

**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



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**Report for**

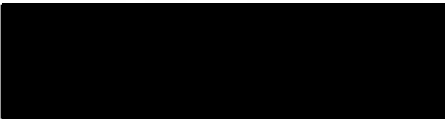
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**Main Contributors**

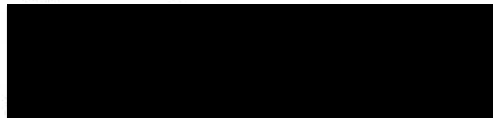
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## Document Revisions

No.	Details	Date
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# 1. Introduction

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## 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

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### 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<sup>1</sup> (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.

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<sup>1</sup>  $y = 1.48 + 0.683x$ , where  $y$  = number of water voles and  $x$  = number of latrines.

## 3. Results

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### 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**

<b>Transect (Figure 2.1)</b>	<b>Bordering Land Uses</b>	<b>Bank Profile<sup>2</sup></b>	<b>Depth (m)</b>	<b>Width (m)</b>	<b>Dominant Bankside Vegetation</b>
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

<sup>2</sup> 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 <sup>2</sup>	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 <sup>2</sup>	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 <sup>3</sup>	150	2	0	0	
6	100	1	34	1	
7	200	12	34	3	
8	100	3	1	0	
9a <sup>4</sup>	100	1	2	1	
9b <sup>4</sup>	80	0	0	0	
10a	120	5	8	2	
10b	90	9	15	4	Water vole nest in rushes
11 <sup>4</sup>	110	23	29	3	
12	160	4	0	0	
13 <sup>4</sup>	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.

<sup>3</sup> 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.

<sup>4</sup> 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
4			1 burrow	In the bank of a ditch
	17 latrines	On artificial latrine sites	18 latrines	On artificial latrine sites
	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
5	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	

### 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) <sup>5</sup>	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) <sup>1</sup> – entire sample:			8.14
No. of water voles per 100m (from mean of 22.91 latrines per 100m) <sup>1</sup> - most optimal habitat only *):			17.13
No. of water voles per 100m (from mean of 2.92 latrines per 100m) <sup>1</sup> - least suitable habitat only (†):			3.47

<sup>5</sup> 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

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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 100m of 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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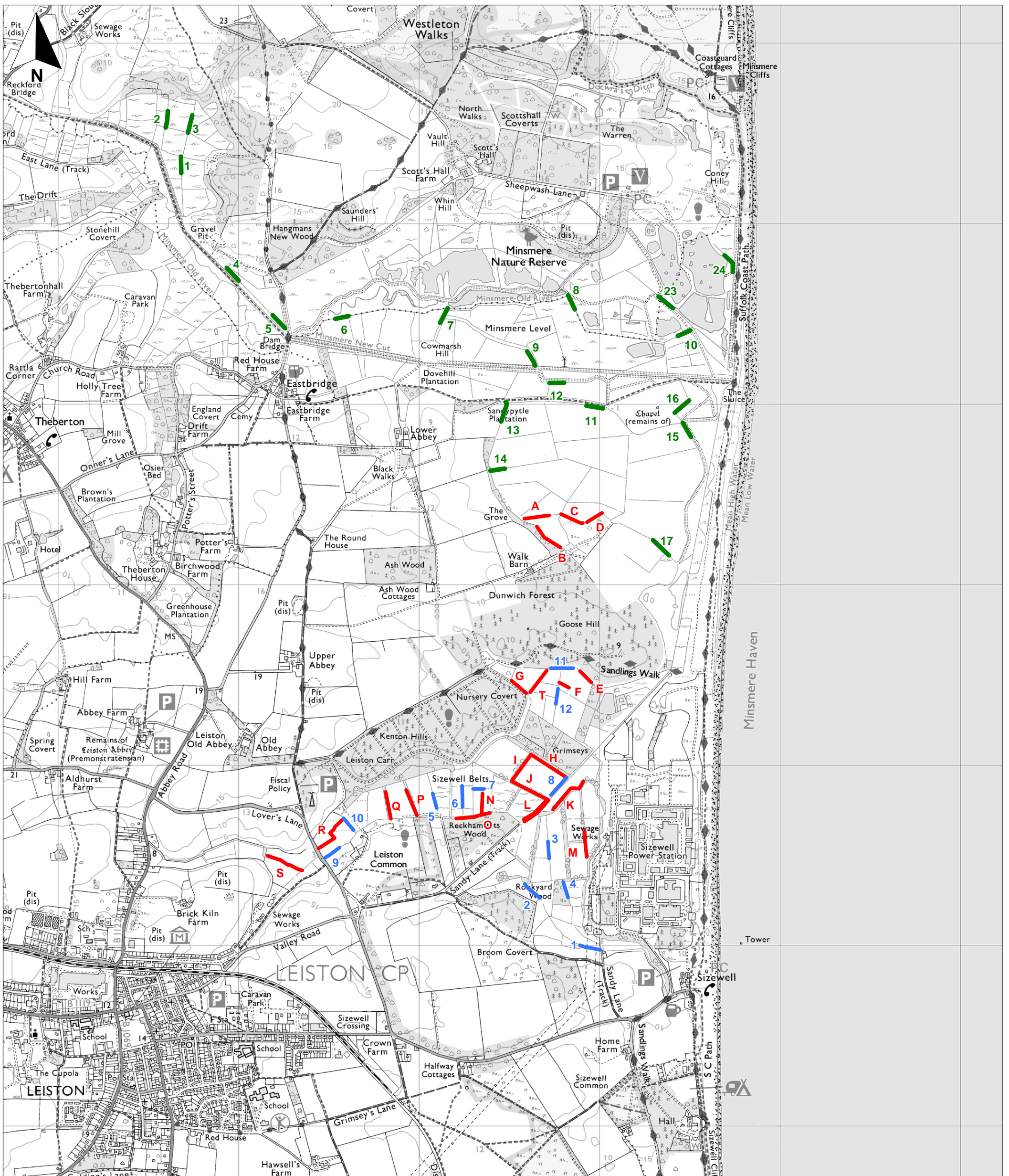
Suffolk Biodiversity Partnership (2003). *Species Action Plans: Water vole (Arvicola terrestris)*. Suffolk Local Biodiversity Action Plan. Available from: <http://www.suffolkbiodiversity.org/content/suffolkbiodiversity.org/PDFs/action-plans/watervole.pdf>

Suffolk Wildlife Trust. *Sizewell Land Management Annual Review*. Reports 1996-2007.

