farm AF6	TM 45368 63516	Droppings
Aldhurst Farm AF7	TM 45350 63507	Droppings
Aldhurst Farm AF8	TM 44831 63465	Droppings
Aldhurst Farm AF10	TM 44853 63471	Droppings
Aldhurst Farm AF11	TM 44860 63475	Droppings
Aldhurst Farm AF12	TM 44869 63480	Droppings
Aldhurst Farm AF13	TM 44901 63493	Feeding signs Droppings
Aldhurst Farm AF14	TM 44918 63495	Droppings
Aldhurst Farm AF15	TM 45169 63468	Droppings
Aldhurst Farm AF17	TM 45210 63437	Droppings
Aldhurst Farm AF18	TM 45223 63428	Droppings
Aldhurst Farm AF19	TM 45233 63407	Droppings
Aldhurst Farm AF20	TM 45237 63391	Droppings
SSSI Triangle Lagoon A8	TM 47083 64360	Feeding signs (adjacent to float) Droppings
SSSI Triangle Lagoon A9	TM 47084 64355	Droppings
SSSI Triangle Lagoon A10	TM 47086 64346	Droppings
Leiston Drain B7	TM 47237 64500	Droppings
Leiston Drain B8	TM 47187 64479	Droppings
Mink Raft 6AF	TM 45174 63469	Water vole droppings Water vole footprints

1.2.21 See Section 3 for further details of the likely impacts on water vole as a result of the development.

1.3 Impact assessment (before mitigation or compensation)

a) Introduction

1.3.1 This Section describes potential impacts of the Sizewell C and the main development site on water vole.

1.3.2 The impact assessment showed the potential for the works to have an impact upon water vole and their habitats, namely a proportion / section of Leiston

Drain, Sizewell Marshes SSSI, Sizewell Drain and east-west running drains west of Sizewell Drain by SZB. Potential impacts are detailed within the sub-sections below.

b) Incidental mortality

1.3.3 Water vole use a series of burrows with many entrances and interconnecting tunnels. They also occasionally build woven nests in the bases of sedges and reeds. Outside of their burrows, water vole activity is largely confined to runs in dense vegetation with 2-5m of the water's edge.

1.3.4 There is the potential for incidental injury or mortality to water vole from construction plant carrying out vegetation and ground clearance works, installation of security fencing, ditch realignment during the Phase 1 preliminary works, and site establishment phases of construction. Water vole would be particularly vulnerable when they are in their burrows.

c) Habitat loss (Permanent)

1.3.5 The water vole population within the main development site would experience an impact of habitat loss through the following:

- vegetation clearance and site preparation for the SSSI crossing;
- vegetation clearance and site preparation of land to form the north-west corner of the proposed Sizewell C Station Platform located within the Sizewell Marshes SSSI (see **Appendix A**, **Figure 14C6B.2**); and
- installation of a sheet-pile barrier between Sizewell Marshes SSSI and the main development site; which would provide the platform to conduct the ditch realignment works for the diversion of the Sizewell Drain within Sizewell Marshes SSSI for approximately 500m (two options under consideration).

1.3.6 These activities would result in the loss of water vole foraging habitat and destruction of burrows.

1.3.7 The construction option chosen for the drain alignment, would require work over approximately 4.22ha of habitat that water vole may occupy and in a linear context, this represents approximately 1740m of ditch or drain. Water voles would need to be moved from these areas prior to the works commencing. Once completed, the realigned Sizewell Drain would be available for water vole to use. The location of this drain is presented in **Appendix A**, **Figure 2.9.C5.2**.

1.3.8 **Table 1.5** shows the area (or length) of water vole habitat which is due to be lost due to the construction footprint.

Table 1.5: Components of water vole habitat to be lost

Location	Length/area to be lost	Reason for loss
Leiston Drain	390m (including clear span bridge structure)	To create Sizewell Marshes SSSI crossing
Habitat lost within Sizewell Marshes SSSI	665m perimeter, 0.67ha of wet reedbed 1736m perimeter, 3.55ha of suboptimal dry reedbed	Infill for north-west corner of proposed Sizewell C Station Platform
Sizewell Drain	1319m	Drain realignment*
East-west running drains west of Sizewell Drain by SZB	31m (one section)	Drain realignment*

** Although new sections of realigned ditch will be created, this is still considered a permanent habitat loss, with replacement habitat provision. The details of the replacement realigned ditch are presented in section 1.4.*

d) Habitat fragmentation

1.3.9 The construction of the Sizewell Marshes SSSI bridge crossing rather than a culvert reduces the potential for and may eliminate fragmentation effects for water voles which would have prevented dispersal movements between Sizewell Marshes SSSI and Minsmere South Levels, along the Leiston Drain.

1.3.10 The greatest potential for short-term habitat fragmentation would be during the Phase 1 construction period, when the site clearance and construction work associated with the establishment of the Sizewell Marshes SSSI crossing is taking place. During the construction of the bridge that would form the Sizewell Marshes SSSI crossing, the integrity of the Leiston Drain and adjacent banks would be maintained, so a barrier to water vole movement via the Leiston Drain is only likely to occur for a short duration during the ground improvement works.

1.3.11 Potential fragmentation effects resulting from the SSSI Crossing have been assessed within **Volume 1**, **Chapter 2** of the **ES Addendum**. During construction, these effects are assessed as minor adverse in the worst case but are most likely to be negligible and would remain not significant. During operation, the effects are assessed as minor adverse to neutral (not significant), however the provision of the clear span bridge structure is likely to reduce the potential for and may eliminate fragmentation effects.

1.4 Mitigation strategy overview

a) Introduction

1.4.1 This section outlines the proposed mitigation strategy for water vole, a provides justification of why this strategy was chosen and an explanation of how this strategy will be implemented and follows best practice guidelines as set out in the Water Vole Mitigation Handbook (Ref 3).

1.4.2 In summary, the approach to mitigation for water vole on site includes:

- The primary approach for water vole mitigation is likely to be via displacement, given the relatively low populations detected in surveys undertaken in 2020. Displacement techniques and monitoring are proposed where there is a working area with maximum length of 50m (for watercourse this equates to 50m on each bank). However, should displacement be unsuccessful (i.e. programme, season, signs continuously recorded following vegetation clearance) trapping will be undertaken within those areas. Displacement is proposed to mitigate habitat loss/disturbance within the 31m section of the east-west running drains west of Sizewell Drain by SZB that is due to be impacted.

- Trapping out water vole from the Sizewell Marshes SSSI crossing construction footprint would only be undertaken if high populations are detected in a population resurvey prior to the works. Any capture and relocation works would be undertaken during spring and autumn periods as necessary. In spring, animals would be released directly into the receptor area at Aldhurst Farm. In the autumn and if the weather is cold (night-time temperature below freezing (0^{o}C)), a contingency option for water vole captured during the 15 September to 30 November trapping is to be over-wintered in captivity. These water vole would then be released into the receptor area the following spring (between 1 March and 15 April). Trapping is proposed to mitigate habitat loss/disturbance within:

    - Leiston Drain (where the SSSI crossing is to be constructed);
    - Habitat Sizewell Marshes SSSI (where subject to land take associated with the SZC platform); and
    - Sizewell Drain (where the ditch is being realigned).

- As soon as water voles have been removed from the areas to be impacted, their habitat would be rendered unsuitable for recolonization;

- Monitoring of water vole populations will occur prior to, during and after the above approach at the receptor site, the areas impacted by the works and the areas reinstated, such as the Sizewell Drain.

1.4.3 Once the proposed SZC main development site works have been completed, it is considered that there will be an overall increase in the population of water voles across the EDF Energy estate as a result of an increase in greater habitat availability.

1.4.4 All works that have the potential to impact water vole will be undertaken under licence from Natural England following an agreed Method Statement and would be overseen by an appropriately experienced Ecological Clerk of Works.

1.5 Water vole displacement

a) Displacement approach background

1.5.1 In England, activities aimed at displacing water vole in the context of a development project have previously been routinely undertaken without a licence, with reliance on the 'incidental result' defence. It is now considered that such activities are not covered by this defence, and therefore require a licence. The development proposals must therefore deliver a net benefit for water voles as the licence would be issued for the purpose of conservation.

1.5.2 Displacement will be used as the method for preventing incidental mortality. It is considered that the likely impacts of the project fall within the recommended restrictions of the project. According to the best practice guidelines (Ref. 3) displacement can be employed under the following circumstances (the project response is listed below in italics):

- where there is a working area with a maximum length of 50m (for watercourses this equates to 50m on each bank), although a shorter maximum length would be appropriate in situations where water voles are at high density;

  The works impacting upon the 31m section of the East-west running west of Sizewell drain is less than 50m in length. The water vole population in the ditch is low.

- works are conducted between 15 February and 15 April inclusive (although some seasonal variation is accepted depending on weather and geographical location); and

The project is proposing to conduct the displacement in this time period as far as possible, although the autumn period may also be used, subject to agreement.

- where there is sufficient available alternative habitat for water vole to move into;

  Extensive areas of water vole habitat are available both upstream and downstream of the areas of construction impact.

b) Displacement and destructive search methodology

1.5.3 In areas where impacts to water bodies supporting water vole are foreseen, displacement will be conducted followed by a destructive search which would be overseen by an experienced ecologist. The protocol for this displacement and destructive search is presented in **Table 1.6** below.

Table 1.6: Displacement and Destructive search protocol

Step	Action	
1	Before vegetation removal, identify and mark the position of all burrows in the working area so that these can be located later to ensure that they are not blocked. Confirm the absence of other constraints to the works, such as nesting birds.	
2	Remove vegetation on the bank face within the area subject to development works, plus at least an additional 3m either side of the working area, and on the bank top (i.e. at least 3m back from the bank). This would be achieved using a strimmer until only bare earth remains and will most likely be carried out in stages depending upon the vegetation conditions present. If feasible, aquatic emergent vegetation located along the water margin will be cut to below the water level.	
3	Rake off and remove any arisings from the cleared area.	
4	Check that burrow entrances have not become blocked and remove any latrines or feeding remains.	
5	If feasible and environmentally acceptable, combine with de-watering of the affected section of watercourse.	
6	Leave the strimmed area intact for five days to allow animals time to relocate.	
7	Re-survey the site for fresh evidence of water vole. If there is no evidence that water voles are still present, undertake a destructive search of the burrows (under the supervision of a suitably experienced ecologist) as follows.	
7	a	Excavate burrows to ensure that no animals are present. Hand tools would preferably be used, and excavation would extend as far as possible, bearing in mind practical health and safety constraints.
7	b	Using an excavator with a toothed bucket, slowly rake through the turf and topsoil on the bank face and top on the side that the excavator is positioned.

Step	Action	
		Then with a second or third sweep of the bucket, sensitively remove the turf and topsoil to a depth beyond which any burrows would be present.
7	c	Remove in-channel vegetation within 50cm of the toe of the bank to prevent regrowth.
7	d	Smooth the surface of the bank using an excavator with a ditching bucket (or the back of the toothed bucket). Ensure that any lumps of topsoil that might provide a refuge for water vole are removed.
7	e	Repeat the process for the opposite bank (if necessary).
8	Ensure that water vole do not return prior to the development works commencing by: • undertaking the works within five days of completing the destructive search; or • in-filling the channel immediately following the destructive search; or • maintaining the works area as bare ground until the works have taken place. This is likely to require a repeat scraping/smoothing of the banks; or • covering the ground with a suitable matting to ensure that vegetative regeneration cannot occur; or • installing suitable water vole resistant fencing to prevent water vole returning.	

1.5.4 If monitoring after the displacement but prior to the destructive search finds evidence of water vole, steps 1 – 6 will need to be repeated, or trapping will subsequently be conducted, as outlined in section a).

1.5.5 During destructive search the vegetation clearance and subsequent excavator will work in the direction that the water voles are being encouraged to move (towards retained habitat of good quality for water vole).

1.5.6 It is not foreseen that there will be any necessity to capture water vole by hand as a component of the works.

1.5.7 Throughout the construction period there will be monthly monitoring of active works areas along ditch 1 to ensure that water vole have not recolonised these areas.

1.5.8 If a licence is obtained, the approach to displacement and destructive search would be implemented as outlined within this report.

c) Works timetable

1.5.9 **Table 1.7** outlines the indicative timescale for the licensable activities.

Table 1.7: Works timetable

Activity	Timeframe	Notes
Displacement as outlined in Table 1.9	Post DCO pre-construction enabling period	
Destructive search as outlined in Table 1.9	Post DCO pre-construction enabling period	To be conducted immediately following displacement
Construction period	2023 onwards	Monitoring of the impacted areas to ensure that water vole have not recolonised will occur monthly throughout this period
Reinstatement of realigned ditch sections to allow recolonization of vegetation to occur	2023 onwards	Immediately following construction completion

1.6 Water vole trapping and translocation (if required)

a) Trapping Introduction

1.6.1 As noted above, displacement is anticipated to be the mitigation approach that will be adopted. However, in the unlikely event that trapping is required, the following methodology would be applied.

1.6.2 Trapping of water vole can only be undertaken by a person licensed to do so by the relevant Statutory Nature Conservation Organisation (SNCO) (Natural England in England) and would only be carried out by those with sufficient experience to ensure the welfare of the animals. Much of the following is adapted from the approach defined in Dean et al. (Ref. 3).

1.6.3 Trapping of water vole would only be undertaken at an appropriate time of year (1st March – 15th April and/ or 15th September – 30th November). Trapping would also not be undertaken during the following conditions:

- cold conditions – night-time temperatures below freezing (0ºC);
- hot conditions – daytime temperatures above 20ºC; and
- high rainfall/flooding – where water-level rises could be sufficient to flood the traps (the use of floating platforms may allow trapping to continue during minor water level fluctuations, but not during major flooding events which would capsize the rafts).

1.6.4 The weather forecast would be monitored daily during any the trapping exercise, and the traps would be securely closed or removed if adverse weather conditions arise or forecast.

b) Traps

1.6.5 An ideal metal trap type for capturing water vole is constructed from 1cm × 1cm weld mesh with an aluminium or wooden shelter at one end. Its basic dimensions are 50cm long × 15cm wide × 15cm high. The aluminium shelter sits over the far end of the trap and is 215mm in length. The traps have a spring-loaded mechanism allowing a very light treadle weight and have a simple locking bar fitting in their doors which activates on closure. These traps are light and easy to handle.

1.6.6 Traps would be thoroughly cleaned, disinfected, rinsed in clean water and dried after use and between trapping sites. In areas with bovine tuberculosis (TB), care needs to be taken to ensure that the agent is effective against mycobacteria (e.g. Trigene © is an effective agent whereas Virkon is not).

1.6.7 If trapping is undertaken during inclement weather conditions, then wooden covers over the nesting areas of the trap would be used to insulate the bedding area. These can be additionally insulated with a covering of 'bubble-wrap' if poor weather conditions persist.

1.6.8 Traps would be checked prior to use to ensure that they are in complete working order. Any traps which break, or malfunction would be immediately replaced. Each trapping team would have enough traps to allow for a replaceable reserve.

c) Locating and securing traps

1.6.9 Traps would be placed at a density of at least one per 10m of bank and where possible would be located parallel to the bank edge and immediately adjacent to latrine sites or in areas where runs are obvious. The ground beneath the trap would be flattened as far as possible without damaging the bank, to allow the trap to sit securely, and where possible placed on a slight incline with the nest chamber highest, to prevent submersion in the event of minor fluctuations in water level. All traps would be secured with pegs, to prevent them being dislodged.

1.6.10 Traps would not be set in precarious positions where the movement of captured animals could lead them to fall into water, or in situations where human interference is likely to occur[1].

[1] Traps can also be set on floating platforms (such as mink rafts, or purpose-built structures). This approach is particularly helpful in capturing animals from wetland habitat where there is no bank; where the bank is too steep to

1.6.11 Each trap would be uniquely numbered with indelible pen and either clearly marked using flags (where interference by the public is unlikely, as in this location) or their locations mapped accurately to ensure they can be relocated. All trap locations should also be recorded using a hand-held Global Positioning System (GPS).

1.7 Provisioning traps

1.7.1 Traps would be provisioned with dry straw bedding and half a fresh, sweet apple. Additional food can also be provided (e.g. pieces of carrot). These materials would be checked daily and changed at least every second day.

a) Checking traps

1.7.2 Traps would be checked at least twice daily:

- early morning check, between 6am and 10am, with all traps checked by 10am; and
- late afternoon/evening check, before dusk.

1.7.3 During warm weather conditions a third check in the middle of the day would be undertaken.

b) Handling captured animals

1.7.4 Handling of water vole would only be undertaken by individuals holding an SNCO licence, or their accredited agents. In the event of any trapping works being required, captured water vole would be released at the Aldhurst Farm receptor site. All animals would be examined upon release from the trap to determine their sex and approximate size. They would then be placed in a suitable container for transportation, such as a standard rodent laboratory cage.

1.7.5 When water voles are captured, traps would be replaced on the same spot, as it is likely that more than one animal would be present. Particular care would be taken to ensure that more than a single trap is placed side by side at any location where very small juveniles (30–50g in weight) have been

allow traps to be set safely; where most of the latrines are located some distance from the bank on floating vegetation; or where water levels are likely to fluctuate, such as downstream of an outfall or in an artificially or tidally impounded reach. Floating platforms are also useful where the disturbance of traps by dogs or foxes is likely. They must be sufficiently buoyant and stable to ensure that they can support a water vole's weight (or that of any non-target species), and therefore must be of higher specification than those simply used for undertaking surveys. The traps must be secured to the platform, to ensure that they do not roll into the water, and the platforms must be secured using canes or similar, to prevent them floating away. They also need to be tethered in a way which allows them to rise and fall with changes in water level, and they should not be used in situations where there is significant water wash from boat traffic, which could cause them to capsize.

captured. The chance of catching other sibling litter mates at the same point is high. These can be placed in holding cages together if they are captured at the same location but should not be mixed with any other adults.

1.7.6 All field staff would be made aware that water vole can carry leptospirosis, and be familiar with its symptoms, pathways for transmission to humans, and the precautions necessary when handling water voles to minimise the risk of infection.

c) Completion of trapping

1.7.7 Trapping would be considered to be complete once there has been a period of five days or more when overnight temperatures are above freezing, with no captured animals, and there are no new field signs within the capture site. Once completed, a destructive search of the area would be undertaken. Any animals found during the destructive search would be captured with nets or by hand and transported as described above.

1.7.8 Whilst considered at the time of writing as unlikely, based on the 2020 survey data collected (Appendix B.4), in the event of a large trapping exercise being required within any part of the site, it may be appropriate to consider completing trapping in some parts of the site before others, to prevent the chances of animals recolonising the cleared areas. Further consideration is to be given to this, particularly in light of the difficulties in accessing the area for all of the works described above.

d) Soft release

1.7.9 Water vole that are relocated by trapping would be released into their receptor site using a soft-release technique taken from Dean et al. (Ref .3). Although there is a lack of evidence of the additional benefits of soft-release versus hard-release (or indeed of the potential benefits of a longer-term soft-release than that described below) it is the professional opinion of the authors that the use of soft-release pens is likely to increase the number of animals surviving at release sites by providing animals with time to adjust to their new location. There are two basic methodologies for this process:

- The creation of pens with no base that are sunk into the ground to a depth of at least 25cm adjacent to the water's edge. These can be complete (fold-up) units or constructed from separate materials.
- Complete cages positioned in the riparian vegetation next to the water's edge from which animals cannot escape until a front section (with 6cm diameter holes in either side of a predator-proof baffle) is fitted.

1.7.10 Although both systems can work well each has its advantages and disadvantages discussed in the following sections.

ii. Pens with no base

1.7.11 Using this release technique, the water vole burrows out of the holding pen. Studies of radio-collared individuals (P. Franklin, personal communication) demonstrated that they would remain under these structures, in the burrow systems they have established, for many days before moving out into the wider environment. Once in position, these cages are difficult to move and if water levels fluctuate, they can rapidly be submerged. In addition, if they are not designed as complete units and their construction materials leave gaps in the overall structure then the vole can readily escape before they have settled. Under certain ground conditions, such as stony soils, they can be hard to reliably install. They need to be covered at least partially from the weather and securing predator-proof lids can be difficult.

1.7.12 A successfully used design is constructed from aluminium, which folds down for transport, and has a hinged lid for feeding access. It is completely weather-proof, with a floor area of approximately 45cm × 45cm and a maximum height of 25cm. Once dug in, these pens are fitted with a cardboard sheet (5mm thick) in their base through which the water vole have to gnaw to access the soil beneath. The top lid functions as an access door for feeding and maintenance. These cages needed to be well shaded to avoid them heating up excessively, so they would be located to avoid direct or dappled sunlight.

iii. Complete cages

1.7.13 Using this technique, water voles are completely contained. Although they cannot establish burrow systems they would rapidly come and go from both their own and adjacent cages once the fronts are folded under the main cage and a baffle (to deter large predator access) is placed in position. These types of release cages are easier to install in some cases (such as stony soils) and are easier to move if this is needed during the release. The water voles are released from this structure by folding the front section under the main cage and then fitting a baffle with 6cm diameter holes at either side.

1.7.14 These cages can also be used as an on-site holding facility in situations where the release of water vole needs to be delayed, such as to allow vegetation within the receptor site to become better established. In such cases the cages must have a covered section on their top, back and sides to prevent the bedding getting damp. This can be achieved by partially covering the cage with a tarpaulin. The pens must be positioned in an entirely secure location where they cannot be removed or interfered with in any way by

predators or people. Their position in a receptor habitat must be well above the level of any potential rises in water level.

iv. Release

1.7.15 If groups of siblings are being released together, up to seven individuals can be released using either technique. Family groups of a mother and young can also be released together. In other circumstances, water vole should be released as individuals rather than in groups. Individuals of the same sex should be separated by a minimum of 40m intervals along the waterway (two pens, one containing a male, one a female, per 40m length). The pens should be sited as close to the water as possible, in (or near) tall vegetation. Release pens should be situated away from public access. If this is impossible then a security fence may be required to prevent interference.

v. Provisioning

1.7.16 Release pens must be checked daily during the relocation operation to ensure that the animals have enough food. They should be supplied with a straw-bale-section (one-sixth of a bale) to provide cover and bedding. In the experience of the authors, each water vole should be provided with quarter of a sweet apple, half a carrot and cut external vegetation daily; and the animals should be supported with food for eight days in the dug-in cage system before these are removed, leaving the old bedding in place. In the complete cage system, they should be supported with food for five days, released on the sixth day and then fed for another three days. Once again, all the old bedding from these pens should be left *in situ* on the bank. In situations where water vole are to be held in complete cages for longer than six days, as an on-site holding facility (see above), they should also be provided daily with a small bowl of dry alfalfa-rich rabbit feed and drinking water (clip-on water bottles should be attached to the side of the cage). Shallow metal trays, 60cm long × 30cm wide × 10cm deep can also be provided as swimming trays. The cages should need to be checked daily to ensure that they are intact, and food and water must be replenished daily.

e) Taking into captivity

1.7.17 In the event of trapping being required and animals needing to be kept in captivity e.g. if trapping is required to be undertaken in autumn between 15 September to 30 November inclusive and the weather is cold (night-time temperature below freezing (0ºC)) in the autumn, there would be a contingency option for any water vole captured in the 15 September to 30 November window to be over-wintered in captivity and subsequently released into the Aldhurst Farm receptor area the following spring.

1.7.18 The following organisations are believed to have the facilities to hold water vole in captivity (should this be required if the weather turns cold (night-time temperature below freezing (0°C)) during an autumn trapping programme):

- Chester Zoo (British and Irish Association of Zoos and Aquariums (BIAZA) registered).
- Derek Gow Consultancy.
- M&H Ecology.
- Wildwood Ecology (BIAZA registered).

1.7.19 All facilities and care regimes for water vole must be fully compliant with the legislative requirements present in the Welfare of Animals Act (Ref. 4). Ideally animals would be held by organisations registered with the British and Irish Association of Zoos and Aquariums (BIAZA) or in similar facilities (such as those noted above) which can maintain a consistently high standard of captive care and maintenance.

1.7.20 All operatives handling water vole must be suitably experienced and use appropriate equipment.

f) Post trapping destructive search

1.7.21 The following steps (outlined in **Table 1.8**) would be undertaken after the completion of any trapping. This approached has been adapted from the guidance in the most recent water vole guidance (Ref. 3).

Table 1.8: Post trapping destructive search protocol

Step	Action
1	Re-survey the site for fresh evidence of water vole. If there is no evidence that water voles are still present, undertake a destructive search of the burrows (under the supervision of a suitably experienced ecologist) as follows.
2	Excavate burrows to ensure that no animals are present. Hand tools would preferably be used, and excavation would extend as far as possible, bearing in mind practical health and safety constraints.
3	Using an excavator with a toothed bucket, slowly rake through the turf and topsoil on the bank face and top on the side that the excavator is positioned. Then with a second or third sweep of the bucket, sensitively remove the turf and topsoil to a depth beyond which any burrows would be present.
4	Remove in-channel vegetation within 50cm of the toe of the bank to prevent regrowth.
5	Smooth the surface of the bank using an excavator with a ditching bucket (or the

Step	Action
	back of the toothed bucket). Ensure that any lumps of topsoil that might provide a refuge for water vole are removed.
6	Repeat the process for the opposite bank (if necessary).
7	Ensure that water vole do not return prior to the development works commencing by: • undertaking the works within five days of completing the destructive search; or • in-filling the channel immediately following the destructive search; or • maintaining the works area as bare ground until the works have taken place. This is likely to require a repeat scraping/smoothing of the banks; or • covering the ground with a suitable matting to ensure that vegetative regeneration cannot occur; or • installing suitable water vole resistant fencing to prevent water vole returning.

g) Timetable of trapping and translocation works

1.7.22 The timetable of the works described is dependent upon weather (i.e. extreme weather events such as high rainfall, daytime temperatures above 20ºC and night-time temperature below freezing 0ºC), trapping success and the completion of other ongoing protected species mitigation works being conducted within the application site. Any trapping works is anticipated to take a maximum of 21 days. The predicted timetable for the works can be seen in **Table 1.9** below [to be confirmed].

Table 1.9: Proposed timetable and summary of water vole mitigation trapping works at the application site (if required). If needed the mitigation works would aim to be completed in autumn 2022.

Activity and Key Points (if required in addition to the displacement activities)	Approximate Dates
Updated surveys	TBC
Licence submission	TBC
Licence granted This date assumes a 30 working day turnaround for the licence from submission to Natural England and any amendments in the event of trapping being required and a licence addendum needing to be submitted to cover any trapping works.	TBC
Site resurveyed to determine trap positioning This will allow the current status of water vole within the survey site to be assessed.	TBC
Installation of soft release pens Once a licence has been granted, soft release pens will be installed at the receptor site. The time between installation and the commencement of trapping will allow any damaged vegetation to recover prior to any animals being translocated to the release pens.	TBC
Baited traps opened.	TBC
Checking of open traps All open traps will be checked twice daily. Any captured animals will be moved to receptor site release pens and provisioned with adequate food resources.	TBC
Closing of traps Once a minimum of ten trapping days in suitable weather have been conducted with no animals being caught for 5 consecutive days, the destruction of habitat will be allowed. Should the destruction of habitat be postponed, the traps will remain active and in situ right up until the destruction of habitat occurs to ensure no window of opportunity exists for water vole to re-colonise.	TBC

Activity and Key Points (if required in addition to the displacement activities)	Approximate Dates
Destruction of habitat Once the site is determined to have been cleared of water vole and other protected species, the site will be destroyed under supervision of a suitably qualified ecologist, according to the methodology outlined in the Water Vole Conservation Handbook.	TBC
Soft release of captured water vole Once it is determined that all animals in the application site have been relocated and water vole habitat at the application site has been destroyed, or individual water vole have been held in release pens for 21 days, any captured animals present in release pens will be released through the removal of a small baffle. This will only occur if animals have been in the release pens for a minimum of four days. The pens will be left in-situ to provide shelter for the released animals and food supplies will continue to be provisioned.	TBC
Removal of soft release pens Five days after the animals are released from the soft release pens, these pens will be removed entirely. Any remaining bedding and food will be left in-situ.	TBC

1.8 Compensation

a) Release location

1.8.1 The proposed release location for any trapped water voles is the Aldhurst Farm receptor site where habitat enhancement and creation measures were implemented in 2014 to 2016, with ongoing management of the area.

1.8.2 The Aldhurst Farm area (bounded by Lovers Lane to the north and east, Valley Road to the south-east, and Leiston to the west and south-west) was in arable use up until 2014. It has the upper reaches of the Leiston Drain crossing the site from east to west and is immediately adjacent to the Sizewell Marshes SSSI to the east. Surveys found water vole present in the Leiston Drain.

1.8.3 Overall, the release site offers more extensive habitat than that being lost to the development, as presented in **Table 1.10**.

Table 1.10: Habitat loss and gain as a result of the development

Donor site		Receptor/habitat enhancement site	
Location	**Habitat loss - Size (perimeter/ length in m, or area in ha)***	**Location**	**Habitat Created/Enhanced - Size (perimeter/ length in m, or area in ha)**
Leiston Drain	390m of permanent habitat loss (Inc. the clear span bridge structure) on two banks	Aldhurst Farm lagoons and reedbed habitat creation/enhancement (including the release site the northern boundary on lagoon A.)	The total area of wetland habitat created / enhanced within Aldhurst Farm is approximately 6.2ha which includes: Wet reedbed (excluding open water areas) 3.15ha Open water within wet reedbed (assume 25% from 20—30% stated in Ecology and Landscape Management Plan, Appendix A) 1.1ha Dry reedbed and reed-based tall herb fen 1.2ha Approximately 2km of ditch (0.8ha) Of which the release area (Lagoon A) is approximately 1.9ha with approximately 790m of ditch
Sizewell Drain	Within SSSI triangle: 1319m of permanent habitat loss on two banks	Ditch realignment of Sizewell and Leiston Drain	Ditch realignment of Sizewell and Leiston Drain will create 1.09km of ditch
East-west running drains west of Sizewell Drain	31m (one section)	New habitat in the north eastern extent of the site	New habitat to be created in the marsh harrier habitat improvement areas of the site will comprise of 3.06ha of reedbeds and open water and 0.7ha of wet woodland
Lagoon and associated reedbed in SSSI	0.67ha of wet reedbed 3.55ha dry reedbed		
Total Area Lost:	4.22ha of reedbed	Total Area Available:	6.65ha Reedbed

Donor site		Receptor/habitat enhancement site	
Location	**Habitat loss - Size (perimeter/ length in m, or area in ha)***	**Location**	**Habitat Created/Enhanced - Size (perimeter/ length in m, or area in ha)**
	1740m of ditches	• Aldhurst farm • New habitat to be created in the marsh harrier habitat improvement areas created areas	1.86ha Open water 0.7ha Wet woodland Approximately 3km of ditches

1.8.4 Approximately 6.2ha of wetland and 2km of ditch and open water were created on this site in 2014 in the form of four lagoons either side of the Leiston Drain. These lagoons were designed to ensure that the reedbed and lowland ditch habitats could establish and develop a similar biodiversity value to those within the adjacent Sizewell Marshes SSSI. They were created through lowering the ground to expose the water table, securing water levels during low rainfall, with weirs to maximise water-level control.

1.8.5 The newly created lagoon banks and reedbed have established well and currently provide suitable habitat for water vole to burrow in; the reedbeds provide habitat for water vole to build nests in, and the diverse flora provides suitable foraging habitat.

1.8.6 The western-most lagoon (Lagoon A, see **Appendix A**, **Figure 14C6B.7**) has an area of approximately 1.9ha and a ditch perimeter of approximately 790m. This lagoon has been designed to be the receptor site for water vole translocated from Sizewell C. A site visit on 6 October 2016 and subsequent visits in 2018 revealed that Lagoon A has establishing well as a potential water vole receptor site (see **Table 1.11**). Lagoon A was fenced with water vole-proof fencing in the spring of 2018. The outflows to the ditch system were covered in fine mesh to prevent ingress by water vole. Further site visits in 2018 (19 June and 7 August) confirmed the absence of water vole and the on-going development of the habitat as suitable for water vole. During the 2020 survey visits a small number of water vole field signs were found within the receptor site in Lagoon A where a breach in the fence had occurred. Following a review of the lagoon and surveys to confirm water vole population densities, the northern extent of Lagoon A is still considered suitable for use in the unlikely event that trapping works need to be undertaken.

1.8.7 A visit was undertaken in November 2019 to evaluate the ongoing management of the area and additional management prescriptions were recommended to ensure optimum quality.

Table 1.11: Photos of Lagoon A, Aldhurst Farm in 2016 and 2018

From west, looking east (06/10/16).	From east, looking west (06/10/16).
	
From west, looking east (22/06/18).	From west, looking east (22/06/18).

1.8.8 Plants identified within the reedbed in 2018 include: Water-plantain (*Alisma plantago-aquatica*), Bulrush (*Typha latifolia*), Purple-loosestrife (*Lythrum salicaria*), Water-cress (*Nasturtium officinale*), Pendulous Sedge (*Carex pendula*) and Hoary Willowherb (*Epilobium parviflorum*). Patches of Bramble (*Rubus fruticosus agg.*) were also developing around edge of reedbed. Therefore, the reedbeds and banks have become optimal habitats for water vole.

1.8.9 The other created lagoons and reedbeds at Aldhurst Farm (Lagoons B, C and D, see **Appendix A**, **Figure 14C6B.7**) have been created as compensatory habitats to offset the land take impacts associated with Sizewell SSSI Marshes described above, including habitat loss to water vole. Lagoons B, C and D have not been fenced off to prevent the natural colonisation of water vole. In habitat area terms, these lagoons would provide a conservation benefit to water vole and offset the overall habitat loss and fragmentation effects from the Sizewell C project in relation to reedbeds and ditches.

1.8.10 A management plan for Aldhurst Farm has been prepared and approved by the Local Planning Authority, ensuring the maintenance of habitat suitable for water vole. See Appendix C.

1.8.11 In addition to the Aldhurst Farm habitat areas, described above, a new area of reedbed and wet woodland would be created in the north-eastern extent of the site. The area will comprise a mosaic of reedbed and open water (3.06ha) and wet woodland (0.7ha) adjacent to extensive areas of dry grassland and scrub created as habitat improvement areas for marsh harriers and surrounded by existing woodland to the north and east of the newly created habitat (see **Appendix A**, **Figure 2.9.C5.3**). These wetland habitats would form an extension to the Minsmere South Levels to the north and east

and when established would also be suitable for colonisation by water voles in due course.

1.8.12 Research has shown water vole require an area of 204m² per individual (based on home range minimum requirement of 185m² per animal with 10% included for resilience) (Ref. 5) and individual water vole of the same sex can also be released into receptor areas at 40m intervals along waterways with one male and one female being able to be released per 40m length (Ref. 3).

1.8.13 The 2009 survey results calculated an estimate of 5.2 individuals per 100m of ditch habitat. Based on the areas and lengths of water vole habitat that will be lost as part of the development (4.22ha of reedbed and 1740m of ditches) the maximum number of water vole that could be supported by these areas and potentially impacted would be approximately 295 individuals.

1.8.14 Taking into consideration the area and extent of habitat provided in the Aldhurst Farm receptor area (6.2ha reedbed and 2 km ditches) the receptor area has the potential to support a maximum of 353 individuals based upon the research above.

1.9 Monitoring and management

1.9.1 A regular monitoring programme, both during and after construction, is required to:

- assess the effectiveness of the mitigation; and
- provide early warning of any adverse trends in the population so that appropriate action can be taken.

1.9.2 This approach will provide the best opportunity of ensuring no adverse impacts arise on water vole populations over the short- or long-term.

1.9.3 Monitoring would be undertaken at both the construction site (and several hundred metres either side of it) and at the receptor site at Aldhurst Farm.

1.9.4 Monitoring water voles will provide information on:

- the establishment and success of the translocated population at the Aldhurst Farm receptor site;
- colonisation of the realigned Sizewell Drain;
- re-colonisation of the Leiston Drain; and
- population interchange across the new SSSI Crossing.

1.9.5 Surveys will be carried out during the breeding season (March to October), and at a time of year when field sign survey results can be compared with pre-construction survey data. The monitoring would be undertaken for a five-year period, in accordance with the guidelines set out in the Water Vole Mitigation Guidelines (Ref. 3). Specific survey techniques are likely to be required to determine the extent of population interchange across the new SSSI Crossing.

1.9.6 Management of the receptor site will continue throughout the life cycle of the Sizewell C reactor and will be the responsibility of the site operator (SZC Co.). In the event of the receptor sites not being required and trapping and relocation works not needed, the exclusion fencing surrounding these areas will be removed and the areas made accessible for the local water vole population to naturally expand into and colonise. The management of the receptor site and of the existing ditches impacted by the works, realigned ditches and newly created habitats at Aldhurst Farm is designed to prevent incidental mortality and to achieve an optimum habitat as outlined in the Water Vole Conservation Handbook (Ref. 6). An approved (by the Local Planning Authority) management plan is in place and is presented in **Appendix C**.

1.10 Development timetable

a) Timetable summary

1.10.1 **Table 1.12** shows the proposed construction and operational phases of the SZC main development site works. Where applicable, inputs in relation to water vole mitigation are also included.

Table 1.12: Construction and Operational Phases in relation to water vole mitigation

Phase	Generic action	Specific action	Timing
Preliminary works	Activities proposed prior to a DCO being granted, to expedite the delivery of the works.	Fencing to exclude water vole from proposed Aldhurst Farm receptor site, and further habitat enhancement.	Completed 2018. Maintenance ongoing.
		Surveys to confirm absence of water vole at proposed Aldhurst Farm receptor site.	Completed 2018. To be updated in 2020
		Draft licence preparation as part of the DCO.	2020
		Pre-licence population surveys at Sizewell Marshes SSSI crossing construction footprint.	2021
		Final licence preparation.	2021
		Licence submission.	Post DCO grant
Phase 1: Site establishment and preparation for earthworks	Establishment of the site and preparations for the main earthworks, focussing on securing and clearing the site and provision of early access routes. Ditch realignment.	Displacement of water vole from sections of watercourses to be impacted within the redline boundary. In the event of further mitigation being required in addition to displacement activities, spring (ideally) or autumn trapping of water vole from Sizewell Marshes SSSI crossing construction footprint (and if required, over-wintering in captivity).	Post DCO pre-construction enabling period

Phase	Generic action	Specific action	Timing
	Installation of Sizewell Marshes SSSI crossing	Release of water vole from captivity (if required) into Aldhurst Farm receptor site.	Post DCO pre-construction enabling period
		Displacement of water vole from 30m sections of Sizewell Drain.	Post DCO pre-construction enabling period
Phase 2: Earthworks	Main ground materials which overlay construction area transported to the stockpile areas within the temporary construction area. New reedbed and wet woodland habitats to be created in the north eastern extent of the site	On-going monitoring programme at receptor site and Sizewell Marshes SSSI crossing construction footprint.	2023 onwards
Phase 3: Main civil works	Main civil engineering works.	On-going monitoring programme at receptor site and Sizewell Marshes SSSI crossing construction footprint.	Years 9-12
Phase 4: Fit out, instrumentation and commissioning	Mechanical and electrical plant installation phase.	On-going monitoring programme at receptor site and Sizewell Marshes SSSI crossing construction footprint.	Years 9-12
Phase 5: Removal of temporary facilities and restoration	As the main construction phases conclude, temporary facilities would start to be removed and the temporary construction site areas restored to an agreed state consistent with Landscape Strategy for the EDF Energy estate.	On-going monitoring programme at receptor site and Sizewell Marshes SSSI crossing construction footprint.	Years 9-12
Operational phase	On-going monitoring programme at receptor site, realigned ditches, crossing clear span bridge structure and Sizewell Marshes SSSI crossing footprint.		Post year 9-12 upon completion of construction phase works

1.11 Project plan for conservation gain

a) Net conservation gain

1.11.1 Macpherson & Bright (Ref. 7) considered the landscape approach to water vole conservation. They have shown, from population modelling, the importance of creating (through habitat creation/restoration of large reedbeds and grazing marsh sites) 'patches' of core water vole habitat which can sustain water vole metapopulations in the surrounding landscape where conditions are less favourable.

1.11.2 Although water voles were recorded in the Leiston Drain at Aldhurst Farm prior to the habitat creation programme, only a small number of signs were found, and the surrounding land was agricultural land, of negligible value for water vole. Habitat creation at Aldhurst Farm has created and would maintain a mosaic of habitat suitable for water vole including: approximately 5.4ha of wet and dry reedbed habitat (incorporating between 20-30% open water habitat) and approximately 2km of ditch habitat characteristic of lowland ditch habitat.

1.11.3 In addition, the new reedbed and wet woodland habitats in the north eastern extent of the main development site will be created during the construction phase and will likely to have established and available for use during the final stages of construction. These habitats, once established, would represent a net gain for water vole.

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APPENDIX A: FIGURES

A.1. Figure 2.2.8: Changes to the Main Development Site Boundary

A.2. Figure 2.9.C5.1: Combined 2020 Water Vole Survey Results

A.3. Figure 2.9.C5.2: Location Plan of the SSSI Crossing

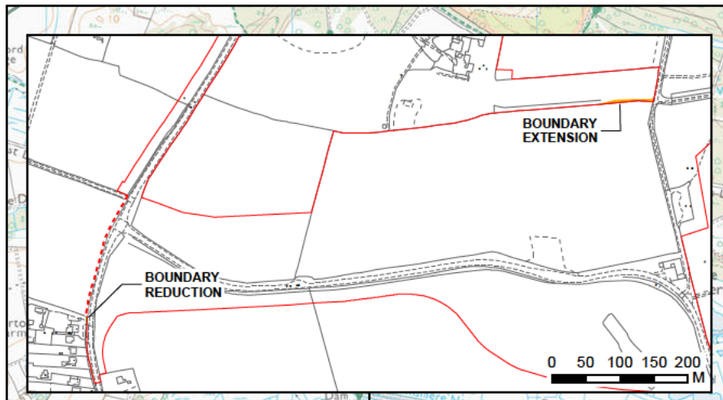
A.4. Figure 2.9.C5.3 : Reedbed and Wet Woodland Habitats To Be Created In The North Eastern Extent of The Site

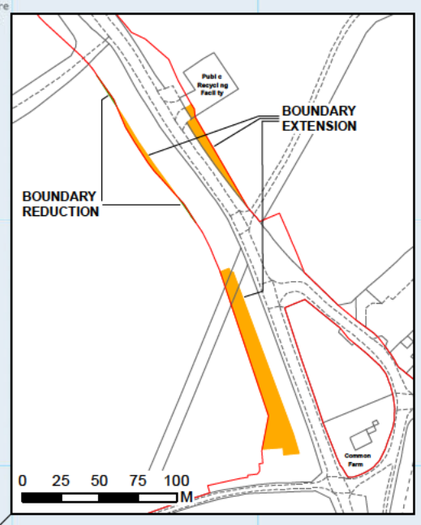
A.5. Figure 14C6B.1: Sizewell C Construction Areas.

A.6. Figure 14C6B.2: Sizewell C Site Layout.

A.7. Figure 14C6B.3: Previous Survey Results (2009 survey)

A.8. Figure 14C6B.7: Aldhurst Farm Habitat Creation.





