**Cambridge Waste Water Treatment Plant Relocation Project**
Anglian Water Services Limited

# Appendix 8.22:Natural England Ghost Licence Method Statement Water Vole

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# 1 Introduction

## 1.1 Aims and Objectives of this Method Statement

1.1.1 This technical method statement provides information to support a licence application for works which will impact upon water vole (*Arvicola amphibius*). Water vole is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), receiving full protection since 2008. It is against the law to:

- intentionally capture, kill or injure water vole;
- intentionally or recklessly damage, destroy or block access to their places of shelter or protection;
- intentionally or recklessly disturb them in a place of shelter or protection; and
- possess, sell, control or transport live or dead water vole.

1.1.2 If found guilty of an offence, punishment can include an unlimited fine and a six-month prison sentence.

1.1.3 The project has the potential to impact upon water vole and could result in damage to burrows and habitat suitable for water vole as well as destruction of burrows, and there is a risk of killing water vole. Details of this and water vole evidence identified are included in the Water Vole Technical Appendix in Appendix A. A full suite of mitigation measures is set out within this method statement which will afford the species an appropriate and proportionate level of protection throughout the duration of the scheme programme.

1.1.4 This document provides information based on survey information up to Summer 2022 (prior to planning consent) and is considered a “ghost method statement”, i.e. a draft method statement. Any design or methodology amendments following planning consent being granted, or new survey information prior to construction being available, will inform the final method statement submitted to Natural England in support of a licence once all consents are in place.

1.1.5 This document sets out the methods for the activities which will be undertaken as part of the development and could harm water vole. These include (but are not limited to):

- Habitat loss (watercourses, waterbodies and the associated bank habitat within 5m);
- Changes to water quality;
- Changes to water flow;
- Changes to habitat as a result of alterations to groundwater conditions;
- Fragmentation of existing habitat;
- Disturbance;

- Loss of burrows; and,
- Death or injury of animals as a result of construction activity.

1.1.6 The aim of this method statement is to:

- Present the results of the surveys for water vole, including habitat to be affected;
- Provide an up-to-date assessment of likely impacts on the impacts of the scheme on water vole;
- Set out what alternatives have been considered and, where possible, have been implemented to eliminate or reduce impacts;
- Outline the water vole mitigation strategy; and,
- Provide displacement and mitigation methodology so that Proposed Development works can be carried out effectively, staying within the terms of the licence and the law.

# 2 About the Application

## 2.1 Proposed Development details

2.1.1 The address of the Proposed Development and developer contact details are included within Table 2-1 below:

**Table 2-1: Proposed Development and developer details**

| Address |
|---|
| Proposed Development: (No physical address yet) OSG: TL 49534 60984. A14/Low Fen Drove Way, Horningsea, approximate post code is: CB25 9AG |
| Developer: Anglian Water Limited, Lancaster House, Lancaster Way, Ermine Business Park, Huntington, Cambridgeshire, PE29 6YJ |

*Source: Mott MacDonald, 2022.*

2.1.2 The Proposed Development is located between Ordnance Survey Grid References (OSGR) TF63862 19181 and TF64119 19336.

## 2.2 Purpose of the works

### Description of proposed works likely to impact on water vole

2.2.1 The Proposed Development comprises the relocation of the Cambridge Waste Water Treatment Plant (WWTP) from its existing site on land adjoining the north eastern side of the city of Cambridge, to a new location. The relocation will enable South Cambridgeshire District Council and Cambridge City Council's long held ambition to develop a new low-carbon city district on Cambridge's last major brownfield site, known as North East Cambridge. The site is an important component of the First Proposals (preferred options) for the new Greater Cambridge Local Plan that were subject to public consultation in late 2021. The relocation of the existing waste water treatment facility will enable this new district to come forward and deliver 8,350 homes, 15,000 new jobs and a wide range of community, cultural and open space facilities in North East Cambridge.

### Proposed licensable activity

2.2.2 Water voles have been confirmed or are assumed present in 26 waterbodies, six of which will be subject to permanent or temporary habitat loss. Displacement of water voles will be required within these ditches; 50m of water vole habitat will be permanently lost and up to 120m will be temporarily lost. The amount of temporary habitat loss will be confirmed at the point of the final design. An estimate of the habitat to be affected is included in Table 4-1.