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## Figures

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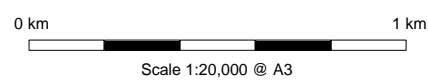
**Key:**

- AMEC 2007 survey transects (A-T)
- Royal Holloway University survey transects (1-12)
- RSPB survey transects (1-24)



Sizewell Water Vole  
Survey Report 2007-2009

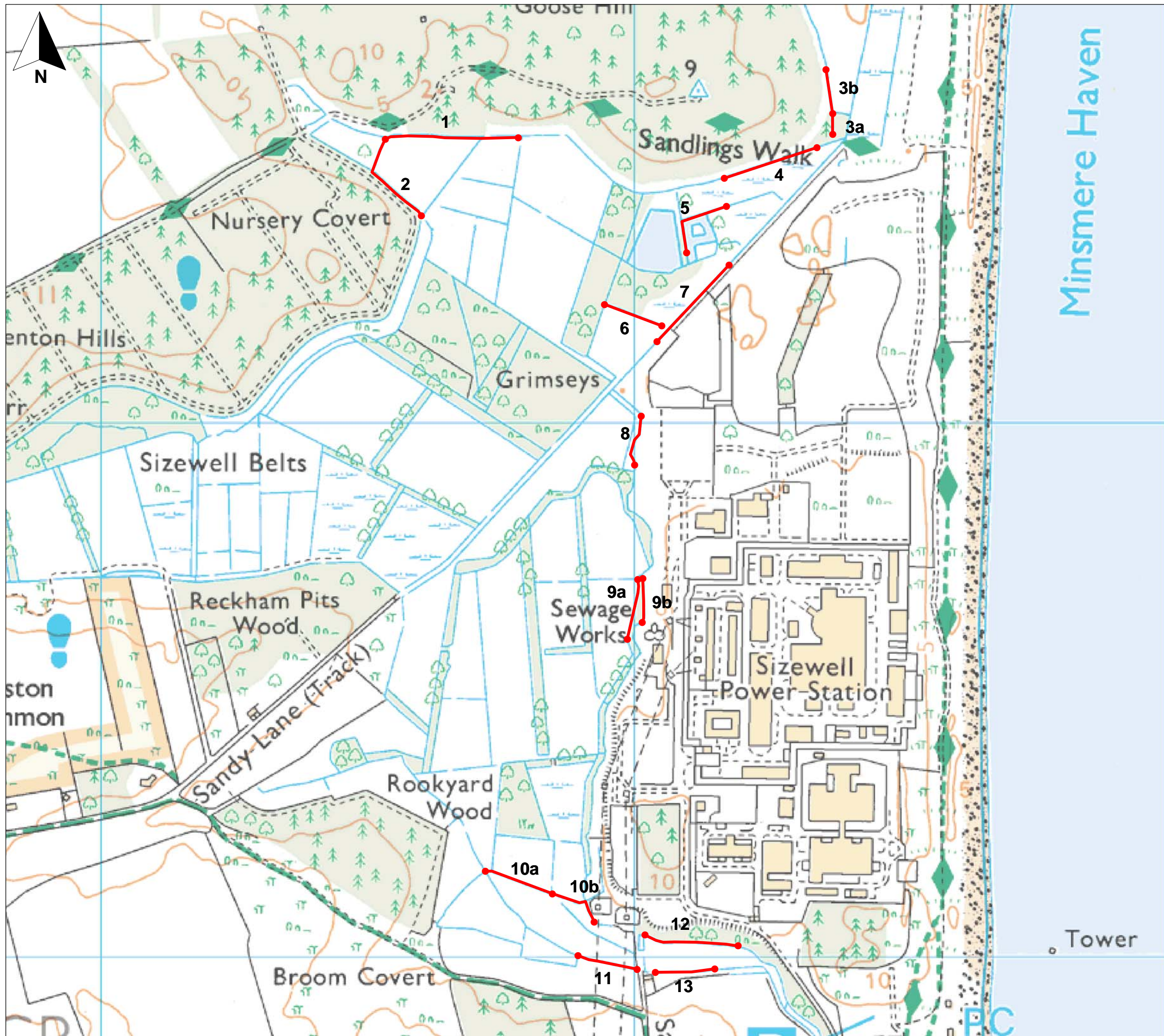
**Figure 2.1**  
Water Vole survey transects,  
AMEC 2007 and RHU / RSPB to 2007