BOUNDARY REDUCTION

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NOTES

KEY

- SIZEWELL C MAIN DEVELOPMENT SITE BOUNDARY
- DEMARCATION LINE
- SITE BOUNDARY EXTENSION
- SITE BOUNDARY REDUCTION

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DOCUMENT:
ENVIRONMENTAL STATEMENT ADDENDUM
VOLUME 2
CHAPTER 2
MAIN DEVELOPMENT SITE

DRAWING TITLE:
CHANGES TO THE SITE BOUNDARY OF THE MAIN DEVELOPMENT SITE

DRAWING NO:
FIGURE 2.2.28

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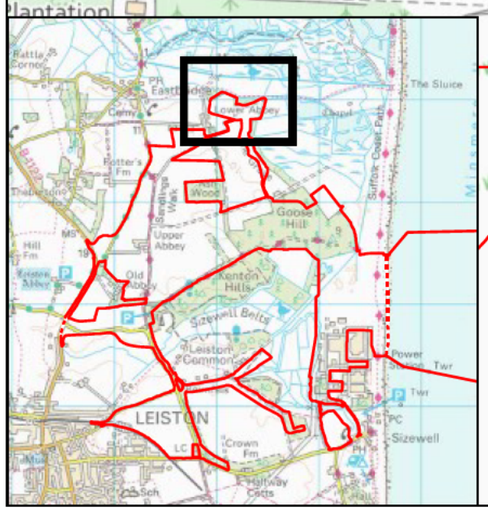
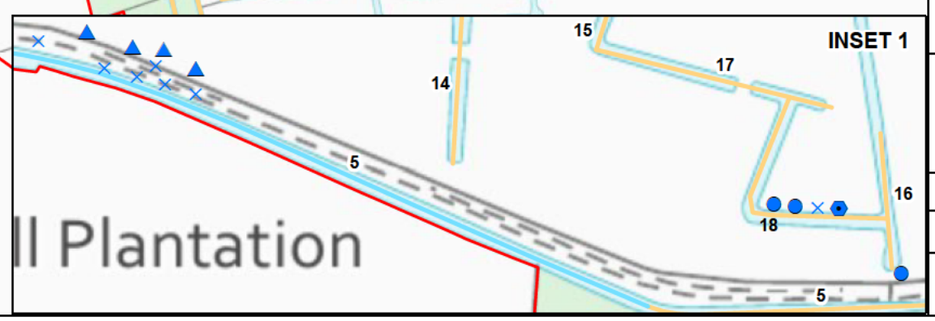
JAN 2021	C.N.	1:25,000 @A3	01

SCALE BAR
0 0.2 0.4 0.6 0.8 1 KM

Minsmere Old River
Drain
Cowmarsh Hill
Minsmere New Cut
Track
Path
Dovehill Plantation
SEE INSET 1
Sandypytle Plantation
Lower Abbey Farm
The Grove
Plantation
LEISTON
Sizewell
Track





NOTES

KEY

- SIZEWELL C MAIN DEVELOPMENT SITE BOUNDARY
- DEMARCATION LINE

WATEROURSE SURVEY STATUS

- NOT SURVEYED
- PARTIALLY SURVEYED
- SURVEYED

JUNE 2020 WATER VOLE SURVEY RESULTS

- BURROW
- FEEDING STATION
- OTHER SIGN
- SMALL MAMMAL HOLE
- LATRINE

AUGUST 2020 WATER VOLE SURVEY RESULTS

- BURROW
- FEEDING STATION
- FEEDING SIGNS
- SMALL MAMMAL RUN
- LATRINE

NOT PROTECTIVELY MARKED

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DOCUMENT:
ENVIRONMENTAL STATEMENT ADDENDUM
VOLUME 3
APPENDIX 2.9.C5
WATER VOLE DRAFT LICENCE UPDATE - METHOD STATEMENT

DRAWING TITLE:
COMBINED 2020 WATER VOLE SURVEY RESULTS
SHEET 1 OF 6

DRAWING NO:
FIGURE 2.9.C5.1

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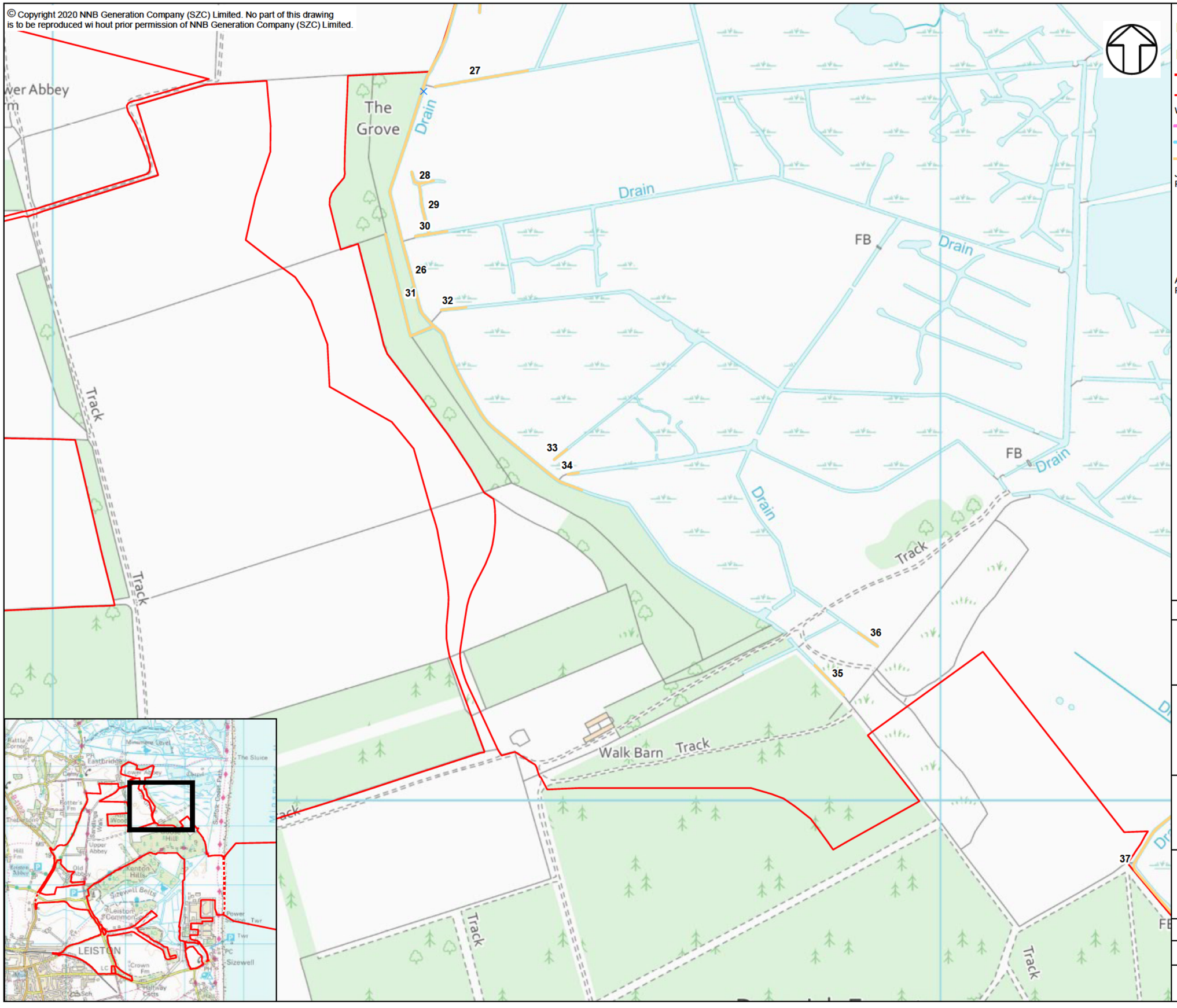

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WATEROURSE SURVEY STATUS

- NOT SURVEYED
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JUNE 2020 WATER VOLE SURVEY RESULTS

- BURROW
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- OTHER SIGN
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- LATRINE

AUGUST 2020 WATER VOLE SURVEY RESULTS

- BURROW
- FEEDING STATION
- FEEDING SIGNS
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- LATRINE

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COMBINED 2020 WATER VOLE SURVEY RESULTS
SHEET 2 OF 6

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FIGURE 2.9.C5.1

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Dunwich Forest
Hilltop Covert
Nursery Covert
Grimseys
Goose Hill
Walk Barn
Track
Drain
FB
FBs
Path
9m
12m
LEISTON
Sizewell

NOTES

KEY

- SIZEWELL C MAIN DEVELOPMENT SITE BOUNDARY
- DEMARCATION LINE

WATEROURSE SURVEY STATUS

- NOT SURVEYED
- PARTIALLY SURVEYED
- SURVEYED

JUNE 2020 WATER VOLE SURVEY RESULTS

- BURROW
- FEEDING STATION
- OTHER SIGN
- SMALL MAMMAL HOLE
- LATRINE

AUGUST 2020 WATER VOLE SURVEY RESULTS

- BURROW
- FEEDING STATION
- FEEDING SIGNS
- SMALL MAMMAL RUN
- LATRINE

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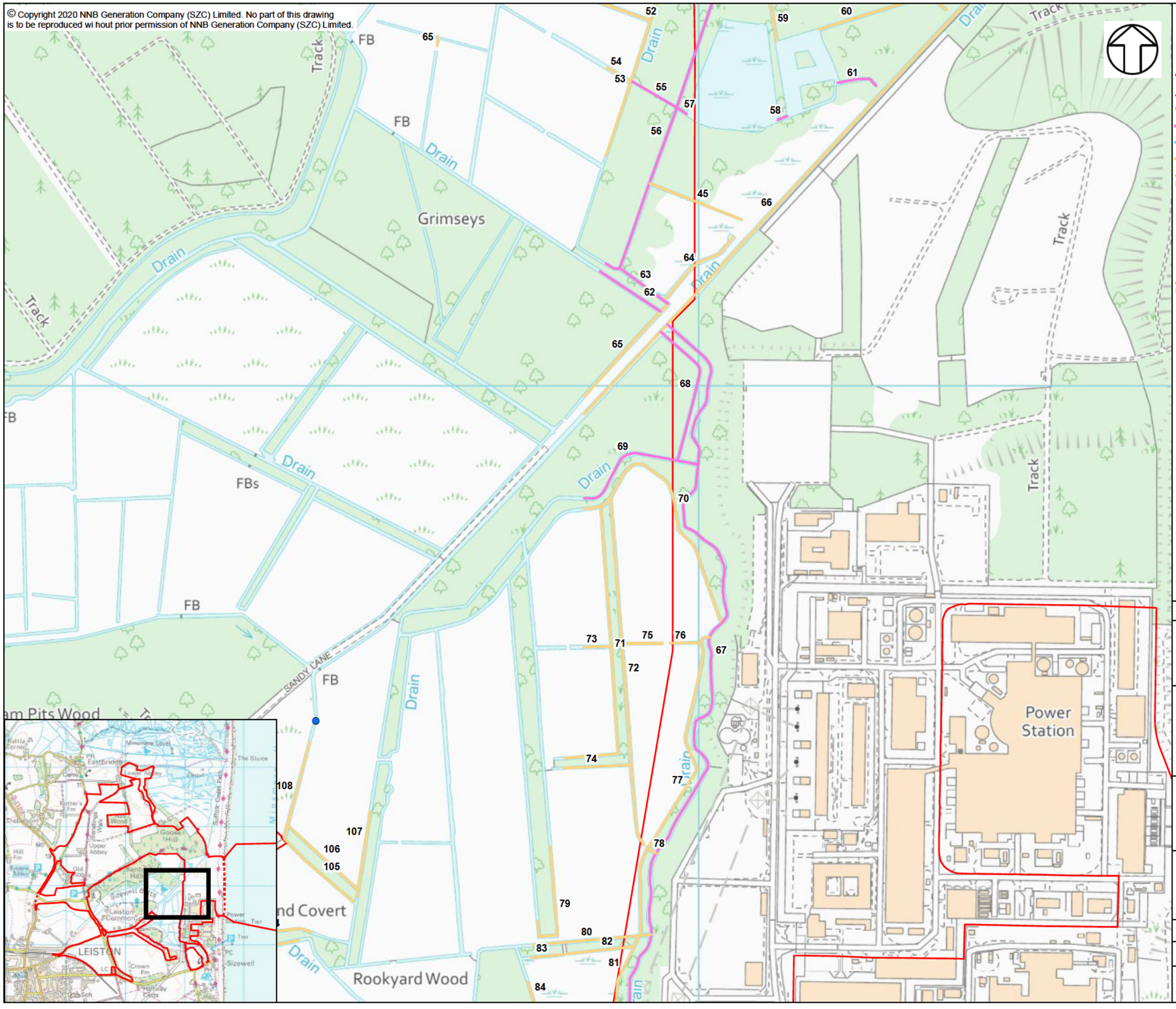

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WATEROURSE SURVEY STATUS

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- SURVEYED

JUNE 2020 WATER VOLE SURVEY RESULTS

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- LATRINE

AUGUST 2020 WATER VOLE SURVEY RESULTS

- BURROW
- FEEDING STATION
- FEEDING SIGNS
- SMALL MAMMAL RUN
- LATRINE

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SHEET 4 OF 6

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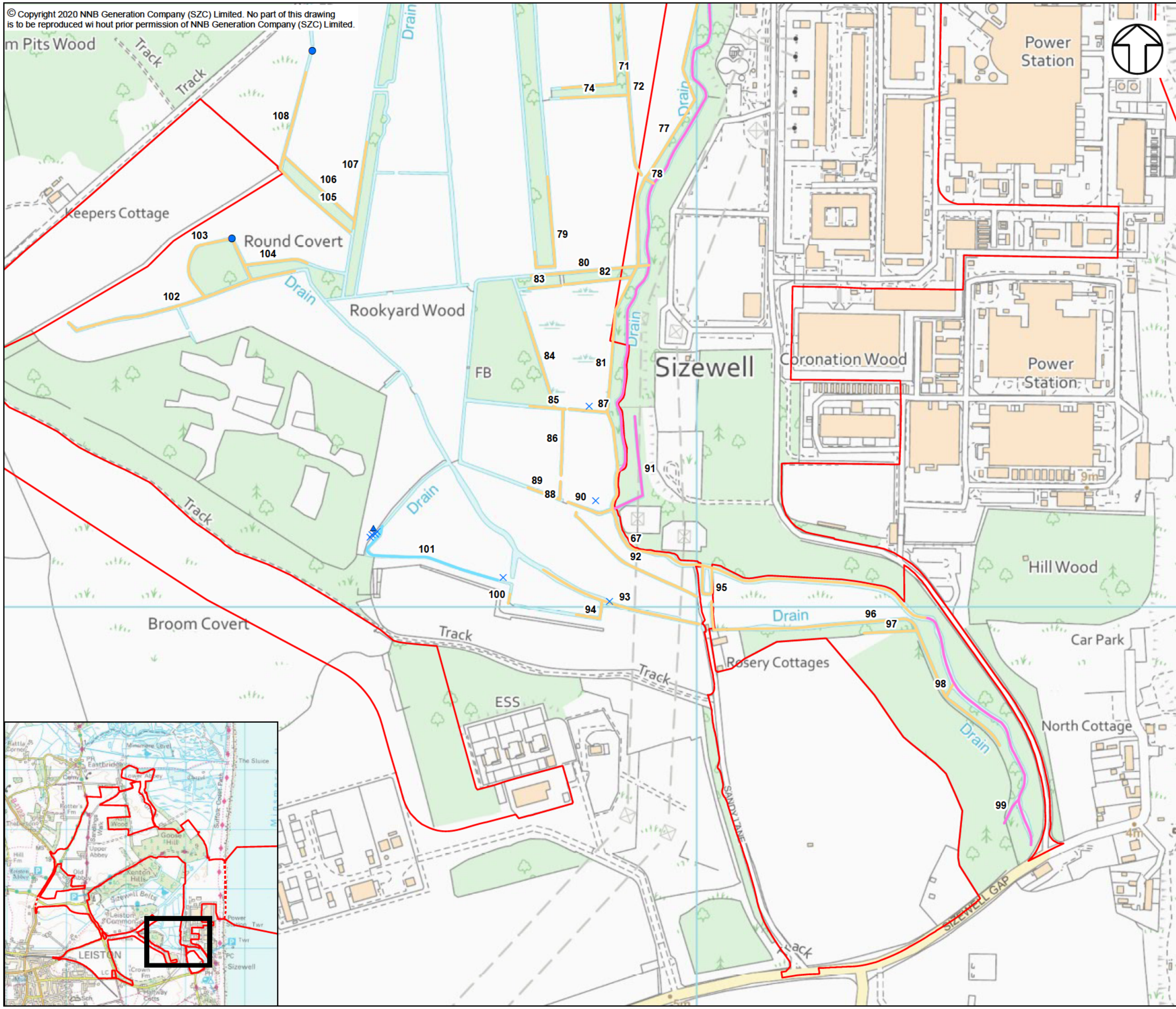

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SIZEWELL C MAIN DEVELOPMENT SITE BOUNDARY

DEMARCATION LINE

WATEROURSE SURVEY STATUS

NOT SURVEYED

PARTIALLY SURVEYED

SURVEYED

JUNE 2020 WATER VOLE SURVEY RESULTS

BURROW

FEEDING STATION

OTHER SIGN

SMALL MAMMAL HOLE

LATRINE

AUGUST 2020 WATER VOLE SURVEY RESULTS

BURROW

FEEDING STATION

FEEDING SIGNS

SMALL MAMMAL RUN

LATRINE

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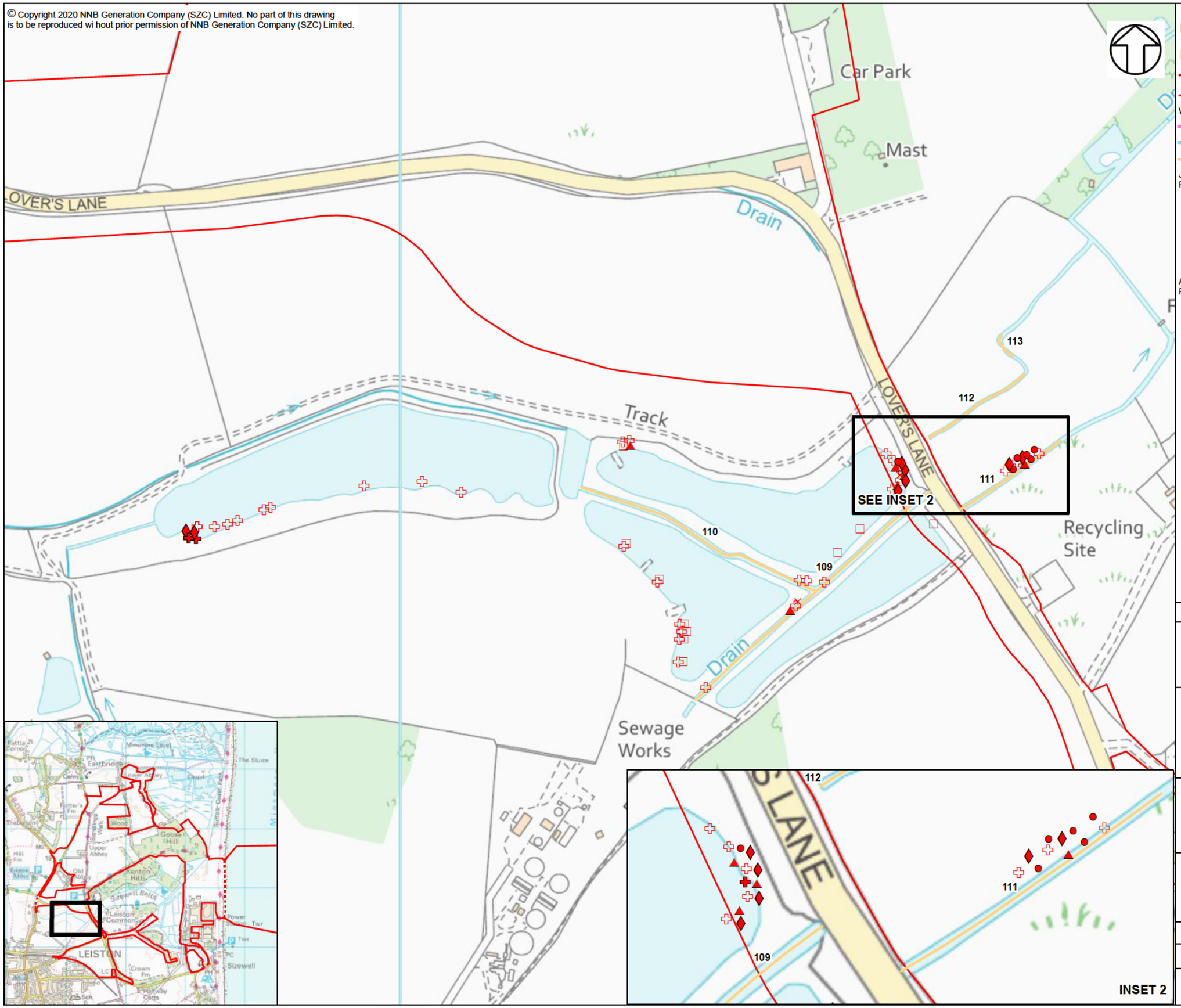

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- FEEDING SIGNS
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- LATRINE

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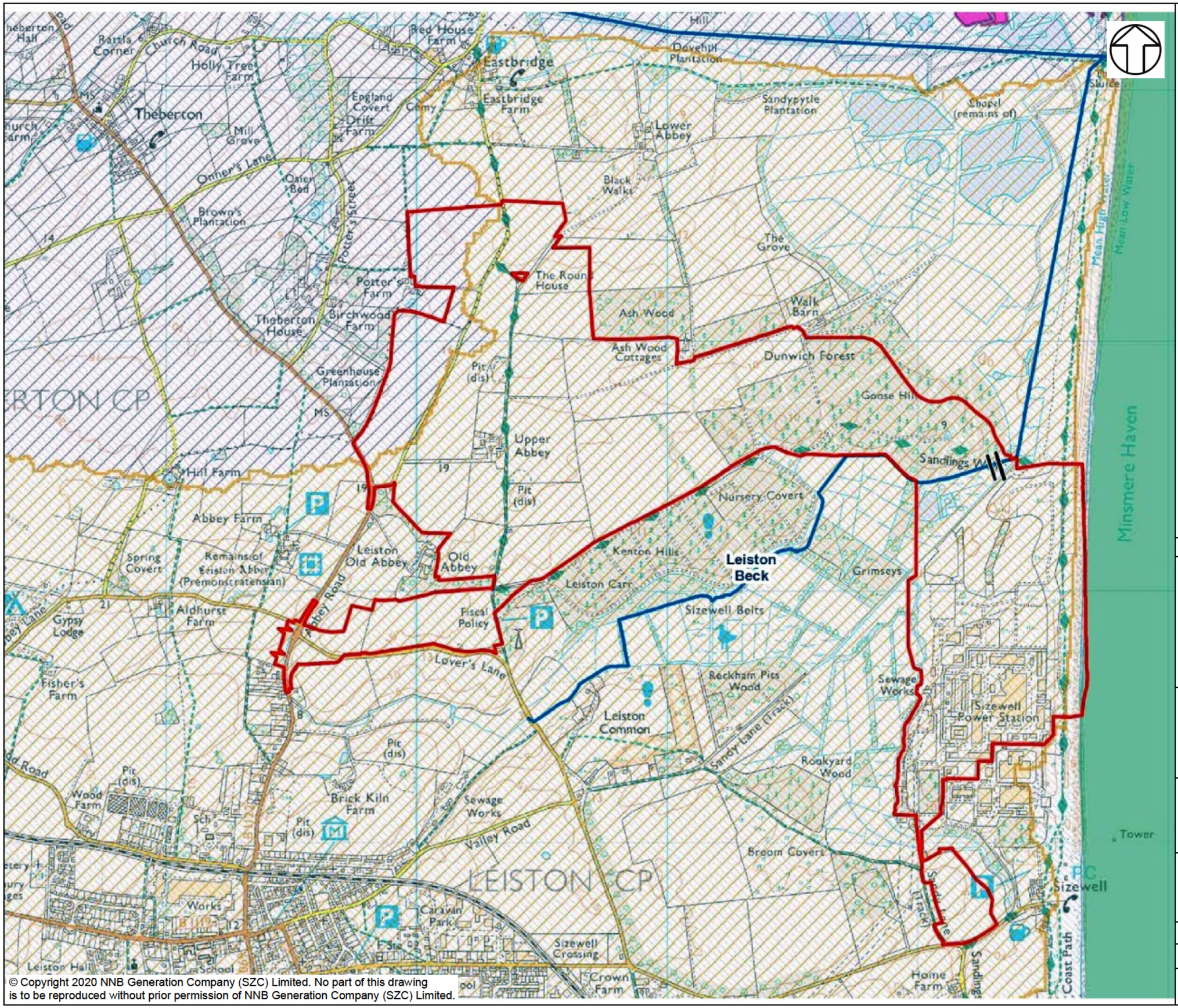

NOTES

KEY

- WFD Fluvial water body
- SSSI Crossing
- Indicative Development Site Boundary

WFD Coastal Water body

- Suffolk (GB650503520002)
- Walberswick Marshes (GB610050076000)

WFD Fluvial Catchment areas

- Leiston Beck (GB105035046271)
- Minsmere Old River (GB105035046270)

WFD Groundwater body

- Waveney and East Suffolk Chalk & Crag (GB40501G400600)

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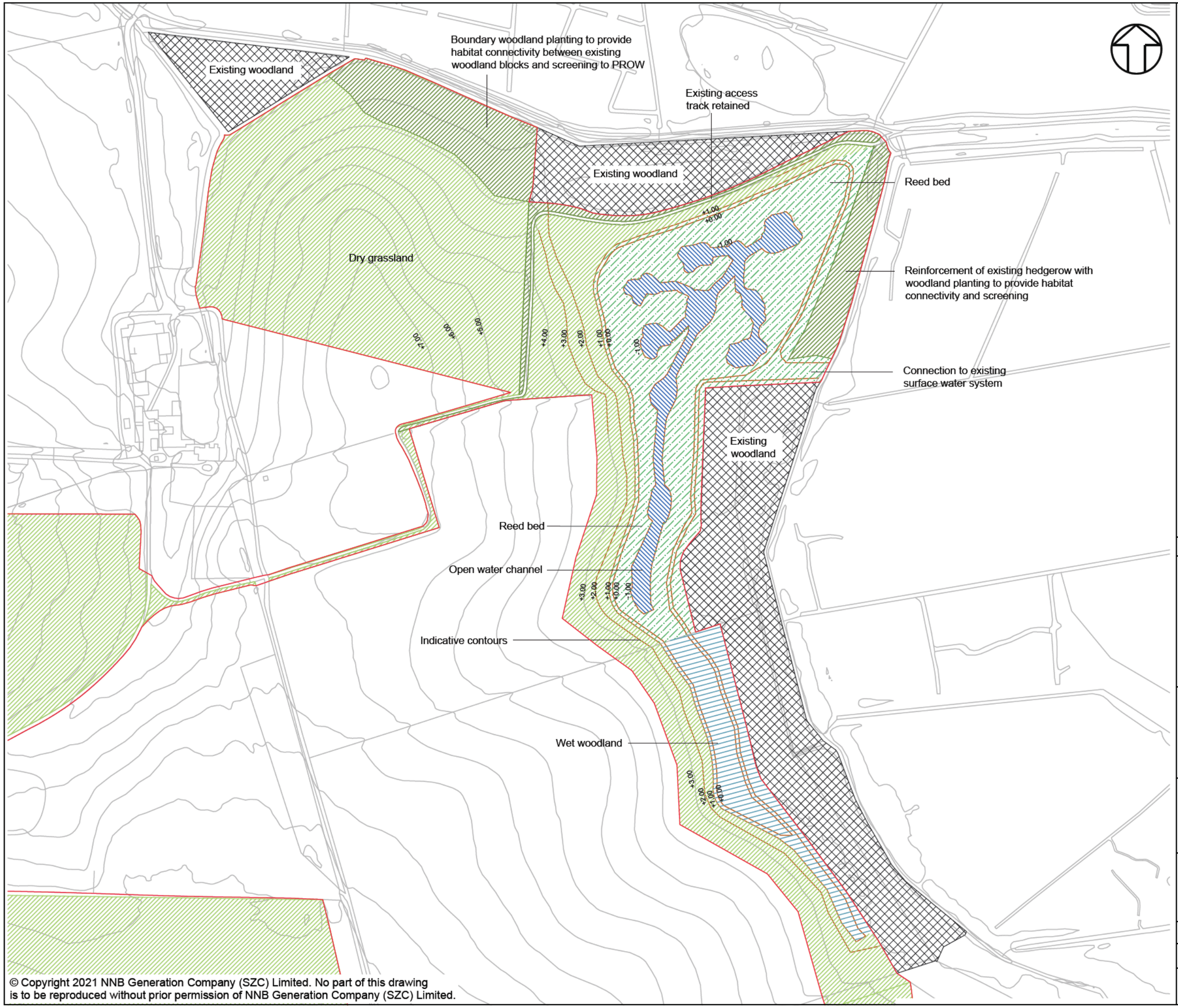

NOTES

KEY

- Existing contour
- Proposed contour
- Existing woodland
- Proposed woodland
- Proposed wet woodland
- Proposed reed bed
- Proposed dry grassland
- Open water channel

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WATER VOLE DRAFT LICENCE UPDATE - METHOD STATEMENT

DRAWING TITLE:
REEDBED AND WET WOODLAND HABITATS TO BE CREATED IN THE NORTH EASTERN EXTENT OF THE SITE

DRAWING NO:
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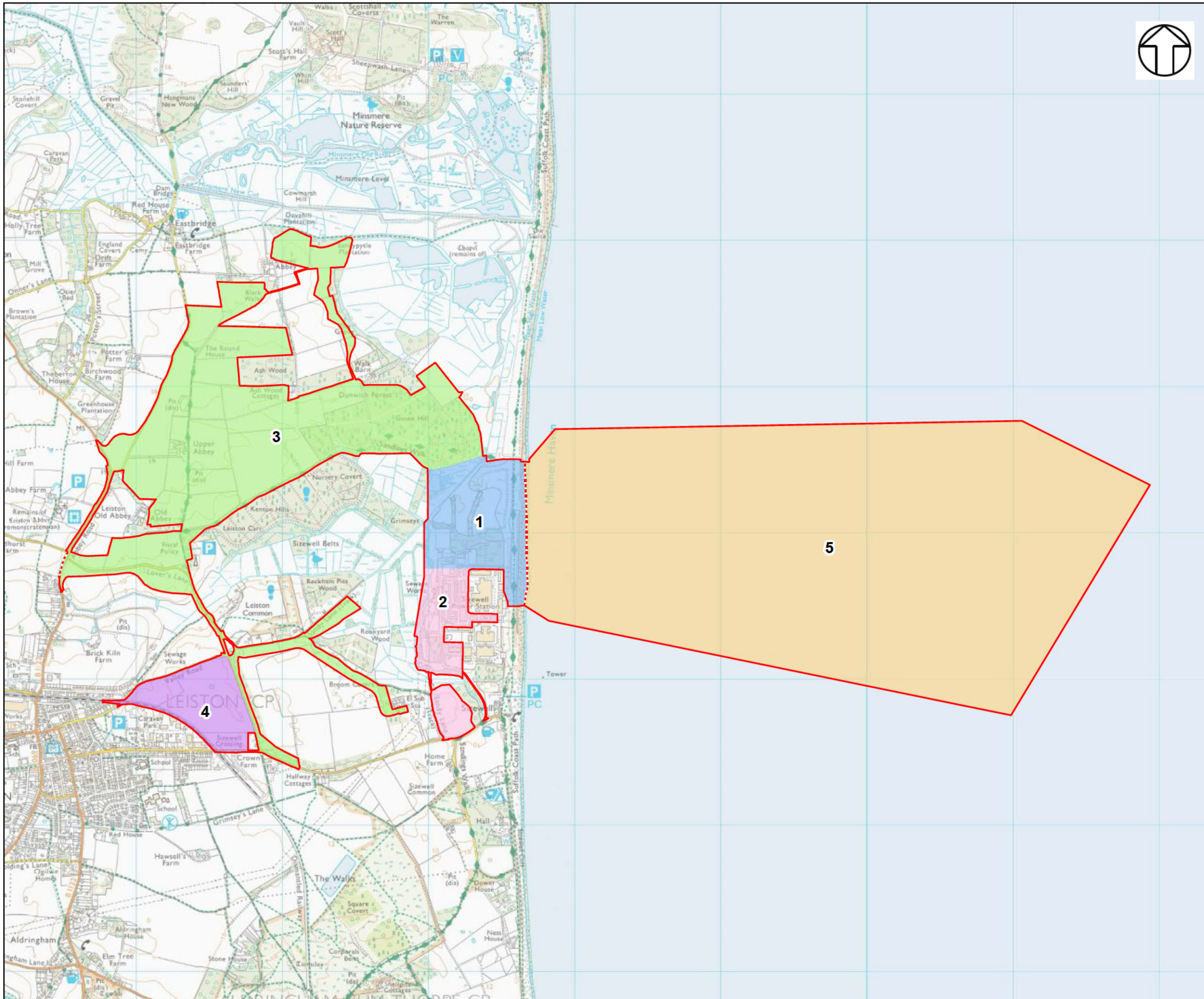

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NOTES

KEY

- SIZEWELL C MAIN DEVELOPMENT SITE BOUNDARY
- DEMARCATION LINE

MAIN DEVELOPMENT SITE AREAS

- 1. MAIN PLATFORM
- 2. SIZEWELL B RELOCATED FACILITIES AND NATIONAL GRID LAND
- 3. TEMPORARY CONSTRUCTION AREA
- 4. LAND EAST OF EASTLANDS INDUSTRIAL ESTATE - LEEIE
- 5. OFFSHORE WORKS AREA

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WATER VOLE DRAFT LICENCE UPDATE - METHOD STATEMENT

DRAWING TITLE:
MAIN DEVELOPMENT SITE:
SITE SUB AREAS

DRAWING NO:
FIGURE 14C6B.1

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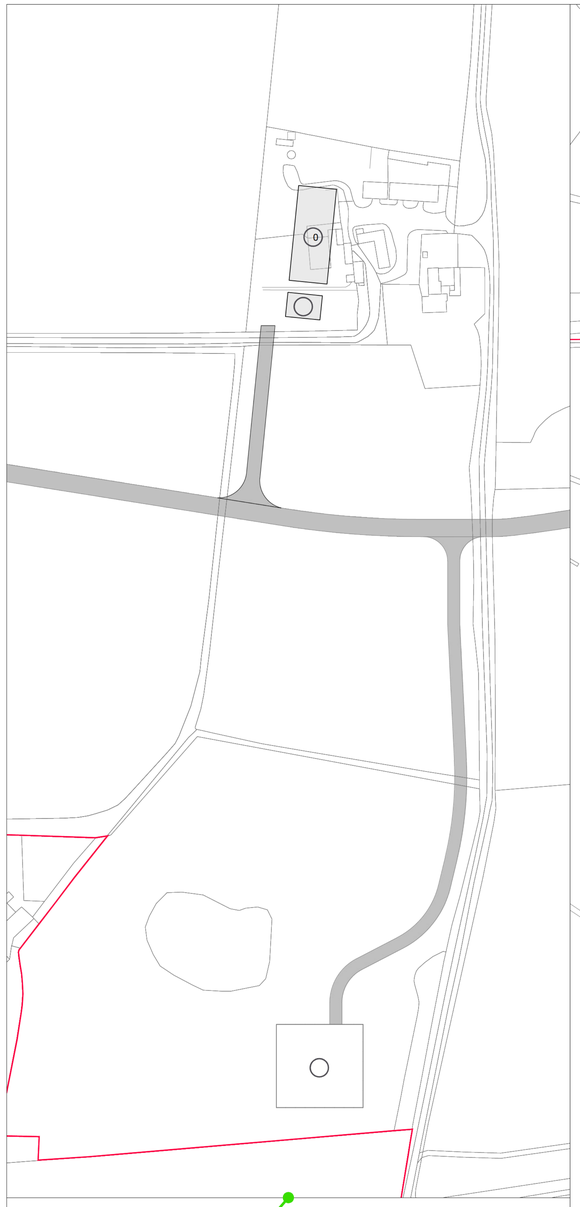

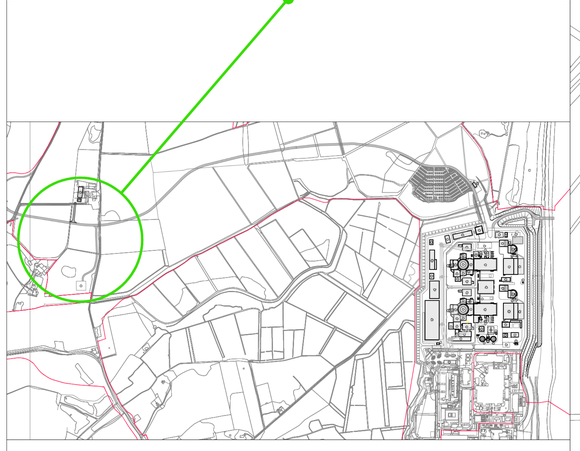

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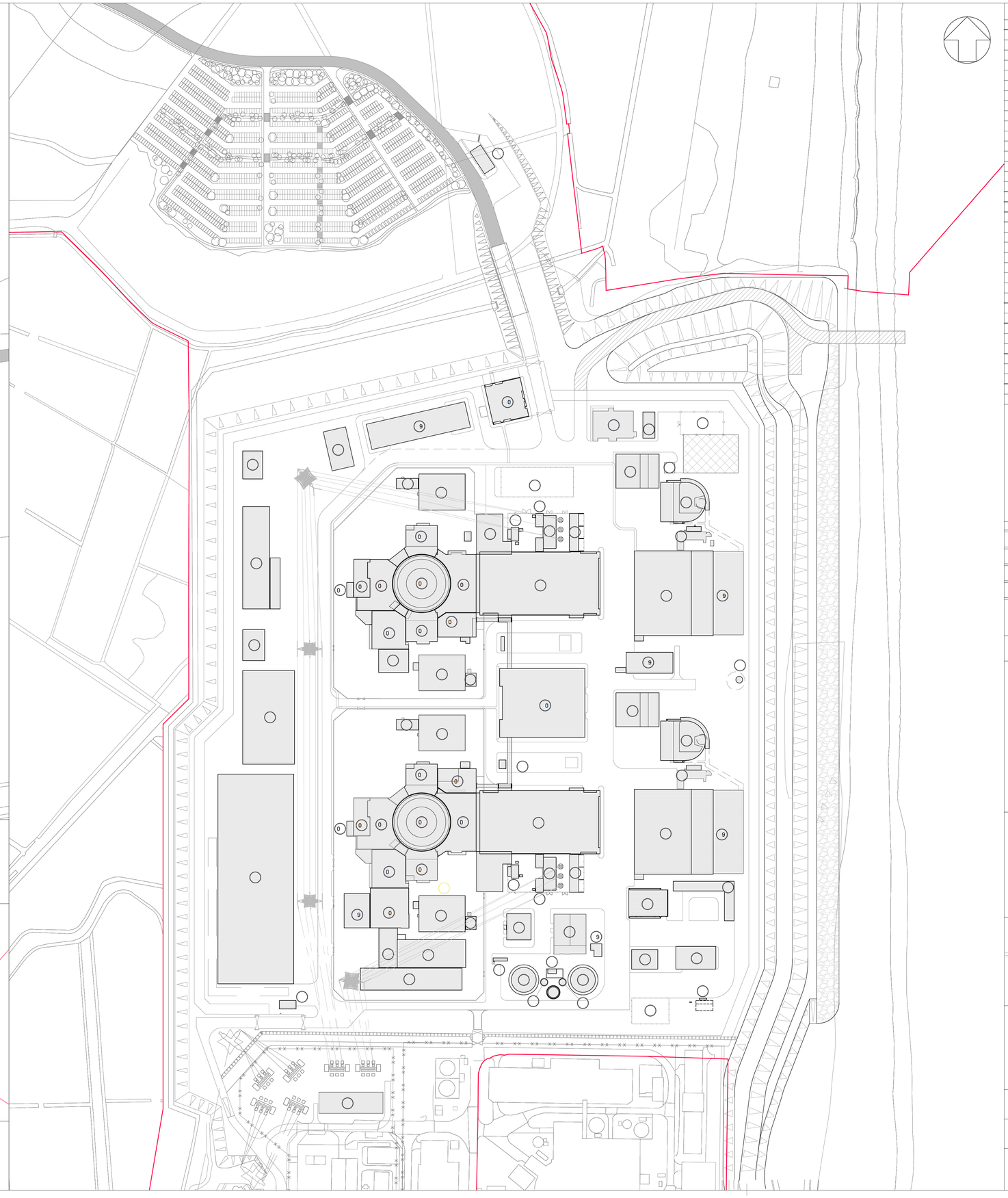

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NOTES

KEY

- Sizewell C Main Development Site Boundary
- Demarcation Line
- Hedgerows
- Mixed Woodland/Trees
- Dry Sandlings Grassland
- Semi-Improved Grassland
- Arable Land
- Amenity Landscape
- Marsh, Fen and Reedbed
- Vegetated Dunes and Shingle Beach

NOT PROTECTIVELY MARKED

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DOCUMENT:
ENVIRONMENTAL STATEMENT ADDENDUM
VOLUME 3
APPENDIX 2.9.C5
WATER VOLE DRAFT LICENCE UPDATE - METHOD STATEMENT

DRAWING TITLE:
LANDSCAPE MASTERPLAN (OPERATIONAL)
ILLUSTRATIVE - FOR INFORMATION

DRAWING NO:
FIGURE 14C6B.3

DATE:	DRAWN:	SCALE :
JAN 2020	S.G	NTS

SCALE BAR
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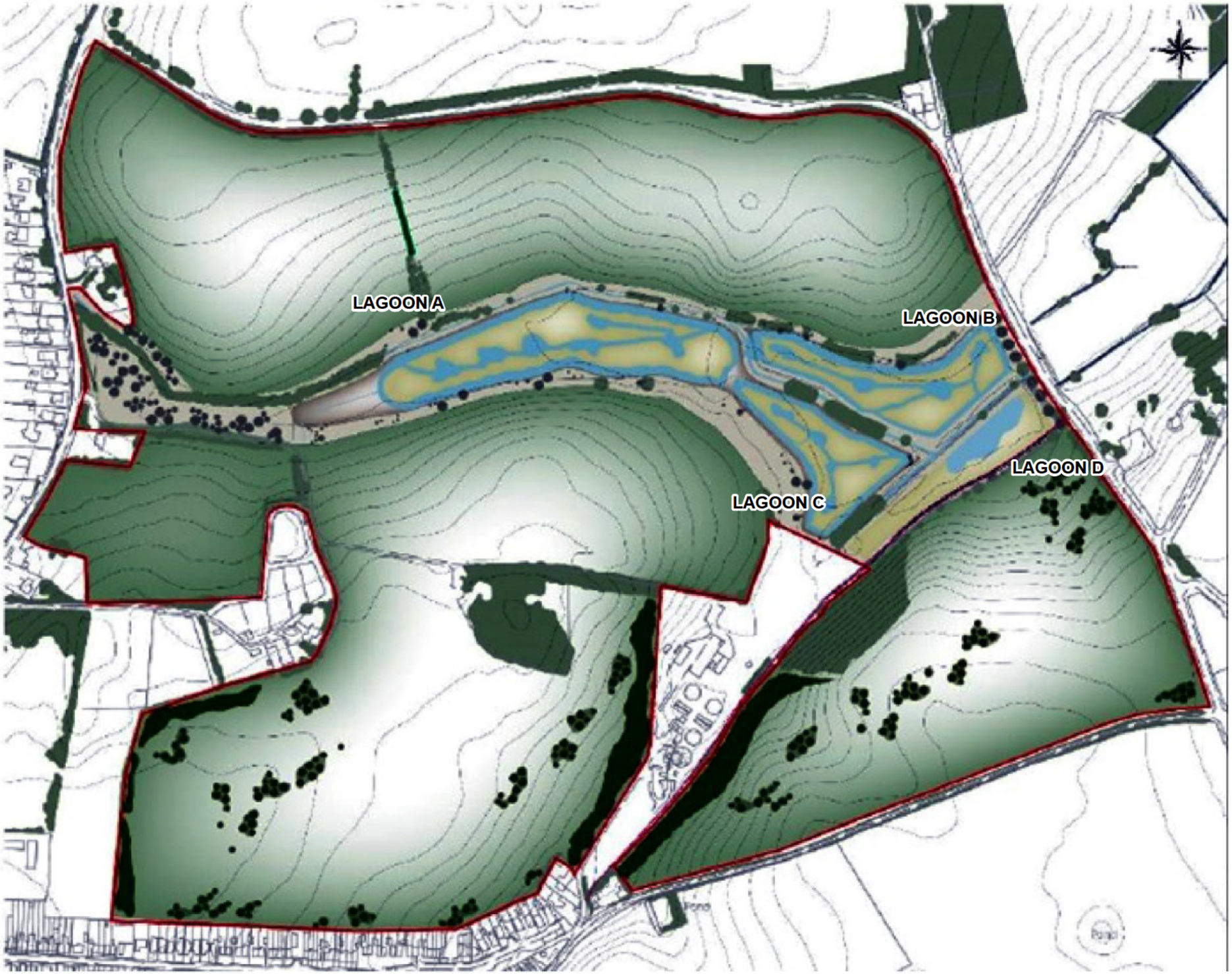

NOTES

KEY

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DOCUMENT:
ENVIRONMENTAL STATEMENT ADDENDUM
VOLUME 3
APPENDIX 2.9.C5
WATER VOLE DRAFT LICENCE UPDATE - METHOD STATEMENT

DRAWING TITLE:
ALDHURST FARM HABITAT CREATION

DRAWING NO:
FIGURE 14C6B.7

DATE:	DRAWN:	SCALE :
JAN 2020	R.G.	NTS

APPENDIX B: SURVEY REPORTS

B.1. Appendix B.1

A	17/01/11	Katheryn Leggat	Emma Toovey	Draft	Draft Issue for EDF comment	Emma Toovey
Revision	**Date**	**Prepared by**	**Checked by**	**Status**	**Reasons for revision**	**Approved by**

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NNB Generation Company
Sizewell Water Vole Survey Report 2010

1. Introduction

1.1 Background

An area of land directly north of the Sizewell 'B' Power Station has been identified as having the potential to accommodate new nuclear plant. This area has an approximate central grid reference of TM473640 and is referred to in this document as the 'Strategic Site Area (SSA)'. The access road is likely to run in an easterly direction before linking into the wider road network at Lover's Lane, although its exact route has not yet been determined. In addition to these permanent development proposals there will also be a number of temporary construction activities and other associated developments but details of these areas are yet to be ascertained.

It was clear from early in the ecological desk study (which began in late 2006) that the Sizewell Estate supported a nationally important population of water voles (*Arvicola terrestris*). Survey work was undertaken in 2007 (report ref: 19081cr102) to establish the nature of use of the site by the water vole population present and following these studies, further survey work was proposed for 2009 to gain a better understanding of the size and distribution of the water vole population present. This additional data will be used to inform the Ecological Impact Assessment for the proposed scheme and to inform the design and implementation of any necessary mitigation strategy that may need to be adopted as part of the new build proposals.

This report outlines the findings of the 2009 survey work and complements the initial work from 2007.