2.2.3 The lengths of ditch to be impacted will be subject to water vole displacement, the final stage of which is a destructive search of the areas where displacement has been undertaken.

2.2.4 This document provides information based on survey information collected up until Summer 2022 (prior to planning consent) and is considered a "ghost method statement."

2.2.5 Design or methodology amendments following planning consent being granted or new survey information will inform the final method statement submitted to Natural England in support of a licence.

**Details of nearby projects which may have affected the same population of water vole as this application in the last 5 years or next 5 years.**

2.2.6 No other water vole development licences are required as part of this project and there is no known licensing overlap with any other project.

**Good Practice**

2.2.7 The water vole surveys and mitigation strategies implemented at the Proposed Development will be carried out in accordance with good practice methods, defined within the latest Water Vole Conservation Handbook (Strachan et al, 2011) and the Water Vole Mitigation Handbook (Dean, Strachan, Gow, & Andrews, 2016).

# 3 About the site and survey

## 3.1 Description of habitats and features of the Proposed Development

3.1.1 The area is an open landscape of large fields, separated by low hedgerows and drainage ditches and woodland belts along field boundaries and around settlement edges. The A14, electricity pylons and powerlines are prominent features of the landscape. The River Cam towpath, Fen Rivers Way, Harcamlow Way and the cycle path along Horningsea Road provide important recreational walking and cycling routes between Cambridge and the landscape to the north-east. There are gentle undulations in the landscape which appears to be almost flat but generally slopes gently down towards the River Cam.

## 3.2 Describe the survey effort and methods

**Desk study**

3.2.1 The aim of the desk study was to collate and review existing information about the Proposed Development and its surroundings to inform the design of subsequent water vole surveys and inform the impact assessment for the project.

3.2.2 A data search was undertaken in 2021 to determine the presence of water vole records.

3.2.3 Results from a biological records search undertaken to obtain records of protected or notable species within a 5km radius of a central point (grid reference: TL 49740 61214) in the proposed WWTP are discussed within this section. Records were provided by the Cambridgeshire and Peterborough Environmental Records Centre. Biological records up to 10 years old were considered as part of the desk study.

**Field survey**

3.2.4 Water vole surveys were undertaken on all suitable watercourses within the Scheme Order Limits plus a 100m buffer.

3.2.5 The field surveys comprised two parts; the habitat assessment and the survey for water vole field signs. Two suitably experienced ecologists from Mott MacDonald carried out the habitat assessments and water vole surveys. The habitat assessments occurred concurrently with the water vole field signs survey and involved walking the banks of the watercourses, and within the channel when it was safe to do so.

3.2.6 The habitat assessment undertaken for each of the ditch sections considered the following factors (Dean, Strachan, Gow, & Andrews, 2016):

- Bank profile, channel profile and characteristics and water levels;
- Habitat types present (indication of abundance using DAFOR scale);
- Predominant bank substrate;
- Availability of food sources;
- Vegetation structure (particularly the extent of suitable marginal vegetation);
- Level of shading (%);
- Watercourse depth and width (m);
- Rate of flow;
- Disturbance levels;
- Bordering land use; and
- Connectivity with other areas of suitable or sub-optimal habitat.

3.2.7 Disturbance levels were assessed using the follow categories:

- No disturbance – no people or noise pollution;
- Low disturbance – few people, some noise pollution;
- Moderate disturbance – people present, close to areas of human use; and,
- High disturbance – frequent use by people, noise pollution present.

3.2.8 During each survey, the banks of each waterbody (a minimum 5m from the waterbody and further where possible) were inspected for signs of use by water vole and each type of sign was recorded. Field signs recorded included presence of:

- Latrines;
- Burrows (both active and inactive);
- Runs;
- Footprints;
- Feeding remains;
- Individual droppings;

- Sightings and/or sounds (characteristic sound entering the water) of individuals.

### Waterbeach Raft Surveys

3.2.9 After one survey carried out on foot it was decided that raft surveys would be more appropriate for the ditches located in the Waterbeach area for health and safety reasons. So, instead of a second survey visit using conventional walkover methodology in ditches, water vole rafts were used to survey the ditches within 100m of the Waterbeach Pipeline. Refer to the Water Vole Technical Appendix in Appendix A for these locations.