June 2012  
28130-A420.wor tugwc







Key  
 Ditch transect

0 m 250 m  
 Scale 1:7000 @ A3



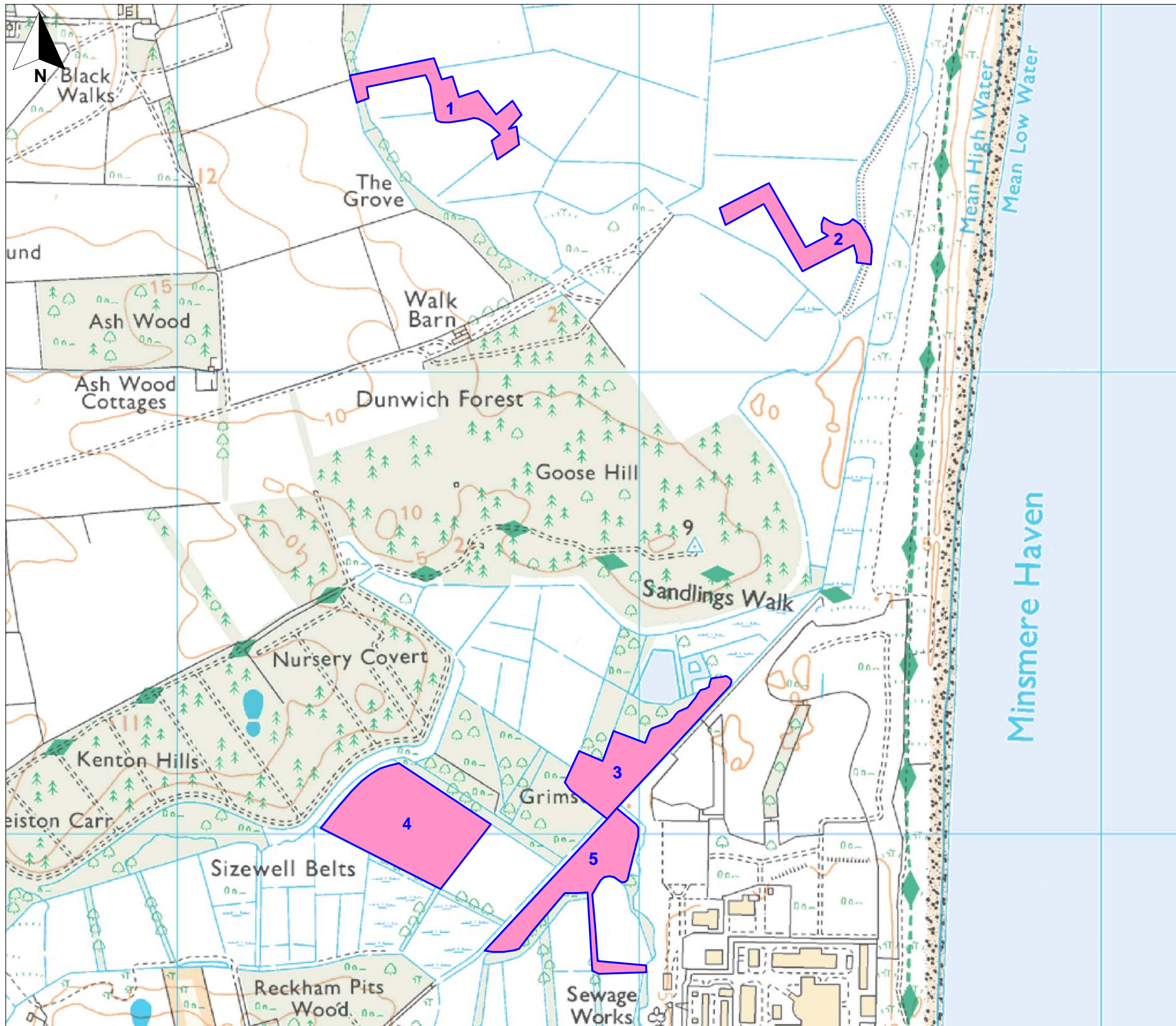
Sizewell Water Vole  
 Survey Report 2007-2009


**Figure 2.2**  
 Location of 2009 ditch survey transects

June 2012  
 28132-A421.wor tugwc



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**Key**  
 Reedbed survey transects

0 m 250 m  
 Scale 1:8000 @ A3



Sizewell Water Vole  
 Survey Report 2007-2009

**Figure 2.3**  
 Approximate locations of 2009 reedbed  
 survey transects

June 2012  
 28132-A422.wor tugwc



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# Appendix A Data Responses

3 Pages

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**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**

<b>Location</b>	<b>Grid Reference</b>	<b>Date</b>
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

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# WATER VOLE SURVEY FORM

## BACKGROUND INFORMATION

Site name/river

Site number  10km square  Grid ref

County  Water Authority

Recorder  Date

## HABITAT INFORMATION (mark features on map)

Survey distance

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)**

N Bankside trees

R Bushes

O Herbs

F Submerged weed

D Reeds/sedges

O Tall grass

A Short grass

**Disturbance:**

**Bank profile**

Flat < 10°

Shallow < 45° <sup>2nd half</sup>

Steep > 45° <sup>1st half</sup>

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**

Slow  Rapid  Fast

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  Moorhen

Waterfowl  Dipper

**Identified plants from feeding remains:**



# SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS (mark route surveyed and direction of flow)		ADJACENT LAND-USE CODES	
Mature trees		Erosion/land slip <b>BW</b>	
Over-hanging branches		Cattle pasture <b>CP</b>	
Fallen tree		Wood and heath <b>MH</b>	
Exposed roots		Rough pasture <b>RP</b>	
Pollarded tree		Wetland <b>WL</b>	
Sapling		Improved grass <b>IG</b>	
Scrub		Tilled land (crop) <b>TL</b>	
Hedgerow		Suburban/urban devel. (inc gardens) <b>URB</b>	
Fence		<b>Marshy grassland MG</b>	
Reed/sedge bed		<b>OTHER FEATURES</b>	
Flood bank		Roadbridge	
Artificial bank		Footbridge	
Earth cliff		Weir	
		Culvert	
		Ford	
	Outfall		
	Dredgings/spoil		
	Silt bars		
	Islands <b>mark position and size</b>		
<p><b>ADDITIONAL COMMENTS:</b></p> <p>water level management  signs of drying out  flood debris position  evidence of pollution</p> <p style="margin-left: 20px;">F - Water vole feeding remains  L - Water vole latrine</p>			

# 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            Date 04/10/07

## 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
- Earth <sup>1<sup>st</sup></sup> half
- Rock cliffs
- Earth cliffs <sup>2<sup>nd</sup></sup> half
- 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
- O  Herbs
- O  Submerged weed
- F  Reeds/sedges
- O  Tall grass
- O  Short grass

### Disturbance:

### Bank profile

- Flat < 10°
- Shallow < 45° <sup>1<sup>st</sup></sup> half
- Steep > 45° <sup>2<sup>nd</sup></sup> half
- 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

- Slow
- Rapid
- 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)		ADJACENT LAND-USE CODES	
Mature trees		Enclosed Area	BW
Over-hanging branches		Open pasture	CP
Fallen tree		Wood and near	MH
Exposed roots		Rough pasture	RP
Pollarded tree		Wetland	WL
Sapling		Improved grass	IG
Scrub		Tilled land (crop)	TL
Hedgerow		Suburban/urban devel. (inc gardens)	URB
Fence		Musky grass	MG
Reed/sedge bed		<b>OTHER FEATURES</b>	
Flood bank		Roadbridge	
Artificial bank		Footbridge	
Earth cliff		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          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

- 1m
- 1-2m
- 2-5m
- 5-10m
- 10-20m
- 20-40m
- > 40m

### Current

- Slow
- Rapid
- 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)		ADJACENT LAND-USE CODES
Mature trees		Embankment BW
Over-hanging branches		Concrete channel CP
Fallen tree		Moor and heath MH
Exposed roots		Rough pasture RP
Pollarded tree		Wetland WL
Sapling		Improved grass IG <i>Semi improved grass SIG</i>
Scrub		Tilled land (crop) TL
Hedgerow		Suburban/urban devel. (inc gardens) URB <i>Mowing grass MG</i>
Fence		OTHER FEATURES
Reed/sedge bed		Roadbridge
Flood bank		Footbridge
Artificial bank		Weir
Earth cliff		Culvert
		Ford
		Outfall
	Dredgings/spoil	
	Silt bars	
	Islands <b>mark position and size</b>	

### ADDITIONAL COMMENTS:

water level management

signs of drying out

flood debris position

evidence of pollution

**F** - water vole feeding remains

**L** - water vole lachine

**B** - water vole burrow

\* Area with good otter potential, various unconfirmed field signs present.