1.2 Legislation and Policy Guidance

1.2.1 Biodiversity Action Plan

Water vole is on the list of priority species in the UK Biodiversity Action Plan (UK BAP), adopted by the Government in 2007. Species included on this list have been identified by the UK Government as needing special conservation effort because of their rarity and/or decline in numbers over recent decades. Species Action Plans (SAPs) have been developed to identify conservation priorities, propose action, and set targets to try and maintain and restore populations. Water vole populations are at risk primarily from habitat loss and degradation, which has increased water vole vulnerability to predation, particularly from American mink. This has led to a major decline not only within Suffolk, but also nationally. This has led to populations becoming scarce and fragmented across many parts of their former range (Strachan & Moorhouse, 2006).

A clear understanding of the level and nature of use of a site by water voles is necessary to ensure that environmental measures (mitigation, enhancement and offsetting) associated with a development can be appropriately targeted, and put in the context of local and National

conservation priorities. The SAPs promote the favourable management of land, especially in the vicinity of known water vole habitat, and aim to maintain and enhance existing populations.

Most of the Species Action Plans (SAPs) in the Suffolk Biodiversity Action Plan are based on National Biodiversity Action Plans (Suffolk Biodiversity Partnership, 2003). The process of identifying BAP priorities in Suffolk began in 1997, and an initial plan (Tranche 1) was produced in 1998. Tranche 2, published in 2000 has been withdrawn and revised plans are in production. Water vole was included as a priority species on both Tranche 1 and Tranche 2.

1.2.2 Protective Legislation Relating to Water Vole

Water voles and their burrows are protected in the UK under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended). This makes it an offence, *inter alia*, to:

- Intentionally kill, injure or take a water vole;
- Intentionally or recklessly damage or destroy or obstruct access to any structure or place which water voles use for shelter or protection; or
- Intentionally or recklessly disturb water voles while they are using such a place.

The Natural Environment and Rural Communities Act 2006 (NERC Act) states, in Section 40(1), that "*every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity*". Section 40(3) of the NERC Act 2006 goes on to state that "*conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat*".

Section 41(1) of the NERC Act 2006 states that "*the Secretary of State must, as respects England, publish a list of the living organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity*". Listed on the UK Biodiversity Action Plan (see Section 1.2.1), water vole is considered a Species of Principal Importance for the Conservation of Biodiversity under Section 41 of the NERC Act.

In paragraph 16 of Planning Policy Statement 9 (Office of the Deputy Prime Minister, 2005), the Government indicates that local authorities should take steps to further the conservation of species of principal importance for the conservation of biodiversity in England and should ensure that that these species and their habitats are protected from adverse effects of development, where appropriate, by using planning conditions or obligations.

1.3 Summary of Previous Survey Work

The water vole surveys carried out in 2009 build upon the baseline survey work that was carried out in 2007. The Sizewell Water Vole Survey Report 2007 (Entec report reference 19081cr102) includes a detailed review of all available desktop data relating to water voles on and surrounding the Sizewell Estate. In addition, the report details survey work carried out with the specific aim of surveying and assessing suitable habitat within 500m of the preliminary works area for its potential to support water vole. A representative sample of the ditches within the survey area were identified and surveyed to obtain basic presence/absence data for water voles.

The findings of the desktop study and field survey in 2007 demonstrated that water voles occur throughout the ditch network of the Sizewell Estate, and are widespread in suitable habitat in the wider area. The population appears to be persistent and there is no evidence that it has been

affected by the national decline, with records dating back to 1982, and high water vole populations referred to by the Sizewell Land Management Annual Review Reports since 1997-98. The site has been recognised as a National Key Site for water voles since the scheme was set up in 2000.

It was concluded that the water voles present in the survey area likely formed part of a larger population inhabiting the wider ditch network. The 2007 survey was not designed to estimate population size, however due to the extensive signs discovered across the Sizewell area, and the wealth of desktop information available, it was assumed that the site supports a good population of the species.

1.4 Aims of 2009 Survey

The 2009 survey work was commissioned by British Energy (now EDF Developments Ltd) to address recommendations made in the 2007 Sizewell Water Vole Survey Report. The aims of the 2009 surveys were therefore:

- To obtain a better understanding of how water voles use the habitats across the Sizewell Estate not only in ditches and other clearly defined water bodies, but also in reedbeds;
- To make more detailed assessments of a sample of ditches, in order to make population assessments that allow extrapolation for a generalised population assessment for the entire Estate; and
- To use this additional data to make detailed assessments regarding the potential impacts of the development on the conservation status of water voles, as well as informing mitigation and enhancement strategies for the species.

2. Survey Methods

2.1 Ditch Surveys

On the 28 and 29 July, and 15 October 2009 a sample of 16 sections of ditches (**Figure 2.1**) within the Sizewell Estate, occurring close to and within the SSA boundaries were surveyed in detail to identify all evidence of water vole activity. Surveys were carried out based on methods recommended by Strachan & Moorhouse (2006). This involved searching bankside vegetation for:

- Latrines/droppings – water vole droppings are often concentrated in discreet latrine sites near the nest, at range boundaries and places where they regularly enter and exit the water. While most droppings will be deposited in latrines, some may be found scattered along runways in vegetation;
- Feeding stations – feeding remains in the form of neat piles of chewed lengths of vegetation, are often found in runways and at haul-out platforms;
- Burrows - these are typically found along the waters edge and on top of the bank up to 5m from the waters edge. Holes on top of the banks often have grazed 'lawns' around them;

- Nests – Where vegetation cover is dense and the water table is high (limiting opportunities for burrowing), water vole nests may be found woven into the base of rushes, sedges or grass tussocks; and
- Footprints – these may be identified in soft mud or silt.

Also recorded at each surveyed water body was the depth and speed of water flow[1], the waterway width, bank side vegetation and surrounding land use: all of these being factors that may determine the suitability of habitat for supporting water voles.

The survey was undertaken at an appropriate time of year for detecting water vole presence, with water voles actively marking their breeding territories with latrines between late April and early October (Strachan & Moorhouse, 2006).

2.1.1 Population Assessments

The data collected from those ditches was used to calculate a population estimate using recommended methodologies[2] (Woodroffe *et al.*, 1990; amended by Morris *et al.*, 1998). This involves using the mean number of latrines per 100m of ditch to calculate the approximate water vole population density per 100m during the breeding season. Where access restrictions prevented both banks from being surveyed, the bank length was halved for the purpose of this equation. In all cases where this was undertaken, habitats on both banks of the ditch were considered to be of similar quality.

Given the variation in habitat types surveyed, in addition to the overall mean population estimate mean estimates were calculated for the most optimal habitat and the habitat with very low suitability for water vole. This is to provide an indication of the variation between habitat types.

2.2 Reedbed Surveys

In marshland areas, where there are no distinct banks on which to search for water vole field signs, five transects, each measuring approximately 500m in length, were designed to zig-zag through the reedbeds (**Figure 2.2**). Sheets of plywood measuring approximately 20 by 30cm were then placed at a density of around one every 10m to create artificial latrine sites and lightly tethered to adjacent reeds. The artificial latrine sites were left in place, undisturbed for 2-3 weeks prior to the survey taking place so as to allow enough time for water voles to explore and begin using them.

Each transect was surveyed twice by Entec Ecologists[3], once between 20 and 21 August, and once between 13 and 14 October. During each survey the following signs of water vole activity were recorded:

- Latrines/droppings – these may be found on the artificial latrine sites that have been specifically placed along the transect route, or in other suitable locations above the water level;

[1] Speed of flow was estimated during a visual assessment.

[2] $y = 1.48+0.683x$, where y = number of water voles and x = number of latrines.

[3] Katheryn Leggat, Dyfrig Hubble, Alastair Miller, John Baker and Paige Alumbaugh.

- Feeding signs – evidence of feeding in reedbed habitat is likely to be most noticeable where new shoots of vegetation have had the tips eaten; and
- Nests – above water level woven into large tussocks of vegetation.

2.2.1 Survey Limitations

Due to deep water and/or silt, combined with dense bankside and in-channel vegetation, it was not feasible to search the entire banks of some of the ditches. Where banks were flat and water levels high, it is likely that the chance of finding field signs was reduced, due to the limited availability of dry banks on which such signs would usually be found.

The transect surveys had to be designed in the field taking into account the accessibility of some areas, as well as the suitability of habitats present. Furthermore the routes of both the ditch and transect surveys were adjusted in the field to avoid areas occupied by nesting birds, particularly sedge warblers (*Acrocephalus schoenobaenus*) and reed warblers (*Acrocephalus scirpaceus*). During the course of the survey work, approximately 10% of the artificial latrine sites were lost from each transect. This was due to them sinking in ditches, or becoming completely buried under dense dead vegetation after strong winds flattened areas of the reedbed habitat.

3. Results

3.1 Ditch Surveys

3.1.1 Habitat Suitability

Of the ditches surveyed, six were considered to offer relatively poor habitat for water voles. This was predominantly due to two key main factors:

- Heavy over-shading by adjacent woodland limiting the growth of aquatic vegetation and resulting in a deep layer of decaying leaf litter dominating the channel (ditches 3b, 8, 9b, 12 and 13); and/or
- Very heavy poaching of the banks by cattle reducing bankside vegetation and restricting opportunities for burrowing water voles (ditches 9a, 12 and 13).

A further six of the ditches surveyed (ditches 3a, 4, 5, 6, 7 and 11) were considered to offer very good habitat for water voles, comprising water over 1m deep with wide swathes of riparian vegetation dominated by common reed (*Phragmites australis*), and earth banks. The other four ditches offer good habitat for water voles, although the value is limited to just one bank due to over-shading trees (ditch 2), and/or reduced by cattle poaching (ditches 1, 2, 10a and 10b).

Bordering land use is predominantly marshy grassland with cattle grazing, but also includes semi-natural broad-leaved woodland, mixed and conifer plantation, marshland (reedbed), and some semi-improved and improved grassland. Bank profiles are predominantly shallow, with only a few steep banks, limiting water vole burrowing opportunities; although most of the ditches do provide some burrowing habitat. The riparian vegetation required for foraging and sheltering water voles was present at varying levels with some ditches providing a dense reed bed, and others almost bare.

Table 2.1 below outlines the habitat variables recorded at each ditch.

Table 2.1 Description of the Ditches Surveyed

Ditch reference	Bordering land uses	Bank profile[4]	Depth (m)	Width (m)	Dominant bankside vegetation
1	Marshy grassland, mixed plantation woodland, cattle grazing	Shallow	0.5-1	1-5	Tall grass
2	Marshy grassland, mixed plantation woodland, semi-natural broad-leaved woodland, cattle grazing	Shallow	0.5-1	1-5	Bankside trees and short grass
3a	Semi-improved grassland, conifer plantation woodland	Shallow	1-2+	2-5	Reeds/sedges
3b	Semi-improved grassland, conifer plantation woodland, cattle grazing	Shallow	1-2+	1-5	Bankside trees and scrub
4	Marshy grassland, mixed plantation woodland	Shallow	1-2	2-5	Reeds/sedges
5	Marshy grassland, semi-natural broad-leaved woodland, cattle grazing	Shallow	1-2+	2-5	Reeds/sedges
6	Marshland, semi-natural broad-leaved woodland	Flat-shallow	1-2	2-5	Reeds/sedges
7	Marshland, semi-natural broad-leaved woodland	Flat-vertical/undercut	1-2	2-5	Reeds/sedges
8	Marshland, semi-natural broad-leaved woodland	Flat	0.5-2	2-5	Bankside trees
9a	Marshy grassland, semi-natural broad-leaved woodland, cattle grazing	Shallow	1-2	2-5	Bankside trees and short grass
9b	Improved grassland, semi-natural broad-leaved woodland	Shallow	0.5-1	1-2	Bankside trees
10a	Marshy grassland, cattle grazing	Shallow	>2	1-2	Tall grass
10b	Marshy grassland, semi-natural broad-leaved woodland, cattle grazing	Shallow-steep	1-2	1-2	Tall grass
11	Marshy grassland, cattle grazing	Shallow	>2	2-5	Reeds/sedges
12	Marshy grassland, semi-natural broad-leaved woodland, cattle grazing	Flat-shallow	0.5-2	1-2	Bankside trees
13	Marshy grassland, semi-natural broad-leaved woodland, cattle grazing	Flat-shallow	0.5-1	1-2	Bankside trees and tall grass/rushes

3.1.2 Water Vole Activity

The water vole field signs identified by the survey are summarised in **Table 2.2**. Evidence of water vole activity in the form of latrines, feeding remains, and/or burrows was found on the banks of most surveyed ditches, with the exception of ditches 2 and 9b. The latter of these was

[4] Bank profile: flat <10°, shallow <45°, steep >45°, vertical/undercut.

considered to offer poor habitat for water voles. All of the other ditches considered to offer poor water vole habitat supported some, limited signs of activity (ditches 3b, 8, 9a, 12 and 13).

A high density of different field signs was recorded from four of the ditches (3a, 4, 7 and 11) considered to provide very good water vole habitat. Although ditch 5 also offers very good water vole habitat, access to this ditch was restricted by deep sediment and dense bankside vegetation. A high density of feeding remains found along the banks of ditch 6 indicated a significant level of water vole activity, although few other signs were recorded. This is likely to be due to the flat banks of this ditch, which limit the number of suitable locations for latrines, as well as reducing potential for burrowing.

Table 2.2 Water Vole Field Signs Identified

Ditch reference	Transect length (m)	Water Vole Signs Found			
		Latrines	Feeding Station	Burrow	Other
1	230	0	3	0	
2	190	0	0	0	
3a	50	26	25	9	
3b	100	0	2	0	1 dead water vole
4	160	22	51	31	
5[5]	150	2	0	0	
6	100	1	34	1	
7	200	12	34	3	
8	100	3	1	0	
9a[6]	100	1	2	1	
9b[6]	80	0	0	0	
10a	120	5	8	2	
10b	90	9	15	4	Water vole nest in rushes
11[6]	110	23	29	3	
12	160	4	0	0	
13[6]	60	3	2	1	

[5] Access for survey limited due to very deep water and dense vegetation, as well as the presence of nesting reed warblers, therefore this ditch has not been included in the population estimate calculation.

[6] Only one bank surveyed due to access difficulties. The bank length used for the population assessment was therefore taken to be half this distance (Table 2.3).

3.1.3 Population Assessment

The results of the population assessment based on the current survey data are shown in Table 2.3. The average population size for all the ditches surveyed can be estimated at 4.81 water voles per 100m. Assessments made based on habitat suitability however indicate the wide variation between ditches, with the most optimal habitats supporting an average of 9.31 water voles per 100m, and the poorest habitats supporting as few as 2.48 individuals per 100m.

Table 2.3 Water Vole Population Assessment

Ditch reference	Bank length (m)	Latrine count	No. of latrines per 100m
1	230	0	0
2	190	0	0
3a	50	26	52
3b	100	0	0
4	160	22	13.75
6	100	1	1
7	200	12	6
8	100	3	3
9a	50	1	2
9b	40	0	0
10a	120	5	4.17
10b	90	9	10
11	55	23	41.82
12	160	4	2.5
13	30	3	10
	No. of water voles per 100m (from mean)^2 – entire sample:		**8.34**
	No. of water voles per 100m (from mean)^2- more optimal habitat only:		**17.13**
	No. of water voles per 100m (from mean)^2- least suitable habitat only:		**3.47**

3.2 Reedbed Surveys

3.2.1 Habitat Description

Reedbed habitat to the north of the Sizewell Estate is largely restricted to wide linear swathes that follow ditch lines, and therefore Transects 1 and 2 also followed these water bodies. The ditches have high water levels and predominantly flat banks that merge with adjacent marshy grassland.

Transects 3, 4 and 5 zig zag through dense reedbed habitat which support several shallow and deep ditches. At the time of surveying water levels were low, with much of the reedbeds dry and the only water found in a few small wet patches of reedbed that occur close to the ditches, and within the ditches themselves. Parts of the reedbeds at all three transects were starting to be colonised by terrestrial species including common nettle (*Urtica dioica*), common cleavers (*Galium aparine*), bramble (*Rubus fruticosus* agg.) and lesser bindweed (*Convolvulus arvensis*).

The artificial latrine sites were not only sited through the reedbed occasionally crossing ditches, but sections of the transects also followed ditch lines where the extent of the reedbed was limited (transect 5) and passed through small sections of wet woodland (transect 3).

3.2.2 Water Vole Activity

Water vole field signs, including latrines, were recorded on all of the transect routes surveyed. Throughout the length of transects 1 and 2, where natural latrine sites are restricted by high water levels, the artificial latrine sites were widely used for territorial marking. Of the 50 artificial latrine sites set out at transect 1, more than half held latrines during the second survey visit; while 18 of those along transect 2 held latrines during the same survey visit.

Within transects 3, 4 and 5 however, use of the artificial latrine sites was limited to the few that were placed within or adjacent to ditches and nearby wet areas. A maximum of 4 artificial latrine sites were used at transect 3, this was during the first survey visit. No more than 1 artificial latrine site was used at each of transects 4 and 5. Similarly, all other water vole field signs identified were recorded along the banks of ditches and in wet pockets. No evidence of water vole activity was recorded throughout most of the length of the transects, where they passed through dry reedbed habitats.

Table 2.4 Water Vole Field Signs Identified

	Survey visit 1		Survey visit 2	
Transect	**Field signs**	**Details (e.g. habitat type/location of record)**	**Field signs**	**Details (e.g. habitat type/location of record)**
1	19 latrines	On artificial latrine sites	26 latrines	On artificial latrine sites
	1 feeding station	On an artificial latrine site	1 feeding station	On the banks of a ditch
			1 burrow	In the bank of a ditch
2	17 latrines	On artificial latrine sites	18 latrines	On artificial latrine sites
	2 feeding stations	On artificial latrine sites		
3	30 feeding stations	On the banks of ditches	13 feeding stations	On the banks of ditches
	1 feeding station	Within a wet area of the reedbed	2 latrines	On the banks of ditches
	1 patch of reeds with tops eaten	Within a wet area of the reedbed	1 latrine	On an artificial latrine site adjacent to a ditch

Table 2.4 (continued) Water Vole Field Signs Identified

Transect	Survey visit 1		Survey visit 2	
	Field signs	**Details (e.g. habitat type/location of record)**	**Field signs**	**Details (e.g. habitat type/location of record)**
	3 latrines	On an artificial latrine site adjacent to a ditch	1 latrine	On an artificial latrine site in a ditch
	1 latrine	On the banks of a ditch		
	1 latrine	On an artificial latrine site within a wet area of the reedbed		
	1 nest	Within dense reeds on the banks of a ditch		
4	1 feeding station	On the banks of a ditch	1 latrine	On an artificial latrine site adjacent to a ditch
	1 latrine	On the banks of a ditch	1 latrine	On a log lying across a ditch
	1 latrine	On an artificial latrine site in a ditch		
	1 burrow	Within the banks of a ditch		
5	3 feeding stations	On the banks of ditches	2 feeding stations	On the banks of ditches
	1 latrine	On the banks of a ditch		
	1 latrine	On an artificial latrine site adjacent to a ditch		

4. Conclusions

- Water bodies occurring within and close to the SSA include both areas of optimal habitat for water voles, as well as areas of relatively poor habitat for the species. Within the wider Sizewell Estate it is considered that the poorer habitat occurs less frequently. This higher proportion of low quality habitat occurs within the sample due to the focus of the survey work along the existing Sizewell Power Station site boundary, which is followed by a linear woodland strip;

- In many areas within the SSA, and within the wider Sizewell site, relatively good water vole habitat is provided by the ditch network albeit that habitat quality has been degraded in some areas by poaching of the banks by cattle. Jefferies (2003) notes that livestock grazing on the banks of water courses is one of the key factors that has lead to, and continues to contribute to, the decline of water voles in the UK. The degradation of habitats caused by livestock, not only by compacting soils and destroying burrows, but also by depletion of vegetative cover causes water voles to be significantly more susceptible to predation and increases mortality. In

some areas of the UK this single factor is thought to have resulted in a substantial reduction in water vole range;

- Both previous studies and the current field survey work have demonstrated that water voles occur in water bodies throughout the Sizewell Estate, including those that provide habitat perceived to be of relatively poor quality for the species. While survey work may fail to identify field signs on the banks of some ditches during any one visit, such surveys provide only a snapshot of activity, and cannot indicate the absence of the species from a water body. Water voles have a metapopulation dynamic, where lower quality habitats may only be used in intermittent years. These 'sink' habitats are however a very valuable aspect of the overall habitat used by the population, and should not be considered insignificant compared to the high quality 'source' habitats (Strachan & Moorhouse, 2006);

- A population assessment has been made based on the number of latrines recorded per 100m of ditch surveyed, however these provide only a crude estimate and are based on a small sample size. The population assessment is based on latrine counts within the breeding season and therefore indicates the size of the breeding population. As such, it includes adult males, adult females and many independent juveniles, but not dependent young in the nests. Jefferies (2003) suggests that only 36% of the calculated population represents breeding-aged adults, which in the current sample of the Sizewell site equates to an average of 3 adult water voles per 100m of bank. In addition, there are large seasonal fluctuations in water vole population size, and the overwintering population is likely to be considerably lower than that calculated here;

- Given the high variation in habitat quality within the study sample, population assessments of the most optimal habitats, and separately of the poorest quality habitats, have also been made. These are based on a very small sample size and are used only to indicate the likely variation in water vole numbers between habitat types. The results equate to an average of 6.17 adult water voles per 100m of bank in optimal water vole habitat, compared to an average of just 1.25 adult water voles per 100m of bank in poor quality habitat;

- As the current survey findings suggest, the size of the population supported by a water course is largely dependent on the habitat provided, and in particular the width of riparian vegetation along each bank (pers. comm. Rob Strachan, Environment Agency, 2008). It is however considered that the habitat within the surveyed ditches is not representative of the wider Sizewell Belts, consisting as it does of a disproportionately high sample of over-shaded and woodland ditches with limited riparian vegetation. The results of the population assessment cannot therefore be extrapolated to provide an estimate of population size for the entire Sizewell site. The current findings do however indicate that, even allowing for natural gaps in water vole distribution within optimal habitat, the population of the site is considerably higher than the mean estimate made for the entire Anglian region in 1993 (Strachan & Jefferies, 1993; amended by Morris *et al.*, 1998). This estimate suggested an average of 7.75 water voles per 100m, equating to 2.79 adult water voles per 100m of bank. This estimate was the second highest made of all regions in the UK during the study;

- The reedbeds that occur within the Sizewell Estate are generally very dry, and during the survey period water was predominantly restricted to the ditches that pass through the habitat. The frequent occurrence of terrestrial plant species within the reedbeds indicates that the 2009 survey period was not unusual in this respect, and communications with the Suffolk Wildlife Trust confirmed that the reedbeds remain dry in most years (pers. comm. Alan Miller, Suffolk Wildlife Trust, 2009);

- The results of transect surveys through the reedbeds suggested that water voles are rarely active within the reedbed habitats at any distance from the ditches, with no evidence of such found. Ditches and nearby wet areas within the reedbeds are readily used, with clear evidence of water vole occupation present at all those surveyed. Previous survey work during a period when water levels were higher (Entec report ref: 19081cr102), and reedbeds were wet, did however indicate that water voles occurred within the habitats at some distance from any defined channels. It is likely that water voles on the Sizewell Estate may leave water bodies to pass through the reedbeds occasionally, but only make regular use of such areas in years when water levels are high;

- It has been suggested that every 1m width of vegetation cover either side of a water course increases the chance of water vole survival (pers. comm. Rob Strachan, Environment Agency, 2008). Ditches situated entirely within the Sizewell reedbeds are therefore likely to be of particularly high value to the water vole population;

- In particular reedbeds have been proposed as crucial to the persistence of water vole populations in the UK, by providing a refuge from mustelid predators, specifically the non-native American mink (*Mustela vison*). This species has significantly contributed to the decline of water voles in the UK. While American mink will hunt around the edges of reedbeds, they are less likely to leave main channels, and research had shown that predation rates strongly decline with the distance water vole live from a main water channel (Bright & Carter, 2003);

- Expanding on this, Bright & Carter (2003) have suggested that reedbeds that contain dry islands, or ditches with earth banks above the water level, provide an overwintering refuge for water voles. Such refuges are particularly critical in reducing winter mortality in water voles, which is likely to be a major factor influencing the population viability. They conclude that reedbeds are likely to increase the viability of water vole metapopulations in surrounding landscapes;

- American mink do occur within the county of Suffolk, and it is thought that only a programme of trapping by the Suffolk Wildlife Trust has prevented them becoming established within the Sizewell Belts (pers. comm. Penny Hemphill, Suffolk Wildlife Trust, 2008). If the presence of this invasive species does increase in the Sizewell area, the reedbed habitats are likely to be vital in order to prevent major decline, and potentially extinction of the water vole population;

- A number of ditches occur within the SSA, most notably however the SSA includes an area of reedbed habitat (survey transect 3), and some ditches of high habitat quality supporting wide swathes of riparian vegetation (including survey ditches 3a, 4, 5, 6 and 7). In addition, the SSA includes two ditches that are

thought to provide an important ecological link between Sizewell and Minsmere to the north. These water courses are likely to form an important dispersal route for water voles, linking the Sizewell population with those found in Suffolk's coastal marshes.

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Reviewer: Emma Toovey

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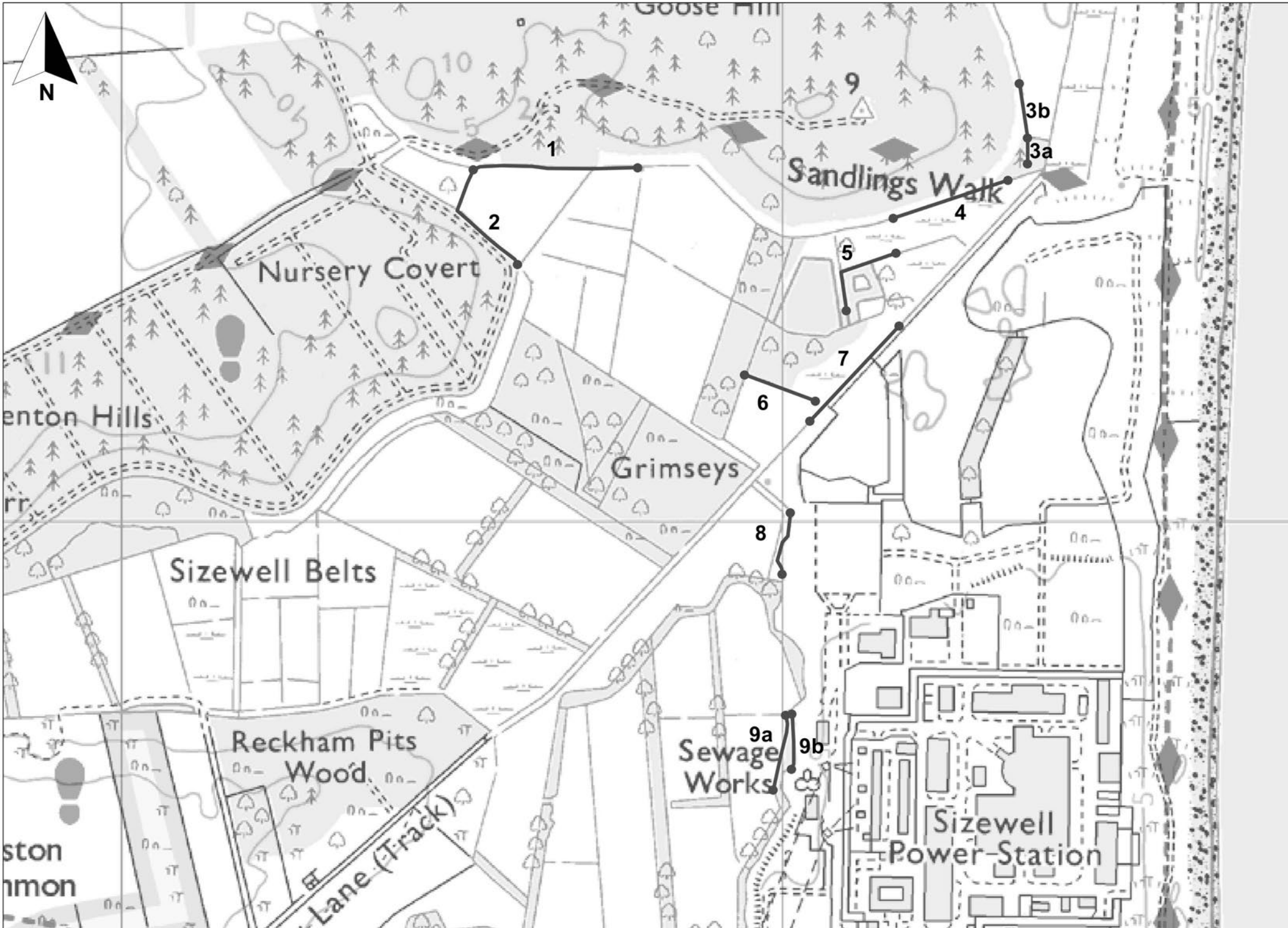
17 January 2011

Appendix A
Figures

2 pages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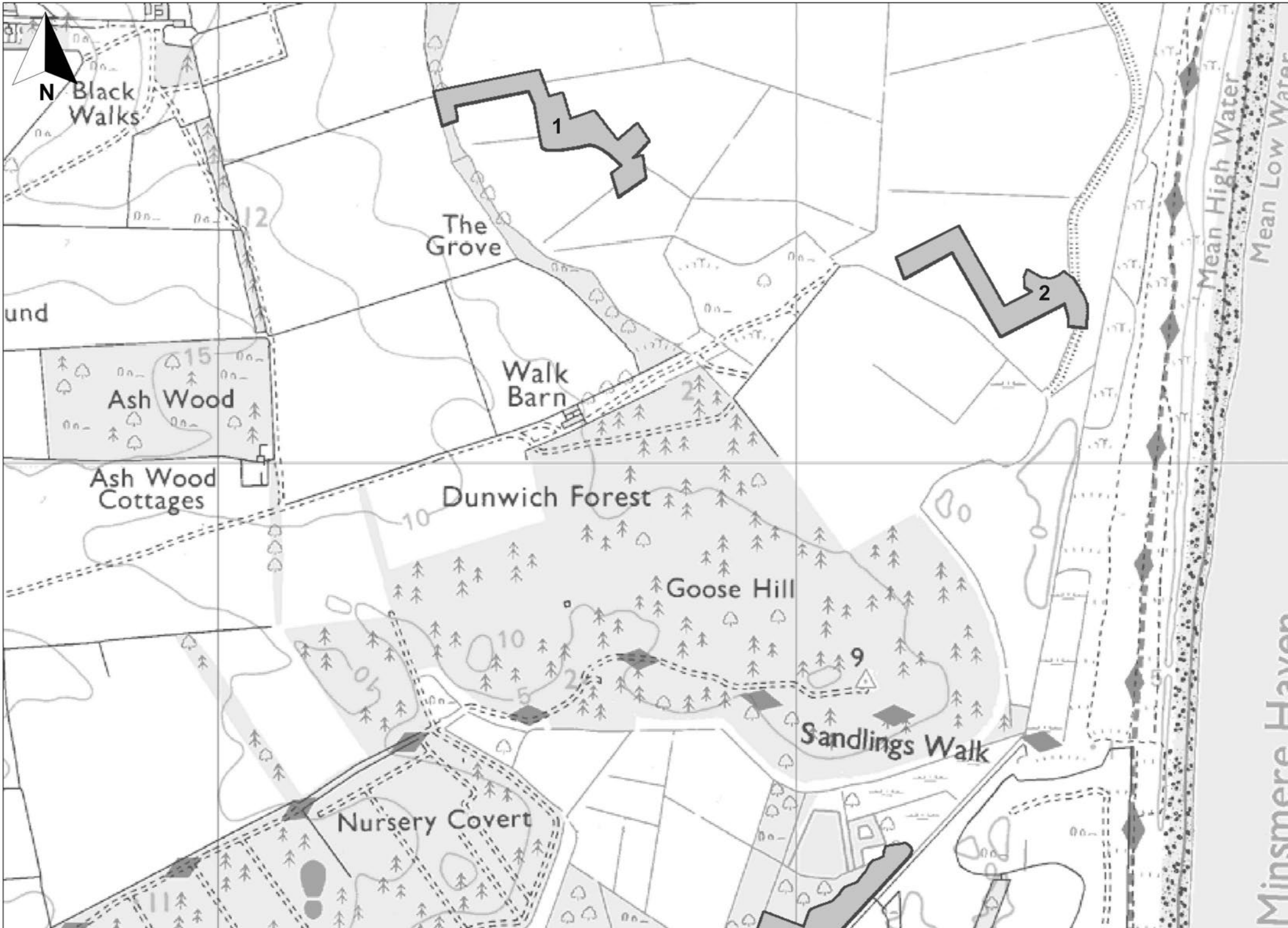
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Dunwich Forest
Goose Hill
Sandlings Walk
Nursery Covert
Mean High Water
Mean Low Water
Minsmere Haven

B.2. Appendix B.2

EDF Energy

Sizewell C New Nuclear Power Station: Terrestrial and Freshwater Ecology, and Ornithology

Draft Water Vole Survey Report 2007-2009

June 2012

AMEC Environment & Infrastructure UK Limited

Report for

EDF Energy

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Certificate No. FS 13881 Certificate No. EMS 69090

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Document Revisions

No.	Details	Date
1	Draft Report	June 2012

Contents

1. Introduction

1.1 Purpose of this Report

An area of land directly north of Sizewell B Nuclear Power Station, which is located near Leiston in Suffolk, has been identified as having the potential to accommodate the proposed development of one or more new nuclear reactors. This proposed development is known as Sizewell C. The site of the proposed development has an approximate central National Grid Reference (NGR) of TM473640.

AMEC Environment & Infrastructure UK Ltd ('AMEC') was commissioned in 2007 to provide terrestrial and freshwater ecological, and ornithological services in relation to Sizewell C. The purpose of this report, which outlines the findings of survey work undertaken for water vole (*Arvicola amphibius*) in the period 2007-2009, is to inform the design of Sizewell C and the Environmental Statement for the scheme.

1.2 Water Voles on the Sizewell Estate

The wetland habitats at Sizewell, and separately the Minsmere site, have been recognised as being of national importance to water voles, and the two sites have therefore been designated as National Key Sites for the species. The National Key Sites scheme recognises sites supporting water vole populations of national importance, and that are considered by the UKBAP Water Vole Steering Group (lead by the Environment Agency (EA)) as a priority for the conservation of resources at a national level. The selection of sites for this designation is based on the following criteria:

- The presence of a large water vole population, with habitat of optimal quality for the species, or where a minor adjustment in management would make it so;
- A site that provides a known and probably sustainable refuge from the introduced American mink (Mustela vison);
- A site that is most likely to be a major source of recolonist animals for a wider area; and
- A site where land tenure and habitat management is assured in the long term.

Landowners and managers of National Key Sites agree to adopt habitat management plans to ensure the importance of the site for water voles is maintained, and biannual monitoring is carried out following a standardised protocol to monitor the populations and allow comparisons to be made between sites (Bright & Carter, 2000, Strachan & Moorhouse 2006). British Energy (which became part of EDF Energy in 2009) developed a Species Action Plan (SAP) for water voles on land within their ownership, including the Sizewell estate (British Energy Group PLC 2007). This outlines the following actions:

- Maintain regular monitoring of the populations and diversity of the species on EDF Energy sites;

- Develop an information management system which records and manages data associated with the key performance indicators for water voles;
- Safeguard any existing populations on EDF Energy sites by appropriate and sympathetic management of bankside vegetation and riparian maintenance work. However, strike a balance between clearing ditches to promote water flow and providing adequate aquatic vegetation cover for small mammals such as water voles;
- Minimise the risk to water voles of any necessary pest control procedures;
- Safeguard water vole populations against mink predation by installing mink monitoring rafts and traps where necessary.

1.3 Survey Area and Scope

The survey areas and methodologies used have been adopted following consultation with statutory and non-statutory consultees and other stakeholders, taking into account best practice guidelines, and site-specific and project-specific characteristics. The survey area adopted is precautionary in that it allows for the iterative development of the scheme design by covering a larger area than is likely to be affected by the proposals. Based on the information available at the time the survey was undertaken, it was assessed that the relevant Zones of Influence of the proposed development would be likely not to extend further than the defined study area.

2. Methods

2.1 Desk Study

Existing information regarding water voles within the study area and surrounding land was obtained from the following sources:

- EDF Energy (and British Energy, which became part of EDF Energy in 2009) which has conducted a wide range of ecological surveys of its land holding and employs a conservation warden at Sizewell to help manage its land and undertake biological recording;
- Royal Holloway University (RHU) and RSPB, who conduct water vole monitoring as part of the National Key Sites scheme within the Sizewell Estate and at Minsmere respectively;
- Suffolk Biological Records Centre (SBRC);
- Suffolk Wildlife Trust (SWT); and
- The Environment Agency (EA).

The records included in this report were most recently requested in 2007.

2.2 Field Surveys

2.2.1 Ditch Surveys

An initial survey of 20 transects along ditches (see Figure 2.1 for locations) was carried out on 4 and 5 October 2007. Due to the extensive system of water bodies present across the survey area, and health and safety issues due to the heavily vegetated nature of some and the inaccessibility of others, it was not feasible to include every water body within the scope of the survey. A representative sample of the ditches within the survey area were therefore identified and surveyed to obtain basic presence/ absence data for water voles. The water bodies surveyed were chosen based on both ease of access in the field, and were widely distributed in order to sample all parts of the site. Once distinctive water vole signs were recorded in a ditch, presence had been established and no further searches of that water body were carried out.

On 28 and 29 July, and 15 October 2009, a sample of 16 sections of ditches (Figure 2.2) within the area of land directly north of the Sizewell B Power Station was surveyed in more detail to identify all evidence of water vole activity present (as far as safe access allowed). The aims of this further study were:

- To obtain a better understanding of how water voles use the habitats across the Sizewell Estate, not only in ditches and other clearly defined water bodies, but also in reedbeds (see Section 2.2.2); and

- To make more detailed assessments of a sample of ditches, in order to make population assessments that allow extrapolation for a generalised population assessment for the entire Estate.

The surveys were carried out based on methods recommended by Strachan & Moorhouse (2006). This involved searching bankside vegetation for:

- Latrines/ droppings – water vole droppings are often concentrated in discrete latrine sites near the nest, at range boundaries and places where they regularly enter and exit the water. While most droppings will be deposited in latrines, some may be found scattered along runways in vegetation;
- Feeding stations – feeding remains in the form of neat piles of chewed lengths of vegetation, are often found in runways and at haul-out platforms;
- Burrows - these are typically found along the water's edge and on top of the bank up to 5m from the water's edge. Holes on top of the banks often have grazed 'lawns' surrounding them;
- Nests – Where vegetation cover is dense and the water table is high (limiting opportunities for burrowing), water vole nests may be found woven into the base of rushes, sedges or grass tussocks; and
- Footprints – these may be identified in soft mud or silt.

Also recorded at each ditch was the depth, speed of water flow (estimated visually), the waterway width, bank side vegetation type and abundance, and surrounding land use, all of these being factors that may determine the suitability of habitat for supporting water voles.

The surveys were undertaken at an appropriate time of year for detecting water vole presence, i.e. between late April and early October, when water voles actively mark their breeding territories with latrines

2.2.2 Reedbed Survey

Marshland areas, where there are no distinct banks on which to search for water vole field signs, were also surveyed during 2009 via five transects, each measuring approximately 500m in length, designed to zig-zag through the reedbeds. Figure 2.3 shows the locations of the transects. Sheets of plywood measuring approximately 20cm by 30cm were then placed at a density of around one every 10m to create artificial latrine sites and lightly tethered to adjacent reeds. The artificial latrine sites were left in place, undisturbed, for 2-3 weeks prior to the survey taking place to allow enough time for water voles to explore and begin using them. Each of the transects was surveyed twice, once between 20 and 21 August, and once between 13 and 14 October.

During each survey the following signs of water vole activity were recorded:

- Latrines/ droppings – these may be found on the artificial latrine sites that have been specifically placed along the transect route, or in other suitable locations above the water level;
- Feeding signs – evidence of feeding in reedbed habitat is likely to be most noticeable where new shoots of vegetation have had the tips eaten; and

- Nests – above water level woven into large tussocks of vegetation.

2.3 Population Assessment

The data collected from the ditches during the 2009 survey were used to make population estimates using recommended methodologies[1] (Woodroffe *et al.*, 1990; amended by Morris *et al.*, 1998). This involves using the mean number of latrines per 100m of ditch to calculate the approximate water vole population density per 100m during the breeding season. Where access restrictions prevented both banks from being surveyed, the bank length was halved for the purpose of this equation. In all cases where this was undertaken, habitats on both banks of the ditch were considered to be of similar quality.

Given the variation in habitat types surveyed, in addition to the overall mean population estimate, mean estimates were calculated for the most optimal habitat and the habitat with very low suitability for water vole. This was in order to provide an indication of the variation between habitat types.

It should be noted that these are crude estimates, being based on a small sample size. In addition, the population assessment is based on latrine counts within the breeding season and therefore indicates the size of the breeding population. As such, it includes adult males, adult females and many independent juveniles, but not dependent young in the nests.

2.4 Personnel

The teams of suitably experienced surveyors were led by Katheryn Leggat.

[1] $y = 1.48+0.683x$, where y = number of water voles and x = number of latrines.

3. Results

3.1 Desk Study

3.1.1 SWT and EA

A countywide water vole survey was undertaken in Suffolk in 1997 by SWT and the EA. This demonstrated that water voles were largely absent from the west and north of Suffolk, but present in central and eastern parts of the county. Overall, signs of water vole were found at a third of sites surveyed. During this survey, the River Deben was found to have water voles present in three quarters of the sections surveyed. Whilst a follow-up countywide survey has not yet been completed, a survey of the River Deben catchment in 2003 showed a reduction in sites with water vole signs present from 75% in 1997 to 46% in 2003 (Suffolk Biodiversity Partnership, 2003).

The Sizewell Land Management Annual Review has regularly referred to the importance of Sizewell for water vole conservation and the high populations supported since the 1997-98 report. The 2006-07 report suggests that Sizewell is one of the best sites for the species in Suffolk. Liaison with Penny Hemphill (Suffolk Wildlife Trust, 2008), indicated that the population present at Sizewell is important only as part of a wider population throughout coastal marsh habitat along the Suffolk coast. She also explained that whilst mink have been discovered in this part of the county, they have not yet become established. Mink control is in place at Sizewell, without which the water vole population may face the threat of serious decline.

3.1.2 RHU and RSPB

12 transects within the Sizewell Estate are monitored twice annually as part of the National Key Sites initiative. RHU provided data for these transects, for the period between September 2001 and May 2007. Figure 2.1 illustrates the location of each transect, and Table A1 (Appendix A) provides the presence/ absence data for each of these since September 2001. The transects are distributed across the majority of the survey area, although none are located in the northernmost part. There was no evidence of water vole activity on two of the 12 transects in May 2007, but both of these have had water vole signs recorded within the past two years.

24 transects on the Minsmere site are monitored twice a year as part of the National Key Sites initiative. RSPB have been able to provide the presence/ absence data for these transects for the period between autumn 2001 and autumn 2007. Figure 2.1 illustrates the location of each of these transects too, while Table A2 presents the outcome of these surveys since the beginning of the monitoring programme (2001). These transects are distributed across an area to the north of the current study site. Water vole presence was confirmed in 16 of the 23 surveyed transects in autumn 2007, although those transects in which water voles were not recorded during this survey have all supported water voles within the previous two years. Transects in which water vole presence was confirmed in autumn 2007 are widely distributed across the Minsmere site.

3.1.3 SBRC and Other Data

The SBRC provided a number of records of water vole activity throughout the Sizewell Marshes and the surrounding area up to a distance of 3km. These data are presented in Table A3, and clearly indicate that the species has been present in the survey area for at least the last 10 years.

The Environmental Statement (ES) produced in association with the decommissioning of the existing nuclear facility indicated four historical records of water vole activity in the ditches at Turf Pits, to the south of the study area. Surveys carried out to inform the ES also confirmed the presence of the species in a watercourse that runs to the west of the existing power station.

3.2 Field Surveys

3.2.1 Habitat Assessment

Ditches Surveyed in 2007

All ditches surveyed in 2007 provided suitable aquatic habitat for water voles, comprising slow-flowing or still water over 1m deep with wide swathes of riparian vegetation and earth banks. Bordering land use is predominantly marshy grassland, which in many cases is grazed by cattle and/or sheep. Other land uses bordering survey transects included reedbeds and arable fields. Several of the transects had woodland dominating one bank and therefore were somewhat shaded by overhanging trees. Bank profiles ranged from shallow to steep, but all provided some suitable burrowing habitat for water voles, the only exception being Transect R, which had a very flat bank that merged with the adjacent wet grassland. This does not however preclude the possibility of water voles occupying the habitat, as the species will build nests in the base of sedge and reeds, particularly in wetlands with a high water table such as those found on the Sizewell Estate (Strachan & Moorhouse, 2006). At each transect the riparian vegetation required for foraging and sheltering water voles was abundant at varying levels. Some ditches provided a wide margin of reeds and sedges, whilst others were dominated by patches of scrub with only a narrow strip of reeds.