3.2.10 Raft surveys involved the installation of floating rafts made of insulation board, approximately 0.45x0.3m in size. The rafts were placed in the channel, approximately every 15m and attached to the bank using string and a cane.

3.2.11 The rafts were then checked every two weeks for six visits. Binoculars were used to check rafts when the channel was difficult to access.

3.2.12 Water vole are known to use floating materials to deposit latrines, so raft surveys are a good way of detecting water vole presence when access into the channel is difficult (Dean, Strachan, Gow, & Andrews, 2016). Waterbodies that underwent raft surveys are detailed in the Water Vole Technical Appendix (Appendix A).

### Survey Timings

3.2.13 Water vole surveys were undertaken between April 2021 and August 2022. Two visits were undertaken in the proposed WWTP area, one in the first half of the season (mid-April to June inclusive) and one in the second half of the season (July to September inclusive). Visits were undertaken three months apart in accordance with Dean et al. (2016)

3.2.14 Six visits were undertaken in the Waterbeach area between May and August. These visits were made every two weeks.

3.2.15 Different sections of the study area were surveyed on different dates throughout the season. This is partly owing to the land access availability with specific landowners and changes in design as the Proposed Development progressed. Refer to the Water Vole Technical Appendix (Appendix A) which highlights the different survey sections.

3.2.16 Surveys were completed in suitable weather conditions on the following dates and in the following areas:

Proposed WWTP and associated ditches, River Cam and outfall location:

- visit one: 27 and 28 April 2021; 10 and 11 May 2021; and
- visit two: 02, 03, 06 and 24 August 2021.

Waterbeach Pipeline:

- visit one: 13, 16, 28 and 30 September 2021.

After this visit, six raft surveys completed as follows;

- visit one: 05 and 06 May 2022;
- visit two: 18 and 19 May 2022;
- visit three: 9 and 10 June 2022;
- visit four: 22 and 24 June 2022;
- visit five: 07 and 08 July 2022; and
- visit six: 15 and 16 August 2022.

3.2.17 Visit details are provided in the Water Vole Technical Appendix (Appendix A).

### Predicting the number of water voles

3.2.18 To estimate the number of water voles present within each section, the number of latrines identified were subject to the following standard calculation, as described in Morris et al, 1998:

*Estimated water vole numbers = 1.48 + (0.683 x (number of latrines))*

3.2.19 The numbers resulting from the above calculation were rounded up to the next whole number. These results are presented in Section 3.3 of this report. This calculation was used on each section of watercourse (Morris, 1998). It is not possible to use latrine counts to make robust calculations of population sizes and therefore these figures are used as a guide only.

3.2.20 Water vole populations are likely to be higher later in the year, after the peak breeding season (mid-April to mid-September). Water vole can produce 2-5 litters of young annually (Strachan et al, 2011), so population calculations using latrine counts are likely to give higher results later in the breeding season. Water vole are short lived; the majority of individuals survive fewer than two winters (Strachan et al, 2011), so populations do fluctuate throughout the year.

3.2.21 A second method to estimate population size of water voles present within each section was also used. The number of latrines identified per approximate 100m section of ditch were used in accordance with Dean et al. (2016) to determine whether populations are low, medium or high. Details of this are shown in Table Table 3-1 below and population estimates per section are shown in Table 3-3.

**Table 3-1: Estimated population levels based on latrines per 100m of bankside habitat**

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

*Source: Dean et al, 2016.*

3.2.22 The number of 100m sections along the length of the ditch was rounded up for each section to minimise the risk of underestimating the population size of water vole.

### Survey Limitations and Assumptions

3.2.23 Biological records obtained from third parties and presented in the desk study do not represent a full and complete species list for the area. They are mostly given by individuals on an ad hoc basis, often meaning there are areas of deficiency in the data. This is not considered to be a significant limitation because surveys were carried out throughout all suitable habitat within 100m of the Scheme Order Limits. No areas were ruled out based on the results of the desk study.

3.2.24 Five waterbodies (WB001, WB012, WB020, WB035, WB260) have dense vegetation which inhibited access to sections of the watercourse; therefore, a robust search for field signs could not be undertaken along the entire length of each waterbody.