# WATER VOLE SURVEY FORM

## BACKGROUND INFORMATION

Site name/river

Site number  10km square  Grid ref

County  Water Authority

Recorder  Date

## HABITAT INFORMATION (mark features on map)

Survey distance

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
- 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

- 1m
- 1-2m
- 2-5m
- 5-10m
- 10-20m
- 20-40m
- > 40m

### Current

- Slow
- Rapid
- 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)		ADJACENT LAND-USE CODES
Mature trees		Brushwood
Over-hanging branches		BW
Fallen tree		CP
Exposed roots		Wood and near
Pollarded tree		MH
Sapling		RP
Scrub		Wetland
Hedgerow		Improved grass
Fence		IG
Reed/sedge bed		TL
Flood bank		Suburban/urban devel. inc. gardens
Artificial bank		URB
Earth cliff		Marshy grass
		MC
		TL
		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 other signs - large runs in bank, flattened vegetation, unconfirmed prints. Possible hole?

# 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               Date 05/10/07

## HABITAT INFORMATION (mark features on map)

Survey distance

120 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
- 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

- 1m
- 1-2m
- 2-5m
- 5-10m
- 10-20m
- 20-40m
- > 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


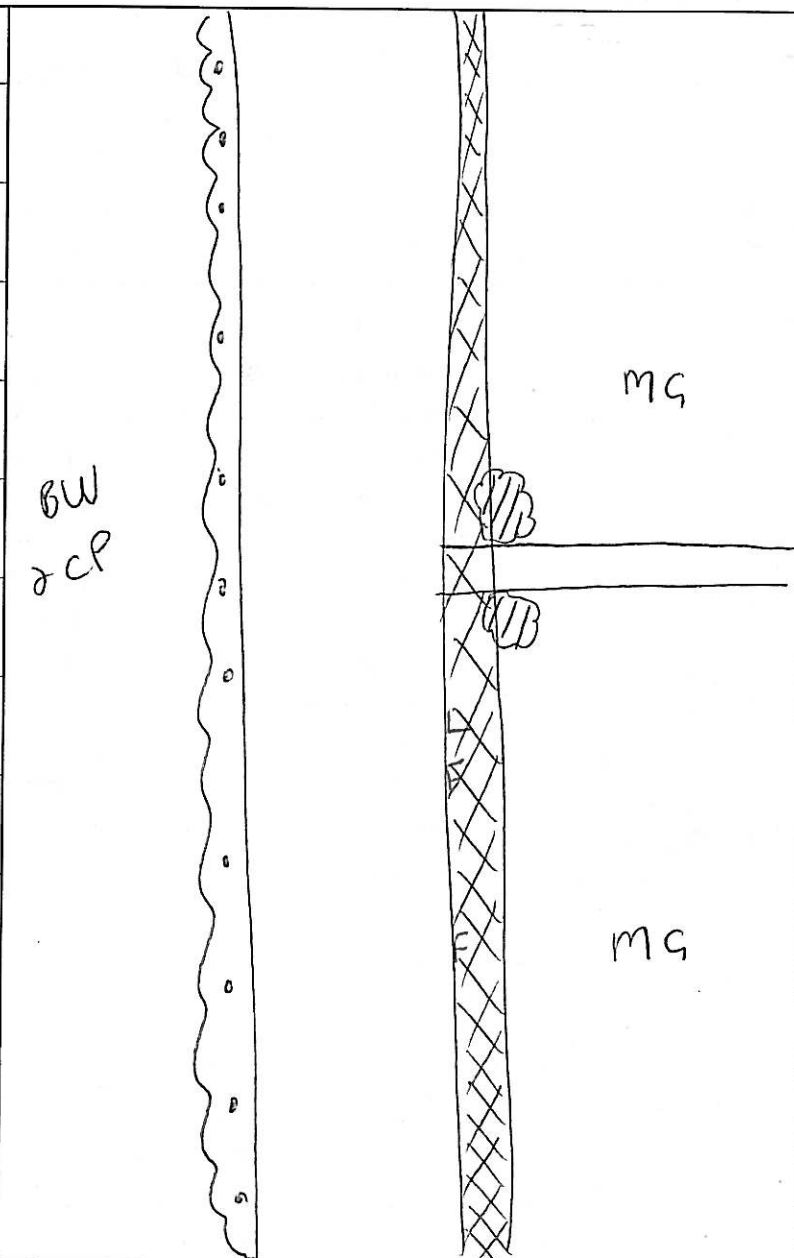






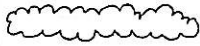
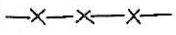


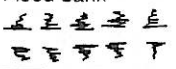

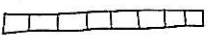

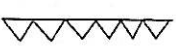

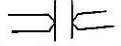
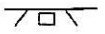

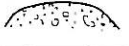
### Other wildlife

- 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)		ADJACENT LAND-USE CODES		
Mature trees 		Enclosed wood <b>BW</b>	Marshy grass <b>MG</b>	
Over-hanging branches 		Conifer plantation <b>CP</b>		
Fallen tree 		Moor and heath <b>MH</b>		
Exposed roots 		Rough pasture <b>RP</b>		
Pollarded tree 		Wetland <b>WL</b>		
Sapling 		Improved grass <b>IG</b>		
Scrub 		Tilled land (crop) <b>TL</b>		
Hedgerow 		Suburban/urban devel. (inc. gardens) <b>URB</b>		
Fence 		OTHER FEATURES		
Reed/sedge bed 		Roadbridge 		mark position and size
Flood bank 		Footbridge 		
Artificial bank 		Weir 		
Earth cliff 		Culvert 		
	Ford 			
	Outfall 			
	Dredgings/spoil 			
	Silt bars 			
	Islands			
<b>ADDITIONAL COMMENTS:</b> 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