Table 3.1 Description of the Ditches Surveyed in 2007

Transect (Figure 2.1)	Bordering Land Uses	Bank Profile[2]	Depth (m)	Width (m)	Dominant Bankside Vegetation
A	Marshy grassland	Shallow-steep	1.5+	1-2	Reeds
B	Broad-leaved woodland, marshy grassland	Shallow-steep	1.5+	1-2	Trees
C	Marshy grassland, semi-improved grassland	Shallow	1-1.5	1	Trees/scrub
D	Marshy grassland, semi-improved grassland	Steep	0.5-1	1-2	Trees, scrub
E	Marshy grassland, mixed woodland	Steep	1.5+	2-5	Reeds, trees
F	Marshy grassland	Shallow	1.5+	1-2	Reeds
G	Conifer plantation, marshy grassland	Steep	1.5+	1-2	Trees, tall grass
H	Reedbed, broad-leaved woodland	Shallow	1.5+	2-5	Reeds, trees
I	Reedbed, broad-leaved woodland	Shallow	1.5+	2-5	Reeds, trees
J	Reedbed, broad-leaved woodland	Shallow	1.5+	2-5	Reeds, trees
K	Reedbed, broad-leaved woodland	Flat	1.5+	2-5	Reeds, trees
L	Reedbed, broad-leaved woodland	Flat	1.5+	2-5	Reeds
M	Marshy grassland	Shallow	1.5+	1-2	Reeds
N	Marshy grassland	Shallow	1.5+	1-2	Submerged weed
O	Marshy grassland, broad-leaved woodland	Shallow	1.5+	2-5	Trees, submerged weed
P	Marshy grassland, broad-leaved woodland	Shallow	1.5+	1-2	Trees, reeds
Q	Broad-leaved woodland, marshy grassland	Shallow	1.5+	1-2	Trees, submerged weed
R	Semi-improved grassland	Steep	1.5+	2-5	Scrub
S	Arable land	Steep	1.5+	1-2	Submerged weed, short grass
T	Marshy grassland	Shallow	1.5+	1-2	Reeds

Ditches Surveyed in 2009

Of the ditches surveyed in 2009, six were considered to offer relatively poor habitat for water voles. This was predominantly due to two key main factors:

- Heavy over-shading by adjacent woodland limiting the growth of aquatic vegetation and resulting in a deep layer of decaying leaf litter dominating the channel (ditches 3b, 8, 9b, 12 and 13); and/or

[2] Bank profile: flat <10°, shallow <45°, steep >45°, vertical/undercut.

- Very heavy poaching of the banks by cattle reducing bankside vegetation and restricting opportunities for burrowing water voles (ditches 9a, 12 and 13).

A further six of the ditches surveyed (ditches 3a, 4, 5, 6, 7 and 11) were considered to offer very good habitat for water voles, comprising water over 1m deep with wide swathes of riparian vegetation dominated by common reed (*Phragmites australis*), and earth banks. The other four ditches offer good habitat for water voles, although the value is limited to just one bank due to over-shading trees (ditch 2), and/or reduced by cattle poaching (ditches 1, 2, 10a and 10b).

Bordering land use is predominantly marshy grassland with cattle grazing, but also includes semi-natural broad-leaved woodland, mixed and conifer plantation, marshland (reedbed), and some semi-improved and improved grassland. Bank profiles are predominantly shallow, with only a few steep banks, limiting water vole burrowing opportunities; although most of the ditches do provide some burrowing habitat. The riparian vegetation required for foraging and sheltering water voles was present at varying levels with some ditches providing a dense reed bed, and others almost bare. Table 3.2 outlines the habitat variables recorded at each ditch.

Table 3.2 Description of the Ditches Surveyed in 2009

Ditch Reference (Figure 2.2)	Bordering Land Uses	Bank Profile[2]	Depth (m)	Width (m)	Dominant Bankside Vegetation
1	Marshy grassland, mixed plantation woodland, cattle grazing	Shallow	0.5-1	1-5	Tall grass
2	Marshy grassland, mixed plantation woodland, semi-natural broad-leaved woodland, cattle grazing	Shallow	0.5-1	1-5	Bankside trees and short grass
3a	Semi-improved grassland, conifer plantation woodland	Shallow	1-2+	2-5	Reeds/sedges
3b	Semi-improved grassland, conifer plantation woodland, cattle grazing	Shallow	1-2+	1-5	Bankside trees and scrub
4	Marshy grassland, mixed plantation woodland	Shallow	1-2	2-5	Reeds/sedges
5	Marshy grassland, semi-natural broad-leaved woodland, cattle grazing	Shallow	1-2+	2-5	Reeds/sedges
6	Marshland, semi-natural broad-leaved woodland	Flat-shallow	1-2	2-5	Reeds/sedges
7	Marshland, semi-natural broad-leaved woodland	Flat-vertical/undercut	1-2	2-5	Reeds/sedges
8	Marshland, semi-natural broad-leaved woodland	Flat	0.5-2	2-5	Bankside trees
9a	Marshy grassland, semi-natural broad-leaved woodland, cattle grazing	Shallow	1-2	2-5	Bankside trees and short grass
9b	Improved grassland, semi-natural broad-leaved woodland	Shallow	0.5-1	1-2	Bankside trees

Table 3.2 (continued) Description of the Ditches Surveyed in 2009

Ditch Reference (Figure 2.2)	Bordering Land Uses	Bank Profile[2]	Depth (m)	Width (m)	Dominant Bankside Vegetation
10a	Marshy grassland, cattle grazing	Shallow	>2	1-2	Tall grass
10b	Marshy grassland, semi-natural broad-leaved woodland, cattle grazing	Shallow-steep	1-2	1-2	Tall grass
11	Marshy grassland, cattle grazing	Shallow	>2	2-5	Reeds/sedges
12	Marshy grassland, semi-natural broad-leaved woodland, cattle grazing	Flat-shallow	0.5-2	1-2	Bankside trees
13	Marshy grassland, semi-natural broad-leaved woodland, cattle grazing	Flat-shallow	0.5-1	1-2	Bankside trees and tall grass/rushes

Reedbeds Surveyed in 2009

Reedbed habitat to the north of the Sizewell Estate is largely restricted to wide linear swathes that follow ditch lines, and therefore Transects 1 and 2 also followed these water bodies (Figure 2.3). The ditches have high water levels and predominantly flat banks that merge with adjacent marshy grassland.

Transects 3, 4 and 5 zig zag through dense reedbed habitat (Figure 2.3) which support several shallow and deep ditches. At the time of surveying water levels were low, with much of the reedbeds dry and the only water found in a few small wet patches of reedbed that occur close to the ditches, and within the ditches themselves. Parts of the reedbeds at all three transects were starting to be colonised by terrestrial species including common nettle (*Urtica dioica*), common cleavers (*Galium aparine*), bramble (*Rubus fruticosus* agg.) and lesser bindweed (*Convolvulus arvensis*).

The artificial latrine sites were not only sited through the reedbed occasionally crossing ditches, but sections of the transects also followed ditch lines where the extent of the reedbed was limited (transect 5) and passed through small sections of wet woodland (transect 3).

3.2.2 Water Vole Activity Surveys

Ditches Surveyed in 2007

A summary of the water vole field signs identified in 2007 is presented in Table 3.3, and the completed field survey forms are presented in Appendix B). Evidence of water vole activity, in the form of latrines and/or feeding remains, was found on the banks of all ditches surveyed with the exception of Transect T, and several water vole burrows were also identified.

Table 3.3 Water Vole Field Signs identified during the 2007 Survey

Transect (Figure 2.1)	Signs		
	Latrine/ Droppings	Feeding Station	Burrow
A	✓	✓	
B	✓	✓	
C	✓	✓	✓
D	✓		
E	✓	✓	
F	✓	✓	
G	✓		✓
H	✓		
I	✓	✓	
J	✓	✓	
K	✓	✓	
L	✓	✓	
M	✓	✓	
N	✓		
O		✓	
P	✓	✓	
Q	✓	✓	
R	✓		
S	✓		✓
T			

Ditches Surveyed in 2009

The water vole field signs identified during the 2009 ditch survey are summarised in Table 3.4. Evidence of water vole activity in the form of latrines, feeding remains, and/or burrows was found on the banks of all surveyed ditches, with the exception of ditches 2 and 9b. The latter of these was considered to offer poor habitat for water voles. All of the other ditches considered to offer poor water vole habitat supported some, limited signs of activity (ditches 3b, 8, 9a, 12 and 13).

A high density of different field signs was recorded from four of the ditches (3a, 4, 7 and 11) considered to provide very good water vole habitat. Although ditch 5 also offers very good water vole habitat, access to this ditch was restricted by deep sediment and dense bankside vegetation. A high density of feeding remains found along the banks of ditch 6 indicated a significant level of water vole activity, although few other signs were recorded. This is likely to be due to the flat banks of this ditch, which limit the number of suitable locations for latrines, as well as reducing potential for burrowing.

Table 3.4 Water Vole Field Signs identified during the 2009 Ditch Survey

Ditch Reference (Figure 2.2)	Transect Length (m)	Signs			
		Latrine/ Droppings	Feeding Station	Burrow	Other
1	230	0	3	0	
2	190	0	0	0	
3a	50	26	25	9	
3b	100	0	2	0	1 dead water vole
4	160	22	51	31	
5[3]	150	2	0	0	
6	100	1	34	1	
7	200	12	34	3	
8	100	3	1	0	
9a[4]	100	1	2	1	
9b[4]	80	0	0	0	
10a	120	5	8	2	
10b	90	9	15	4	Water vole nest in rushes
11[4]	110	23	29	3	
12	160	4	0	0	
13[4]	60	3	2	1	

Reedbeds Surveyed in 2009

Water vole field signs, including latrines, were recorded on all of the transect routes surveyed. Throughout the length of transects 1 and 2, where natural latrine sites are restricted by high water levels, the artificial latrine sites were widely used for territorial marking. Of the 50 artificial latrine sites set out at transect 1, more than half held latrines during the second survey visit; while 18 of those along transect 2 held latrines during the same survey visit.

Within transects 3, 4 and 5 however, use of the artificial latrine sites was limited to the few that were placed within or adjacent to ditches and nearby wet areas. A maximum of 4 artificial latrine sites were used at transect 3, this was during the first survey visit. No more than 1 artificial latrine site was used at each of transects 4 and 5. Similarly, all other water vole field signs identified were recorded along the banks of ditches and in wet pockets. No evidence of water vole activity was recorded throughout most of the length of the transects, where they passed through dry reedbed habitats.

[3] Access for survey limited due to very deep water and dense vegetation, as well as the presence of nesting reed warblers, therefore this ditch has not been included in the population estimate calculation.

[4] Only one bank surveyed due to access difficulties. The bank length used for the population assessment was therefore taken to be half this distance.

Table 3.5 Water Vole Field Signs identified during the 2009 Reedbed Survey

Transect (Figure 2.3)	Survey Visit 1		Survey Visit 2	
	Signs	Details (e.g. Habitat Type/ Location of Record)	Signs	Details (e.g. Habitat Type/ Location of Record)
1	19 latrines	On artificial latrine sites	26 latrines	On artificial latrine sites
	1 feeding station	On an artificial latrine site	1 feeding station	On the banks of a ditch
			1 burrow	In the bank of a ditch
2	17 latrines	On artificial latrine sites	18 latrines	On artificial latrine sites
	2 feeding stations	On artificial latrine sites		
3	30 feeding stations	On the banks of ditches	13 feeding stations	On the banks of ditches
	1 feeding station	Within a wet area of the reedbed	2 latrines	On the banks of ditches
	1 patch of reeds with tops eaten	Within a wet area of the reedbed	1 latrine	On an artificial latrine site adjacent to a ditch
	19 latrines	On artificial latrine sites	26 latrines	On artificial latrine sites
	1 feeding station	On an artificial latrine site	1 feeding station	On the banks of a ditch
			1 burrow	In the bank of a ditch
	17 latrines	On artificial latrine sites	18 latrines	On artificial latrine sites
4	2 feeding stations	On artificial latrine sites		
	30 feeding stations	On the banks of ditches	13 feeding stations	On the banks of ditches
	1 feeding station	Within a wet area of the reedbed	2 latrines	On the banks of ditches
	1 patch of reeds with tops eaten	Within a wet area of the reedbed	1 latrine	On an artificial latrine site adjacent to a ditch
5	19 latrines	On artificial latrine sites	26 latrines	On artificial latrine sites
	1 feeding station	On an artificial latrine site	1 feeding station	On the banks of a ditch
			1 burrow	In the bank of a ditch

3.3 Population Assessment

The results of the population assessment based on the 2009 ditch survey data are shown in Table 3.6. The average population size for all the ditches surveyed is estimated at 8.14 water voles per 100m. Assessments made based on habitat suitability, however, indicate the wide variation between ditches, with the most optimal habitats supporting an average of 17.13 water voles per 100m, and the poorest habitats supporting as few as 3.47 individuals per 100m.

Table 3.6 Water Vole Population Assessment 2009

Ditch Reference	Bank Length (m)[5]	Latrine Count	No. of Latrines per 100m
1	230	0	0
2	190	0	0
3a*	50	26	52
3b†	100	0	0
4*	160	22	13.75
6*	100	1	1
7*	200	12	6
8†	100	3	3
9a†	50	1	2
9b†	40	0	0
10a	120	5	4.17
10b	90	9	10
11*	55	23	41.82
12†	160	4	2.5
13†	30	3	10
No. of water voles per 100m (from mean of 9.75 latrines per 100m)[1] – entire sample:			8.14
No. of water voles per 100m (from mean of 22.91 latrines per 100m)[1] - most optimal habitat only *):			17.13
No. of water voles per 100m (from mean of 2.92 latrines per 100m)[1]- least suitable habitat only (†):			3.47

[5] As noted in Section 2.3, where access restrictions prevented both banks from being surveyed, the bank length was halved for the purpose of this equation.

4. Summary

Surveys at Sizewell during 2007 and 2009 demonstrated that water voles occur throughout the ditch network within the survey area, with most of the Sizewell Estate providing areas of optimal habitat for water voles. Water vole activity was found to be limited in the less frequent areas of poorer habitat quality such as dry reedbeds.

A population assessment has been made based on the number of latrines recorded per 100m of ditch surveyed in 2009; however, these provide only a crude estimate and are based on a small sample size. The population assessment is based on latrine counts within the breeding season and therefore indicates the size of the breeding population, and does not allow for seasonal fluctuations. In addition, it includes adult males, adult females and many independent juveniles, but not dependent young in the nests. The population estimate for the study area was 8.14 water voles per 100mof ditch.

There is high variation in habitat quality within the study sample, therefore population assessments of the most optimal habitats, and separately of the poorest quality habitats, have also been made. These are based on a very small sample size and are used only to indicate the likely variation in water vole numbers between habitat types. The results equate to an average of 17.13 adult water voles per 100m in optimal water vole habitat, compared to an average of just 3.47 adult water voles per 100m in poor quality habitat.

The results of transect surveys through the reedbeds indicate that water voles are rarely active within the reedbed habitats at any distance from the ditches, with no evidence of such found. Ditches and nearby wet areas within the reedbeds are readily used, with clear evidence of water vole occupation present at all those surveyed.

5. References

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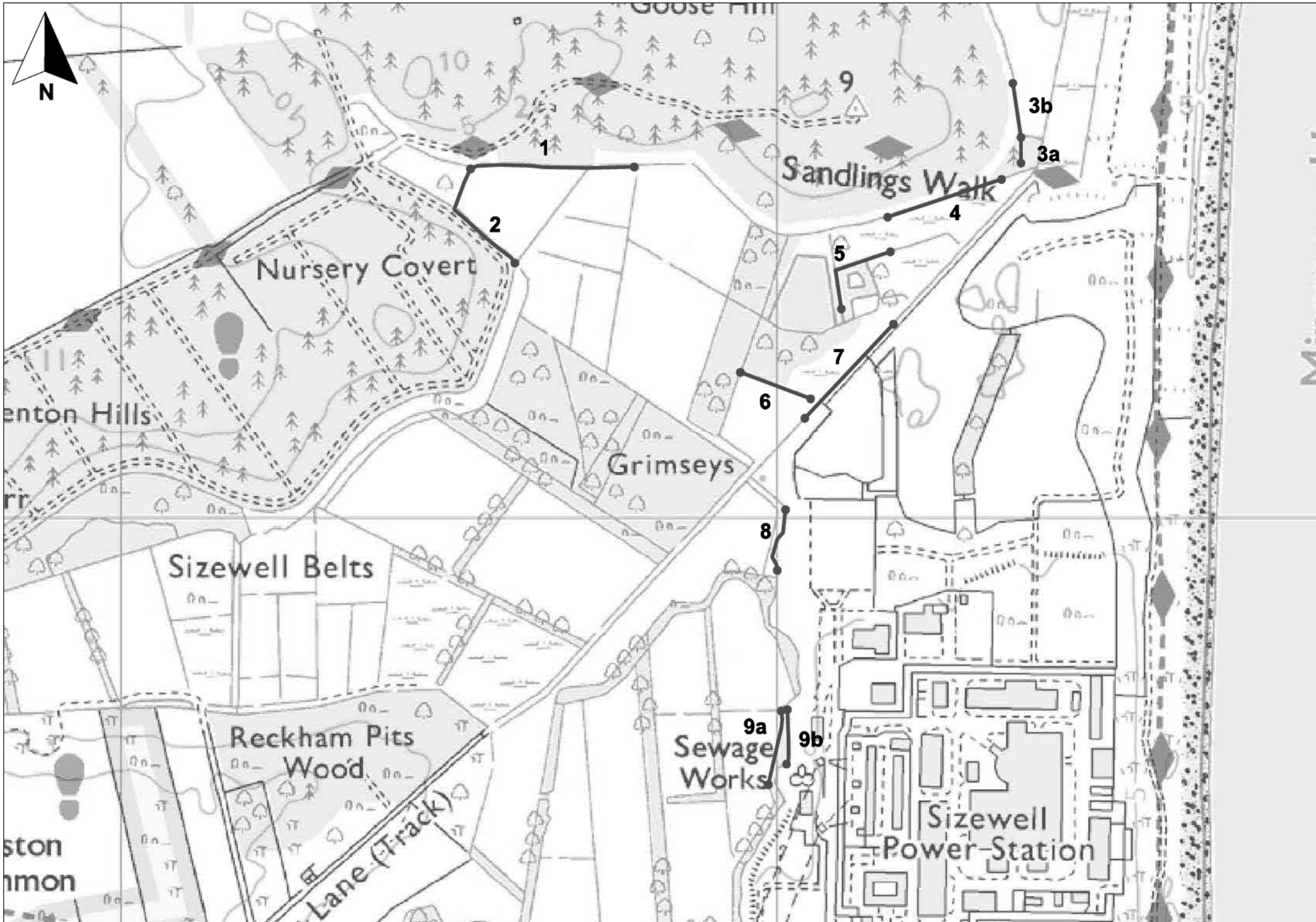
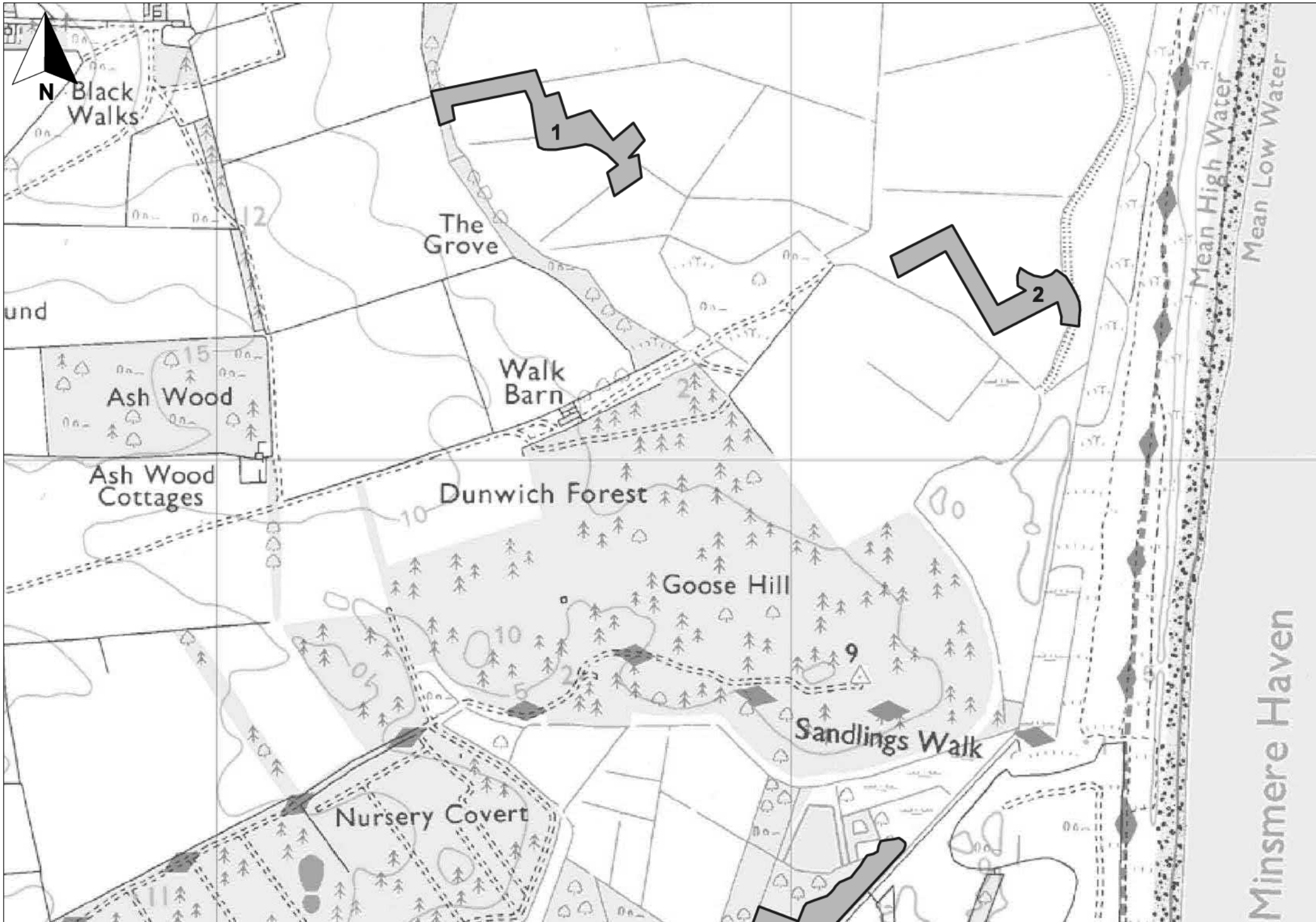
Figures


N
Pit (dis)
Black Slough
Sewage Works
Reckford Bridge
Covert
Westleton Walks
Docwra's Ditch
PC
North Walks
Scottshall Coverts
The Warren
Vault Hill
Scott's Hall
Scott's Hall Farm
East Lane (Track)
The Drift
Sheepwash Lane
Whin Hill
Saunders' Hill
Stonehill Covert
Gravel Pit
Hangmans New Wood
Minsmere Old River
Minsmere Nature Reserve
Pit (dis)
Thebertonhall Farm
Caravan Park
Minsmere New Cut
Minsmere Level
Cowmarsh Hill
Dam Bridge
Red House Farm
Rattla Corner
Church Road
Holly Tree Farm
Eastbridge
Eastbridge Farm
Dovehill Plantation
Sandpytle Plantation
Chapel (remains of)
Theberton
England Covert
Drift Farm
Cemy
Lower Abbey
Mill Grove
Onner's Lane
Osier Bed
Black Walks
Brown's Plantation
Potter's Street
The Grove
Hotel
Potter's Farm
The Round House
Theberton House
Birchwood Farm
Walk Barn
Ash Wood
Ash Wood Cottages
Dunwich Forest
Greenhouse Plantation
MS
Goose Hill
Upper Abbey
Sandlings Walk
Hill Farm
Nursery Covert
Abbey Farm
Spring Covert
Remains of Leiston Abbey (Premonstratensian)
Leiston Old Abbey
Old Abbey
Kenton Hills
Grimseys
Leiston Carr
Aldhurst Farm
Abbey Road
Fiscal Policy
Sizewell Belts
Lover's Lane
Reckham Ots Wood
Sewage Works
Sizewell Power Station
Leiston Common
Sandy Lane (Track)
Rookyard Wood
Pit (dis)
Brick Kiln Farm
Sewage Works
Valley Road
Broom Covert
LEISTON CP
Works
Caravan Park
Sizewell Crossing
Sandy Lane (Track)
Sizew


N
1
2
3a
3b
4
5
6
7
8
9
9a
9b
Sandlings Walk
Nursery Covert
Grimseys
Sizewell Belts
Reckham Pits Wood
Sewage Works
Sizewell Power Station
Lane (Track)


N
Black Walks
1
2
The Grove
Walk Barn
Ash Wood
Ash Wood Cottages
Dunwich Forest
Goose Hill
Sandlings Walk
Nursery Covert
Mean High Water
Mean Low Water
Minsmere Haven

Appendix A
Data Responses

3 Pages

Table A1 RHU Survey Transects at Sizewell

Transect (Figure 2.1)	May 07	Sept 06	May 06	Sept 05	May 05	Sept 04	May 04	Sept 03	May 03	Sept 02	May 02	Sept 01
1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	×
2	✓	×	✓	✓	✓	✓	×	×	✓	✓	✓	✓
3	✓	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	×
4	✓	✓	✓	✓	✓	✓	✓	×	×	✓	✓	×
5	×	×	×	✓	✓	×	✓	×	×	✓	✓	✓
6	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	✓
7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
8	×	✓	✓	✓	✓	×	✓	✓	×	✓	✓	✓
9	✓	✓	✓	✓	✓	✓	✓	✓	×	✓	✓	✓
10	✓	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
12	✓	×	✓	✓	✓	×	✓	✓	✓	✓	✓	×

✓ indicates water vole signs recorded, × indicates no water vole signs recorded.

Table A2 RSPB Survey Transects at Minsmere

Transect (Figure 2.1)	Aut 07	Spr 07	Aut 06	Spr 06	Aut 05	Spr 05	Aut 04	Spr 04	Aut 03	Spr 03	Aut 02	Spr 02	Aut 01
1	✓	×	×	✓	✓	✓	·	✓	✓	·	×	✓	✓
2	×	×	✓	×	✓	✓	·	✓	✓	·	✓	✓	✓
3	✓	✓	✓	✓	✓	✓	·	✓	✓	·	✓	✓	✓
4	×	✓	×	·	×	✓	·	✓	✓	·	×	×	×
5	✓	✓	✓	·	✓	✓	·	✓	✓	·	×	×	×
6	✓	·	✓	·	✓	✓	·	·	✓	·	✓	·	✓
7	×	·	×	·	✓	·	·	·	✓	·	✓	·	✓
8	×	·	✓	·	✓	·	·	·	✓	·	✓	·	✓
9	✓	·	✓	·	✓	·	·	·	✓	·	✓	·	×
10	✓	✓	✓	✓	✓	·	·	·	✓	·	✓	✓	✓
11	✓	✓	✓	✓	✓	✓	·	✓	✓	·	✓	✓	✓
12	×	✓	✓	✓	✓	✓	·	✓	✓	·	✓	✓	✓
13	✓	×	×	✓	✓	✓	·	✓	✓	·	✓	✓	✓
14	·	✓	✓	✓	✓	✓	·	✓	✓	·	✓	✓	✓
15	✓	✓	✓	✓	✓	✓	·	✓	×	·	×	×	×
16	✓	✓	✓	N	✓	✓	·	✓	✓	·	✓	✓	✓
17	✓	✓	✓	Y	✓	✓	·	✓	✓	·	✓	✓	✓
18	✓	·	✓	·	✓	·	·	·	✓	·	✓	·	✓
19	✓	·	✓	·	✓	·	·	·	✓	·	✓	·	✓
20	×	·	✓	·	✓	·	·	·	✓	·	✓	·	✓
21	×	·	✓	·	✓	·	·	·	✓	·	✓	·	✓
23	✓	·	✓	·	✓	·	·	·	✓	·	✓	·	✓
24	✓	✓	✓	✓	✓	✓	·	✓	✓	·	✓	✓	✓

✓ indicates water vole signs recorded, × indicates no water vole signs recorded, · indicates surveys not completed.

Table A3 Water Vole Records from SBRC

Location	Grid Reference	Date
Eastbridge	TM4466	1991
Minsmere Valley: Reckford Bridge to Beveriche Manor Farm	TM453664	1997
Sizewell Belts	TM4547063493	2005
Sizewell Belts	TM4629963877	2005
Sizewell Belts	TM4630563880	2005
Sizewell Belts	TM465635	1997
Goose Hill marshes, Leiston	TM465645	1996
Sizewell Belts	TM4664763500	2005
Sizewell Belts	TM4667663258	2005
Sizewell Belts	TM4673263822	2005
Sizewell	TM467644	1993
Sizewell Belts	TM4683364408	2005
Sizewell Belts	TM4684963157	2005
Sizewell Belts	TM4686264560	2005
Sizewell Belts	TM4697462983	2005
Leiston ditch, Sizewell Belts	TM474645	1996
Minsmere B. R.	TM474665	1998
Minsmere B. R.	TM475671	1992
Sizewell Belts	TM455635	2000
Sizewell Belts	TM4563063648	2005
btw. Eastbridge and Hangmans	TM4566	1982
Two Penny Bridge, Minsmere New Cut	TM460663	1996
Minsmere B. R.	TM460672	2003
Sizewell Belts	TM4612163729	2005

Appendix B
Field Survey Forms

36 Pages

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: A | 10km square: | Grid ref: TM 466 653

County: SUFFOLK | Water Authority:

Recorder: SB & KL | Date: 04/10/2007

HABITAT INFORMATION (mark features on map)

Survey distance: 200 8m

Habitat
- [x] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [x] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [ ] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [ ] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [x] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [N] Bankside trees
- [R] Bushes
- [O] Herbs
- [F] Submerged weed
- [D] Reeds/sedges
- [O] Tall grass
- [A] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [x] Shallow < 45° 2nd half
- [x] Steep > 45° 1st half
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [x] 1–2m
- [ ] > 2m

Width
- [ ] 1m
- [x] 1–2m
- [ ] 2–5m
- [ ] 5–10m
- [ ] 10–20m
- [ ] 20–40m
- [ ] > 40m

Current
- [ ] Rapid
- [ ] Fast
- [ ] Slow
- [ ] Sluggish
- [x] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [x] Latrines (count)
- [ ] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [x] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

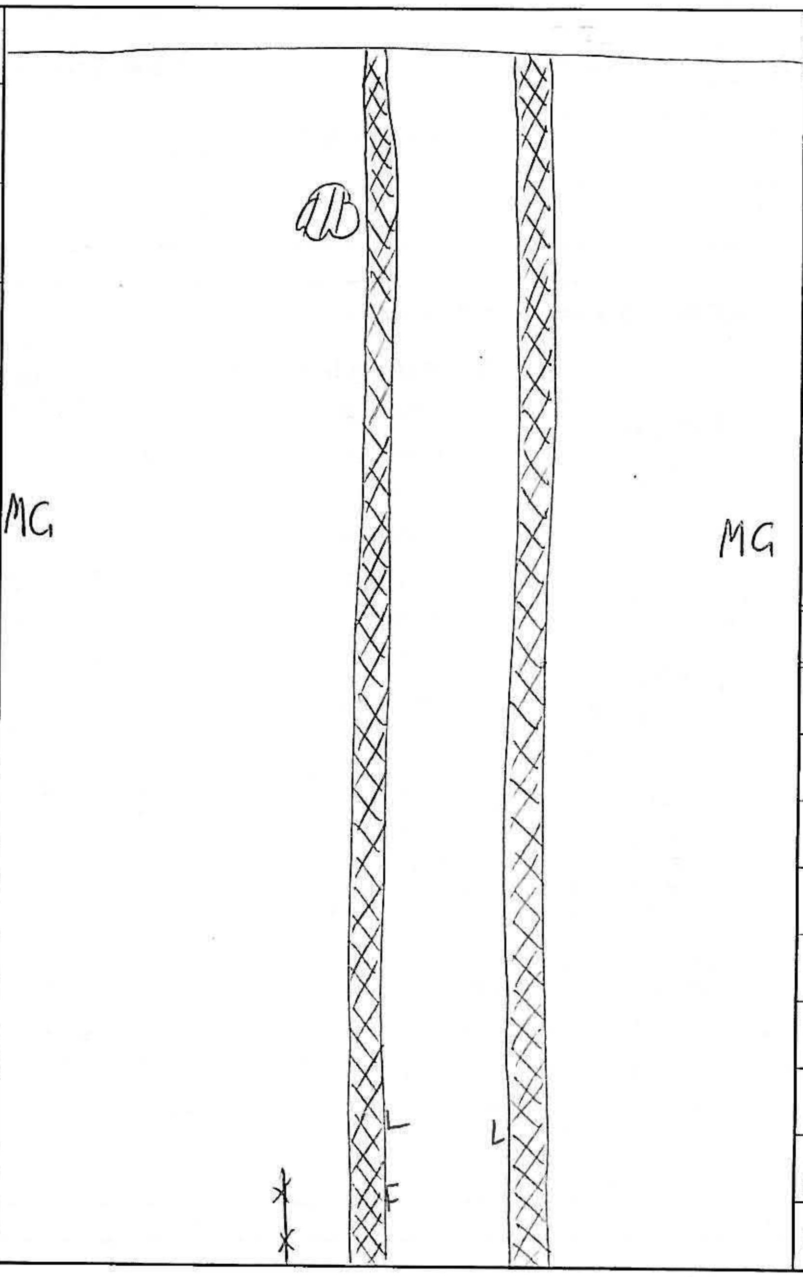
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

Symbol
Mature trees
Over-hanging branches
Fallen tree
Exposed roots
Pollarded tree P
Sapling
Scrub
Hedgerow
Fence —x—x—x—
Reed/sedge bed
Flood bank
Artificial bank
Earth cliff



ADJACENT LAND-USE CODES	
Broadleaved wood	BW
Conifer plantation	CP
Moorland heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc. gardens)	URB
Marshy grassland	MG

OTHER FEATURES
Roadbridge
Footbridge
Weir
Culvert
Ford
Outfall
Dredgings/ spoil
Silt bars
Islands — mark position and size

ADDITIONAL COMMENTS:
water level management
signs of drying out
flood debris position
evidence of pollution

F - Water vole feeding remains
L - Water vole latrine

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: B | 10km square: | Grid ref: TM 466 652

County: SUFFOLK | Water Authority:

Recorder: KL & SB | Date: 04/10/07

HABITAT INFORMATION (mark features on map)

Survey distance: 200 m

Habitat
- [x] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [x] Earth (1st half)
- [ ] Rock cliffs
- [x] Earth cliffs (2nd half)
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [x] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [ ] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [x] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [A] Bankside trees
- [N] Bushes
- [O] Herbs
- [O] Submerged weed
- [F] Reeds/sedges
- [O] Tall grass
- [O] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [x] Shallow < 45° (1st half)
- [x] Steep > 45° (2nd half)
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [x] 1–2m
- [ ] > 2m

Width
- [ ] 1m
- [x] 1–2m
- [ ] 2–5m
- [ ] 5–10m
- [ ] 10–20m
- [ ] 20–40m
- [ ] > 40m

Current
- [ ] Slow
- [ ] Rapid
- [ ] Fast
- [ ] Sluggish
- [x] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [x] Latrines (count)
- [ ] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [x] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [x] Droppings
- [ ] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

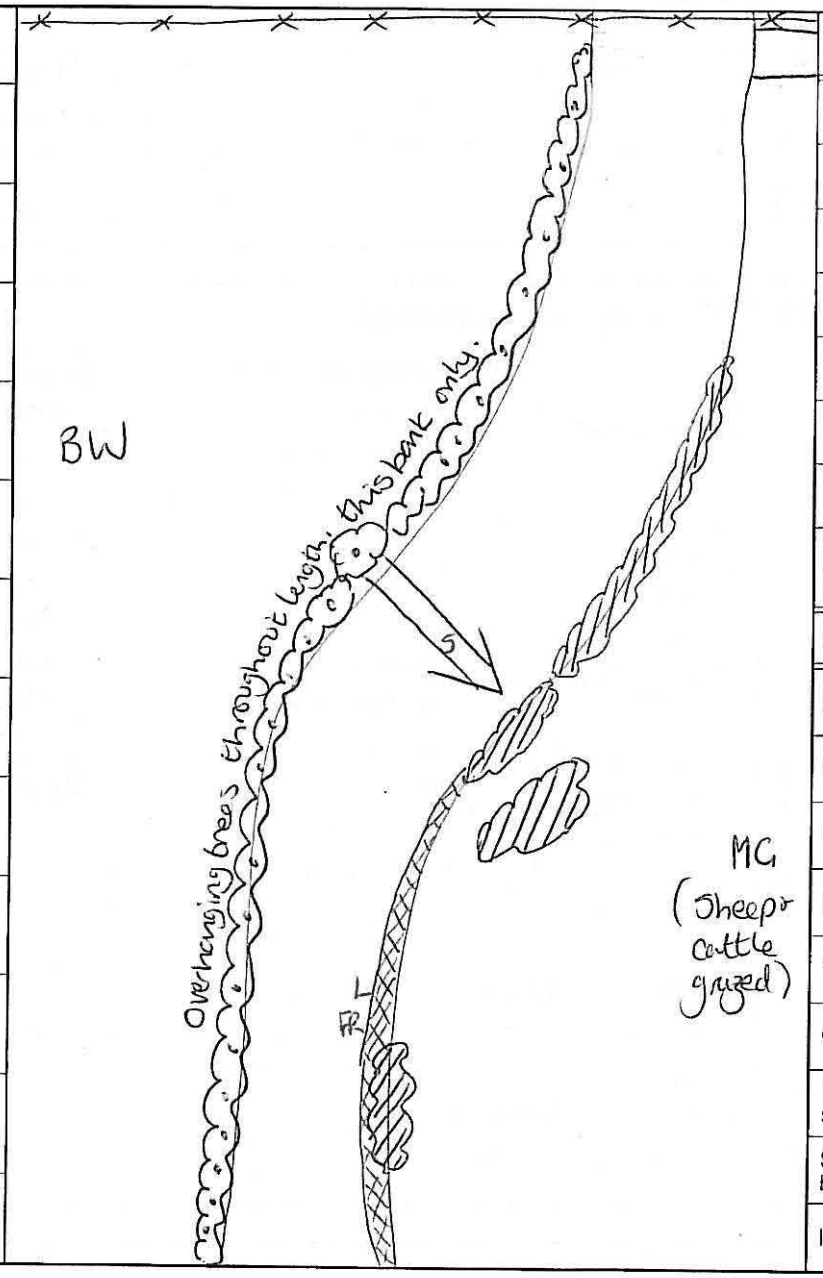
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES

Broadleaved wood	BW
Conifer plantation	CP
Mixed and heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc gardens)	URB

Marshy grass MG

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/ spoil
- Silt bars
- Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

FR - Watervole feeding remains

L - Watervole latrine

S - Otter spraint

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: C | 10km square: | Grid ref: TM 468 653

County: SUFFOLK | Water Authority:

Recorder: SB & KL | Date: 04/10/07

HABITAT INFORMATION (mark features on map)

Survey distance: 115 m

Habitat
- [✓] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [✓] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [ ] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [ ] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [✓] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [A] Bankside trees
- [D] Bushes
- [R] Herbs
- [N] Submerged weed
- [N] Reeds/sedges
- [R] Tall grass
- [R] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [✓] Shallow < 45°
- [ ] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [✓] 1–2m
- [ ] > 2m

Width
- [ ] 5–10m
- [✓] 1m
- [ ] 10–20m
- [ ] 1–2m
- [ ] 20–40m
- [ ] 2–5m
- [ ] > 40m

Current
- [ ] Slow
- [ ] Rapid
- [ ] Sluggish
- [ ] Fast
- [✓] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [✓] Latrines (count)
- [✓] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [✓] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [ ] Droppings
- [?] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

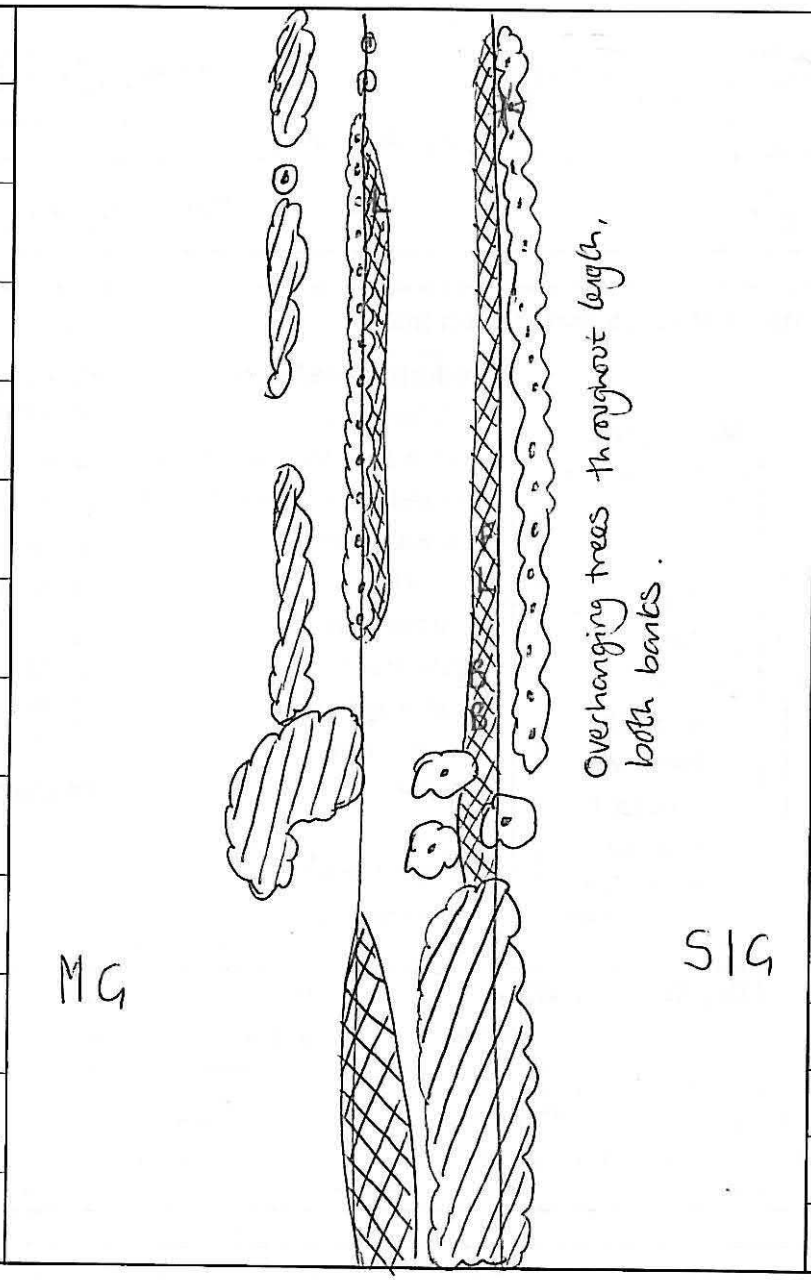
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES

Broadleaved wood	BW
Conif. plantation	CP
Moorland heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc gardens)	URB

Semi-improved grass SIG

Mowing grass MG

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/ spoil
- Silt bars
- Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

F - water vole feeding remains
L - water vole latrine
B - water vole burrow

* Area with good otter potential, various unconfirmed fieldsigns present.