3.2.25 The significance of this limitation for each waterbody is outlined in Table 3-2 below.

**Table 3-2: Survey Limitations**

| Waterbody ID | Limitation | Significance of limitation |
|---|---|---|
| WB001, WB260 | Not all latrines may have been identified and therefore this may represent a limitation to calculation of the number of water voles. | This is not seen to be a limitation to the licence as trapping and translocation will not be used in this location. |
| WB012, WB020 | Adjacent to River Cam and WB001 where water vole populations were recorded | Pre-construction checks should be undertaken and a 5m buffer should be maintained around the waterbodies if water voles are present |
| WB035 | Connected to WB260 and WB105 where signs recorded along both watercourses | Presence also assumed within WB035 |

*Source: Mott MacDonald, 2022*

3.2.26 Many of the watercourses on Proposed Development are well connected and the absence of field signs in one section does not mean water vole is absent from the whole watercourse. Water vole is a highly mobile species and may use different watercourses throughout the varying seasons. This has been accounted for by assuming presence in sections of watercourse well connected to others with signs present and similar habitat, as detailed in Section 3.3.

3.2.27 Raft surveys were carried out in the Waterbeach area following the first check (undertaken on foot). Five rather than six raft survey checks were caried out on waterbodies WB123, WB055 and WB215. The landowner here removed the rafts without informing the survey team. Missing the final visit does not affect the results because evidence of water vole had already been confirmed before raft removal. In addition, all three ditches had dried out on the fifth visit.

3.2.28 Some sections of ditch were heavily overgrown during the surveys, so a thorough search for field signs could not always be undertaken. The ditches were more overgrown during the late survey season visits, which may have inhibited the identification of field signs. Field signs are therefore likely to be under-recorded during the surveys and population estimates given could possibly be underestimated.

## 3.3 Water vole survey results

### Desk Study Results

3.3.1 The desk study returned 11 records of water vole within a 5km radius from the Scheme Order Limits. Records included water vole field signs such as latrines, feeding signs and a sighting of a juvenile.

3.3.2 There are no statutory or non-statutory designated sites with water vole as reason for their designation returned with 10km of the Scheme Order Limits.

3.3.3 Water vole records were identified along the River Cam and within the existing WWTP.

3.3.4 Desk study results can be found in the Water Vole Technical Appendix (Appendix A).

### Field Signs

3.3.5 Water vole signs were identified on 31 watercourses within and immediately adjacent to the Scheme Order Limits. Waterbodies with the highest number of signs were the River Cam, WB260, WB321, WB141 and WB001. Water vole field signs are shown in detail and mapped in the Water Vole Technical Appendix (Appendix A). A summary of field signs identified is shown in Table 3-3 below.

**Table 3-3: Water Vole Field Signs Summary**

| Waterbody ID | Number of burrows | Number of latrines | Number of piles of feeding remains | Other signs | Number of survey visits undertaken |
|---|---|---|---|---|---|
| **WB001** | 2 | 10 | None | 1 run | 2 |
| **WB017** | None | 1 | None | None | 2 |
| **WB043** | None | 1 | None | None | 2 |
| **WB045** | None | 1 | None | None | 2 |
| **WB055** | None | 8 | None | None | 5 |
| **WB064** | None | 1 | None | None | 6 |
| **WB078** | None | 3 | None | None | 6 |
| **WB085** | None | 2 | None | None | 6 |
| **WB095** | 1 | None | None | None | 1- Incidental sighting |
| **WB100** | 4 | 2 | None | None | 2 |
| **WB105** | 4 | 6 | None | 1 footprint | 2 |
| **WB107** | None | 1 | None | None | 6 |

| Waterbody ID | Number of burrows | Number of latrines | Number of piles of feeding remains | Other signs | Number of survey visits undertaken |
|---|---|---|---|---|---|
| **WB120** | None | 2 | None | None | 6 |
| **WB121** | None | 1 | None | 1 sighting | 6 |
| **WB123** | None | 2 | None | 1 sighting | 5 |
| **WB129** | None | 1 | None | None | 6 |
| **WB141** | 4 | 20 | None | 1 run, 1 footprint, 2 sightings. Sightings regularly reported by land owner. | 6 |
| **WB159** | 1 | 1 | 1 | 1 sighting | 6 |
| **WB171** | 1 | 7 | 1 | None | 2 |
| **WB191** | None | 2 | 3 | None | 2 |
| **WB215** | None | 3 | None | None | 5 |
| **WB234** | 2 | 9 | None | 2 runs | 6 |
| **WB243** | None | 1 | None | None | 1- Incidental sighting |
| **WB253** | None | 2 | None | 1 sighting | 6 |
| **WB260** | 11 | 11 | None | 1 footprint | 2 |
| **WB264** | None | 2 | None | None | 6 |
| **WB291** | None | 1 | None | None | 6 |
| **WB318** | None | 10 | None | None | 6 |
| **WB320** | None | 2 | 1 | None | 2 |
| **WB321** | 13 | 4 | None | 1 run | 2 |
| **River Cam (WB322)** | 23 | 21 | 2 | None | 2 |