Site number  10km square  Grid ref

County  Water Authority

Recorder  Date

## HABITAT INFORMATION (mark features on map)

Survey distance

### 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)

- N Bankside trees
- N Bushes
- R Herbs
- R Submerged weed
- A Reeds/sedges
- R 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

- 1m
- 1-2m
- 2-5m
- 5-10m
- 10-20m
- 20-40m
- > 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


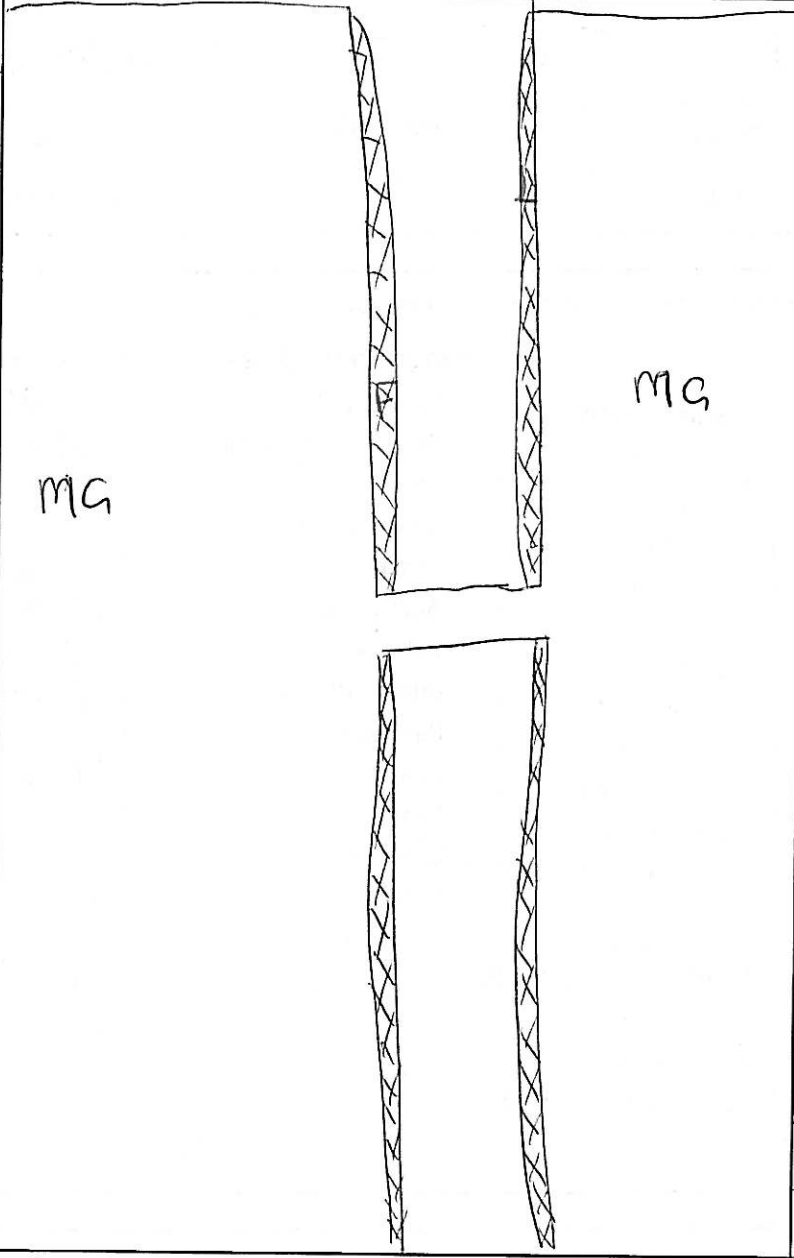






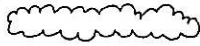
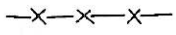


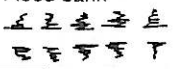

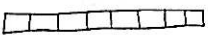

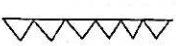

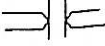


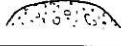
- Sightings
- Droppings
- Footprints/runs

### Other wildlife

- Kingfisher
- Heron
- Coot
- Moorhen
- Waterfowl
- Dipper

Identified plants from feeding remains:

# SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS (mark route surveyed and direction of flow)		ADJACENT LAND-USE CODES	
Mature trees 		Broadleaved wood <b>BW</b>	
Over-hanging branches 		Conifer plantation <b>CP</b>	
Fallen tree 		Moor and heath <b>MH</b>	
Exposed roots 		Rough pasture <b>RP</b>	
Pollarded tree 		Wetland <b>WL</b>	
Sapling 		Improved grass <b>IG</b>	
Scrub 		Tilled land (crop) <b>TL</b>	
Hedgerow 		Suburban/urban devel. (inc. gardens) <b>URB</b>	Marshy grass <b>MG</b>
Fence 		OTHER FEATURES	
Reed/sedge bed 		Roadbridge 	
Flood bank 		Footbridge 	
Artificial bank 		Weir 	
Earth cliff 		Culvert 	
		Ford 	
	Outfall 		
	Dredgings/spoil 		
	Silt bars 		
	Islands <b>mark position and size</b>		
<b>ADDITIONAL COMMENTS:</b>			
water level management			
signs of drying out			
flood debris position			
evidence of pollution			
<p>L Water vole latrine</p> <p>F Water vole feeding remains</p>			

# WATER VOLE SURVEY FORM

## BACKGROUND INFORMATION

Site name/river

Site number  10km square  Grid ref

County  Water Authority

Recorder  Date

## HABITAT INFORMATION (mark features on map)

Survey distance

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
- 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

- 1m
- 1-2m
- 2-5m
- 5-10m
- 10-20m
- 20-40m
- > 40m

### Current

- Slow
- Rapid
- Sluggish
- Static
- Fast

## 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




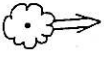




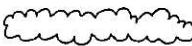
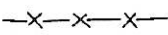


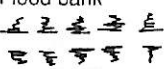

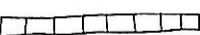

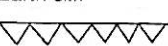




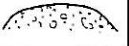
- Sightings
- Droppings
- Footprints/runs