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: D | 10km square: | Grid ref: TM 469 653

County: SUFFOLK | Water Authority:

Recorder: SB + KL | Date: 04/10/2007

HABITAT INFORMATION (mark features on map)

Survey distance: 140 km

Habitat
- [✓] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [✓] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [✓] Permanent/temporary grass
- [ ] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [✓] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [✓] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [A] Bankside trees
- [A] Bushes
- [R] Herbs
- [N] Submerged weed
- [N] Reeds/sedges
- [R] Tall grass
- [N] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [ ] Shallow < 45°
- [✓] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [✓] 0.5–1m
- [ ] 1–2m
- [ ] > 2m

Width
- [ ] 5–10m
- [ ] 1m
- [ ] 10–20m
- [✓] 1–2m
- [ ] 20–40m
- [ ] 2–5m
- [ ] > 40m

Current
- [ ] Slow
- [ ] Rapid
- [ ] Sluggish
- [ ] Fast
- [✓] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [✓] Latrines (count)
- [ ] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [ ] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [ ] Droppings
- [?] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

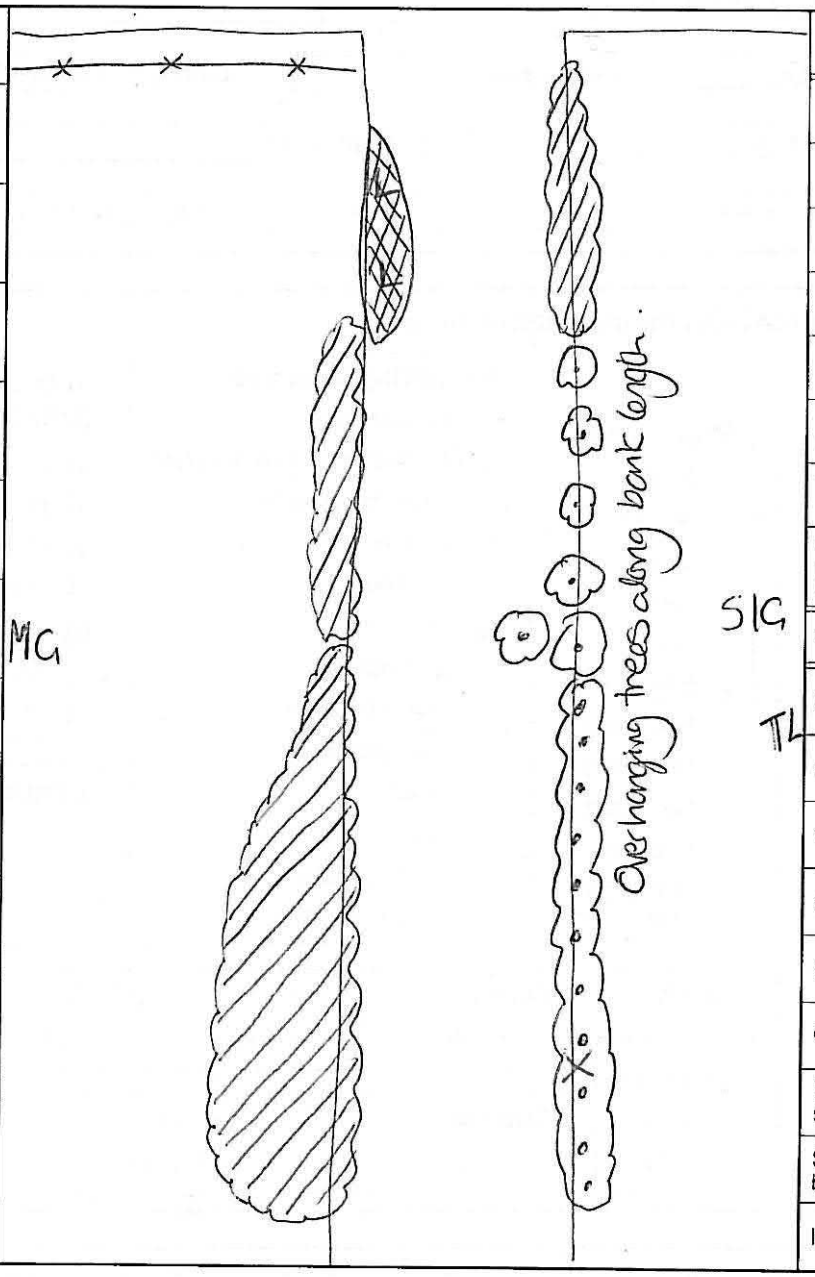
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES

Broadleaved wood	BW
Conifer plantation	CP
Moorland/heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/urban devel. (inc. gardens)	URB

Semi-improved grass SIG

Marshy grass MG

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/spoil
- Silt bars
- Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

L Water vole latrine

X Possible otter signs – large runs in bank, flattened vegetation, unconfirmed prints. Possible holt?

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: E | 10km square: | Grid ref: TM 468 645

County: SUFFOLK | Water Authority:

Recorder: SB & KL | Date: 05/10/07

HABITAT INFORMATION (mark features on map)

Survey distance: 120 km

Habitat
- [✓] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [✓] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [✓] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [✓] Mixed broadleaf woodland
- [✓] Conifer wood
- [ ] Peat bog
- [ ] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [✓] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [A] Bankside trees
- [N] Bushes
- [R] Herbs
- [F] Submerged weed
- [A] Reeds/sedges
- [N] Tall grass
- [O] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [ ] Shallow < 45°
- [✓] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [✓] 1–2m
- [ ] > 2m

Width
- [ ] 5–10m
- [ ] 1m
- [ ] 10–20m
- [ ] 1–2m
- [ ] 20–40m
- [✓] 2–5m
- [ ] > 40m

Current
- [ ] Slow
- [ ] Rapid
- [✓] Sluggish
- [ ] Fast
- [ ] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [✓] Latrines (count)
- [ ] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [✓] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

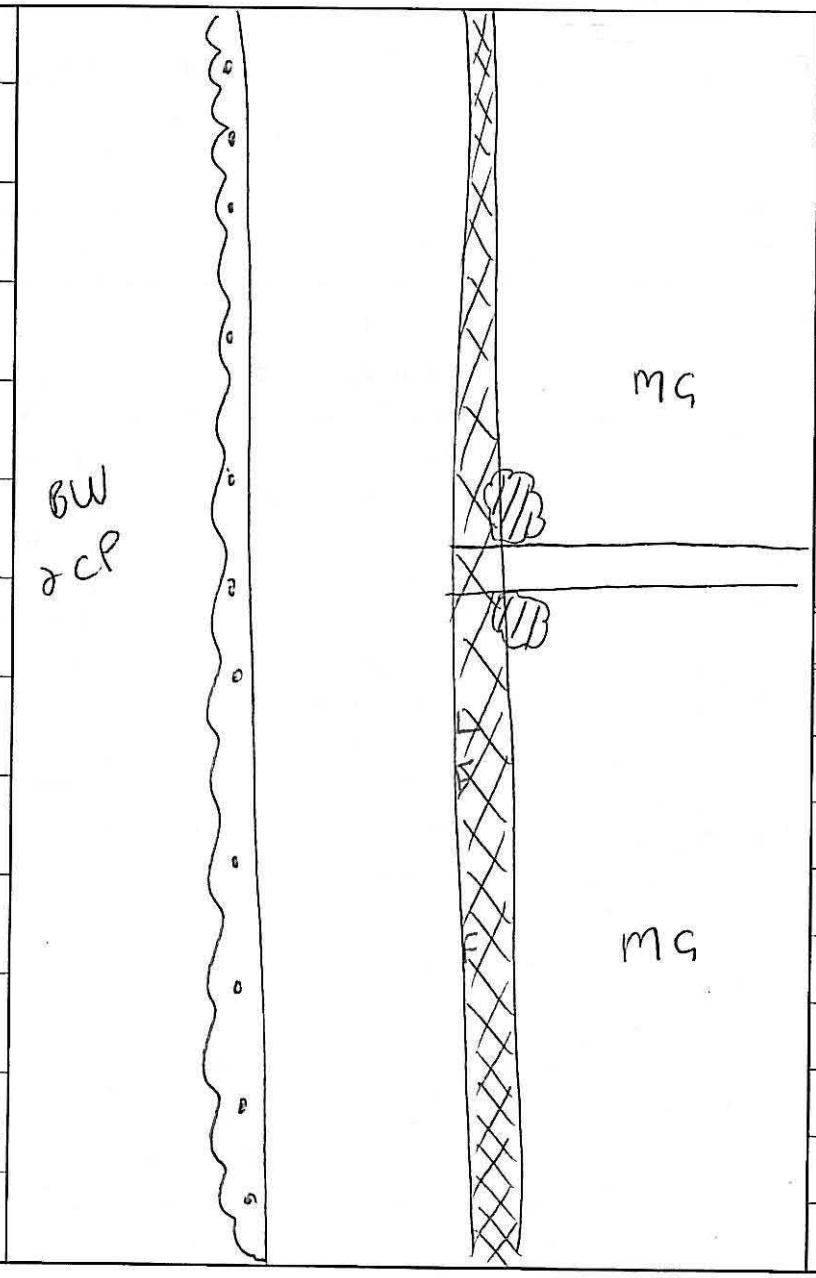
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES

Broadleaved wood	BW
Coniferous plantation	CP
Mixed wood and mean	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc gardens)	URB

Marshy grass MG

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/ spoil
- Silt bars
- Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

L Watervole latrine

F Water vole feeding remains

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: F | 10km square: | Grid ref: TM468 644

County: SUFFOLK | Water Authority:

Recorder: SB & KL | Date: 05/10/07

HABITAT INFORMATION (mark features on map)

Survey distance: 150 km

Habitat
- [x] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [x] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [x] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [ ] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [ ] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [x] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [N] Bankside trees
- [N] Bushes
- [R] Herbs
- [R] Submerged weed
- [A] Reeds/sedges
- [R] Tall grass
- [O] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [x] Shallow < 45°
- [ ] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [x] 1–2m
- [ ] > 2m

Width
- [ ] 1m
- [x] 1–2m
- [ ] 2–5m
- [ ] 5–10m
- [ ] 10–20m
- [ ] 20–40m
- [ ] > 40m

Current
- [ ] Rapid
- [ ] Fast
- [ ] Slow
- [ ] Sluggish
- [x] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [x] Latrines (count)
- [ ] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [x] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

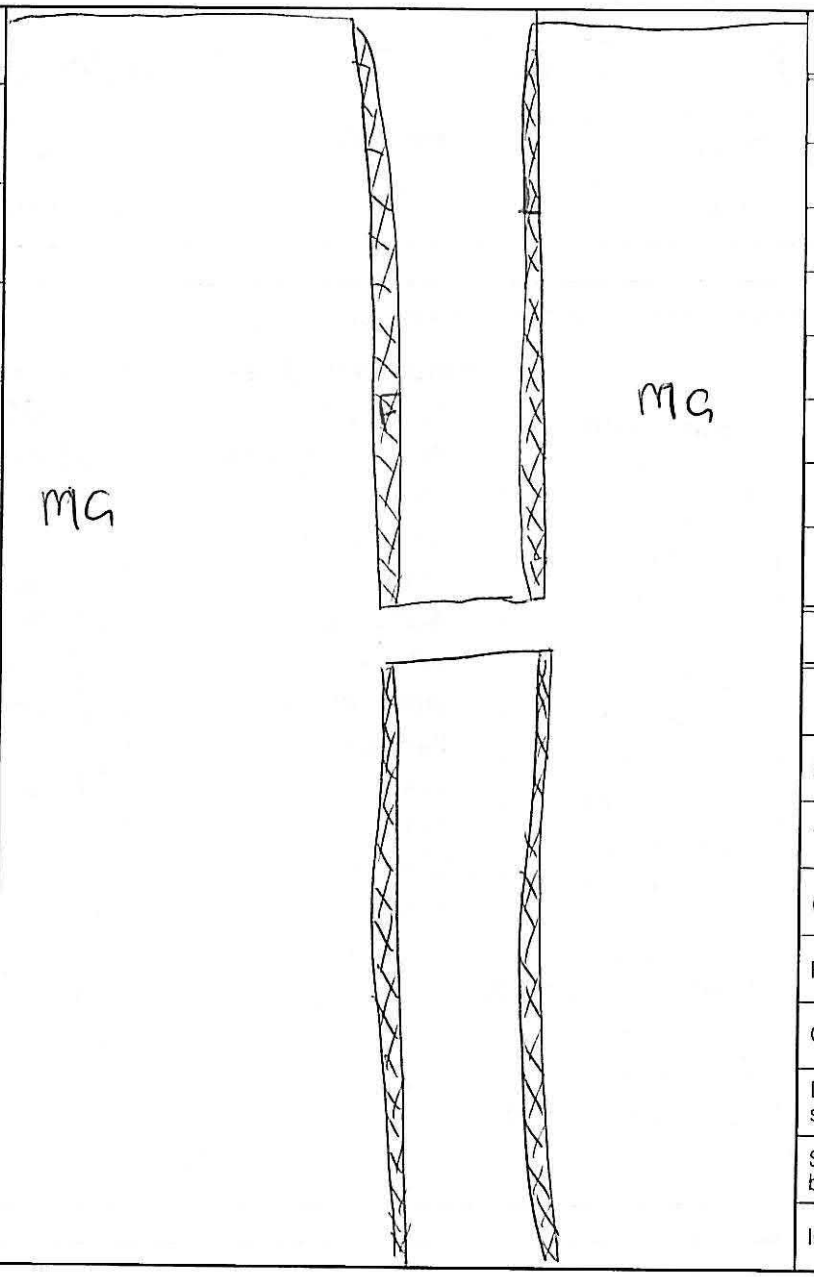
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES

Broad-leaved wood	BW
Conifer plantation	CP
Moorland/ heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc gardens)	URB

Marshy grass MG

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/ spoil
- Silt bars
- Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

L Water vole latrine

f Water vole feeding remains

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: G | 10km square: | Grid ref: TM 465 644

County: SUFFOLK | Water Authority:

Recorder: SB & KL | Date: 05/10/07

HABITAT INFORMATION (mark features on map)

Survey distance: 120 4m

Habitat
- [✓] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [✓] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [✓] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [ ] Mixed broadleaf woodland
- [✓] Conifer wood
- [ ] Peat bog
- [ ] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [✓] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [A] Bankside trees
- [R] Bushes
- [O] Herbs
- [R] Submerged weed
- [O] Reeds/sedges
- [A] Tall grass
- [R] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [ ] Shallow < 45°
- [✓] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [✓] 1–2m
- [ ] > 2m

Width
- [ ] 5–10m
- [ ] 1m
- [ ] 10–20m
- [✓] 1–2m
- [ ] 20–40m
- [ ] 2–5m
- [ ] > 40m

Current
- [ ] Slow
- [ ] Rapid
- [ ] Sluggish
- [ ] Fast
- [✓] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [✓] Latrines (count)
- [✓] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [ ] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

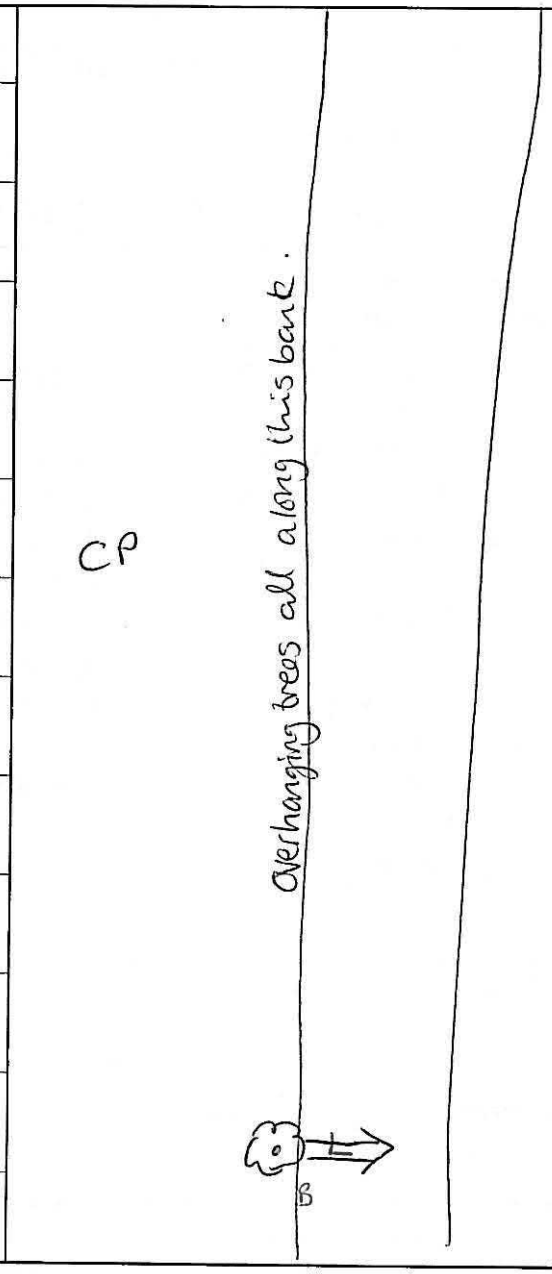
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES

Broadleaved wood	BW
Conifer plantation	CP
Mixed and mean	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc gardens)	URB

Marshy grass MG

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/ spoil
- Silt bars
- Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

L Water vole latrine

B Water vole burrow

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: H | 10km square: | Grid ref: TM 467 639

County: SUFFOLK | Water Authority:

Recorder: SB & KL | Date: 05/10/09

HABITAT INFORMATION (mark features on map)

Survey distance: 200 m

Habitat
- [ ] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [x] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [x] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [ ] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [x] Fen
- [ ] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [D] Bankside trees
- [N] Bushes
- [R] Herbs
- [O] Submerged weed
- [D] Reeds/sedges
- [N] Tall grass
- [N] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [x] Shallow < 45°
- [ ] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [x] 1–2m
- [ ] > 2m

Width
- [ ] 5–10m
- [ ] 1m
- [ ] 10–20m
- [ ] 1–2m
- [ ] 20–40m
- [x] 2–5m
- [ ] > 40m

Current
- [ ] Slow
- [ ] Rapid
- [ ] Sluggish
- [ ] Fast
- [ ] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [x] Latrines (count)
- [ ] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [ ] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

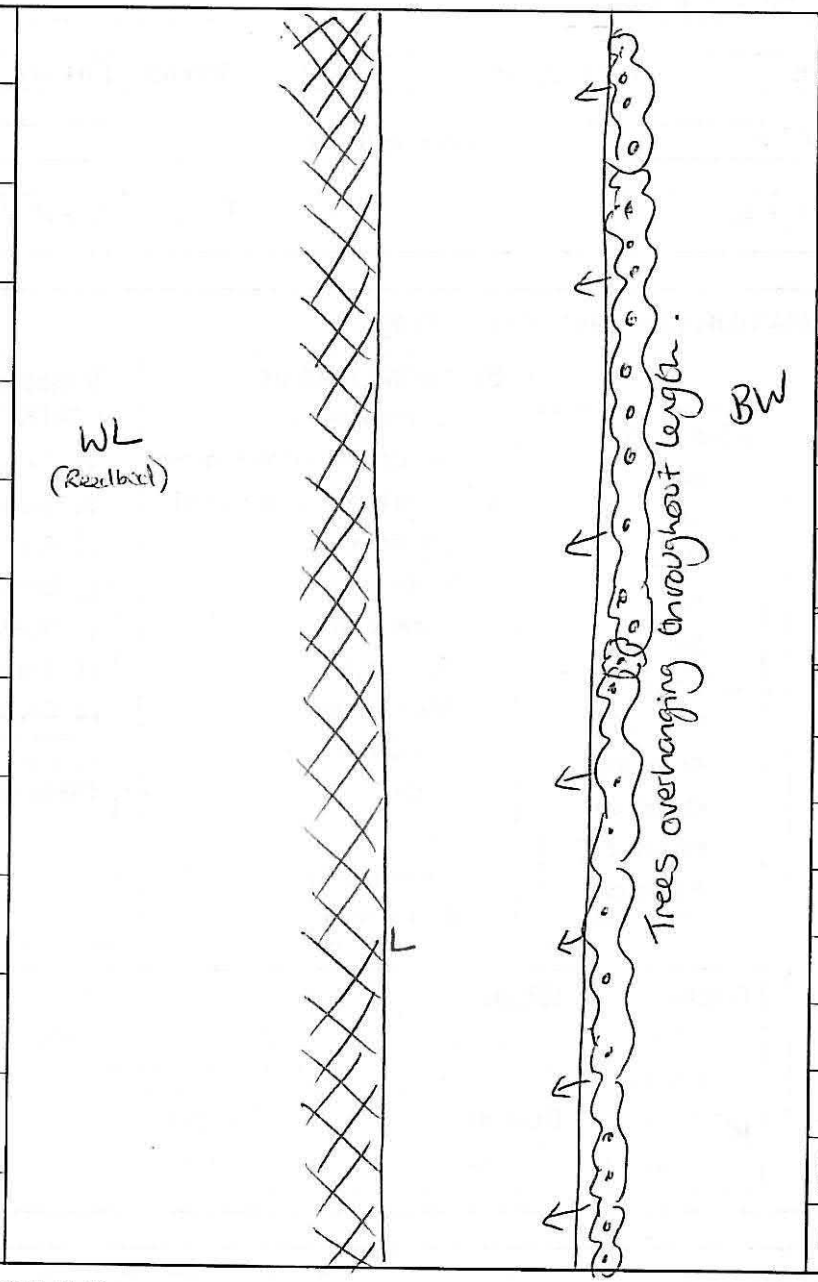
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES

Broadleaved [illegible]	BW
[illegible]	CP
Woodland/ heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc gardens)	URB

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/ spoil
- Silt bars
- Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

L - water vole latrines

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: J | 10km square: | Grid ref: TM 466 638

County: SUFFOLK | Water Authority:

Recorder: SB & KL | Date: 05/10/07

HABITAT INFORMATION (mark features on map)

Survey distance: 200 m

Habitat
- [x] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [x] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [x] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [ ] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [x] Fen
- [ ] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [D] Bankside trees
- [R] Bushes
- [O] Herbs
- [O] Submerged weed
- [D] Reeds/sedges
- [R] Tall grass
- [N] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [x] Shallow < 45°
- [ ] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [x] 1–2m
- [ ] > 2m

Width
- [ ] 5–10m
- [ ] 1m
- [ ] 10–20m
- [ ] 1–2m
- [ ] 20–40m
- [x] 2–5m
- [ ] > 40m

Current
- [ ] Slow
- [ ] Rapid
- [ ] Sluggish
- [ ] Fast
- [x] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [x] Latrines (count)
- [ ] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [x] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

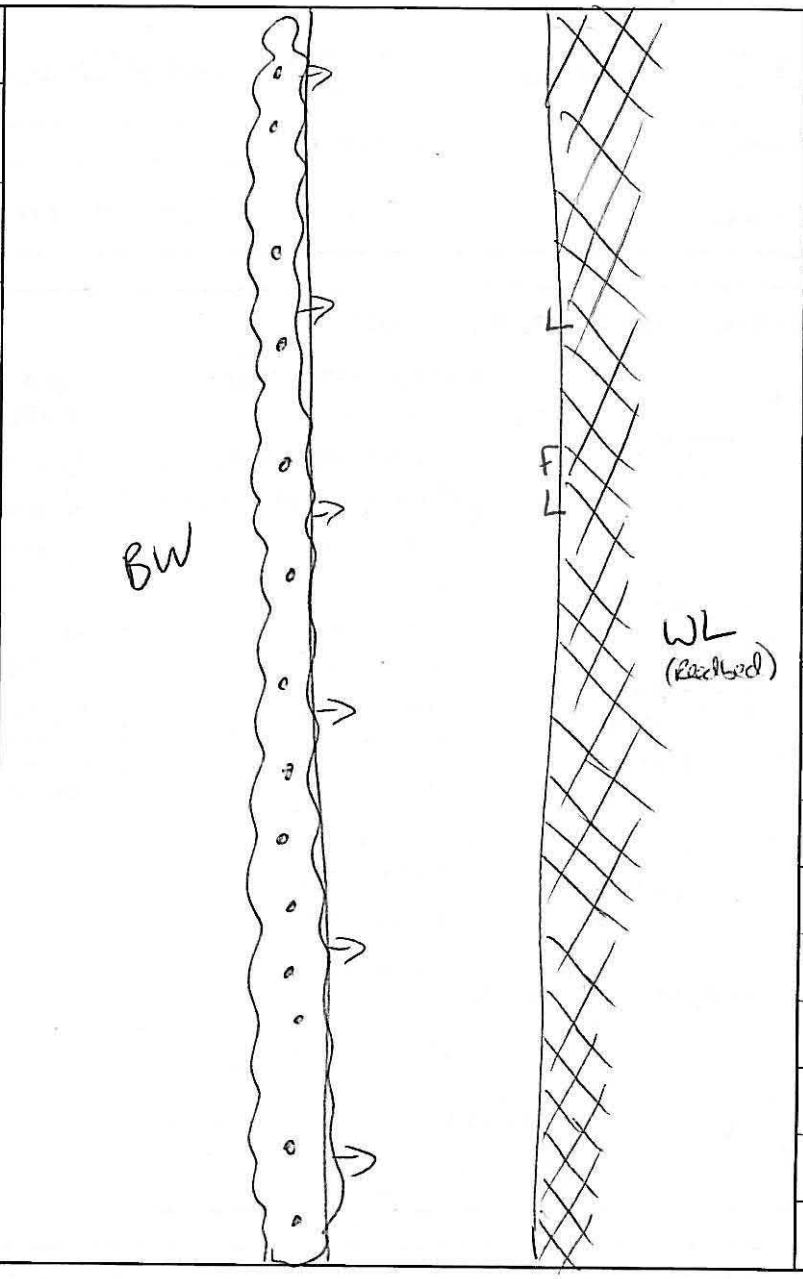
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES

Broadleaved wood	BW
Coniferous plantation	CP
Moorland/heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/urban devel. (inc gardens)	URB

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/spoil
- Silt bars
- Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

L - Water vole latrine

F - Water vole feeding remains.

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: K | 10km square: | Grid ref: TM 468 638

County: SUFFOLK | Water Authority:

Recorder: SB & KL | Date: 05/10/07

HABITAT INFORMATION (mark features on map)

Survey distance: 250 km

Habitat
- [x] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [x] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [x] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [ ] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [x] Fen
- [ ] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- D Bankside trees
- N Bushes
- R Herbs
- R Submerged weed
- D Reeds/sedges
- D Tall grass
- N Short grass

Disturbance:

Bank profile
- [x] Flat < 10°
- [ ] Shallow < 45°
- [ ] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [x] 1–2m
- [x] > 2m

Width
- [ ] 5–10m
- [ ] 1m
- [ ] 10–20m
- [ ] 1–2m
- [ ] 20–40m
- [x] 2–5m
- [ ] > 40m

Current
- [ ] Slow
- [ ] Rapid
- [ ] Sluggish
- [ ] Fast
- [x] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [x] Latrines (count)
- [ ] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [x] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

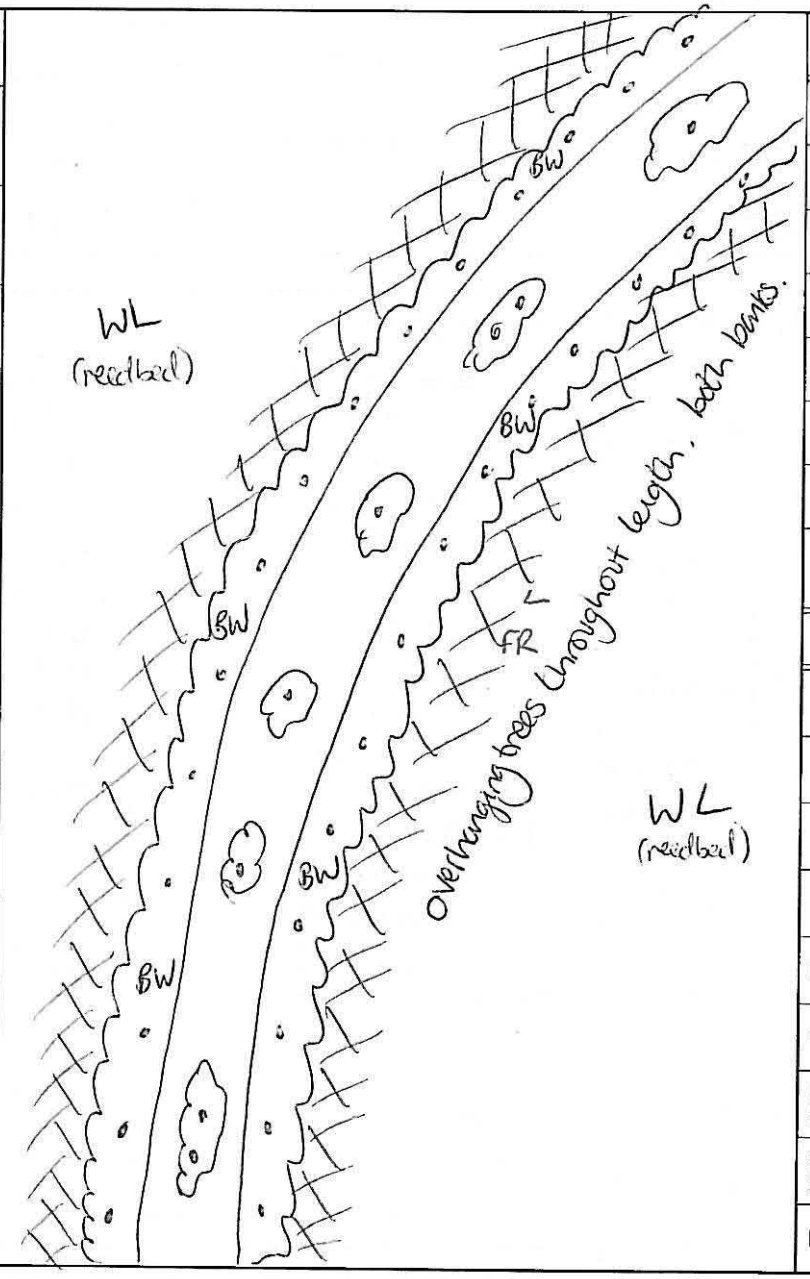
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES

Broadleaved wood	BW
Conifer plantation	CP
Mixed and mature woodland	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc gardens)	URB

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/ spoil
- Silt bars
- Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: L | 10km square: | Grid ref: TM 466 637

County: SUFFOLK | Water Authority:

Recorder: SB + KL | Date: 05/10/2007

HABITAT INFORMATION (mark features on map)

Survey distance: 200 km

Habitat
- [✓] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [✓] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [✓] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [ ] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [✓] Fen
- [ ] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [F] Bankside trees
- [R] Bushes
- [A] Herbs
- [F] Submerged weed
- [D] Reeds/sedges
- [O] Tall grass
- [R] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [✓] Shallow < 45°
- [ ] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [✓] 1–2m
- [✓] > 2m

Width
- [ ] 1m
- [ ] 1–2m
- [✓] 2–5m
- [ ] 5–10m
- [ ] 10–20m
- [ ] 20–40m
- [ ] > 40m

Current
- [ ] Rapid
- [ ] Fast
- [ ] Slow
- [ ] Sluggish
- [✓] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [✓] Latrines (count)
- [ ] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [✓] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [✓] Droppings
- [ ] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

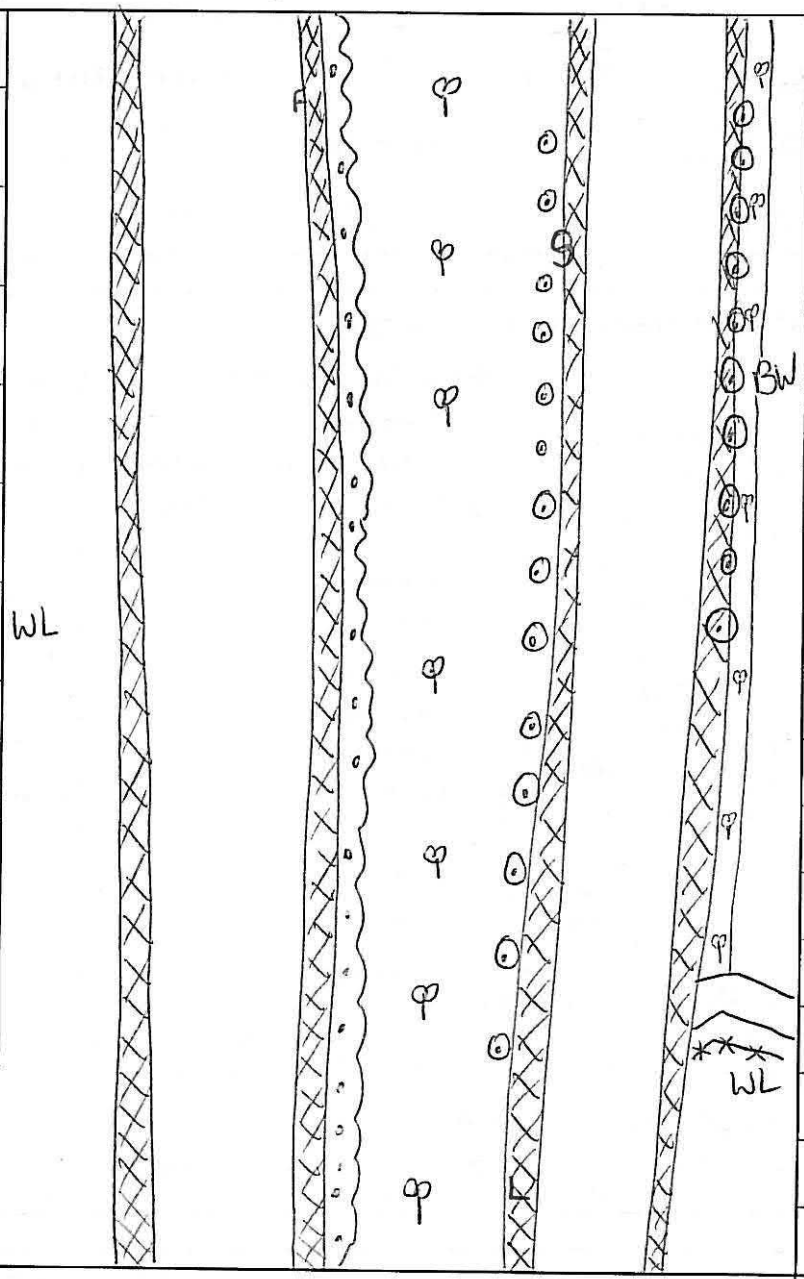
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree (P)
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES

Broad-leaved woodland	BW
Coniferous plantation	CP
Upland heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc gardens)	URB

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/ spoil
- Silt bars
- Islands — mark position and size
- ♀ herbs

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

L Water vole latrine

F Water vole feeding remains

S Otter spraint

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: M | 10km square: | Grid ref: TM 469 636

County: SUFFOLK | Water Authority:

Recorder: SB & KL | Date: 05/10/07

HABITAT INFORMATION (mark features on map)

Survey distance: 200 km

Habitat
- [x] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [x] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [ ] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [ ] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [x] Fen
- [ ] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [B] Bankside trees
- [N] Bushes
- [O] Herbs
- [O] Submerged weed
- [D] Reeds/sedges
- [O] Tall grass
- [N] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [x] Shallow < 45°
- [ ] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [x] 1–2m
- [ ] > 2m

Width
- [ ] 1m
- [x] 1–2m
- [ ] 2–5m
- [ ] 5–10m
- [ ] 10–20m
- [ ] 20–40m
- [ ] > 40m

Current
- [ ] Rapid
- [ ] Fast
- [ ] Slow
- [ ] Sluggish
- [x] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [x] Latrines (count)
- [ ] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [x] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

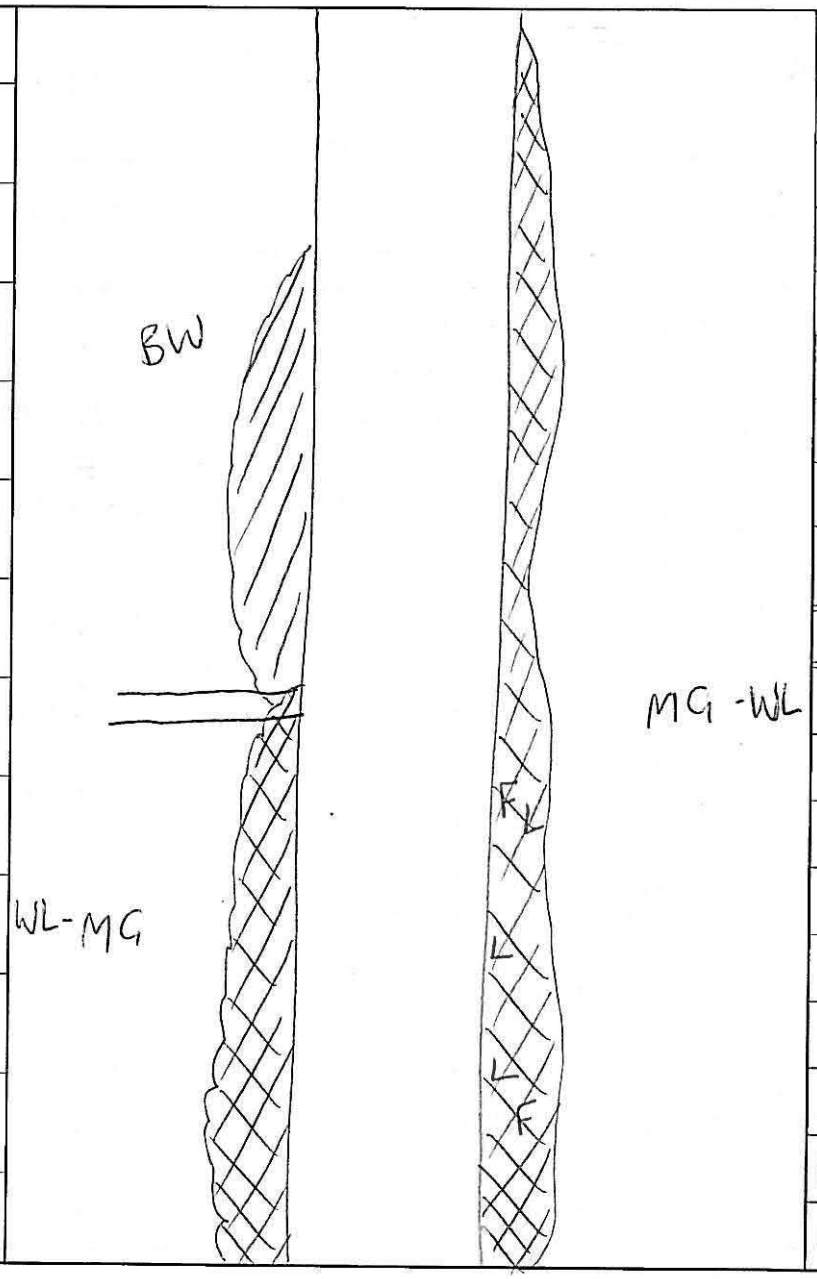
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES

Broadleaved [illegible]	BW
Coniferous [illegible]	CP
Moorland/ heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc gardens)	URB

Marshy grass MG

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/ spoil
- Silt bars
- Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

L - water vole latrine

F - feeding remains

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: N & O | 10km square: | Grid ref: TM 463 637

County: SUFFOLK | Water Authority:

Recorder: SB & KL | Date: 05/10/07

HABITAT INFORMATION (mark features on map)

Survey distance: 250 km

Habitat
- [x] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [x] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [x] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [ ] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [x] Fen
- [ ] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [D] Bankside trees
- [O] Bushes
- [O] Herbs
- [D] Submerged weed
- [F] Reeds/sedges
- [N] Tall grass
- [A] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [x] Shallow < 45°
- [ ] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [x] 1–2m
- [ ] > 2m

Width
- [ ] 5–10m
- [ ] 1m
- [ ] 10–20m
- [ ] 1–2m
- [ ] 20–40m
- [x] 2–5m
- [ ] > 40m

Current
- [ ] Slow
- [ ] Rapid
- [ ] Sluggish
- [ ] Fast
- [x] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [x] Latrines (count)
- [ ] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [x] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

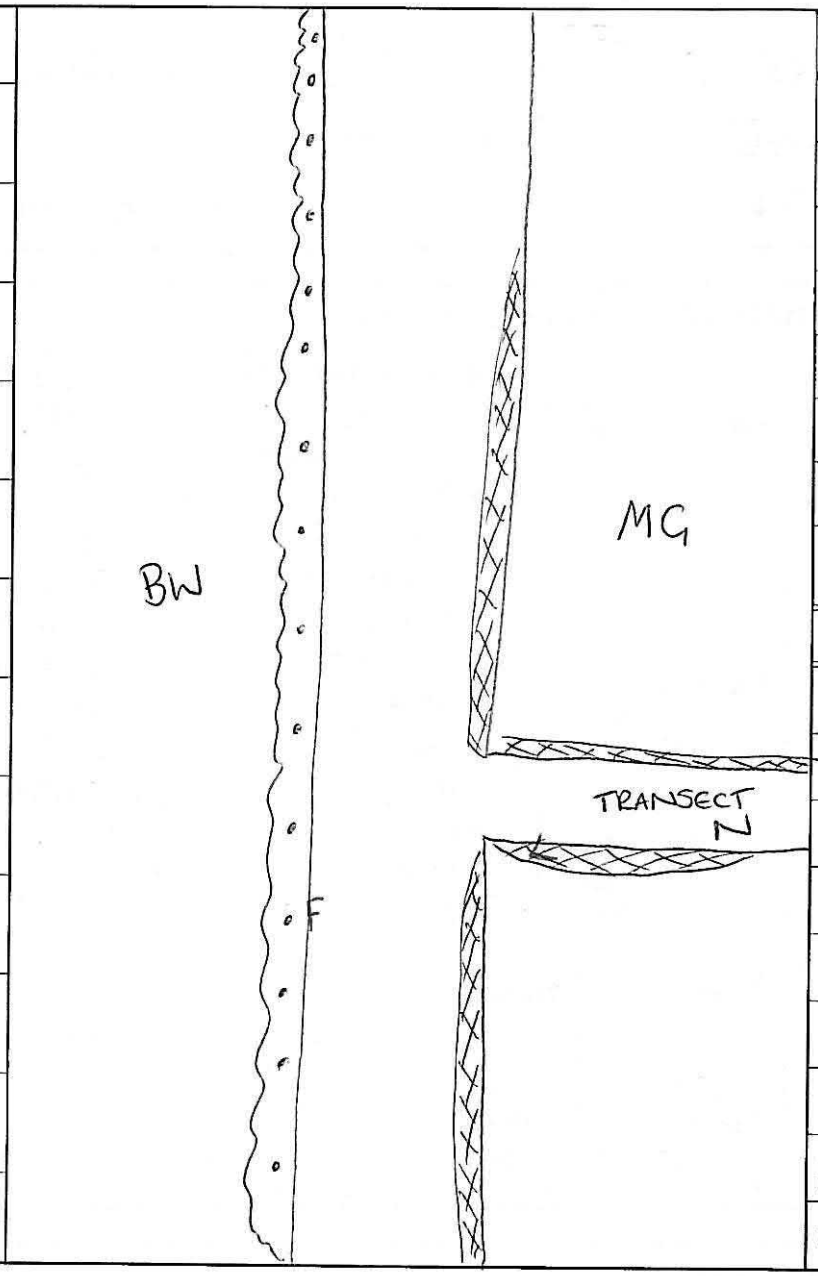
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES	
Broadleaved [illegible]	BW
Coniferous [illegible]	CP
Moorland near [illegible]	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc gardens)	URB

Missing grass MG

OTHER FEATURES
Roadbridge
Footbridge
Weir
Culvert
Ford
Outfall
Dredgings/ spoil
Silt bars
Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

L - Water vole latrine

F - Water vole feeding remains

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: P | 10km square: | Grid ref: TM 459 638

County: SUFFOLK | Water Authority:

Recorder: SB & KL | Date: 05/10/07

HABITAT INFORMATION (mark features on map)

Survey distance: 150m

Habitat
- [✓] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [✓] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [✓] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [✓] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [ ] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [✓] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [A] Bankside trees
- [R] Bushes
- [F] Herbs
- [F] Submerged weed
- [A] Reeds/sedges
- [N] Tall grass
- [O] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [✓] Shallow < 45°
- [ ] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [✓] 1–2m
- [ ] > 2m

Width
- [ ] 5–10m
- [ ] 1m
- [ ] 10–20m
- [✓] 1–2m
- [ ] 20–40m
- [ ] 2–5m
- [ ] > 40m

Current
- [ ] Slow
- [ ] Rapid
- [ ] Sluggish
- [ ] Fast
- [✓] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [✓] Latrines (count)
- [ ] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [✓] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

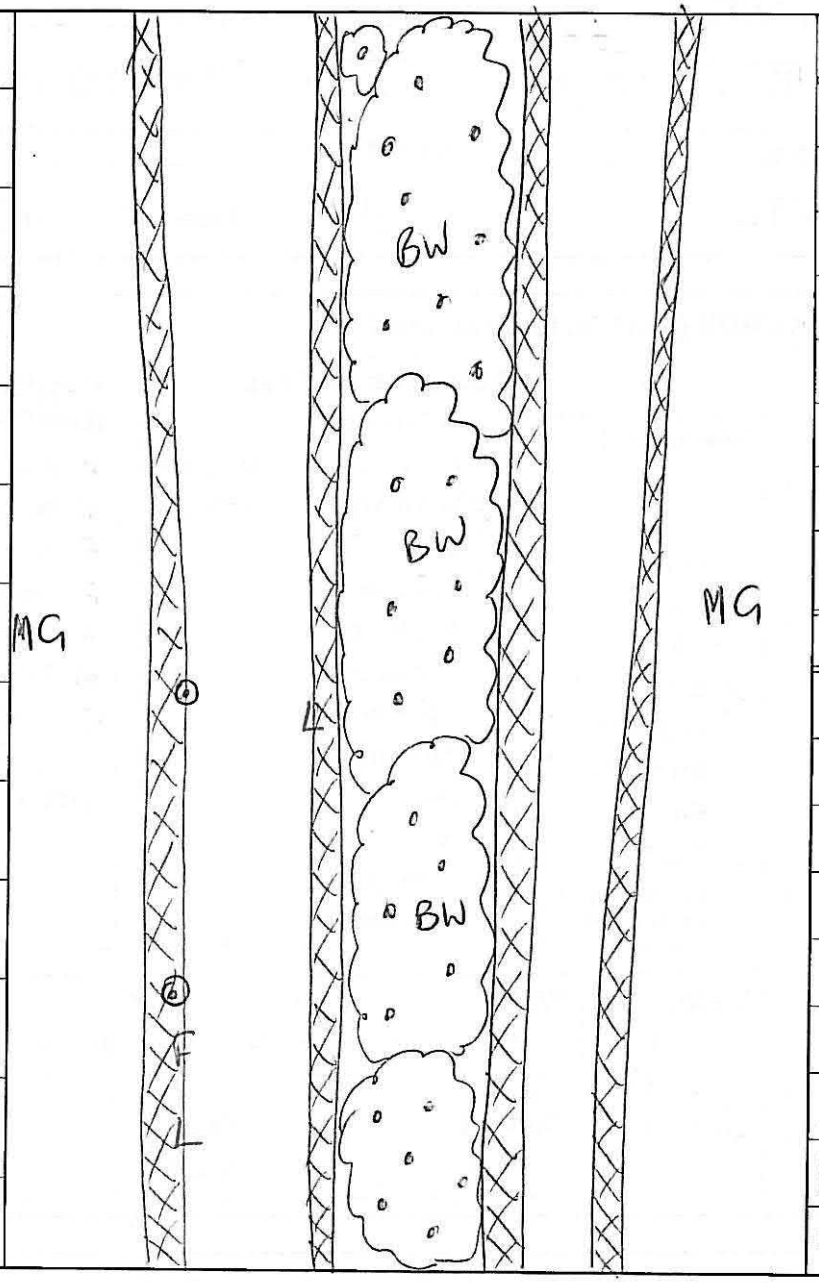
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES

Broad-leaved wood	BW
Conifer plantation	CP
Moorland/heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc gardens)	URB

Marshy grass MG

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/ spoil
- Silt bars
- Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

L - Water vole latrine

F Water vole feeding remains

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: Q | 10km square: | Grid ref: TM 458 637

County: SUFFOLK | Water Authority:

Recorder: SB & KL | Date: 05/10/07

HABITAT INFORMATION (mark features on map)

Survey distance: 150 km

Habitat
- [✓] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [ ] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [✓] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [✓] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [ ] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [✓] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [D] Bankside trees
- [R] Bushes
- [R] Herbs
- [D] Submerged weed
- [F] Reeds/sedges
- [A] Tall grass
- [R] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [✓] Shallow < 45°
- [ ] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [✓] 1–2m
- [ ] > 2m

Width
- [ ] 5–10m
- [ ] 1m
- [ ] 10–20m
- [✓] 1–2m
- [ ] 20–40m
- [ ] 2–5m
- [ ] > 40m

Current
- [ ] Slow
- [ ] Rapid
- [✓] Sluggish
- [ ] Fast
- [ ] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [✓] Latrines (count)
- [ ] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [✓] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

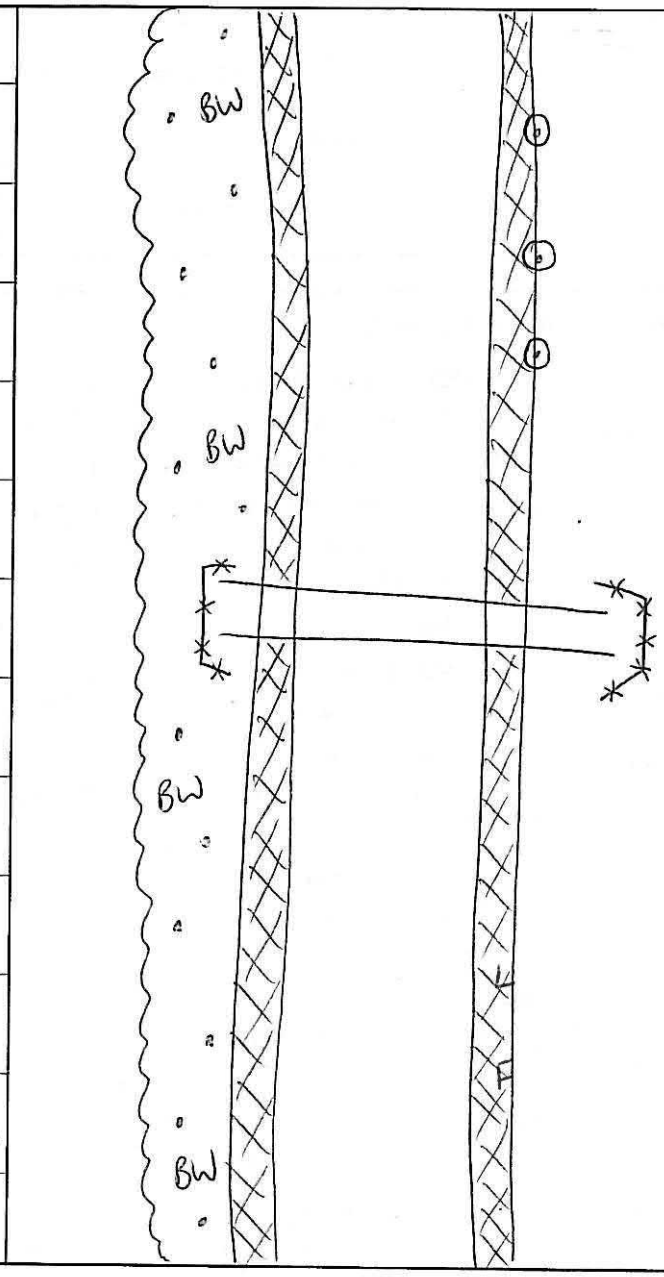
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES	
Broadleaved wood	BW
Conifer plantation	CP
Woodland mosaic	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc gardens)	URB

Marshy grass MG

OTHER FEATURES	
Roadbridge	
Footbridge	
Weir	
Culvert	
Ford	
Outfall	
Dredgings/ spoil	
Silt bars	
Islands	mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

L Water vole latrine

F Water vole feeding remains

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: R | 10km square: | Grid ref: TM 455 636

County: SUFFOLK | Water Authority:

Recorder: SB & KL | Date: 04/10/07

HABITAT INFORMATION (mark features on map)

Survey distance: 250 ½m

Habitat
- [x] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [x] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [ ] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [ ] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [x] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [O] Bankside trees
- [D] Bushes
- [O] Herbs
- [F] Submerged weed
- [F] Reeds/sedges
- [N] Tall grass
- [N] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [ ] Shallow < 45°
- [x] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [x] 1–2m
- [ ] > 2m

Width
- [ ] 5–10m
- [ ] 1m
- [ ] 10–20m
- [ ] 1–2m
- [ ] 20–40m
- [x] 2–5m
- [ ] > 40m

Current
- [ ] Slow
- [ ] Rapid
- [ ] Sluggish
- [ ] Fast
- [x] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [x] Latrines (count)
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- [ ] Footprints
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- [ ] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

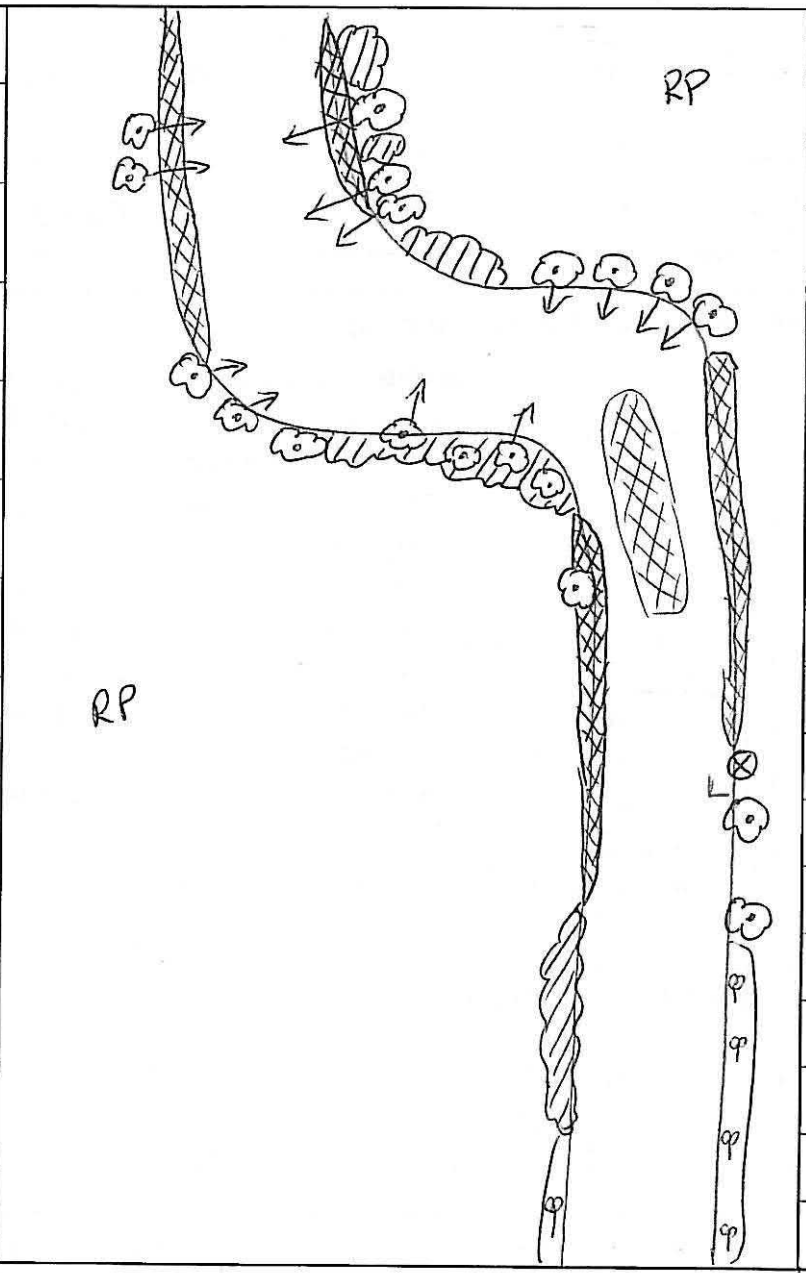
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES

Broadleaved wood	BW
Conifer plantation	CP
Moor and heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc gardens)	URB

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/ spoil
- Silt bars
- Islands — mark position and size

φ herbs

⊗ standing dead tree

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

L Water vole latrine

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: 5 | 10km square: | Grid ref: TM 452 634

County: SUFFOLK | Water Authority:

Recorder: SB & KL | Date: 04/10/07

HABITAT INFORMATION (mark features on map)

Survey distance: 200 km

Habitat
- [x] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [x] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [ ] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [x] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [ ] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [O] Bankside trees
- [O] Bushes
- [O] Herbs
- [D] Submerged weed
- [N] Reeds/sedges
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- [D] Short grass

Disturbance:

Bank profile
- [ ] Flat < 10°
- [ ] Shallow < 45°
- [x] Steep > 45°
- [ ] Vertical/undercut

Depth
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- [ ] 0.5–1m
- [x] 1–2m
- [ ] > 2m

Width
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- [ ] 1m
- [ ] 10–20m
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WILDLIFE INFORMATION

Water voles
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- Mature trees
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- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
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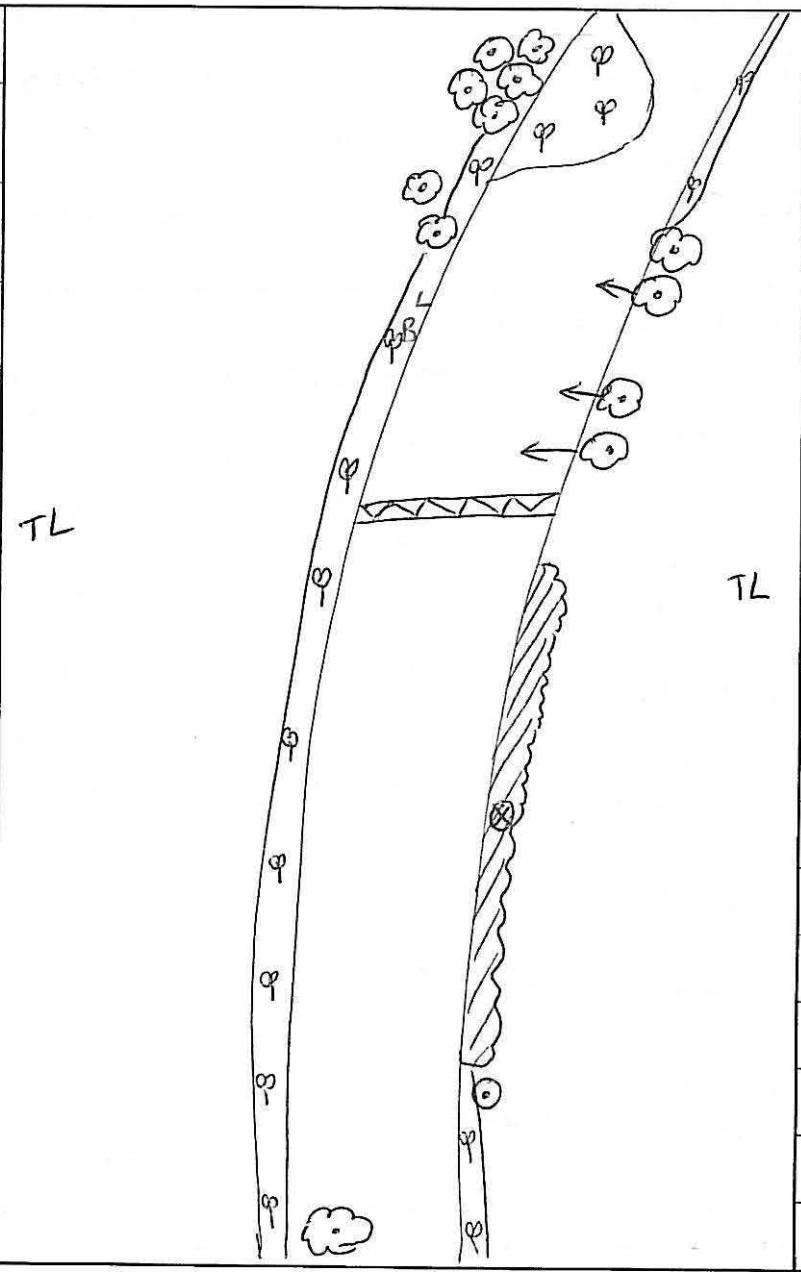

ADJACENT LAND-USE CODES

Broadleaved wood	BW
Conifer plantation	CP
Moorland/heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/urban devel. (inc. gardens)	URB

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/spoil
- Silt bars
- Islands — mark position and size
- φ herbs
- ⊗ standing dead tree

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

- pipe lying across ditch

L - water vole latrines

B - water vole burrows

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: SIZEWELL

Site number: T | 10km square: | Grid ref: TM 466 644

County: SUFFOLK | Water Authority:

Recorder: SB & KL | Date: 05/10/07

HABITAT INFORMATION (mark features on map)

Survey distance: 150 km

Habitat
- [✓] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
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Shore/bank
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- [ ] Gravel
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- [ ] Footprints/runs

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- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

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(mark route surveyed and direction of flow)

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- Scrub
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- Fence
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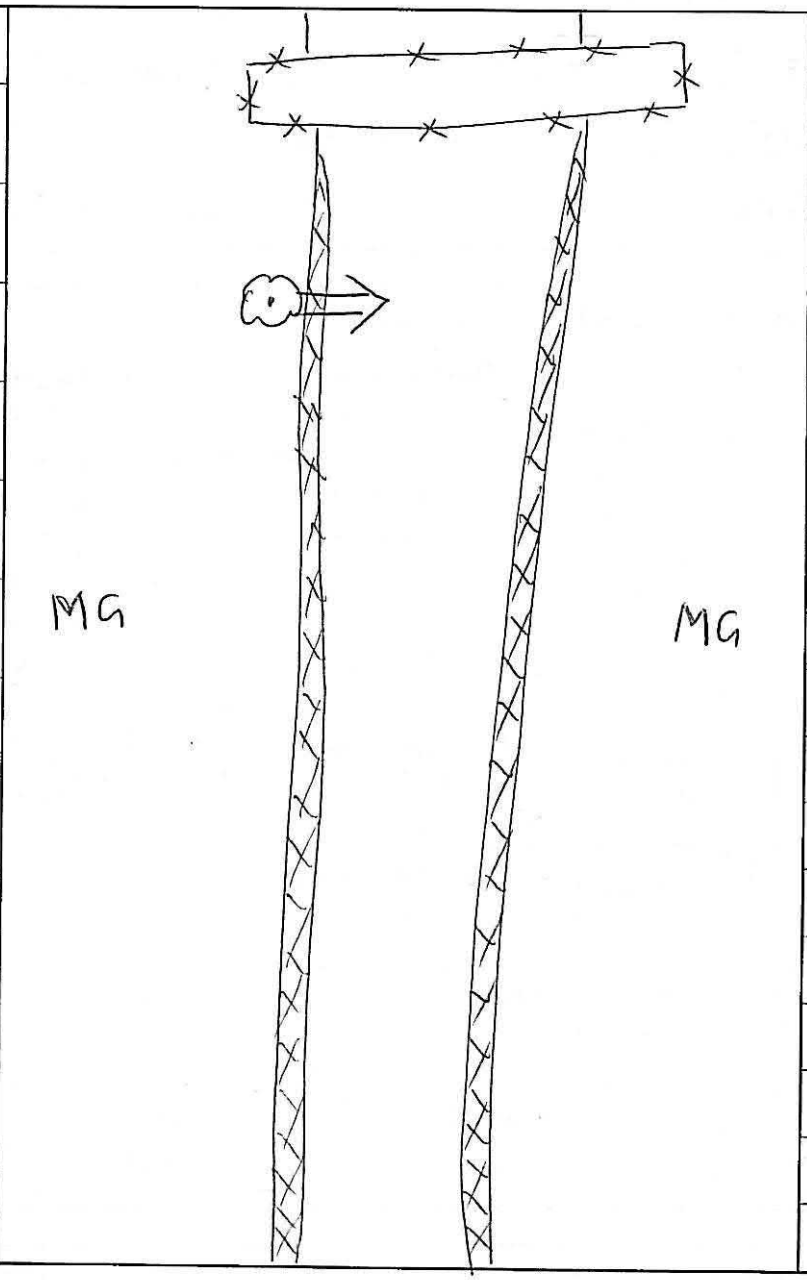


ADJACENT LAND-USE CODES

Broadleaved wood	BW
Coniferous plantation	CP
Moorland/ heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc gardens)	URB

Marshy grass MG

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/ spoil
- Silt bars
- Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

B.3. Appendix B.3

2						
1	03/07/14	Will Trewhella	Mark Lang	Draft		
Rev.	**Date**	**Prepared by**	**Checked by**	**Status**	**Reasons for revision**	**Approved by**

DIRECTION PRODUCTION INGENIERIE **Centre National d'Equipement Nucléaire**	1ST PARTNER	2ND PARTNER

CONTRACTOR REF. No	CONTRACTOR WBS CODE
CONTRACTOR COMPANY NAME **HYDER CRESSWELL**	CONTRACT NUMBER **NNB GenCo Ref:**
	SAFETY related **Yes ☐ No ☐**

APPLICABILITY:

- 1: Document related to Unit 1

- 2: Document related to Unit 2

- 9: Document that applies to buildings/systems common to units 1 & 2

- 0: documents that relate exclusively to buildings or systems that are common to the whole site (e.g. OSC building, parkings, ancillary buildings...)

NUCL/REP/EPR/UKEPR							
HPC (doc: HK)				SZC (doc: SZ)			
0	1	2	9	0	1	2	9
				X			

SYSTEM

00

BUILDING

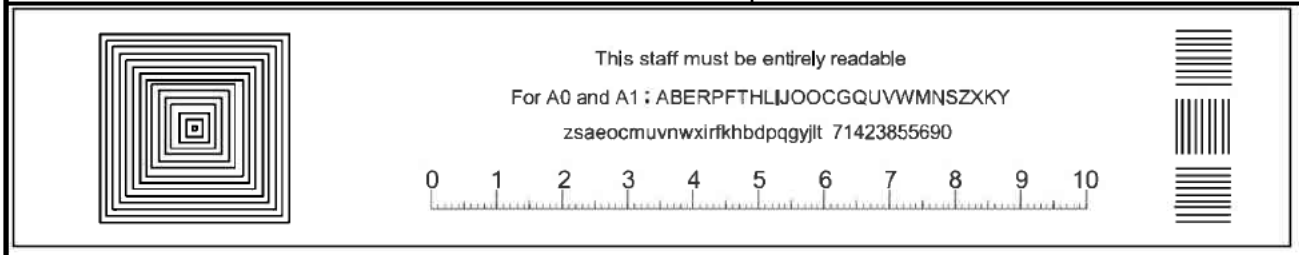
00

SCALE	**DESCRIPTION:**
SIZE	Sizewell C Ecological Support
PAGE	Aldhurst Farm Water Vole Survey 2014

DOCUMENT REFERENCE No

S	Z	C	-	N	N	B	P	E	A	-	X	X	-	0	0	0	-	R	E	P	-	0	0	0	0	2	1
Project			Contract No. / Orig. Co							Asset / Zone			System/ building				Doc. Type			Chrono No.						

DOCUMENT SUB-TYPE	EDF CLASSIFICATION CODE
REPORT	
SUBCONTRACTOR COMPANY NAME	SUBCONTRACTOR DOCUMENT REF.



EDF MARKING:	**Interne** X	**Restreint** ☐	**Confidentiel** ☐	**PIDU case 3**

EDF Energy/NNB GenCo

Sizewell C Ecological Support

Aldhurst Farm Water Vole Survey 2014

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The Mill
Brimscombe Port
Stroud
Glos GL5 2QG
United Kingdom
Tel: +44 (0)1453 423 100
Fax: +44 (0)1453 887 979
www.hyderconsulting.com

EDF Energy/NNB GenCo

Sizewell C Ecological Support

Aldhurst Farm Water Vole Survey 2014

Author	Will Trewhella	[redacted]
Checker	Mark Lang	
Approver	Mark Lang	

BC No - - -- -

Hyder Reference UA004506 S-EX073

Date 4 July 2014

CONTENTS

1 SUMMARY

This report presents the findings of an updated survey for water voles (*Arvicola terrestris*) and assessment of their habitat at Aldhurst Farm, Leiston, Suffolk, where new habitat creation is proposed to mitigate for the potential loss of habitat at the Sizewell Marshes Site of Special Scientific Interest (SSSI), as a result of proposed development of Sizewell C.

The survey work on 16 April 2014 comprised of searching the ditches and other wetland habitats at Aldhurst Farm to identify all evidence of water vole activity, following recognised survey methodologies. Three ditches (ditches 1, 2 and 3) indicated on Figure 1, showed signs of water vole activity, and were found to have good habitat suitability for water voles. These findings support those of pervious water vole surveys and habitat assessments carried out at Aldhurst Farm in 2010 (AMEC 2010).

2 INTRODUCTION

EDF Energy/NNB GenCo (hereafter referred to as NNB) is to submit an application for a Development Consent Order (DCO) to construct and operate a new nuclear power station, Sizewell C, near the town of Leiston in Suffolk. The proposal site lies within an area of high landscape and ecological sensitivity, within an Area of Outstanding Natural Beauty (AONB) and adjacent to the Minsmere to Walberswick Heaths and Marshes Special Area of Conservation (SAC), the Sandlings Special Protection Area (SPA) and the Outer Thames Estuary SPA. A small part lies within the Sizewell Marshes Site of Special Scientific Interest (SSSI).

Following on from NNB's Stage 1 Pre-Application Consultation on its initial proposals and options for Sizewell C, which ended on 6th February 2013, NNB's priorities from 2013 have been to progress the conceptual engineering design and technical studies relating to the development, as well as to undertake essential environmental studies in order to inform this conceptual work and support a robust Stage 2 Consultation in due course. A considerable amount of ecological survey work has been carried out within and around the proposal site since 2007. Further detailed ecological surveys will be needed in support of Stage 2, most of which will be undertaken in 2014.

Previous surveys and habitat assessments of the Sizewell Estate for water voles show that it supports a nationally significant water vole population. A small part of the Sizewell C development site lies within the Sizewell Marshes SSSI, and is known to support a good population of water voles. This species has in recent years been afflicted by a UK wide decline in numbers, linked to a loss in habitat and predation by introduced mink (*Neovison vison*). Since 1998, the water vole has been included on Schedule 5 of the Wildlife & Countryside Act 1981, and it is an offence to destroy any place of shelter or protection for the species.

To mitigate for the loss of SSSI habitat, new habitat creation is proposed at Aldhurst Farm. Hyder Consulting (UK) Ltd were commissioned in 2014 by NNB to update previous water vole surveys at Aldhurst Farm. Aldhurst Farm is situated to the west of the Sizewell Marshes SSSI, and comprises approximately 69 hectares of mostly arable farmland. The site was identified as having potential for water vole during the estate-wide surveys in 2007 and 2009, with further site-specific surveys carried out in 2010.

The 2014 water vole survey at Aldhurst Farm (see Figure 1 for the survey area) had the specific purpose of updating and reassessing the potential of the site for supporting a population of water voles, and updating and reassessing the presence and distribution of water voles within the watercourses at Aldhurst Farm, so as to inform subsequent habitat creation proposals.

2.1 Previous water vole surveys

Water vole surveys conducted across the entire EDF Sizewell Estate between 2007 and 2010 (AMEC 2012, Entec 2010a) have provided baseline information which has been built upon by the later site specific surveys in 2010 at Aldhurst Farm (Entec 2010b). These earlier surveys aimed to assess all suitable habitats within 500 metres of the proposed development, for the potential of supporting water voles. These estate-wide surveys and the associated desk study indicated a large, widespread and stable water vole population across the EDF Sizewell Estate and the wider area, with no evidence of numbers being affected by the national decline. It was concluded that the water vole population on the EDF Sizewell Estate was likely to be a part of a single meta-population distributed across the wider ditch network.

Site specific surveys of Aldhurst Farm itself were carried out by Entec in March 2010. A network of ditches was identified on site, and divided into five sections (ditches 1-5) for ease of survey (see Figure 1). These were then assessed for potential for habitat suitability, and evidence of, water vole presence on site. Of the five sections of ditch surveyed during these 2010 surveys, four (ditches 1-4) were found suitable for habitation by water vole. Evidence of water vole activity was found on the site, with a medium to high density of field signs recorded alongside three of the ditches. A total of 15 latrines, 3 feeding stations, two footprints and 25 burrows were discovered adjacent to the four suitable ditches. This study, concluded that there was evidence of a resident population of water voles at the Aldhurst Farm site, with a medium to high density of different field signs recorded from ditches 1, 2 and 3, and these three ditches were considered to provide good water vole habitat.

The Aldhurst Farm ditches were also surveyed by Hyder in October 2013, primarily for evidence of otter (*Lutra lutra*) field signs but also with the intention of recording any with incidental records of water vole activity. The branching drain, dry ditch and the drain it fed into, and the area around the pond (these locations are indicated by Target Notes 1 to 4 in Figure 2) were all considered as areas potentially suitable for water voles. No signs of water voles were recorded; however, the main purpose of the survey was to identify signs of otter, and the ditches were not searched in detail for signs of water voles. Therefore a lack of field signs would not indicate that water voles were not present during 2013.

3 METHODOLOGY

The Aldhurst Farm area was resurveyed for signs of water voles and the habitat assessed for its potential to support water voles on 16 April 2014, by two experienced ecologists, following standard methodologies (Strachan & Moorhouse 2011). This is an appropriate time of year for detecting water vole presence, as water voles actively mark their breeding territories with latrines between February to November (Strachan & Moorhouse 2011).

Drains, ditches and streams in the Aldhurst Farm area between Abbey Road and Lovers Lane were surveyed on both sides, where access was possible. The ditches, drains and streams were divided into five sections (see Figure 3), following the survey divisions established by Entec in 2010. The banks and area around the pond in the centre of the site was also surveyed. The arable fields around the ditches and streams within a 200m radius, were not intensively surveyed, but were assessed for their suitability for water voles.

3.1 Water vole activity survey

The activity survey work comprised of searching the ditches and other wetland habitats at Aldhurst Farm (Figure 3) to identify all evidence of water vole activity. Surveys were carried out based on standard methods recommended in the water vole conservation handbook (Strachan & Moorhouse 2011). This involved searching bankside vegetation for:

- Latrines/droppings – water vole droppings are often concentrated in discreet latrine sites near the nest, at range boundaries and places where they regularly enter and exit the water. While most droppings will be deposited in latrines, some may be found scattered along runways in vegetation;
- Feeding stations – feeding remains in the form of neat piles of chewed lengths of vegetation, are often found in runways and at haul-out platforms;
- Burrows - these are typically found along the water's edge and on top of the bank up to 5m from the water's edge. Holes on top of the banks often have grazed 'lawns' around them;
- Nests – Where vegetation cover is dense and the water table is high (limiting opportunities for burrowing), water vole nests may be found woven into the base of rushes, sedges or grass tussocks; and
- Footprints – these may be identified in soft mud or silt.

Survey results were recorded on water vole survey forms.

3.2 Water vole habitat survey

For each water course surveyed, the following habitat data was recorded:

- Bank material;
- Bordering land use;
- Vegetation type present and frequency;
- Bank profile;
- Approximate depth and relative speed of water.

A sketch of each water course was made, with any features potentially determining the suitability of the ditch and surrounding area for supporting water vole recorded.

3.3 Survey Limitations

Due to deep silt, combined with steep banks and dense bankside and in-channel vegetation, it was not feasible to search the entire banks of some of the ditches, nor was it possible to enter the watercourse and conduct the survey by wading upstream.

4 RESULTS

4.1 Water vole activity

Evidence of recent water vole activity was found on the Aldhurst Farm site. Water vole field signs (in the form of burrows, runs, droppings/latrines and feeding remains) were found in ditch sections 1, 2 and 3, with no evidence of any activity on sections 4 and 5. The evidence of water vole activity found is summarised in Table 1. A single otter spraint was also found near ditch 3, but no obvious holt or lying up site was identified.

Table 1. Water vole field signs identified at Aldhurst Farm

Ditch reference	Transect length (m)	Water vole signs found				
		Burrow	Path in vegetation	Droppings / latrines	Cropped grass around tunnel	Feeding remains
1	250	17	1	1	2	3
2	300	10	2	0	0	1
3	500	5	3	0	0	0
4	600	0	0	0	0	0
5	200	0	0	0	0	0
Total	1,850	32	6	1	2	4

4.2 Habitat suitability

Ditch sections 1, 2 and 3 were found to have high habitat suitability for water vole presence. These water courses were all situated within arable fields, and comprised of moderately wide (minimum 1-2 metre) ditches with slow flowing water of up to 1 metre in depth. Abundant aquatic vegetation was often present, including a large body of emergent Watercress (*Nasturtium officinale*). All three ditches possessed steep earthen banks, providing suitable burrowing habitat for water vole. Although short grasses dominated, banks were occasionally highly vegetated with some tall grasses and ruderal vegetation, such as Common Nettle (*Urtica dioica*) and Great Willowherb (*Epilobium hirsutum*), as well as occasional bushes and regular patches of bankside willows (*Salix Sp.).* There is therefore significant opportunity for foraging and provision of shelter for water voles at the site. However, an upstream section of ditch 3 was identified as being less suitable for water vole, due to the presence of overhanging willows shading this section of the ditch, and a much shallower water depth.

Beyond 500 metres upstream of Lover's Lane (ditches 4-5), the water course was found to be heavily shaded with Bramble (*Rubus frutiocosus agg.*) and shrubs and therefore the channel supported little emergent or aquatic vegetation. It was therefore deemed to be sub-optimal for supporting water voles.

5 CONCLUSIONS

In terms of habitat suitability, the 2014 surveys are in broad agreement with those of Entec in 2010 (Entec 2010) with ditches 1, 2 and 3 at Aldhurst Farm having good habitat suitability for water voles and ditches 4-5 being sub-optimal. There is no indication that the range of water voles increasing since 2010, with fields signs being located in the same areas as those recorded by AMEC.

For field surveys of water voles, latrines are considered to be the best index of population abundance (Strachan & Moorhouse 2011). Therefore the low number of latrines found (1), as opposed to other field signs, in 2014 compared to 2010 (15), could be indicative of a change in population status of water voles at Aldhurst Farm, with a caveat that it is known that water vole populations fluctuate seasonally and that the surveys were done four years apart. Possibilities for a change in population abundance include:

- A succession of wet weather since 2010, which could have flooded burrows and caused individuals to drown.
- The potential presence of mink at the site predating water voles.

We will consult with Suffolk Wildlife Trust about mink abundance; and suggest surveys using mink rafts (with a sand or clay plate to detect mink footprints) positioned along the ditches, to highlight if mink presence is the reason for the suspected population decline. We would also recommend that a second field survey is carried out in 2014; in early October when vegetation may be less dense.

6 REFERENCES

AMEC (2012). *EDF Energy. Sizewell C New Nuclear Power Station: Terrestrial and Freshwater Ecology, and Ornithology. Draft Water Vole Survey report 2007-2009*. Unpublished report 2012.

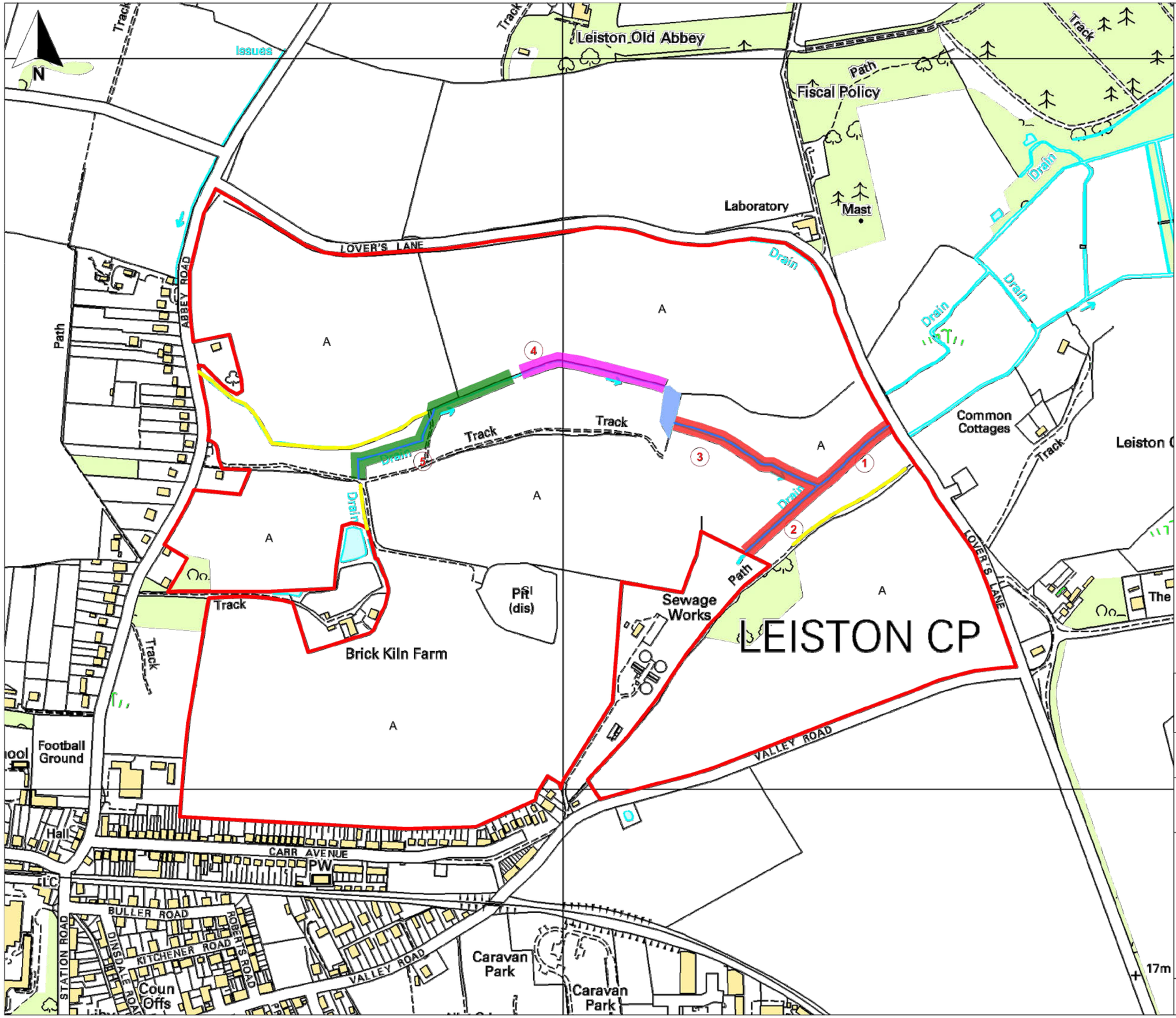
Entec (2010a). *NNB Generation Company. Sizewell Water Vole Survey Report 2010.* Unpublished report 2010.

Entec (2010b). EDF*: Aldhurst Farm, Sizewell Water Vole Survey Report 2010*. Unpublished report 2010.

Hyder (2013). EDF Energy/NNB GenCo. Sizewell C Nuclear Project. Otter Survey Report – October 2013. Unpublished report 2013.

Strachan, R & Moorhouse, T. (2011*). Water Vole Conservation Handbook. 3rd Edition.* Wildlife Conservation Research Unit, Oxford.

FIGURES



Key

- Site boundary
- (2) Transect reference
- Standing water
- Running water
- A Arable
- Dry ditches
- High quality habitat
- Medium quality habitat
- Poor quality habitat

FIGURE 1
WATER VOLE SURVEY
RESULTS FROM ENTEC (2010)

0 m — 250 m

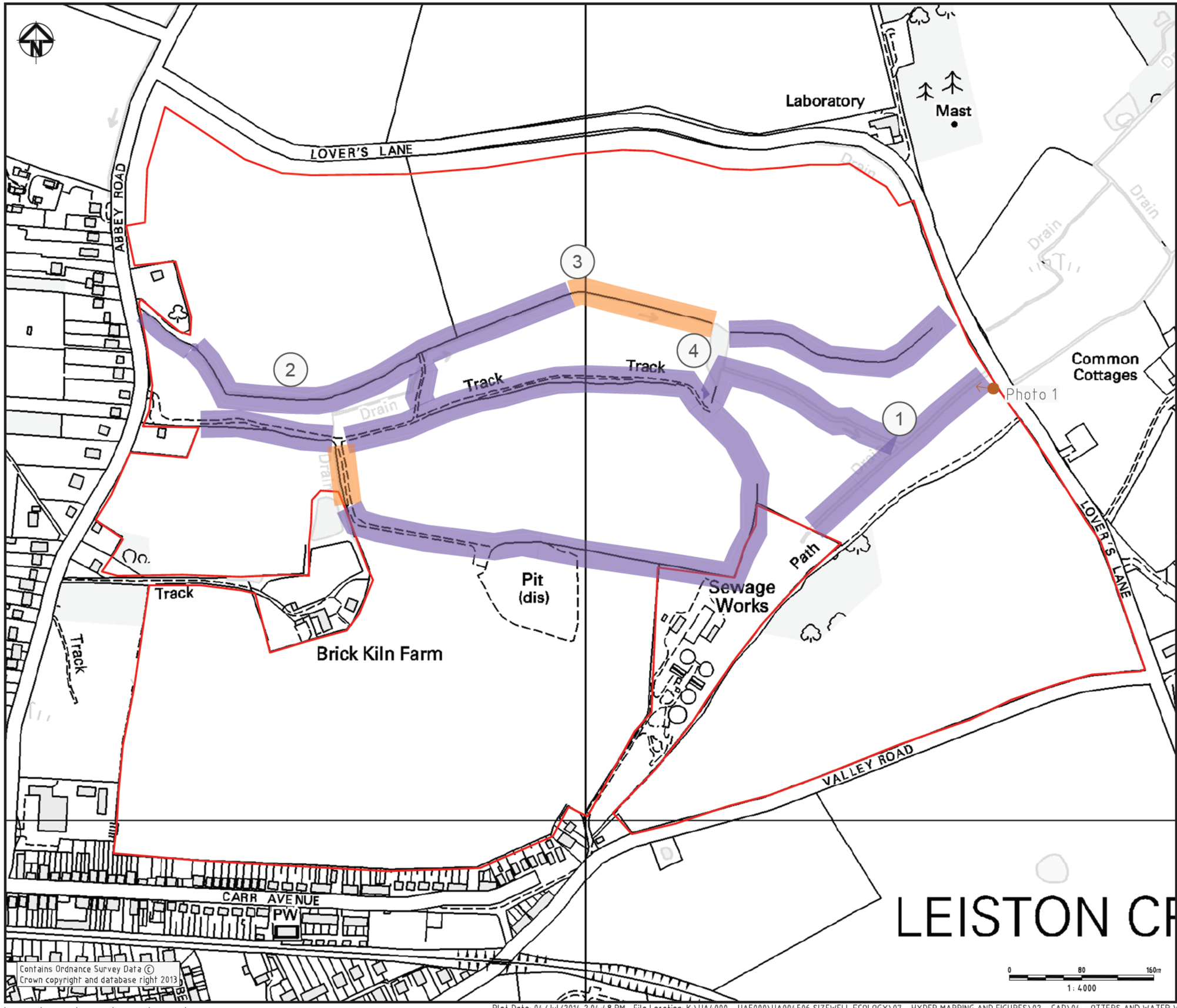
Scale 1:5,000 @ A3

Aldhurst Farm
Phase 1 Habitat Survey Report

Figure 3.2

Water Vole Survey Results

July 2011
28130-A130.WORtugwc



Key

- Site Boundary
- Drains, ditches, streams and boundaries intensively surveyed for otters and water voles
- Area of ditch too dense to survey
- Fields considered unsuitable for otters and water voles
- Location and direction of photograph
- (1) Target Note

Issue	Description	Date
01	VERSION 1	18 OCT 13

Status: **PRELIMINARY**
NOT TO BE USED FOR CONSTRUCTION

Scales	1:4000	Current Issue Signatures
Original Size	A3	Author J.WEAVER
Height Datum	NEWLYN	Checker P.JAMES
Grid	O.S	Approver J.DAVIES
		© Copyright reserved

Filename: 1015-UA004506-STD-01_OTTERS_WV.DWG

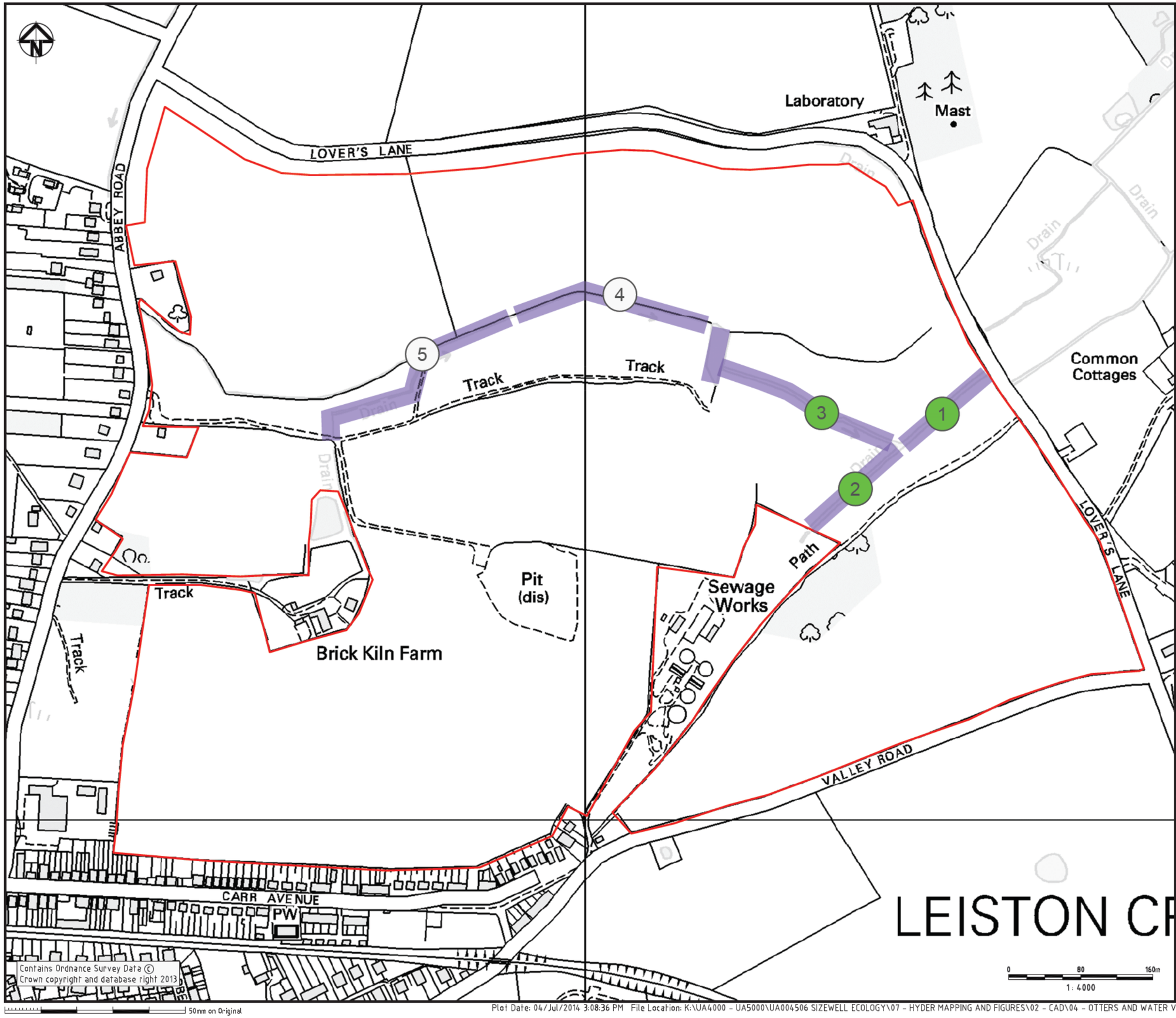
Client: EDF ENERGY

HYDER CONSULTING (UK) Limited
The Mill, Brimscombe Port
Brimscombe
Stroud, England
GL5 2QG
Tel: +44 (0)1453 423100
Fax: +44 (0)1453 887979

Project: SIZEWELL

Title: FIGURE 2
OTTER AND WATER VOLE SURVEY FROM HYDER (2013)