*Source: Mott MacDonald, 2022*

3.3.6 Table 3-4 below shows all waterbodies within the RLB that have the potential to be impacted by the scheme, the number of latrines identified and an estimate of water vole numbers from each of the surveys conducted within the optimal survey period, the early season (April to June inclusive) and the late season (July to September inclusive). Locations of field signs results are mapped in the Water Vole Technical Appendix (Appendix A).

3.3.7 Surveys adhered to best practice and were sufficient to inform the proposed works and complexity of habitats at the Proposed Development.

**Table 3-4: Water vole survey results and estimated population numbers by season**

| Waterbody within 5m of RLB | Survey visits undertaken* | WV presence confirmed (presence of field signs) | Approx. length of ditch (m) | Early survey season (mid-April to June inclusive) | | | Late survey season (July to September inclusive) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | No. of latrines | Estimated water vole population size | Estimated number of water voles | Number of latrines | Estimated water vole population size | Estimated number of water voles |
| WB001 | DS | Confirmed | 298 | 7 | Medium | 7 | 2 | Low | 3 |
| WB008 | HA | Likely absent (dry) | 469 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB012 | DS | Likely absent | 36 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB020 | DS | Likely absent | 112 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB035 | DS | Presence assumed[1] | 317 | 3 | Low | 4 | 1 | Low | 3 |
| WB039 | RS | Likely absent | 245 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB055 | RS** | Confirmed | 203 | 7 | Medium | 7 | 1 | Low | 3 |
| WB056 | HA | Likely absent (dry) | 190 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB059 | HA | Likely absent (dry) | 405 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB060 | RS | Presence assumed[2] | 118 | 3 | Low | 4 | 0 | N/A | N/A |
| WB064 | RS | Confirmed | 64 | 1 | Low | 3 | 0 | N/A | N/A |
| WB071 | DS | Likely absent | 238 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB078 | RS | Confirmed | 276 | 3 | Low | 4 | 0 | N/A | N/A |
| WB085 | RS | Confirmed | 70 | 2 | Medium | 3 | 0 | N/A | N/A |
| WB089 | RS | Presence assumed[3] | 123 | 3 | Low | 4 | 4 | Low | 5 |
| WB092 | HA | Likely absent (dry) | 180 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB107 | RS | Confirmed | 202 | 0 | N/A | N/A | 1 | Low | 3 |
| WB114 | DS | Likely absent | 309 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB118 | DS | Likely absent | 300 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB120 | RS | Confirmed | 100 | 0 | N/A | N/A | 3 | Low | 4 |
| WB121 | RS | Confirmed | 250 | 0 | N/A | N/A | 2 | Low | 3 |
| WB123 | RS** | Confirmed | 1375 | 0 | N/A | N/A | 2 | Low | 3 |
| WB129 | RS | Confirmed | 130 | 1 | Low | 3 | 0 | N/A | N/A |
| WB141 | RS | Confirmed | 205 | 10 | Medium | 9 | 7 | Low | 7 |
| WB146 | DS | Likely absent | 209 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB152 | DS | Presence assumed[4] | 330 | 0 | N/A | N/A | 2 | Low | 3 |
| WB171 | DS | Confirmed | 205 | 0 | N/A | N/A | 2 | Low | 3 |
| WB182 | RS | Presence assumed[5] | 19 | 1 | Low | 3 | 1 | Low | 3 |
| WB188 | NS | Not surveyed | 369 | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown |
| WB199 | DS | Likely absent | 415 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB205 | HA | Likely absent (dry) | 181 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB206 | HA | Likely absent (dry) | 260 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB208 | HA | Likely absent (dry) | 310 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB213 | DS | Likely absent | 302 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB232 | RS | Likely absent | 160 | 0 | N/A | N/A | 0 | N/A | N/A |