### 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)		ADJACENT LAND-USE CODES	
Mature trees 	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">CP</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Overhanging trees all along this bank.</div> <div style="text-align: center;">MG</div> </div> <div style="text-align: center; margin-top: 20px;">   B                 </div>	Enclosed area <b>BW</b>	
Over-hanging branches 		Open pasture <b>CP</b>	
Fallen tree 		Wood and near <b>MH</b>	
Exposed roots 		Rough pasture <b>RP</b>	
Pollarded tree 		Wetland <b>WL</b>	
Sapling 		Improved grass <b>IG</b>	
Scrub 		Tilled land (crop) <b>TL</b>	
Hedgerow 		Suburban/urban devel. (inc. gardens) <b>URB</b>	marshy grass <b>MG</b>
Fence 		<b>OTHER FEATURES</b>	
Reed/sedge bed 		Roadbridge 	
Flood bank 		Footbridge 	
Artificial bank 		Weir 	
Earth cliff 		Culvert 	
	Ford 		
	Outfall 		
	Dredgings/spoil 		
	Silt bars 		
	Islands <b>mark position and size</b>		

**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 [REDACTED]      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
- 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)

- Bankside trees
- Bushes
- Herbs
- Submerged weed
- Reeds/sedges
- Tall grass
- 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
- > 40m
- 5-10m
- 10-20m
- 20-40m

### 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
- Moorhen
- Waterfowl
- Dipper

**Identified plants from feeding remains:**

# SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS (mark route surveyed and direction of flow)		ADJACENT LAND-USE CODES
Mature trees 		Enclosed area <b>BW</b>
Over-hanging branches 		Common pasture <b>CP</b>
Fallen tree 		Moor and heath <b>MH</b>
Exposed roots 		Rough pasture <b>RP</b>
Pollarded tree 		Wetland <b>WL</b>
Sapling 		Improved grass <b>IG</b>
Scrub 		Tilled land (crop) <b>TL</b>
Hedgerow 		Suburban/urban devel. (inc gardens) <b>URB</b>
Fence 		OTHER FEATURES
Reed/sedge bed 		Roadbridge 
Flood bank 		Footbridge 
Artificial bank 		Weir 
Earth cliff 		Culvert 
	Ford 	
	Outfall 	
	Dredgings/spoil 	
	Silt bars 	
	Islands <b>mark position and size</b>	
<b>ADDITIONAL COMMENTS:</b> 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               Date 05/10/07

## 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)**

Bankside trees

Bushes

Herbs

Submerged weed

Reeds/sedges

Tall grass

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**

Slow       Rapid       Fast

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       Moorhen

Waterfowl       Dipper

**Identified plants from feeding remains:**



# SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS (mark route surveyed and direction of flow)		ADJACENT LAND-USE CODES
Mature trees		Enclosed wood <b>BW</b>
Over-hanging branches		Conifer plantation <b>CP</b>
Fallen tree		Moorland heath <b>MH</b>
Exposed roots		Rough pasture <b>RP</b>
Pollarded tree		Wetland <b>WL</b>
Sapling		Improved grass <b>IG</b>
Scrub		Tilled land (crop) <b>TL</b>
Hedgerow		Suburban/urban devel. (inc gardens) <b>URB</b>
Fence		OTHER FEATURES
Reed/sedge bed		Roadbridge
Flood bank		Footbridge
Artificial bank		Weir
Earth cliff		Culvert
		Ford
		Outfall
	Dredgings/spoil	
	Silt bars	
	Islands <b>mark position and size</b>	
<b>ADDITIONAL COMMENTS:</b> 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

Site number  10km square  Grid ref

County  Water Authority

Recorder  Date

## HABITAT INFORMATION (mark features on map)

Survey distance

**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)**

Bankside trees

Bushes

Herbs

Submerged weed

Reeds/sedges

Tall grass

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**

Slow     Rapid     Fast

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








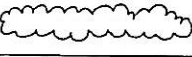
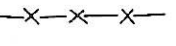


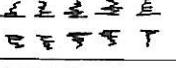

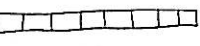

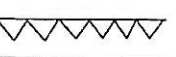

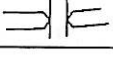


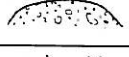
**Other wildlife**

Kingfisher     Heron     Coot     Moorhen

Waterfowl     Dipper

**Identified plants from feeding remains:**

# SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS (mark route surveyed and direction of flow)		ADJACENT LAND-USE CODES
Mature trees 		Enclosed wood <b>BW</b>
Over-hanging branches 		Open garden <b>CP</b>
Fallen tree 		Woodland near <b>MH</b>
Exposed roots 		Rough pasture <b>RP</b>
Pollarded tree 		Wetland <b>WL</b>
Sapling 		Improved grass <b>IG</b>
Scrub 		Tilled land (crop) <b>TL</b>
Hedgerow 		Suburban/urban devel. (inc gardens) <b>URB</b>
Fence 		<b>OTHER FEATURES</b>
Reed/sedge bed 		Roadbridge 
Flood bank 		Footbridge 
Artificial bank 		Weir 
Earth cliff 		Culvert 
	Ford 	
	Outfall 	
	Dredgings/spoil 	
	Silt bars 	
	Islands <b>mark position and size</b>	
<b>ADDITIONAL COMMENTS:</b> water level management signs of drying out flood debris position evidence of pollution		

# WATER VOLE SURVEY FORM

## BACKGROUND INFORMATION

Site name/river

Site number  10km square  Grid ref

County  Water Authority

Recorder  Date

## HABITAT INFORMATION (mark features on map)

Survey distance

### 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

- 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)		ADJACENT LAND-USE CODES
Mature trees		Broadleaved Wood <b>BW</b>
Over-hanging branches		Open pasture <b>OP</b>
Fallen tree		Moorland heath <b>MH</b>
Exposed roots		Rough pasture <b>RP</b>
Pollarded tree		Wetland <b>WL</b>
Sapling		Improved grass <b>IG</b>
Scrub		Tilled land (crop) <b>TL</b>
Hedgerow		Suburban/urban devel. (inc. gardens) <b>URB</b>
Fence		OTHER FEATURES
Reed/sedge bed		Roadbridge
Flood bank		Footbridge
Artificial bank		Weir
Earth cliff		Culvert
	Ford	
	Outfall	
	Dredgings/spoil	
	Silt bars	
	Islands <b>mark position and size</b>	
	herbs	
<b>ADDITIONAL COMMENTS:</b> 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                      Date 05/10/07