Drawing No.	Project No.	Issue
1015	— UA004506—	01



Key

- Site Boundary
- Drains, ditches, streams and boundaries intensively surveyed for water voles
- Fields considered unsuitable for water voles
- (1) Ditch sections
- (1) Ditches where evidence of water voles found and good water vole habitat quality

Issue	Description	Date
02	VERSION 2	04 JUL 14
01	VERSION 1	18 OCT 13

Status
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scales	1:4000	Current Issue Signatures	
		Author J.WEAVER	
Original Size	A3	Checker P.JAMES	
Height Datum	NEWLYN	Approver J.DAVIES	
Grid	O.S	© Copyright reserved	

Filename: 1015-UA004506-STD-02_OTTERS_WV.DWG

Client
EDF ENERGY

HYDER CONSULTING (UK) Limited
The Mill, Brimscombe Port
Brimscombe
Stroud, England
GL5 2QG
Tel: +44 (0)1453 423100
Fax: +44 (0)1453 887979

Project
SIZEWELL

Title
FIGURE 3
ALDHURST FARM
SURVEY AREA 2014

Drawing No.	Project No.	Issue
1015	— UA004506—	01

Plot Date: 04/Jul/2014 3:08:36 PM File Location: K:\UA4000 - UA5000\UA004506 SIZEWELL ECOLOGY\07 - HYDER MAPPING AND FIGURES\02 - CAD\04 - OTTERS AND WATER VOLES\1015-UA004506-STD-02_OTTERS_WV.DWG

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: Sizewell – Ditch Section 2

Site number: | 10km square: | Grid ref:

County: Suffolk | Water Authority:

Recorder: ML / KB | Date: 16/4/2014

HABITAT INFORMATION (mark features on map)

Survey distance: km

Habitat
- [x] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [x] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [ ] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [x] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [ ] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [C] Bankside trees
- [C] Bushes
- [F] Herbs
- [C] Submerged weed
- [ ] Reeds/sedges
- [C] Tall grass
- [C] Short grass

Disturbance: low

Bank profile
- [ ] Flat < 10°
- [x] Shallow < 45°
- [x] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [x] 0.5–1m
- [ ] 1–2m
- [ ] > 2m

Width
- [ ] 5–10m
- [ ] 1m
- [x] 1–2m
- [ ] 2–5m
- [ ] 10–20m
- [ ] 20–40m
- [ ] > 40m

Current
- [x] Slow
- [ ] Rapid
- [ ] Fast
- [ ] Sluggish
- [ ] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [ ] Latrines (count)
- [10] Burrows (count)
- [ ] Footprints
- [2] Pathway in vegetation
- [1] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat [C]
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter [C]
- [ ] Sightings
- [x] Droppings
- [ ] Footprints/runs

Mink [C]
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

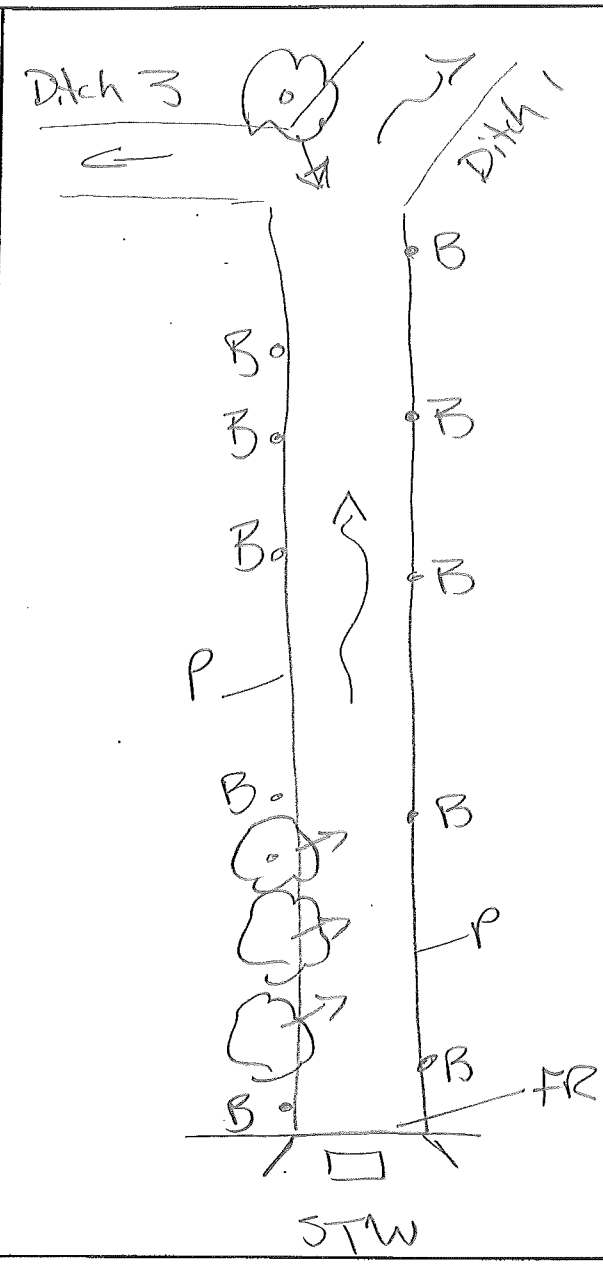
Other wildlife [C]
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES	
Broadleaved wood	BW
Conifer plantation	CP
Moorland/ heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc. gardens)	URB

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/ spoil
- Silt bars
- Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Ditch Section 1

Site name/river: Sizewell

Site number: | 10km square: | Grid ref:

County: Suffolk | Water Authority:

Recorder: MP / KB | Date: 16/4/2014

HABITAT INFORMATION (mark features on map)

Survey distance: ___ km

Habitat
- [x] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [x] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [x] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [ ] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [x] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [ ] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [x] Bankside trees
- [ ] Bushes
- [ ] Herbs
- [x] Submerged weed
- [x] Reeds/sedges
- [x] Tall grass
- [x] Short grass

Disturbance:
NO SIGNS of disturbance

Bank profile
- [ ] Flat < 10°
- [ ] Shallow < 45°
- [x] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [x] 0.5–1m
- [ ] 1–2m
- [ ] > 2m

Width
- [ ] 5–10m
- [ ] 1m
- [ ] 10–20m
- [x] 1–2m
- [ ] 20–40m
- [ ] 2–5m
- [ ] > 40m

Current
- [x] Slow
- [ ] Rapid
- [ ] Sluggish
- [ ] Fast
- [ ] Static

WILDLIFE INFORMATION

Water voles
- [0] Sightings (count)
- [1] Latrines (count)
- [17] Burrows (count)
- [0] Footprints
- [1] Pathway in vegetation
- [3] Feeding remains
- [2] Cropped grass around tunnel entrance

Rat (0)
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter (0)
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Mink (0)
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

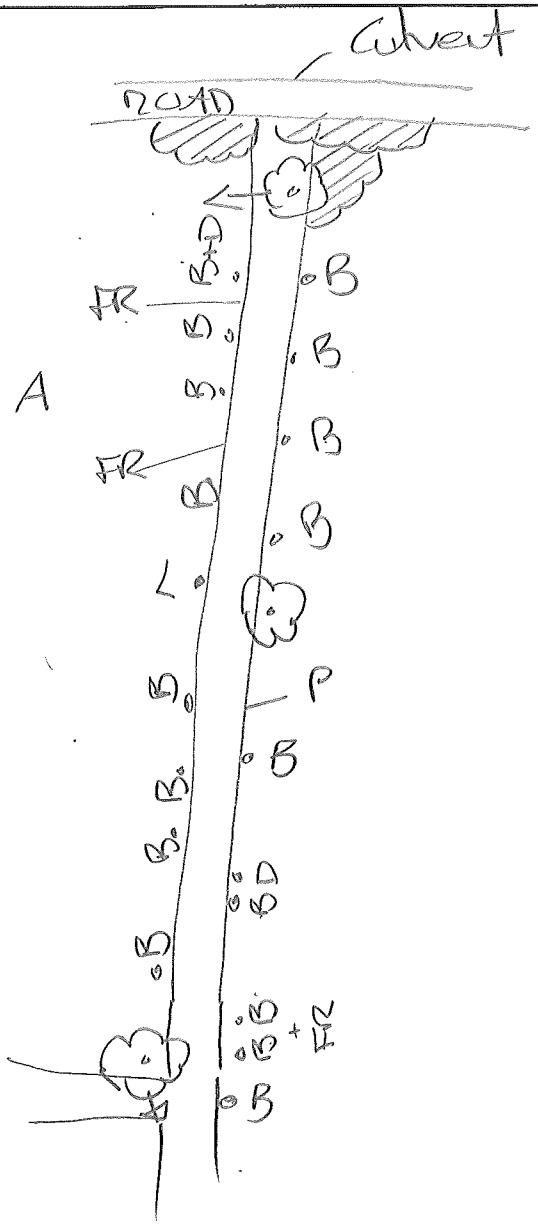
Other wildlife (0)
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES	
Broadleaved wood	BW
Conifer plantation	CP
Moorland/ heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc. gardens)	URB

OTHER FEATURES
Roadbridge
Footbridge
Weir
Culvert
Ford
Outfall
Dredgings/ spoil
Silt bars
Islands — mark position and size

ADDITIONAL COMMENTS:
water level management
signs of drying out
flood debris position
evidence of pollution

L = latrine
B = Burrow
FR – Feeding Remains
D – Dropping
P = Pathway

Deep silt in bottom of ditch prevented entering water with waders.

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: Sizewell Ditch Section 3

Site number: | 10km square: | Grid ref:

County: Suffolk | Water Authority:

Recorder: MK / KB | Date: 16/4/14

HABITAT INFORMATION (mark features on map)

Survey distance: ___ km

Habitat
- [x] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [ ] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [x] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [ ] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [x] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [ ] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [ ] Bankside trees
- [ ] Bushes
- [ ] Herbs
- [ ] Submerged weed
- [ ] Reeds/sedges
- [ ] Tall grass
- [ ] Short grass

Disturbance: low

Bank profile
- [ ] Flat < 10°
- [x] Shallow < 45°
- [x] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [x] 0.5–1m
- [ ] 1–2m
- [ ] > 2m

Width
- [ ] 5–10m
- [ ] 1m
- [ ] 10–20m
- [x] 1–2m
- [ ] 20–40m
- [ ] 2–5m
- [ ] > 40m

Current
- [x] Slow
- [ ] Rapid
- [x] Sluggish
- [ ] Fast
- [ ] Static

WILDLIFE INFORMATION

Water voles
- [0] Sightings (count)
- [0] Latrines (count)
- [5] Burrows (count)
- [0] Footprints
- [3] Pathway in vegetation
- [0] Feeding remains
- [0] Cropped grass around tunnel entrance

Rat (0)
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [x] Droppings
- [ ] Footprints/runs

Mink (0)
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

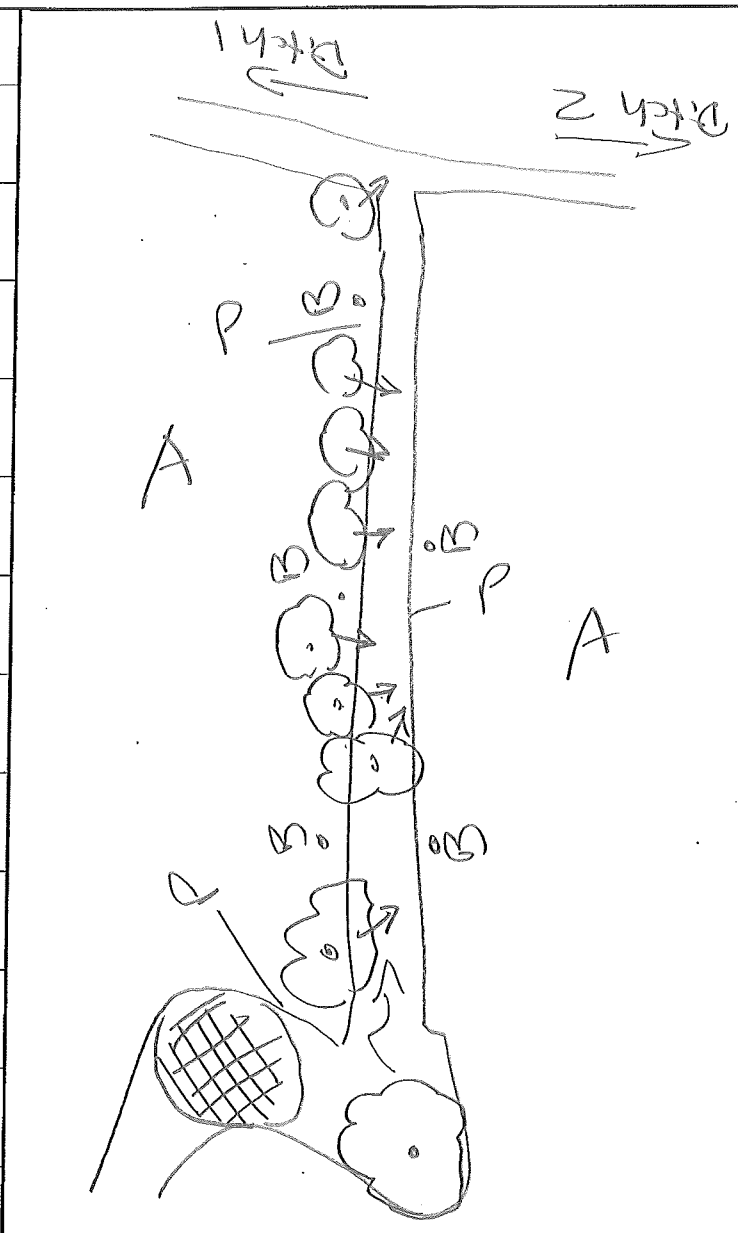
Other wildlife (0)
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES

Broadleaved wood	BW
Conifer plantation	CP
Moorland/ heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc. gardens)	URB

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/ spoil
- Silt bars
- Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

B – Burrow
L – Latrine
D – Dropping
P – Pathway
FR – Feeding remains

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: Sizewell Ditch Section 4.

Site number: | 10km square: | Grid ref:

County: Suffolk | Water Authority:

Recorder: ML / KB | Date: 10/4/14

HABITAT INFORMATION (mark features on map)

Survey distance: ___ km

Habitat
- [x] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [x] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [x] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [ ] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [x] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [ ] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [ ] Bankside trees
- [ ] Bushes
- [ ] Herbs
- [x] Submerged weed
- [x] Reeds/sedges
- [ ] Tall grass
- [ ] Short grass

Disturbance: low

Bank profile
- [ ] Flat < 10°
- [ ] Shallow < 45°
- [x] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [x] 1–2m
- [ ] > 2m

Width
- [ ] 5–10m
- [ ] 1m
- [ ] 10–20m
- [x] 1–2m
- [ ] 20–40m
- [ ] 2–5m
- [ ] > 40m

Current
- [x] Slow
- [ ] Rapid
- [ ] Sluggish
- [ ] Fast
- [ ] Static

WILDLIFE INFORMATION

Water voles
- [ ] Sightings (count)
- [ ] Latrines (count)
- [ ] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [ ] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Mink
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

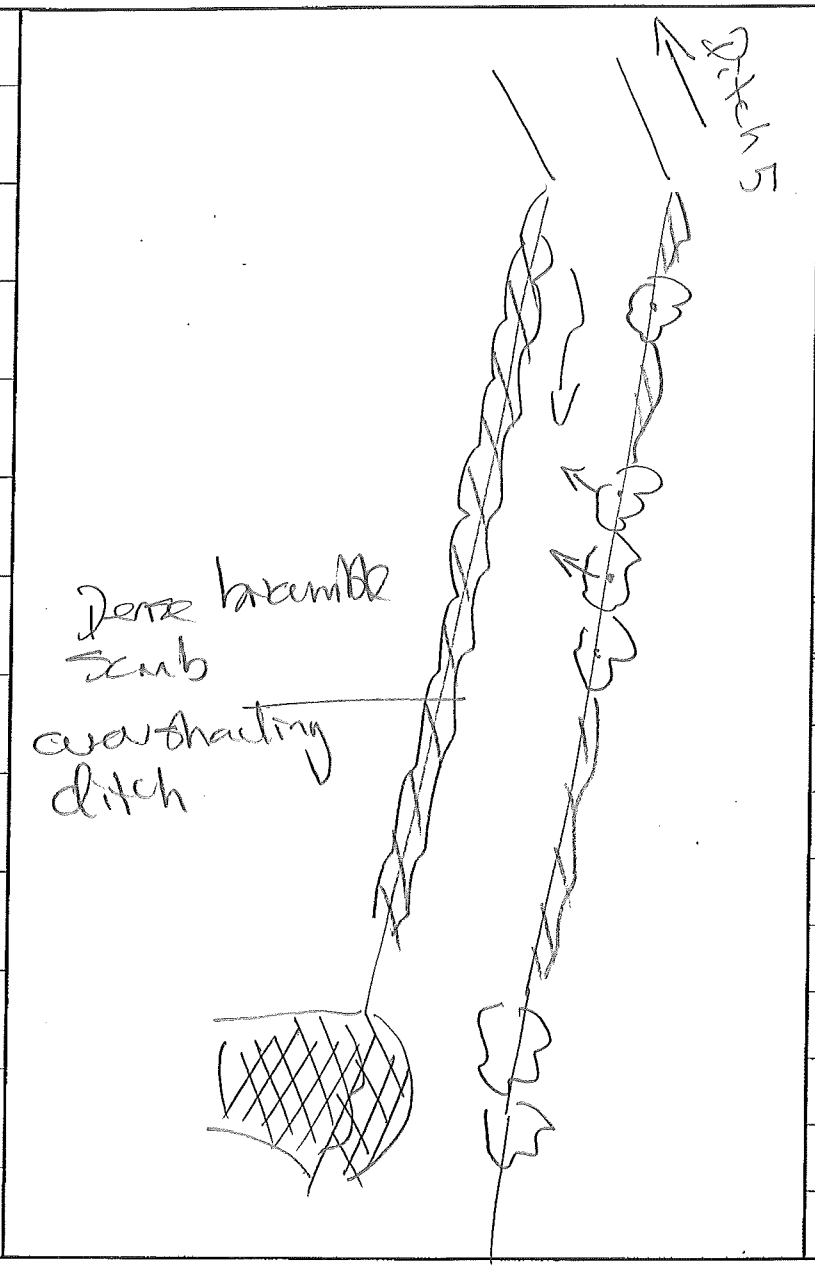
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES

Broadleaved wood	BW
Conifer plantation	CP
Moorland/ heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc. gardens)	URB

OTHER FEATURES

- Roadbridge
- Footbridge
- Weir
- Culvert
- Ford
- Outfall
- Dredgings/ spoil
- Silt bars
- Islands — mark position and size

ADDITIONAL COMMENTS:

water level management
signs of drying out
flood debris position
evidence of pollution

WATER VOLE SURVEY FORM

BACKGROUND INFORMATION

Site name/river: Sizewell Ditch Section five

Site number: | 10km square: | Grid ref:

County: | Water Authority:

Recorder: ML | KB | Date: 16/4/

HABITAT INFORMATION (mark features on map)

Survey distance: km

Habitat
- [x] Ditch
- [ ] Dyke
- [ ] Gravel pit
- [ ] Pond
- [ ] Lowland lake
- [ ] Upland loch
- [ ] Reservoir
- [x] Running water
- [ ] Marsh/bog
- [ ] Canal

Shore/bank
- [ ] Boulders
- [ ] Stones
- [ ] Gravel
- [ ] Sand
- [ ] Silt
- [x] Earth
- [ ] Rock cliffs
- [ ] Earth cliffs
- [ ] Canalized
- [ ] Poached
- [ ] Reinforced (man-made)

Bordering land use
- [ ] Upland grass
- [ ] Permanent/temporary grass
- [ ] Mixed broadleaf woodland
- [ ] Conifer wood
- [ ] Peat bog
- [x] Arable crop
- [ ] Salt marsh
- [ ] Urban/industrial
- [ ] Park/garden
- [ ] Heath
- [ ] Fen
- [ ] Cattle/grazing
- [ ] Bank fenced?

Vegetation (DAFORN)
- [x] Bankside trees
- [ ] Bushes
- [x] Herbs
- [x] Submerged weed
- [x] Reeds/sedges
- [x] Tall grass
- [x] Short grass

Disturbance: low

Bank profile
- [ ] Flat < 10°
- [ ] Shallow < 45°
- [x] Steep > 45°
- [ ] Vertical/undercut

Depth
- [ ] < 0.5m
- [ ] 0.5–1m
- [x] 1–2m
- [ ] > 2m

Width
- [ ] 5–10m
- [x] 1m
- [ ] 10–20m
- [ ] 1–2m
- [ ] 20–40m
- [ ] 2–5m
- [ ] > 40m

Current
- [ ] Slow
- [ ] Rapid
- [ ] Sluggish
- [ ] Fast
- [ ] Static

WILDLIFE INFORMATION

Water voles (circled)
- [ ] Sightings (count)
- [ ] Latrines (count)
- [ ] Burrows (count)
- [ ] Footprints
- [ ] Pathway in vegetation
- [ ] Feeding remains
- [ ] Cropped grass around tunnel entrance

Rat (circled)
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Otter (circled)
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

Mink (circled)
- [ ] Sightings
- [ ] Droppings
- [ ] Footprints/runs

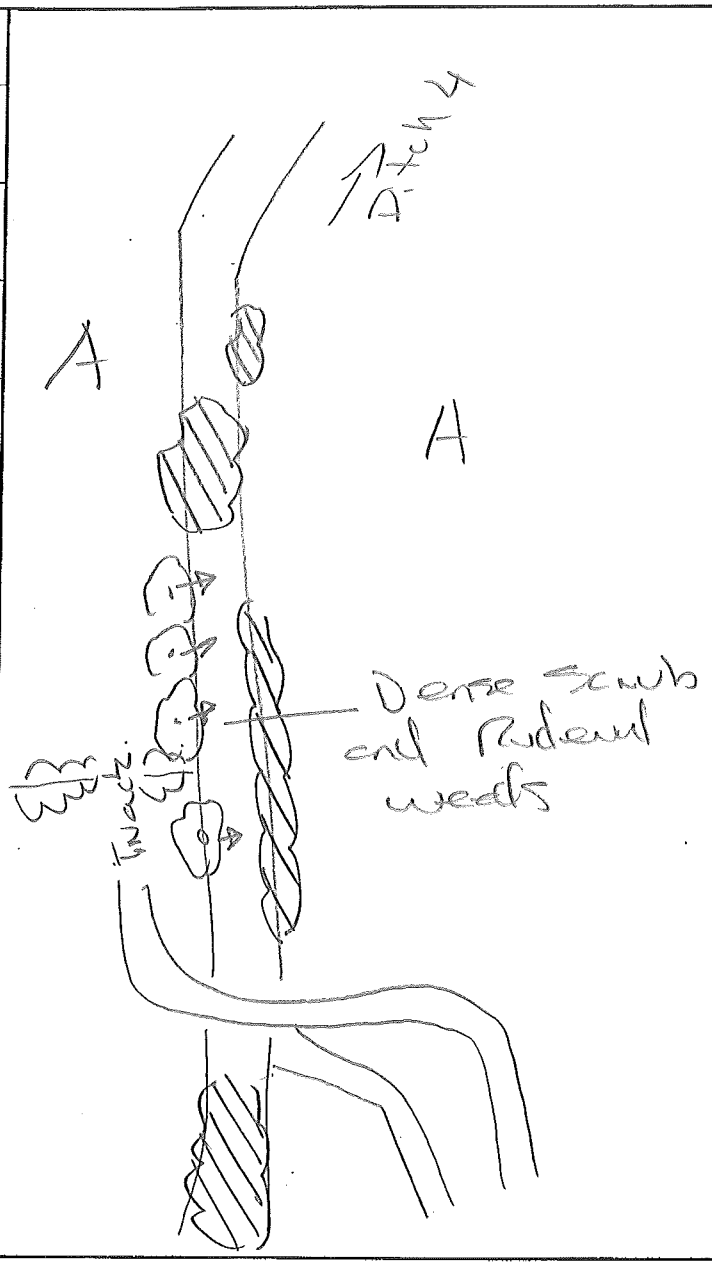
Other wildlife
- [ ] Kingfisher
- [ ] Heron
- [ ] Coot
- [ ] Waterfowl
- [ ] Moorhen
- [ ] Dipper

Identified plants from feeding remains:

SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS
(mark route surveyed and direction of flow)

- Mature trees
- Over-hanging branches
- Fallen tree
- Exposed roots
- Pollarded tree P
- Sapling
- Scrub
- Hedgerow
- Fence
- Reed/sedge bed
- Flood bank
- Artificial bank
- Earth cliff



ADJACENT LAND-USE CODES	
Broadleaved wood	BW
Conifer plantation	CP
Moorland/ heath	MH
Rough pasture	RP
Wetland	WL
Improved grass	IG
Tilled land (crop)	TL
Suburban/ urban devel. (inc. gardens)	URB

OTHER FEATURES	
Roadbridge	
Footbridge	
Weir	
Culvert	
Ford	
Outfall	
Dredgings/ spoil	
Silt bars	
Islands	mark position and size

ADDITIONAL COMMENTS:
water level management
signs of drying out
flood debris position
evidence of pollution

– No signs of water vole.

B.4. Appendix B.4

WATER VOLE AND OTTER SURVEY REPORT 2020

CONTENTS

TABLES

PLATES

FIGURES

1 SUMMARY

1.1.1 This document provides the results of the 2020 otter and water vole surveys conducted on the Sizewell C Main Development Site (MDS) site in 2020. To provide context a summary of previous surveys conducted to inform the Development Consent Order (DCO) submission is provided, along with a summary of the otter and water vole species valuation and mitigation provided in the **Volume 2, Chapter 14** of the **Environmental Statement** (**ES**) (Doc Ref. 6.3).

1.2 Submitted Baseline (2007-2019)

a) Otter

1.2.1 Otter (*Lutra lutra*) surveys were undertaken of land associated with the proposed Sizewell C Main Development Site by Wood Group between 2007-2010. The surveys identified otter signs widely distributed across the survey area with a year-round presence **Volume 2**, **Chapter 14: Appendix 14A9** (Doc Ref. 6.3) [**APP-249**].

1.2.2 In 2013 Hyder undertook otter surveys at Aldhurst Farm and within the SSSI Triangle on the Sizewell Estate and where accessible, potentially suitable features within a 200m strip of land to the north and east of the SSSI Triangle were also surveyed. Whilst the habitat at Aldhurst Farm was considered suitable to support otters, no potential or actual otter holts were recorded and no field signs were identified in the field boundaries, also searched for potential otter holts/lying up sites. Within the SSSI Triangle, the reed bed, ditches and areas of open water along with isolated tree-lines were considered suitable to provide a network of suitable wetland habitat for otters, however no signs of otter were recorded. During these surveys incidental observations of water vole signs were recorded. The habitat at Aldhurst Farm and within the SSSI Triangle was also considered suitable to support water vole however no signs were recorded **Volume 2**, **Chapter 14: Appendix 14A9** of the **ES** (Doc Ref. 6.3) [**APP-249**].

1.2.3 Otter field signs have also been recorded during the annual water vole National Key Site monitoring surveys and indicate that otter activity is focused within Sizewell Marshes Site of Special Scientific Interest (SSSI) (Ref. 1).

b) Water vole

1.2.4 As detailed in **Volume 2**, **Chapter 14: Appendix 14A9** of the **ES** (Doc Ref. 6.3) [**APP-249**], Water vole (*Arvicola amphibius*) surveys were undertaken of land associated with the proposed Sizewell C Main

Development Site by Wood Group between 2007-2010 with water vole surveys undertaken at Aldhurst Farm in 2010 by Wood Group (Ref. 2) and 2014 by Arcadis and of Sizewell B by Arcadis in 2019 (**Volume 2**, **Chapter 14: Appendix 14A9** of the **ES** (Doc Ref. 6.3)) [APP-224]. The results of the water vole surveys confirmed water vole presence across the site, particularly in Sizewell Marshes SSSI and identified sizeable areas of suitable habitat within the EDF Energy estate. The results of the surveys suggest a stable population in the absence of American mink (*Neovison vison*) with the population of water vole recorded within the EDF Energy estate being higher than the national average populations.

1.2.5 As part of the National Key Sites Monitoring Programme initiative (Ref. 1) 12 transects within the EDF Energy estate were monitored annually for water voles for the Sizewell National Key Site, and 24 transects were also monitored by the RSPB at the Minsmere National Key Site, to the north of the Sizewell Key Site between 2001-2018. The results of the surveys found there to be a stable population of water voles within the EDF Energy estate.

1.3 2020 Summary Overview

1.3.1 Updated otter and water vole surveys were undertaken of land associated with the proposed Sizewell C Main Development Site by Arcadis in 2020. The surveys confirmed the continued presence of otter and water vole within the proposed development site and also low numbers of water vole at Aldhurst Farm.

1.3.2 The 2020 survey results for otter were consistent with previous surveys with otter signs including holts, spraints, otter runs and scratch marks found across the survey area.

1.3.3 Previous surveys undertaken within the site recorded higher than the national average populations of water vole within the Sizewell Estate with particularly high densities recorded within the Sizewell Marshes SSSI. The survey results from 2020 indicate that the wetlands within the boundaries of the main development site and the adjacent Zone of Influence support relatively low populations of water vole and indicate a decline in the water vole population since the last assessment. Aldhurst Farm supports medium to low populations of water vole. However, these results are consistent with cyclic population fluctuations seen as part of the National Key Sites Monitoring Programme initiative for water vole (Ref. 1).

1.3.4 The results of the 2020 otter and water vole surveys support the assessment in the **Volume 2**, **Chapter 14** of the **ES** (Doc Ref. 6.3) which was based on previous baseline survey data between 2007 and 2019.

2 OVERVIEW

2.1 The Aims of the 2020 Survey Updates

2.1.1 The aims of the 2020 otter and water vole survey update were to:

- Update the existing otter and water vole baseline survey data and provide a baseline for future monitoring.
- Establish the size of the water vole population present within and adjacent to the proposed development site and to identify the water vole carrying capacity of the receptor areas.
- Inform the required European Protected Species Licences to permit development to proceed.

2.2 Site Description

2.2.1 As described with **Volume 2**, **Chapter 14** of the **ES** (Doc Ref. 6.3) [**APP-224**], within the Sizewell EDF Estate, Sizewell Marshes SSSI habitats suitable to support otter and water vole comprises wet woodland, rush pasture and fen meadow, reedbed meadow, standing open water and ditches with a sizeable area of suitable habitat within the EDF Energy estate having been managed proactively since 1992.

2.2.2 New reedbed and ditch habitat was created in 2015, located adjacent to the development site at Aldhurst Farm, primarily to compensate for the anticipated losses of these habitats from the SSSI associated with the SSSI Crossing and the western edge of the new Sizewell C platform (Ref. 3).

2.3 Submitted Baseline (2007-1019)

2.3.1 This section summarises the baseline for otters and water voles which was submitted to inform **Volume 2**, **Chapter 14** of the **ES** (Doc Ref. 6.3) [**APP-224**], which drew on a variety of surveys undertaken between 2007 and 2019.

2.3.2 Otter surveys were undertaken of land associated with the proposed Sizewell C Main Development Site by Wood Group between 2007-2010.

2.3.3 As detailed in **Volume 2**, **Chapter 14: Appendix 14A9** of the **ES** (Doc Ref. 6.3) [**APP-249**], Water vole surveys were undertaken of land associated with the proposed Sizewell C Main Development Site by Wood Group between 2007-2010 with water vole surveys undertaken at Aldhurst Farm in 2010 by Wood Group (Ref. 2) and 2014 by Arcadis and of Sizewell B by Arcadis in 2019 (**Volume 2**, **Chapter 14** of the **ES** (Doc Ref.

6.3) [APP-224]). For the National Key Sites Monitoring Programme initiative (Ref. 1) 12 transects within the EDF Energy estate were monitored annually for water voles for the Sizewell National Key Site, and 24 transects were also monitored by the RSPB at the Minsmere National Key Site, to the north of the Sizewell Key Site between 2001-2018.

a) Otter

2.3.4 As detailed in **Volume 2**, **Chapter 14: Appendix 14A9** of the **ES** (Doc Ref. 6.3) [APP-249], a walkover survey of the site was undertaken on 4th and 5th October 2007. Suitable habitat was assessed for potential to support otter, and searched for field signs including spraints, footprints, feeding remains, potential holt sites, pathways and resting sites. The 2007 walkover survey, also detailed in **Volume 2**, **Chapter 14: Appendix 14A9** of the **ES** (Doc Ref. 6.3) [APP-249], found that otter signs were widely distributed across the survey area.

2.3.5 A more extensive survey programme (Wood Group, 2012) was undertaken during 2009 and 2010 to understand the presence of otters in the local area, within Sizewell Marshes SSSI, and the extent of habitat connectivity to the wider area. An initial reconnaissance survey was undertaken, which covered a significant proportion of all the drainage channels and water bodies within the 2007 survey area. This identified 33 potential spraint locations, which were then surveyed monthly between December 2009 and November 2010 for any sightings or field signs (**Volume 2**, **Chapter 14: Appendix 14A9** of the **ES** (Doc Ref. 6.3) [APP-249]).

2.3.6 The 2009 to 2010 surveys for field signs recorded spraint at 32 of the 33 monitored potential spraint locations, with various other field signs recorded across the survey area. These included couches (above-ground resting places) found in Sizewell Marshes SSSI, feeding remains, and a well-used slide close to the Minsmere Sluice. Three otter sightings were recorded during the course of these surveys: one within Sizewell Marshes SSSI of two otters on 25 May 2010 (thought to have been an adult female and an approximately one-year-old juvenile); and a single large male otter on 9 March 2011 at the edge of Goodrums Fen.

2.3.7 SWT have collected incidental records of otter sightings and field signs (spraint and footprints) between 2001-2018 during the National Key Sites Monitoring Programme initiative (Ref. 1), as recorded in the NGL Sizewell Land Management Reports (Ref. 4).

2.3.8 As part of monitoring surveys of Sizewell, a National Key Site for water voles as described in Bright and Carter (Ref. 1, see below) and the adjacent EDF Energy estate by Royal Holloway College, incidental field signs of otters were also recorded. The Royal Society for the Protection

of Birds (RSPB) staff at Minsmere also record incidental otter sightings/field signs.

b) Water Vole

2.3.9 As detailed in **Volume 2**, **Chapter 14** of the **ES** (Doc Ref. 6.3) [APP-224], a walkover survey of the site was undertaken in October 2007, in conjunction with the surveys for otter. Twenty potentially suitable ditches were surveyed. Suitable terrestrial and aquatic habitat along these ditches were assessed for potential to support water vole and searched for field signs including a search of the bankside vegetation (where conditions were suitable) for latrines/droppings, feeding stations, burrows and footprints. Nineteen of the twenty ditches surveyed in 2007 were found to contain field evidence of water vole activity. Burrows were identified on three of the ditches; these were widely distributed across Sizewell Marshes SSSI.

2.3.10 Further water vole surveys of 16 ditches, using the same methodology as in 2007, were carried out in 2009, aimed at obtaining a better understanding of how water voles use the habitats across the EDF Energy estate and to establish a generalised population assessment. Additionally, five transects (approximately 500m in length) were surveyed within the reedbeds in the Sizewell Marshes SSSI. Artificial latrine sites were installed at a density of one every 10m; these were left in place undisturbed for two to three weeks prior to the surveys. Each reedbed transect was surveyed twice in 2009, between 20 to 21 August 2009, and again between 13 and 14 October 2009. Any field signs of water vole were recorded. Evidence of water vole activity was found in 14 of 16 ditches surveyed in 2009. A high density of field signs was found in four of these ditches. Water vole field signs were found on all of the five reedbed transect routes surveyed in 2009. As detailed in **Volume 2**, **Chapter 14** of the **ES** (Doc Ref. 6.3) [APP-224], all field signs were found in close proximity to ditches or other areas of open water, indicating that water voles were not active within the drier areas of reedbed, but restricted to the wetter margins.

2.3.11 The average population size for the ditches surveyed in 2009 was estimated by Wood Group at 8.1 individual voles per 100m ditch, based on latrine counts within the breeding season. The density was, however, found to vary significantly, being dependent on the quality of the surrounding habitat. In the lowest quality habitat (heavy over-shading by adjacent woodland limiting growth of aquatic vegetation and heavy poaching of banks by cattle reducing bankside vegetation and restricting burrowing opportunities), this was estimated at only 3.5 individuals per 100m ditch, rising to 17.1 individuals per 100m for optimal habitat.

2.3.12 In 2010, Wood Group surveyed all watercourses at Aldhurst Farm, using five transects, to identify evidence of water vole activity using the same survey methodology (Ref. 2). At the time of survey, the site comprised arable fields, with access tracks, boundary hedgerows and small plantation woodland and shelter belts (mainly comprising mature hybrid poplar (*Poplus* sp.) although some veteran oak (*Quercus* sp.), Ash (*Fraxinus excelsior*) and willow (*Salix* sp.) were present). Four out of five sections of ditches surveyed at Aldhurst Farm provided suitable aquatic habitat for water voles and yielded field signs for water voles (Ref. 2).

2.3.13 As part of the National Key Sites Monitoring Programme initiative (Ref. 1), 12 transects within the EDF Energy Estate are monitored annually for water voles for the Sizewell National Key Site, and 24 transects are also monitored by the RSPB at the Minsmere National Key Site, to the north of the Sizewell Key Site. The Sizewell surveys were carried out in the spring and autumn up to 2009, in the autumn between 2010 and 2014 inclusively, and then from the spring from 2015 onwards. Positive sightings of water vole signs were recorded, and the results presented as the percent of the 12 or 24 transects surveyed each time that showed positive signs. The data is published in the NGL Sizewell Land Management Reports (Ref. 8). RSPB (pers. comm.) provided the Minsmere survey results.

2.3.14 As detailed in **Volume 2**, **Chapter 14** of the **ES** (Doc Ref. 6.3) [**APP-224**], surveys were undertaken by Arcadis in 2014 at Aldhurst Farm and comprised of searching the ditches and other wetland habitats at Aldhurst Farm to identify all evidence of water vole activity, following recognised survey methodologies. Three ditches showed signs of water vole activity and were found to have good habitat suitability for water (**Volume 2**, **Chapter 14: Appendix 14A9** of the **ES** (Doc Ref. 6.3) [**APP-249**]).

2.3.15 Water vole surveys were undertaken in 2019 of the ditches within 250m of the proposed Sizewell B relocated facilities site close to Coronation Wood. In 2019, only one of the six watercourses south of Coronation Wood was considered suitable for water voles. No burrows were identified within 100m of the site boundary, and only one water vole latrine was identified. This was recorded approximately 57m west of the site boundary, on the same watercourse (11) where Wood Group carried out surveys in 2009 (**Volume 2**, **Chapter 14** of the **ES** (Doc Ref. 6.3) [**APP-224**]).

3 METHODS

3.1.1 The water bodies on the application site and within 50m of the application site boundary (see **Figures 1** to **6**) were surveyed on 3rd-5th June, 8th-12th June and again on 17th-21st August and 24th- 28th August by experienced surveyors Duncan Sweeting, Ana Pino Blanco, James Rowland, Sorrell Kiamil (GradCIEEM) and Alister Killingsworth (GradCIEEM) to search for signs of both otter and water vole. A site visit was also carried out on the 21st August by Rich Prew (GradCIEEM) and Derek Gow to assess habitat conditions across the site including the receptor areas.

3.1.2 The surveyors searched for otter field signs including spraints, footprints, feeding remains, potential holt sites, pathways and resting sites.

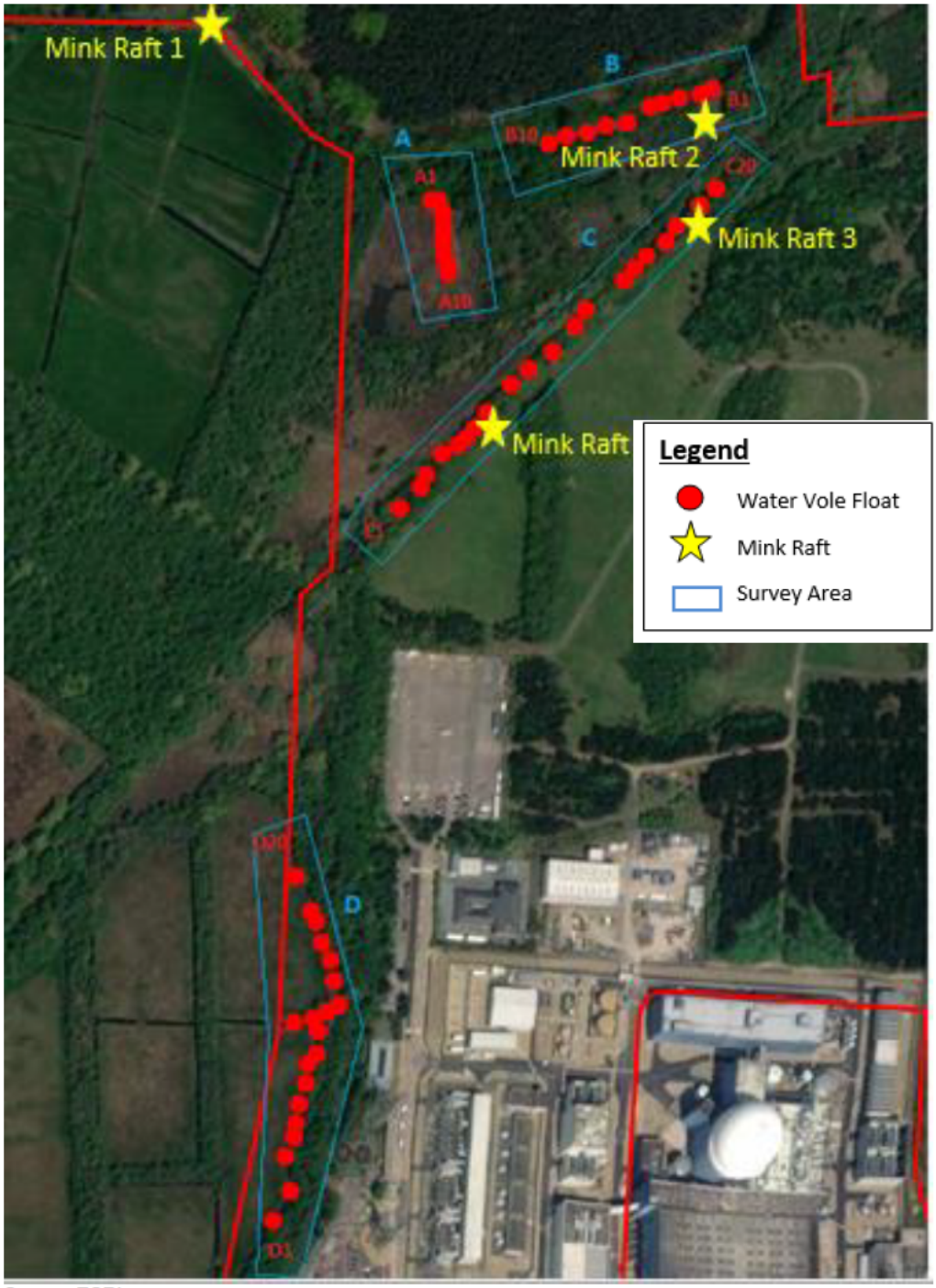
3.1.3 The surveyors searched for water vole field signs including a search of the bankside vegetation (where conditions were suitable) for latrines/droppings, feeding stations, burrows and footprints. The signs were mapped using Global Positioning System (GPS) to allow for an estimation of the population size. The survey work was conducted in accordance with the 'Water Vole Mitigation Handbook' (Ref. 7).

3.1.4 Due to access limitations during the June and August water vole surveys, water vole float surveys were undertaken in September and October 2020. The water vole floats were deployed between 21st and 25th September and were checked between 30th September - 2nd October and on 12th and13th October. The mink rafts were deployed on 30th September and were also checked on 12th - 13th October. The locations of the floats were chosen to provide a more detailed understanding of water vole populations within areas that will be significantly impacted by the development. Water vole floats were also deployed at Aldhurst Farm for greater resolution on the carrying capacity of the proposed receptor site.

3.1.5 Mink raft surveys were also undertaken in combination with the water vole float surveys to confirm if American mink are present within the EDF Estate.