[1] No. of latrines extrapolated from adjacent WB105 and WB260
[2] No. of latrines extrapolated from adjacent WB064
[3] No. of latrines extrapolated from adjacent WB064 and WB120
[4] No. of latrines extrapolated from adjacent WB171
[5] No. of latrines extrapolated from adjacent WB234

| Waterbody within 5m of RLB | Survey visits undertaken* | WV presence confirmed (presence of field signs) | Approx. length of ditch (m) | Early survey season (mid-April to June inclusive) | | | Late survey season (July to September inclusive) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | No. of latrines | Estimated water vole population size | Estimated number of water voles | Number of latrines | Estimated water vole population size | Estimated number of water voles |
| WB234 | RS | Confirmed | 380 | 6 | Low | 6 | 4 | Low | 5 |
| WB240 | HA | Likely absent (dry) | 115 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB251 | DS | Likely absent | 330 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB253 | RS | Confirmed | 200 | 0 | Low | 2 | 2 | Low | 3 |
| WB260 | DS | Confirmed | 779 | 1 | Low | 3 | 0 | Low | 2 |
| WB264 | RS | Confirmed | 115 | 2 | Low | 3 | 0 | N/A | N/A |
| WB291 | RS | Confirmed | 65 | 0 | N/A | N/A | 1 | Low | 3 |
| WB292 | RS | Likely absent | 141 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB294 | HA | Likely absent (dry) | 90 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB295 | HA | Likely absent (dry) | 104 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB301 | HA | Likely absent (dry) | 100 | 0 | N/A | N/A | 0 | N/A | N/A |
| WB307 | NS | Not surveyed | 140 | Unknown | Unknown | Unknown | Unknown | Unknown | Unknown |
| WB308 | RS | Presence assumed[6] | 145 | 3 | Low | 4 | 0 | N/A | N/A |
| WB318 | RS | Confirmed | 137 | 7 | Medium | 7 | 4 | Low | 5 |
| WB321 | DS | Confirmed | 290 | 1 | Low | 3 | 0 | N/A | N/A |
| WB322 (River Cam) | DS | Confirmed | 930 | 14 | Low | 12 | 4 | Low | 5 |
| **Total** | | | **13036** | **75** | | **91** | **43** | | **66** |

*Key (No. of survey visits):
DS = 2x ditch search (early and late season, 2021)
HA = Habitat assessment only (September 2021, dry on all future survey dates)
RS = 1x ditch search (September 2021), 6x raft surveys (May-August 2022)
NS = Not surveyed (restricted access) – population estimate to be undertaken before submission of final licence
**Survey 6 was not completed on these waterbodies as the rafts were removed by the landowner
*Source: Mott MacDonald, 2022*

[6] No. of latrines extrapolated from adjacent WB064

# 4 Impact Assessment

## 4.1 Impact assessment prior to mitigation or compensation

### State how much habitat and what type of habitat is temporarily damaged or destroyed

4.1.1 This document is considered a "ghost method statement." Any design or methodology amendments following planning consent being granted, or new survey information prior to construction being available, will be used to inform the final method statement submitted to Natural England in support of a licence.

4.1.2 The total amount of habitat to be temporarily damaged or destroyed will be up to 120m across six watercourses (WB001, WB055, WB188, WB291, WB318 and WB322). This will be finalised before submission of the final draft of the licence.

### State how much habitat and what type of habitat is permanently damaged or destroyed

4.1.3 The total amount of habitat to be permanently damaged or destroyed will be 50m within WB322 (the River Cam) to facilitate works around the outfall.

### Identify short and long-term impacts on water voles during and after development

4.1.4 Known impacts currently include losses of habitat during construction of the outfall to the River Cam. This would result in the permanent loss of 50m of marginal habitat along one side of the River Cam (WB322) associated with the permanent outfall and permanent river bank protection works. Temporary removal (up to 6 months) of 30m of water vole habitat from both sides of a ditch (WB001) and then reinstatement of this marginal ditch habitat will occur. Both areas of habitat have been confirmed to support water vole. It is predicted that the impact will affect water voles directly.