## 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)

- Bankside trees
- Bushes
- Herbs
- Submerged weed
- Reeds/sedges
- Tall grass
- 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		<b>ADJACENT LAND-USE CODES</b>		
Over-hanging branches		Enclosed area <b>BW</b>		
Fallen tree		Other category <b>CP</b>		
Exposed roots		Moor and heath <b>MH</b>		
Pollarded tree		Rough pasture <b>RP</b>		
Sapling		Wetland <b>WL</b>		
Scrub		Improved grass <b>IG</b>		
Hedgerow		Tilled land (crop) <b>TL</b>		
Fence		Suburban/urban devel. (inc gardens) <b>URB</b>	<i>Marshy grass MG</i>	
Reed/sedge bed		<b>OTHER FEATURES</b>		
Flood bank		Roadbridge	<i>MG - WL</i>	
Artificial bank		Footbridge		
Earth cliff		Weir		
		Culvert		
		Ford		
	Outfall			
	Dredgings/spoil			
	Silt bars			
	Islands <b>mark position and size</b>			
<p><b>ADDITIONAL COMMENTS:</b></p> <p>water level management  signs of drying out  flood debris position  evidence of pollution</p> <p style="margin-left: 100px;"><i>L - water vole latrine</i></p> <p style="margin-left: 100px;"><i>F - feeding remains</i></p>				

# WATER VOLE SURVEY FORM

## BACKGROUND INFORMATION

Site name/river

Site number  10km square  Grid ref

County  Water Authority

Recorder  Date

## HABITAT INFORMATION (mark features on map)

Survey distance

**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)**

Bankside trees

Bushes

Herbs

Submerged weed

Reeds/sedges

Tall grass

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**

Slow     Rapid     Fast

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     Moorhen

Waterfowl     Dipper

**Identified plants from feeding remains:**



# SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS (mark route surveyed and direction of flow)		ADJACENT LAND-USE CODES	
Mature trees		Enclosed Area <b>BW</b>	
Over-hanging branches		Open pasture <b>OP</b>	
Fallen tree		Moor and heath <b>MH</b>	
Exposed roots		Rough pasture <b>RP</b>	
Pollarded tree		Wetland <b>WL</b>	
Sapling		Improved grass <b>IG</b>	
Scrub		Tilled land (crop) <b>TL</b>	
Hedgerow		Suburban/urban devel. (inc. gardens) <b>URB</b>	Mixing grass MG
Fence		OTHER FEATURES	
Reed/sedge bed		Roadbridge	
Flood bank		Footbridge	
Artificial bank		Weir	
Earth cliff		Culvert	
		Ford	
	Outfall		
	Dredgings/spoil		
	Silt bars		
	Islands <b>mark position and size</b>		
<b>ADDITIONAL COMMENTS:</b> 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

Site number  10km square  Grid ref

County  Water Authority

Recorder  Date

## HABITAT INFORMATION (mark features on map)

Survey distance

### 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

- 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)			ADJACENT LAND-USE CODES
Mature trees			Erosion/over-wood <b>BW</b>
Over-hanging branches		Cattle pasture <b>CP</b>	
Fallen tree		Woodland heath <b>MH</b>	
Exposed roots		Rough pasture <b>RP</b>	
Pollarded tree		Wetland <b>WL</b>	
Sapling		Improved grass <b>IG</b>	
Scrub		Tilled land (crop) <b>TL</b>	
Hedgerow		Suburban/urban devel. (inc gardens) <b>URB</b>	<i>Marshy grass MG</i>
Fence		OTHER FEATURES	
Reed/sedge bed		Roadbridge	
Flood bank		Footbridge	
Artificial bank		Weir	
Earth cliff		Culvert	
		Ford	
		Outfall	
	Dredgings/spoil		
	Silt bars		
	Islands <b>mark position and size</b>		

**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            Date 05/10/07

## HABITAT INFORMATION (mark features on map)

Survey distance

150 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)**

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**

1m  1-2m  2-5m

5-10m  10-20m  20-40m  > 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  Moorhen

Waterfowl  Dipper

**Identified plants from feeding remains:**

# SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS (mark route surveyed and direction of flow)		ADJACENT LAND-USE CODES
Mature trees		Bracken BW
Over-hanging branches		Common CP
Fallen tree		Wood and heath MH
Exposed roots		Rough pasture RP
Pollarded tree		Wetland WL
Sapling		Improved grass IG
Scrub		Tilled land (crop) TL
Hedgerow		Suburban/ urban devel. (inc. gardens) URB
Fence		Murshy grass MG
Reed/sedge bed		<b>OTHER FEATURES</b>
Flood bank		Roadbridge
Artificial bank		Footbridge
Earth cliff		Weir
	Culvert	
	Ford	
	Outfall	
	Dredgings/ spoil	
	Silt bars	
	Islands <b>mark position and size</b>	
<b>ADDITIONAL COMMENTS:</b> 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

Site number  10km square  Grid ref

County  Water Authority

Recorder  Date

## HABITAT INFORMATION (mark features on map)

Survey distance

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)**

Bankside trees

Bushes

Herbs

Submerged weed

Reeds/sedges

Tall grass

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**

Slow     Rapid     Fast

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     Moorhen

Waterfowl     Dipper

**Identified plants from feeding remains:**

# SKETCH OF SITE – vole activity indicated (if any)

KEY TO SYMBOLS (mark route surveyed and direction of flow)		ADJACENT LAND-USE CODES
Mature trees		Enclosed wood <b>BW</b>
Over-hanging branches		Open pasture <b>OP</b>
Fallen tree		Moorland heath <b>MH</b>
Exposed roots		Rough pasture <b>RP</b>
Pollarded tree		Wetland <b>WL</b>
Sapling		Improved grass <b>IG</b>
Scrub		Tilled land (crop) <b>TL</b>
Hedgerow		Suburban/urban devel. (inc gardens) <b>URB</b>
Fence		OTHER FEATURES
Reed/sedge bed		Roadbridge
Flood bank		Footbridge
Artificial bank		Weir
Earth cliff		Culvert
		Ford
	Outfall	
	Dredgings/spoil	
	Silt bars	
	Islands <b>mark position and size</b>	
<b>ADDITIONAL COMMENTS:</b> water level management signs of drying out flood debris position evidence of pollution	<i>L Water vole latrine</i>	herbs standing dead tree