3.1.6 The locations of the floats are provided at **Plates 1** and **2**.

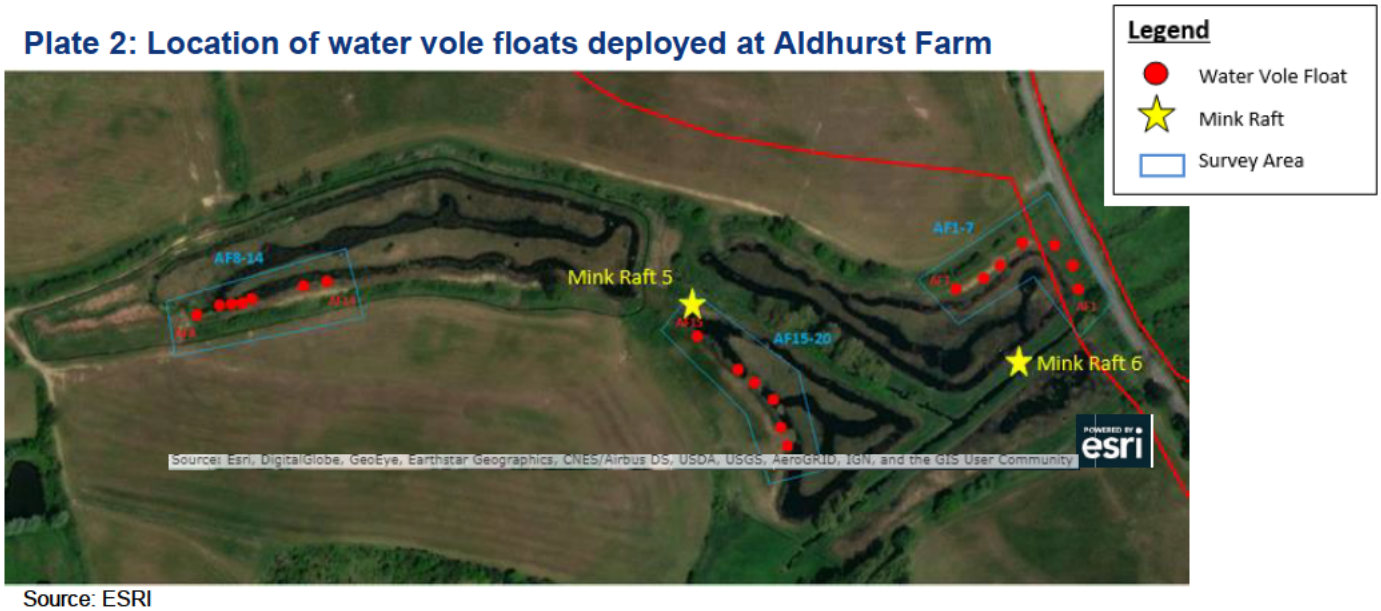
Plate 1: Location of water vole floats deployed at the main development site



Source: ESRI

Area A (SSSI Triangle Lagoon), Area B (Leiston Drain), Area C (Sizewell Drain), Area D (Fen Meadow)

Plate 2: Location of water vole floats deployed at Aldhurst Farm



Source: ESRI

Aldhurst Farm 1-7 (Outside water vole fence), Aldhurst Farm 8-14 (Inside water vole fence), Aldhurst Farm 15-20 (Outsidewater vole fence)

3.1.7 The number of latrines recorded during the surveys was used to provide an indication on relative population sizes of water vole present at each waterbody (Ref. 7) (**Table 1**).

Table 1: Summary of the importance of ecological receptors as assessed in the Main Development Site Environmental Statement

Relative population density	**Approximate number of latrines per 100m of bankside habitat**	
	Survey season (mid-April – June)	Survey season July-September
High	10 +	20 +
Medium	3-9	6-19
Low	≤ 2 (or none but with other confirmatory field signs)	≤ 5 (or none but with other confirmatory field signs)

3.1.8 The number of latrines recorded during the water vole float surveys was used to estimate numbers of water vole per 100m using the calculation described in Morris *et al.* (Ref. 5):

$$y = 1.48 + (0.683x)$$

Where y = water vole per 100m and x = latrines per 100m

3.1.9 A number of watercourses could not be surveyed or surveyed in full (detailed in Appendix A on Figure 1-6), this was due to health and safety restrictions including deep water, steep banks and impenetrable dense vegetation.

3.1.10 Water vole surveys were not undertaken at Aldhurst Farm in June 2020 due to the presence of nesting marsh harriers (*Circus aeruginosus*) but were undertaken in late August and October 2020.

4 RESULTS

4.1.1 The results of the 2020 updated otter and water vole surveys are presented on **Figures 1** to **6** and are described individually below. Full details of all survey data collated for each watercourse is presented in Appendix B. The Tables below, provide the details of all positive survey results where each species has been confirmed as being present, along with a summary of the water vole floats and mink raft survey results.

a) Otter

4.1.2 Evidence of recent otter activity was found within the site. A summary of the results of the 2020 surveys are provided in **Table 2** and presented on **Figures 1** to **3**.

Table 2: Otter survey results 2020

Ditch/Pond Reference	OS Grid Reference	Activity Signs and Observations June 2020	OS Grid Reference	Activity Signs and Observations August 2020
Watercourse 2	TM 45929 65929	Holt (not regularly used) Spraint	TM 45931 65931	Holt (not regularly used) Spraint
Watercourse 5	TM 46478 66013	Holt Track Spraint	TM 46478 66013	Holt
	TM 46462 66028	Holt Spraint	TM 46462 66028	Holt Spraint
	N/A	None	TM 46481 65991	Holt Spraint
Watercourse 26	TM 46454 65478	Spraint	N/A	None
	TM 46421 65828	Possible holt	N/A	None
Watercourse 37	TM 47348 64686	Otter track	N/A	None
Watercourse 41	N/A	None	TM 47407 64642	Spraint
Watercourse 43 (Leiston Drain)	TM 46687 64555	Spraints Scratches Run to watercourse	N/A	None

Ditch/Pond Reference	OS Grid Reference	Activity Signs and Observations June 2020	OS Grid Reference	Activity Signs and Observations August 2020
	N/A	None	TM 46866 64561	Footprint
	N/A	None	TM 46705 64541	Run to watercourse Possible otter scratches
	N/A	None	TM 46571 64547	Spraint Run to watercourse
	N/A	None	TM 46866 64561	Footprint
	N/A	None	TM 46568 64546	Spraint
Watercourse 48	TM 46621 64416	Spraint	N/A	None
Watercourse 58	N/A	None	TM4693164392	Run to watercourse
Watercourse 66	TM 47079 64193	Spraint	N/A	None
	TM 47015 63750	Otter holt	TM 47015 63750	Otter holt

Ditch/Pond Reference	OS Grid Reference	Activity Signs and Observations June 2020	OS Grid Reference	Activity Signs and Observations August 2020
Watercourse 67 (Sizewell drain)	TM 47027 63750	Spraint	N/A	None
	TM 46901 63171	Spraint	N/A	None
Watercourse 70	TM 46931 63912	Otter spraint	N/A	None
Watercourse 74	TM 46836 63583	Otter spraint	N/A	None
Watercourse 79	TM 46847 63379	Run to water course	N/A	None
Watercourse 80	TM 46855 63361	Otter spraint and anal jelly	N/A	None
Watercourse 82	TM 46873 63358	Possible otter holt	N/A	None
Watercourse 87	TM 46857 63227	Track	N/A	None
Watercourse 88	TM 46848 63136	Track	N/A	None
Watercourse 90	TM 46878 63113	Footprint	N/A	None
Watercourse 95	N/A	None	TM 46985 63022	Spraint
Watercourse 101	TM 46726 63046	Possible otter couch	N/A	None
	TM 46725 63163	Otter spraint	N/A	None
North-west of watercourse 108	TM 46536 63607	Run to watercourse Scratches	N/A	None

b) Water vole

4.1.3 Evidence of recent water vole activity was found across the survey area. A summary of the results of the 2020 survey and an assessment of the

potential density of the water vole populations are provided in **Table 3** and **Table 4** below and presented on **Figures 4** to **6**.

Table 3: Water vole survey results 2020

Ditch/Pond Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations June	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations August	Assessment of Potential Population Density
Watercourse 5	TM 46298 66024	1 possible water vole burrow	N/A	None	Low
	TM 46075 66082	1 feeding station 1 latrine	N/A	None	
	TM 46061 66086	1 feeding station	N/A	None	
	TM 46090 66078	1 feeding station 1 latrine	N/A	None	
	TM 46091 66080	1 feeding station 1 latrine	N/A	None	
	TM 46097 66074	1 feeding station 1 latrine	N/A	None	
	TM 46094 66079	1 feeding station	N/A	None	
Watercourse 13	N/A	None	TM4544863470	Small mammal runs	Low
Watercourse 14	N/A	None	TM4518763535	Feeding signs Small mammal runs	Low
	N/A	None	TM4519263536	Latrine Feeding signs	
	N/A	None	TM4536763446	Small mammal runs	
	N/A	None	TM4538663466	Small mammal runs	
	N/A	None	TM4541363499	Small mammal runs	
	N/A	None	TM4541963511	Latrine	

Ditch/Pond Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations June	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations August	Assessment of Potential Population Density
				Feeding signs Small mammal runs	
	N/A	None	TM4542063516	Latrine Feeding station	
	N/A	None	TM4542063507	Feeding signs Small mammal runs	
	N/A	None	TM4541463523	Feeding signs Small mammal runs	
	N/A	None	TM4540863529	Water vole burrow Latrine Feeding signs Small mammal runs	
Watercourse 16	N/A	None	TM 44828 63468	Feeding signs Feeding station Small mammal runs	Low
	N/A	None	TM4484263468	Feeding signs	
	N/A	None	TM4485363470	Feeding signs	
	N/A	None	TM4486163473	Feeding signs	
	N/A	None	TM4488463482	Feeding signs	
	N/A	None	TM4488963484	Feeding signs	
	N/A	None	TM4501763505	Feeding signs	
	N/A	None	TM4505063497	Feeding signs	
Watercourse 17	N/A	None	TM4523863386	Feeding signs Small mammal runs	Low
	N/A	None	TM4524063380	Feeding signs Small mammal runs	
	N/A	None	TM4523863373	Feeding signs	

Ditch/Pond Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations June	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations August	Assessment of Potential Population Density
				Small mammal runs	
	N/A	None	TM4523763354	Feeding signs Small mammal runs	
	N/A	None	TM4521763424	Feeding signs Small mammal runs	
	N/A	None	TM4518963454	Feeding signs Small mammal runs	
Watercourse 18	TM 46268 66043	2 water vole burrows	N/A	None	Low
	TM 46277 66041	1 feeding station	N/A	None	
Watercourse 26	TM 46415 65786	1 feeding station	N/A	None	Low
Watercourse 43 (Leiston Drain)	TM 47197 64481	3 water vole burrows	N/A	None	Low
	N/A	None	TM4686064545	Feeding signs	
Watercourse 47	TM 46552 64441	1 water vole burrow	N/A	None	Low
Watercourse 87	TM 46876 63225	1 feeding station	N/A	None	Low
Watercourse 90	TM 46873 63118	1 feeding station	N/A	None	Low
Watercourse 93	TM 46907 63005	1 feeding station	N/A	None	Low
Watercourse 101	TM 46632 63068	Feeding station	N/A	None	Low
	TM 46634 63072	Feeding station	N/A	None	
		Latrine	N/A	None	
	TM 46637 63077	Feeding stations	N/A	None	

Ditch/Pond Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations June	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations August	Assessment of Potential Population Density
Watercourse 103	TM 46485 63419	1 water vole burrow	N/A	None	Low
Watercourse 108	TM 46569 63623	1 water vole burrow	N/A	None	Low
Watercourse 111	N/A	None	TM4551563516	Water vole burrow Feeding signs Small mammal runs	Low
	N/A	None	TM4552563521	Latrine Water vole burrows Small mammal runs Feeding signs	
	N/A	None	TM4553063525	Water vole burrow Feeding signs	
	N/A	None	TM4553763529	Water vole burrow Feeding signs	

Table 4: Water vole survey results for Aldhurst Farm August 2020

Ditch/Pond Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations	Assessment of Potential Population Density
Watercourse 109 Aldhurst Farm	TM 45358 63419	Feeding signs	Low
	TM 45344 63407	Feeding station	
	TM 45342 63406	Feeding signs	
	TM 45340 63405	Latrine	
	TM 45261 63332	Feeding signs	
Watercourse 110 Aldhurst Farm	TM 45335 63424	Feeding signs	Low
	TM 45330 63426	Feeding signs	
Aldhurst Farm Lagoon A	TM 45055 63502	Feeding signs	Low
	TM 45018 63509	Feeding signs	
	TM 44894 63491	Feeding signs	

Ditch/Pond Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations	Assessment of Potential Population Density
	TM 44889 63490	Feeding signs	
	TM 44870 63480	Feeding signs	
	TM 44862 63477	Feeding signs	
	TM 44849 63473	Feeding signs	
	TM 44826 63471	Feeding station Small mammal runs	
Aldhurst Farm Lagoon B	TM 45186 63538	Run Feeding signs	Low
	TM 45191 63539	Latrine Feeding signs	
	TM 45404 63534	Feeding signs	
	TM 45409 63530	Latrine Feeding signs Runs Burrow	
	TM 45419 63523	Feeding signs Runs (recent and old)	
	TM 45419 63517	Latrine Feeding station (on floating vegetation raft)	
	TM 45421 63515	Feeding signs Runs	
	TM 45422 63503	Latrine Feeding signs Runs	
	TM 45391 63470	Runs	
	TM 45369 63447	Runs	
Aldhurst Farm Lagoon C	TM 45185 63463	Feeding signs Runs	Low
	TM 45216 63433	Feeding signs Runs	
	TM 45241 63390	Feeding signs Runs	
	TM 45241 63386	Feeding signs Runs	
	TM 45240 63384	Feeding signs Runs	
	TM 45238 63353	Feeding signs Runs	
Aldhurst Farm Lagoon D	TM 45447 63472	Runs	Low

c) Water vole floats and mink raft surveys

4.1.4 A summary of the results of the water vole float and mink raft surveys undertaken in September and October are provided in **Table 5** below. The table shows any rafts with water vole signs, the full results can be found in **Appendix D**.

Table 5: Summary of water vole float and mink raft survey results 2020

Location	Float/Raft Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations
Aldhurst Farm – Lagoon B	AF1	TM 45423 63513	Feeding signs Droppings
	AF2	TM 45416 63529	Feeding signs Droppings
	AF3	TM 45407 63539	Droppings
	AF4	TM 45389 63538	Feeding station Latrine
	AF5	TM 45377 63525	Droppings
	AF6	TM 45368 63516	Feeding sigs (on adjacent vegetation) Droppings
	AF7	TM 45350 63507	Droppings
Aldhurst Farm – Lagoon A	AF8	TM 44831 63465	Feeding signs Droppings
	AF9	TM 44848 63472	Droppings
	AF10	TM 44853 63471	Droppings
	AF11	TM 44860 63475	Feeding station Droppings
	AF12	TM 44869 63480	Feeding station Droppings
	AF13	TM 44901 63493	Feeding signs Droppings
	AF14	TM 44918 63495	Droppings
Aldhurst Farm – Lagoon C	AF15	TM 45169 63468	Feeding signs Droppings
	AF17	TM 45210 63437	Droppings
	AF18	TM 45223 63428	Droppings
	AF19	TM 45233 63407	Droppings
	AF20	TM 45237 63391	Droppings
SSSI Triangle lagoon	A8	TM 47083 64360	Feeding signs (adjacent to float) Droppings

Location	Float/Raft Reference	OS Grid Reference	Frequency of Water Vole Activity Signs and Observations
	A9	TM 47084 64355	Droppings
	A10	TM 47086 64346	Feeding signs Droppings
Leiston Drain	B1	TM 47299 64519	Droppings
	B4	TM 47260 64504	Feeding signs Droppings
	B6	TM 47225 64493	Feeding station Droppings
	B7	TM 47237 64500	Droppings
	B8	TM 47187 64479	Droppings
	Mink Raft 6AF	TM 45174 63469	Water vole droppings Water vole footprints

4.1.5 As Table 8 shows, more activity was recorded in Aldhurst farm than in survey areas within Sizewell Marshes SSSI. No water vole signs were recorded on floats deployed in the Sizewell drain either in the section along the SSSI triangle or the section to the west of Sizewell B (Areas C and D respectively, **Plate 1**).

4.1.6 **Table 6** estimates water vole numbers within the individual survey areas using the Morris *et al.* calculation (Ref. 5) and provides an indication of relative population density, described in **Table 1**.

Table 6: Estimated water vole number per float survey area

Location	Floats	Length of watercourse surveyed (m)	Number of latrines	Latrines per 100m	Estimated number of water voles per 100m	Relative population density
Aldhurst Farm - Lagoon B	AF1-AF7	94	7	7.45	6.57	Medium
Aldhurst Farm - Lagoon A	AF8-AF14	120	7	5.83	5.46	Medium
Aldhurst Farm - Lagoon C	AF15-AF20	102	5	4.90	4.83	Low
SSSI Triangle lagoon	A1-A10	74	3	4.05	4.25	Low
Leiston Drain	B1-B10	148	4	2.70	3.33	Low
Sizewell Drain	C1-C20	385	0	0.00	1.48	Low
Fen Meadow	D1-D20	356	0	0.00	1.48	Low

5 DISCUSSION

5.1 Otter

5.1.1 Previous surveys undertaken within the site recorded otter widely across the site and within the wider landscape with sightings indicating a year-round presence.

5.1.2 The 2020 survey results for otter confirmed the continued presence of otter within the proposed development site which was consistent with previous surveys with otter signs found widely across the survey area. However, the 2020 survey results recorded a number of otter holts, concentrated on waterbodies to the north of the site, a single holt along Watercourse 67, the Sizewell Drain, possible holts at watercourse 26 and 82 and a possible couch at watercourse 101. Given the need to divert the drain to build the platform for Sizewell C, this holt would be impacted by construction phase works.

5.1.3 The survey results presented above do not change the assessment of impacts on otter presented in **Section 14.14** of **Volume 2**, **Chapter 14** of the **ES** (Doc Ref. 6.3) [**APP-224**] (Ref. 4). However, further mitigation and a European Protected Species Licence for otters is likely to be required.

5.2 Water vole

5.2.1 The 2020 survey results for water vole confirmed the continued presence of water voles within the proposed development site and also at Aldhurst Farm. American mink were not recorded during these surveys.

5.2.2 Previous surveys undertaken within the Sizewell Estate recorded higher than the national average populations of water vole. The survey results from 2020 indicate that the wetlands with the MDS (and adjacent Zone of Influence) support low populations of water vole. At Aldhurst Farm two of the mitigation lagoon (Lagoon A and B) support medium populations of water vole whilst Lagoon C supports a low population of water vole. Overall, the results of the 2020 surveys shows a decline in the water vole population since previous surveys. Water vole populations are known to be cyclical (Ref. 8) therefore the low population of water vole recorded during the 2020 surveys fits with the cyclic change seen where water vole populations do fluctuate from season to season.

5.2.3 There is approximately 2900m of available linear habitat that has been created at Aldhurst farm. This consists of open channels bordered by reedbed and ditches. Within the development footprint, areas of available linear habitat to be lost amounts to approximately 2015m (Ref. **Error!**

Reference source not found.). This includes sections of the Sizewell and Leiston drains and ditches and lagoons within the SSSI Triangle.

5.2.4 **Table 7** estimates water vole numbers in habitats within the development footprint and Aldhurst Farm using the Morris calculations displayed in **Table 6** and the length of watercourse habitat present (Drains, ditches, open reedbed channels).

Table 7: Estimated water vole numbers in 2020

Average estimated density of water voles per 100m in 2020	Length of watercourse habitat	Estimated population number in 2020
Within the development footprint		
2.63	2015	52.99
Aldhurst Farm		
5.62	2900	162.98

5.2.5 Data from Amec 2009 (Paragraph 2.3.10) suggested that the average water vole population density was 17.13 individuals per 100m in optimal habitat within Sizewell Marshes SSSI. Given that habitats within Aldhurst Farm are considered optimal this can be used to estimate water vole carrying capacity, which is shown in **Table 8**. Water vole numbers fluctuate annually so using population density figures from a year where numbers are high will give an indication of the maximum carrying capacity.

Table 8: Aldhurst farm water vole carrying capacity

Density of water voles per 100m in optimum habitat	Length of watercourse habitat	Estimated carrying capacity of Aldhurst farm	Estimated population number in 2020	Estimated available carrying capacity in Aldhurst Farm	% Remaining carrying capacity
17.13	2900	496.77	162.98	333.79	67

5.2.6 The calculation presented in **Table 8** and **Table 9** demonstrates that the available carrying capacity of Aldhurst Farm is over six times the number of estimated water voles in the area to be lost to the development. Given the extent of optimal habitat within the receptor sites and the presence of low numbers of water voles within the development footprint, there is considered to be sufficient available habitat at Aldhurst Farm should translocation be necessary.

Table 9: Ratio of water vole number in habitats to be lost to available carrying capacity of Aldhurst Farm

Estimated population number in 2020 in the habitats to be lost due to Sizewell C landtake	Estimated available carrying capacity in Aldhurst Farm	Ratio
52.99	333.79	6.30

5.2.7 Based on the current survey results presented above, the assessment of impacts on water vole presented at **Section 14.14** of **Volume 2**, **Chapter 14**of the **ES** (Doc Ref. 6.3) [**APP-224**] has not changed.

5.2.8 The results of the 2020 update otter and water vole surveys do not change the assessment of impacts to otter and water vole in the Environmental Statement and does not change the proposed mitigation detailed in the Otter Licence Method Statement (**Volume 2**, **Chapter 14**: **Appendix 14C10** (Doc Ref. 6.3) [**APP-252**]) and Water Vole Licence Method Statement (**Volume 2**, **Chapter 14: Appendix 14C6B** (Doc Ref. 6.3)[**APP-252**]).

6 CONCLUSION

6.1.1 Surveys undertaken during 2020 demonstrate that otter and water vole occur throughout the wetlands within the proposed development site and the adjacent Zone on Influence.

6.1.2 Based on the 2020 water vole survey results the wetlands within the main development site currently supports low populations of water vole and whilst this is lower than previously recorded within surveys of the wider EDF Estate such population fluctuations are typical of the cyclic population changes seen in vole species and is aligned with the population trends seen during the National Key Sites Monitoring Programme surveys on the Sizewell Estate. Further monitoring surveys for water vole would be required to confirm this is a cyclical trend rather than a longer-term decline within the water vole population within the EDF Energy estate.

6.1.3 While more water voles were recorded at Aldhurst Farm than within areas to be lost to development, the result suggest that there is substantial capacity left at Aldhurst Farm to facilitate translocation in future if this is required.

6.1.4 Based on the 2020 otter survey results further monitoring surveys are proposed to determine the level of otter activity at the holt recorded along watercourse 70 and the holt type, to inform the mitigation requirements and inform protected species licensing.

6.1.5 The results of the 2020 update survey continue to support the DCO assessment based on the previous baseline survey data submitted in the 2020 Environmental Statement. The proposed mitigation for water voles and the residual effects submitted for the Sizewell C Main Development Site DCO would remain the same as that submitted in 2020 and detailed in **Volume 2**, **Chapter 14** of the **ES** (Doc Ref. 6.3) [**APP-224**]. Further mitigation proposals will be developed for otters when the status of the holts located is fully evaluated.

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ANNEX A: FIGURES

A.1. Figures

ANNEX B: 2020 WATER VOLE SURVEY DATA RESULTS

B.1. 2020 water vole survey data results

Ditch/Pond Reference	Central OS Grid Reference of waterbody	Surveyed?	Frequency of Water Vole Activity Signs and Observations
1	TM 45937 65863	Yes	No water vole signs
2	TM 45939 65956	Yes	No water vole signs
3	TM 45920 66053	Yes	No water vole signs
4	TM 46001 66045	Partially	No water vole signs
5	TM 46198 66028	Partially	1 burrow 4 latrines 6 feeding stations
6	TM 45998 66144	Yes	No water vole signs
7	TM 46048 66178	Yes	No water vole signs
8	TM 46080 66127	Yes	No water vole signs
9	TM 46091 66143	Yes	No water vole signs
10	TM 46106 66157	Yes	No water vole signs
11	TM 46148 66112	Yes	No water vole signs
12	TM 46182 66122	Yes	No water vole signs
13	TM 46176 66138	Yes	No water vole signs
14	TM 46179 66079	Yes	2 latrines Feeding signs Small mammal runs
15	TM 46219 66095	Yes	No water vole signs
16	TM 46295 66063	Yes	Feeding signs Feeding station Small mammal runs
17	TM 46252 66078	Yes	Feeding signs Small mammal runs
18	TM 46262 66050	Yes	Feeding station 2 water vole burrows
19	TM 46397 66111	Yes	No water vole signs

Ditch/Pond Reference	Central OS Grid Reference of waterbody	Surveyed?	Frequency of Water Vole Activity Signs and Observations
20	TM 46460 66089	Yes	No water vole signs
21	TM 46487 66064	Yes	No water vole signs
22	TM 46534 66037	Yes	No water vole signs
23	TM 46561 66003	No	N/A
24	TM 46480 65955	Yes	No water vole signs
25	TM 46490 65928	Yes	No water vole signs
26	TM 46393 65639	Yes	1 feeding station
27	TM 46505 65819	Yes	No water vole signs
28	TM 46412 65702	Yes	No water vole signs
29	TM 46419 65671	Yes	No water vole signs
30	TM 46427 65640	Yes	No water vole signs
31	TM 46391 65575	Yes	No water vole signs
32	TM 46454 65556	Yes	No water vole signs
33	TM 46573 65387	Yes	No water vole signs
34	TM 46600 65375	Yes	No water vole signs
35	TM 46874 65145	Yes	No water vole signs
36	TM 46923 65181	Yes	No water vole signs
37	TM 47299 64824	Yes	No water vole signs
38	TM 47371 64615	Yes	No water vole signs
39	TM 47396 64657	Yes	No water vole signs
41	TM 47418 64543	Yes	No water vole signs
42	TM 47405 64506	Yes	No water vole signs
43 - Leiston Drain	TM 47001 64440	Yes	3 water vole burrows Possible water vole burrows Small mammal holes 1 feeding sign
44	TM 46528 64520	Yes	No water vole signs
45	TM 46456 64566	Yes	No water vole signs

Ditch/Pond Reference	Central OS Grid Reference of waterbody	Surveyed?	Frequency of Water Vole Activity Signs and Observations
46	TM 46406 64613	Yes	No water vole signs
47	TM 46505 64485	Yes	Possible water vole burrows
48	TM 46685 64499	Yes	No water vole signs
49	TM 46724 64459	Yes	No water vole signs
50	TM 46785 64489	Yes	No water vole signs
51	TM 46819 64460	Yes	No water vole signs
52	TM 46901 64430	Yes	No water vole signs
53	TM 46937 64373	Yes	No water vole signs
54	TM 46901 64358	Yes	No water vole signs
55	TM 46949 64329	No	N/A
56	TM 46971 64305	No	N/A
57	TM 46985 64314	No	N/A
58	TM 47096 64303	No	N/A
59	TM 47086 64419	Yes	No water vole signs
60	TM 47205 64431	Yes	No water vole signs
61	TM 47190 64355	No	N/A
62	TM 46930 64101	No	N/A
63	TM 46911 64132	No	N/A
64	TM 46983 64116	Yes	No water vole signs
65	TM 46914 64047	Yes	No water vole signs
66 – Sizewell Drain	TM 47155 64284	Yes	No water vole signs
67 – Sizewell Drain	TM 47016 63685	Partially	N/A
68	TM 46993 64041	No	N/A
69	TM 46940 63929	No	N/A
70	TM 46994 63820	Yes	No water vole signs
71	TM 46900 63734	Yes	No water vole signs
72	TM 46922 63689	Yes	No water vole signs
73	TM 46877 63709	Yes	No water vole signs

Ditch/Pond Reference	Central OS Grid Reference of waterbody	Surveyed?	Frequency of Water Vole Activity Signs and Observations
74	TM 46874 63571	Yes	No water vole signs
75	TM 46945 63714	Yes	No water vole signs
76	TM 46989 63717	Yes	No water vole signs
77	TM 46991 63565	Yes	No water vole signs
78	TM 46964 63475	Yes	No water vole signs
79	TM 46837 63474	Yes	No water vole signs
80	TM 46866 63382	Yes	No water vole signs
81	TM 46908 63302	Yes	No water vole signs
82	TM 46890 63365	Yes	No water vole signs
83	TM 46829 63359	Yes	No water vole signs
84	TM 46824 63295	Yes	No water vole signs
85	TM 46820 63225	Yes	No water vole signs
86	TM 46848 63194	Yes	No water vole signs
87	TM 46877 63223	Yes	1 feeding station
88	TM 46849 63143	Yes	No water vole signs
89	TM 46821 63135	Yes	No water vole signs
90	TM 46880 63116	Yes	1 feeding station
91	TM 46943 63165	No	N/A
92	TM 46909 63063	Yes	No water vole signs
93	TM 46887 63012	Yes	1 feeding station
94	TM 46878 62987	Yes	No water vole signs
95	TM 47010 63040	Yes	No water vole signs
96	TM 47223 62974	Yes	No water vole signs
97	TM 47195 62962	Yes	No water vole signs
98	TM 47278 62910	Yes	No water vole signs
99	TM 47345 62775	No	N/A
100	TM 46777 63003	Yes	No water vole signs
101	TM 46670 63049	Partially	1 latrine 4 feeding stations

Ditch/Pond Reference	Central OS Grid Reference of waterbody	Surveyed?	Frequency of Water Vole Activity Signs and Observations
102	TM 46457 63353	Yes	No water vole signs
103	TM 46432 63406	Yes	Possible water vole burrow
104	TM 46523 63397	Yes	No water vole signs
105	TM 46564 63457	Yes	No water vole signs
106	TM 46580 63471	Yes	No water vole signs
107	TM 46622 63471	Yes	No water vole signs
108	TM 46557 63568	Yes	Mammal holes
109 – Aldhurst Farm	TM 45354 63415	Yes	1 latrine 1 feeding station 3 feeding signs
110 – Aldhurst Farm	TM 45244 63460	Yes	2 feeding signs
111	TM 45514 63511	Yes	1 latrine 2 runs 4 burrows 4 feeding signs
112	TM 45487 63576	Yes	No water vole signs
113	TM 45511 63613	Yes	No water vole signs
Lagoon A – Aldhurst Farm	TM 44959 63529	Yes	7 feeding signs 1 feeding station 1 run
Lagoon B – Aldhurst Farm	TM 45315 63478	Yes	7 runs 7 feeding signs 4 latrines 1 burrow 1 feeding station
Lagoon C– Aldhurst Farm	TM 45261 63413	Yes	6 feeding signs 6 runs
Lagoon D– Aldhurst Farm	TM 45418 63440	Yes	1 run

2020 OTTER SURVEY DATA RESULTS

B.2. 2020 otter survey data results

Ditch/Pond Reference	Central OS Grid Reference of waterbody	Surveyed?	Frequency of Otter Activity Signs and Observations
1	TM 45937 65863	Yes	No otter activity
2	TM 45939 65956	Yes	1 holt (not regularly used) spraints
3	TM 45920 66053	Yes	No otter activity
4	TM 46001 66045	Partially	No otter activity
5	TM 46198 66028	Partially	3 holts Run to water coursespraints
6	TM 45998 66144	Yes	No otter activity
7	TM 46048 66178	Yes	No otter activity
8	TM 46080 66127	Yes	No otter activity
9	TM 46091 66143	Yes	No otter activity
10	TM 46106 66157	Yes	No otter activity
11	TM 46148 66112	Yes	No otter activity
12	TM 46182 66122	Yes	No otter activity
13	TM 46176 66138	Yes	No otter activity
14	TM 46179 66079	Yes	No otter activity
15	TM 46219 66095	Yes	No otter activity
16	TM 46295 66063	Yes	No otter activity
17	TM 46252 66078	Yes	No otter activity
18	TM 46262 66050	Yes	No otter activity
19	TM 46397 66111	Yes	No otter activity
20	TM 46460 66089	Yes	No otter activity
21	TM 46487 66064	Yes	No otter activity
22	TM 46534 66037	Yes	No otter activity
23	TM 46561 66003	No	N/A
24	TM 46480 65955	Yes	No otter activity

Ditch/Pond Reference	Central OS Grid Reference of waterbody	Surveyed?	Frequency of Otter Activity Signs and Observations
25	TM 46490 65928	Yes	No otter activity
26	TM 46393 65639	Yes	Possible holt spraints
27	TM 46505 65819	Yes	No otter activity
28	TM 46412 65702	Yes	No otter activity
29	TM 46419 65671	Yes	No otter activity
30	TM 46427 65640	Yes	No otter activity
31	TM 46391 65575	Yes	No otter activity
32	TM 46454 65556	Yes	No otter activity
33	TM 46573 65387	Yes	Spraint Run to watercourse
34	TM 46600 65375	Yes	No otter activity
35	TM 46874 65145	Yes	No otter activity
36	TM 46923 65181	Yes	No otter activity
37	TM 47299 64824	Yes	1 otter track
38	TM 47371 64615	Yes	No otter activity
39	TM 47396 64657	Yes	No otter activity
41	TM 47418 64543	Yes	Spraint
42	TM 47405 64506	Yes	No otter activity
43 - Leiston Drain	TM 47001 64440	Yes	Spraints Footprints Possible otter scratches Run to watercourse
44	TM 46528 64520	Yes	Footprints Spraints Runs
45	TM 46456 64566	Yes	No otter activity
46	TM 46406 64613	Yes	No otter activity
47	TM 46505 64485	Yes	Footprints
48	TM 46685 64499	Yes	Spraints

Ditch/Pond Reference	Central OS Grid Reference of waterbody	Surveyed?	Frequency of Otter Activity Signs and Observations
49	TM 46724 64459	Yes	No otter activity
50	TM 46785 64489	Yes	No otter activity
51	TM 46819 64460	Yes	No otter activity
52	TM 46901 64430	Yes	No otter activity
53	TM 46937 64373	Yes	Otter channel
54	TM 46901 64358	Yes	No otter activity
55	TM 46949 64329	No	N/A
56	TM 46971 64305	No	N/A
57	TM 46985 64314	No	N/A
58	TM 47096 64303	Yes	Run to watercourse
59	TM 47086 64419	Yes	No otter activity
60	TM 47205 64431	Yes	No otter activity
61	TM 47190 64355	No	N/A
62	TM 46930 64101	No	N/A
63	TM 46911 64132	No	N/A
64	TM 46983 64116	Yes	No otter activity
65	TM 46914 64047	Yes	No otter activity
66 – Sizewell Drain	TM 47155 64284	Yes	Spraints Footprints Track north of watercourse 66
67 – Sizewell Drain	TM 47016 63685	Partially	Holt Spraints
68	TM 46993 64041	No	N/A
69	TM 46940 63929	No	N/A
70	TM 46994 63820	Yes	No otter activity
71	TM 46900 63734	Yes	No otter activity
72	TM 46922 63689	Yes	No otter activity

Ditch/Pond Reference	Central OS Grid Reference of waterbody	Surveyed?	Frequency of Otter Activity Signs and Observations
73	TM 46877 63709	Yes	No otter activity
74	TM 46874 63571	Yes	No otter activity
75	TM 46945 63714	Yes	No otter activity
76	TM 46989 63717	Yes	No otter activity
77	TM 46991 63565	Yes	No otter activity
78	TM 46964 63475	Yes	No otter activity
79	TM 46837 63474	Yes	Run to watercourse Spraints
80	TM 46866 63382	Yes	Spraint and anal jelly
81	TM 46908 63302	Yes	No otter activity
82	TM 46890 63365	Yes	Possible otter holt
83	TM 46829 63359	Yes	No otter activity
84	TM 46824 63295	Yes	No otter activity
85	TM 46820 63225	Yes	No otter activity
86	TM 46848 63194	Yes	No otter activity
87	TM 46877 63223	Yes	Track
88	TM 46849 63143	Yes	Track
89	TM 46821 63135	Yes	No otter activity
90	TM 46880 63116	Yes	Footprints
91	TM 46943 63165	No	N/A
92	TM 46909 63063	Yes	Spraints
93	TM 46887 63012	Yes	No otter activity
94	TM 46878 62987	Yes	No otter activity
95	TM 47010 63040	Yes	Spraint
96	TM 47223 62974	Yes	No otter activity
97	TM 47195 62962	Yes	No otter activity
98	TM 47278 62910	Yes	No otter activity
99	TM 47345 62775	No	N/A

Ditch/Pond Reference	Central OS Grid Reference of waterbody	Surveyed?	Frequency of Otter Activity Signs and Observations
100	TM 46777 63003	Yes	No otter activity
101	TM 46670 63049	Partially	Possible couch Spraint
102	TM 46457 63353	Yes	No otter activity
103	TM 46432 63406	Yes	No otter activity
104	TM 46523 63397	Yes	No otter activity
105	TM 46564 63457	Yes	No otter activity
106	TM 46580 63471	Yes	No otter activity
107	TM 46622 63471	Yes	No otter activity
108	TM 46557 63568	Yes	Possible otter scratches Run to watercourse
109 – Aldhurst Farm	TM 45354 63415	Yes	No otter activity
110 – Aldhurst Farm	TM 45244 63460	Yes	No otter activity
111	TM 45514 63511	Yes	No otter activity
112	TM 45487 63576	Yes	No otter activity
113	TM 45511 63613	Yes	No otter activity
Lagoon A – Aldhurst Farm	TM 44959 63529	Yes	No otter activity
Lagoon B – Aldhurst Farm	TM 45315 63478	Yes	No otter activity
Lagoon C– Aldhurst Farm	TM 45261 63413	Yes	No otter activity
Lagoon D– Aldhurst Farm	TM 45418 63440	Yes	No otter activity

ANNEX C: WATER VOLE FLOAT AND MINK RAFT SURVEY RESULTS 2020

C.1. Water vole float and mink raft survey results 2020

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
Aldhurst Farm				
AF1	TM 45423 63513	Water vole feeding signs and droppings and rat droppings	Water vole feeding signs and droppings 	Water vole droppings 
AF2	TM 45416 63529	Water vole droppings	Water vole feeding signs and droppings 	Nothing found

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
AF3	TM 45407 63539	Water vole droppings	Water vole droppings 	Nothing found
AF4	TM 45389 63538	Water vole feeding station and latrine	Nothing found	Nothing found
AF5	TM 45377 63525	Water vole droppings	Water vole droppings 	Water vole droppings 
AF6	TM 45368 63516	Water vole droppings	Water vole feeding signs (on adjacent vegetation) and droppings	Water vole droppings 

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
				
AF7	TM 45350 63507	Water vole droppings	Droppings (likely WV but washed out) 	Water vole droppings 
AF8	TM 44831 63465	Water vole feeding signs and droppings	Water vole droppings 	Water vole droppings 
AF9	TM 44848 63472	Water vole and rat droppings	Nothing found	Nothing found

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
AF10	TM 44853 63471	Water vole droppings	Water vole droppings 	Water vole droppings 
AF11	TM 44860 63475	Water vole feeding station and droppings	Water vole feeding signs and droppings 	Water vole droppings 
AF12	TM 44869 63480	Water vole feeding station and droppings	Water vole feeding signs and droppings 	Water vole droppings 

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
AF13	TM 44901 63493	Water vole feeding signs and droppings	Water vole feeding signs and droppings 	Water vole feeding signs and droppings 
AF14	TM 44918 63495	Droppings	Rat droppings 	Water vole droppings 
AF15	TM 45169 63468	Rat droppings	Water vole feeding signs and droppings. Rat droppings	Water vole droppings 

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
				
AF16	TM 45201 63445	Nothing found	Rat droppings 	Nothing found
AF17	TM 45210 63437	Water vole droppings	Water vole feeding signs and droppings 	Water vole droppings 
AF18	TM 45223 63428	Water vole droppings	Water vole feeding signs and droppings	Water vole droppings

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
				
AF19	TM 45233 63407	Water vole droppings	Water vole droppings 	Water vole droppings 
AF20	TM 45237 63391	Water vole droppings	Water vole feeding signs and droppings 	Water vole droppings 
SSSI Triangle Lagoon				

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
A1	TM 47067 64406	Nothing found	Nothing found	
A2	TM 47073 64411	Nothing found	Rat droppings 	
A3	TM 47080 64407	Nothing found	Nothing found	
A4	TM 47080 64405	Rat droppings	Nothing found	
A5	TM 47081 64395	Nothing found	Nothing found	
A6	TM 47082 64393	Nothing found	Nothing found	
A7	TM 47081 64377	Nothing found	Nothing found	
A8	TM 47083 64360	Nothing found	Water vole feeding signs (adjacent to float) and droppings	Feeding signs (adjacent to float) and droppings

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
			 	 
A9	TM 47084 64355	Rat droppings	Nothing found	Water vole droppings 
A10	TM 47086 64346	Nothing found	Feeding signs Droppings	Water vole droppings

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
				
Leiston Drain				
B1	TM 47299 64519	Water vole and rat droppings	Nothing found	Nothing found
B2	TM 47295 64515	Nothing found	Nothing found	Nothing found
B3	TM 47283 64511	Nothing found	Nothing found	Nothing found
B4	TM 47260 64504	Water vole droppings	Water vole feeding signs and droppings 	Nothing found
B5	TM 47256 64503	Nothing found	Nothing found	Nothing found

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
B6	TM 47225 64493	Water vole feeding station	Water vole feeding signs and droppings 	Nothing found
B7	TM 47237 64500	Nothing found	Nothing found	Water vole droppings 
B8	TM 47187 64479	Water vole droppings	Nothing found	Water vole droppings 
B9	TM 47180 64471	Nothing found	Nothing found	Nothing found

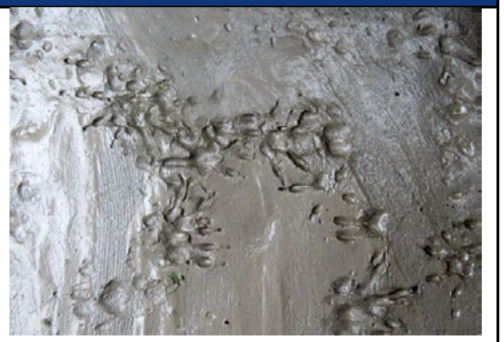
Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
B10	TM 47149 64461	Nothing found	Nothing found	Nothing found
Sizewell Drain				
C1	TM 47051 64155	Unsafe to check – water too high	Nothing found	Nothing found
C2	TM 47068 64172	Nothing found	Nothing found	Nothing found
C3	TM 47074 64181	Nothing found	Nothing found	Nothing found
C4	TM 47082 64194	Nothing found	Nothing found	Nothing found
C5	TM 47093 64204	Nothing found	Nothing found	Nothing found
C6	TM 47103 64215	Nothing found	Nothing found	Nothing found
C7	TM 47111 64223	Nothing found	Nothing found	Nothing found
C8	TM 47125 64234	Nothing found	Nothing found	Nothing found
C9	TM 47144 64256	Nothing found	Nothing found	Nothing found
C10	TM 47154 64268	Nothing found	Nothing found	Nothing found

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
C11	TM 47167 64278	Nothing found	Nothing found	Nothing found
C12	TM 47179 64298	Nothing found	Nothing found	Nothing found
C13	TM 47191 64310	Nothing found	Nothing found	Nothing found
C14	TM 47235 64351	Nothing found	Nothing found	Nothing found
C15	TM 47247 64368	Nothing found	Nothing found	Nothing found
C16	TM 47256 64372	Nothing found	Nothing found	Nothing found
C17	TM 47270 64389	Nothing found	Nothing found	Nothing found
C18	TM 47278 64399	Nothing found	Nothing found	Nothing found
C19	TM 47298 64422	Nothing found	Nothing found	Nothing found
C20	TM 47311 64434	Nothing found	Nothing found	Nothing found
Fen Meadow				
D1	TM 46980 63545	Nothing found	Nothing found	Nothing found

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
D2	TM 46997 63570	Nothing found	Nothing found	Nothing found
D3	TM 46985 63602	Nothing found	Nothing found	Nothing found
D4	TM 46992 63627	Nothing found	Nothing found	Nothing found
D5	TM 46995 63640	Nothing found	Nothing found	Nothing found
D6	TM 47000 63654	Nothing found	Nothing found	Nothing found
D7	TM 47004 63669	Nothing found	Nothing found	Nothing found
D8	TM 47006 63686	Nothing found	Nothing found	Nothing found
D9	TM 47008 63699	Nothing found	Nothing found	Nothing found
D10	TM 47011 63715	Nothing found	Nothing found	Nothing found
D11	TM 46985 63715	Nothing found	Nothing found	Nothing found
D12	TM 46985 63715	Nothing found	Nothing found	Nothing found
D13	TM 47018 63729	Nothing found	Nothing found	Nothing found

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
D14	TM 47026 63738	Nothing found	Nothing found	Nothing found
D15	TM 47023 63751	Nothing found	Nothing found	Nothing found
D16	TM 47021 63761	Nothing found	Nothing found	Nothing found
D17	TM 47018 63783	Nothing found	Nothing found	Nothing found
D18	TM 47010 63804	Nothing found	Nothing found	Nothing found
D19	TM 47003 63823	Nothing found	Nothing found	Nothing found
D20	TM 46985 63848	Nothing found	Nothing found	Nothing found
Mink Rafts				
01	TM 46878 64545	Not deployed until 30th Sept – not surveyed	Nothing found	Nothing found
02	TM 47291 64510	Not deployed until 30th Sept – not surveyed	Nothing found	Nothing found

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
03	TM 47330 64465	Not deployed until 30th Sept – not surveyed	Nothing found	Nothing found
04	TM 47120 64232	Not deployed until 30th Sept – not surveyed	Nothing found	Nothing found
05	TM 45395 63456	Not deployed until 30th Sept – not surveyed	Nothing found	Nothing found
06	TM 45174 69	Not deployed until 30th Sept – not surveyed	Water vole droppings and footprints 	Water vole droppings and footprints 

Float/Raft Reference	OS Grid Reference	Results: Frequency of Water Vole Activity Signs and Observations, other notes and photos (if applicable)		
		30th Sept – 2nd Oct	12th October	13th October
				

APPENDIX C: APPROVED ECOLOGY AND LANDSCAPE MANAGEMENT PLAN FOR ALDHURST FARM WATER VOLE AREA

Available here