# WATER VOLE SURVEY FORM

## BACKGROUND INFORMATION

Site name/river

Site number  10km square  Grid ref

County  Water Authority

Recorder  Date

## HABITAT INFORMATION (mark features on map)

Survey distance

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)

- Bankside trees
- Bushes
- Herbs
- Submerged weed
- Reeds/sedges
- Tall grass
- 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

- 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

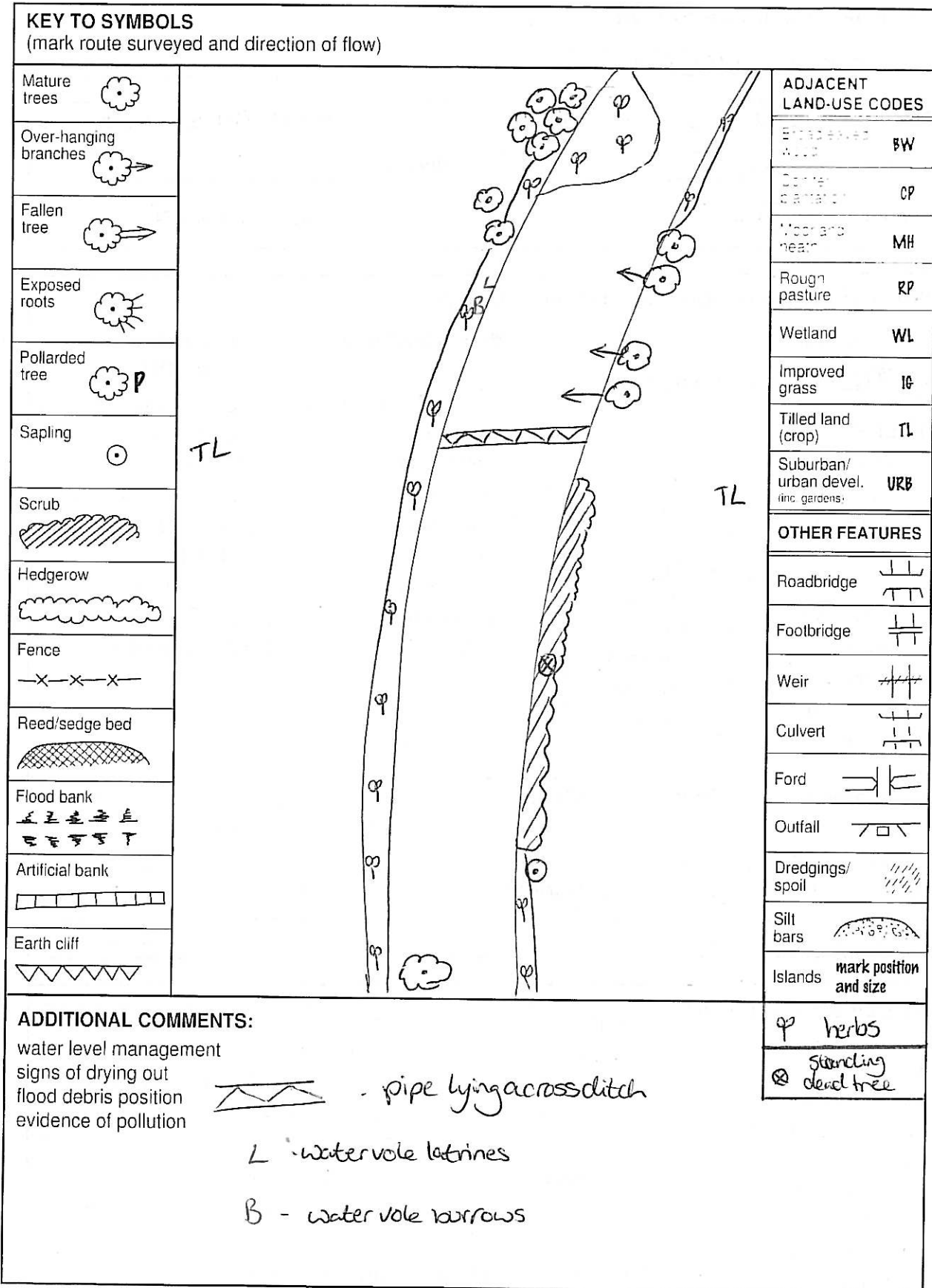
### Other wildlife

- Kingfisher
- Heron
- Coot
- Waterfowl
- Moorhen
- Dipper

Identified plants from feeding remains:



# SKETCH OF SITE – vole activity indicated (if any)



# WATER VOLE SURVEY FORM

## BACKGROUND INFORMATION

Site name/river

Site number  10km square  Grid ref

County  Water Authority

Recorder  Date

## HABITAT INFORMATION (mark features on map)

Survey distance

### 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)

- N Bankside trees
- N Bushes
- F Herbs
- A Submerged weed
- A Reeds/sedges
- O Tall grass
- O Short grass

### Disturbance:

### Bank profile

- Flat < 10°
- Shallow < 45°
- Steep > 45°
- Vertical/undercut

### Depth

- < 0.5m
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- 1-2m
- > 2m

### Width

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- > 40m

### Current

- Slow
- Rapid
- 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		<b>ADJACENT LAND-USE CODES</b>		
Over-hanging branches		Exposed water <b>BW</b>		
Fallen tree		Cattle plantations <b>CP</b>		
Exposed roots		Moor and heath <b>MH</b>		
Pollarded tree		Rough pasture <b>RP</b>		
Sapling		Wetland <b>WL</b>		
Scrub		Improved grass <b>IG</b>		
Hedgerow		Tilled land (crop) <b>TL</b>		
Fence		Suburban/urban devel. (inc gardens) <b>URB</b>	<i>Marshy grass</i> <b>MG</b>	
Reed/sedge bed		<b>OTHER FEATURES</b>		
Flood bank		Roadbridge		
Artificial bank		Footbridge		
Earth cliff		Weir		
		Culvert		
		Ford		
	Outfall			
	Dredgings/spoil			
	Silt bars			
	Islands <b>mark position and size</b>			
<b>ADDITIONAL COMMENTS:</b> water level management signs of drying out flood debris position evidence of pollution				