4.1.5 Water vole have been confirmed or are assumed present in 26 waterbodies. The Waterbeach pipeline route crosses four of these ditches (WB055, WB188, WB291, WB318) with an open cut which would lead to temporary habitat loss of up to 20m at each watercourse. If works are within 5m there is also risk of burrows and water voles being impacted by the works and buffers will be set up around the remaining watercourses listed in Table 4-1 below.

## 4.2 During construction

### Mortality and injury to water vole

4.2.1 If unmitigated, construction activities have the potential to directly injure or kill water vole in the location of the outfall along the River Cam and adjacent ditch. Open cut pipelaying techniques may also lead to killing or injury of water vole.

### Loss, destruction, damage, and degradation of habitat (including burrows)

4.2.2 The construction activities of the permanent outfall structure, bank protection works and open cut pipelaying could result in the loss, destruction, damage, and degradation of water vole habitat in those locations. Water vole burrows will also be destroyed through the construction activities.

4.2.3 Details of the potential impacts of the proposed scheme are outlined in Table 4-1 below and are mapped in Appendix B.

**Table 4-1: Summary of impacts to water voles without mitigation measures**

| Works | Waterbody | Temporary habitat loss (m) | Permanent habitat loss/ degradation (m) | Types of impact |
|---|---|---|---|---|
| Outfall and FE pipeline | WB001 | up to 30m | - | Temporary habitat loss. This will impact individual water vole, burrows and foraging habitat. 25m will be removed for the outfall and an additional 5m has been included to displace water voles out of the radius of potential disturbance from the works. |
| Waterbeach pipeline (open cut) | WB055 | Up to 20m | - | Temporary habitat loss is likely for 5m at the southern end of the watercourse as this lies within the open cut working area. This will impact individual water vole, burrows and foraging habitat.<br><br>35m of this watercourse is within the Scheme Order Limits. It is not yet known what, if any, works are planned for this section but no more than 20m will be temporarily lost. |
| Waterbeach pipeline | WB060, WB064, WB089, WB120, WB308 | - | - | These ditches are within the Scheme Order Limits for the Waterbeach pipeline.<br>A 5m buffer will be erected to surround these watercourses ensuring that no works or new access routes are created within this area to avoid impacting burrows or water vole. |
| Waterbeach pipeline, access works | WB078 | - | - | A 5m buffer will be set up to avoid impacts to the western end of the waterbody. |
| Waterbeach pipeline (directional drilling), access works | WB085 | - | - | A 5m buffer will be erected to surround the watercourse, ensuring that no works or new access routes are created within this area to avoid impacting water vole burrows. |
| Waterbeach pipeline | WB107 | - | - | A 5m buffer will be erected to surround the watercourse, ensuring that no works or new access routes are created within this area to avoid impacting water vole burrows. |
| Waterbeach pipeline | WB121 | - | - | A 5m buffer will be erected to surround the watercourse, ensuring that no works or new access routes are created within this area to avoid impacting water vole burrows. |
| Waterbeach pipeline (directional drilling) | WB123 | - | - | Directional drilling works are planned for this section. The watercourse will not be impacted by these works. |
| Waterbeach pipeline | WB129 | - | - | A 5m buffer will be erected to surround the watercourse, ensuring that no works or new access routes are created within this area to avoid impacting water vole burrows.<br>Directional drilling works are planned for this section. The watercourse will not be impacted by these works. |
| Waterbeach pipeline | WB141 | - | - | A 5m buffer will be set up to avoid impacts to the western end of the waterbody. |
| Outfall | WB152 | - | - | Works will not take place within 5m of the waterbody |
| Outfall | WB171 | - | - | A 5m buffer will be set up to avoid impacts to the western end of the waterbody. |
| Waterbeach pipeline | WB182 | - | - | A 5m buffer will be set up to avoid impacts to the western end of the waterbody. |
| Waterbeach pipeline | WB188 | Up to 20m (unknown if water vole habitat) | - | This ditch has not yet been surveyed and it is unknown if water vole habitat is present or will be lost.<br>Up to 20m of habitat loss will occur where the open cut crosses the ditch. A 5m buffer will be set up around the rest of the length, ensuring that no works or new access routes are created within this area to avoid impacting water vole burrows.<br>Directional drilling works are also planned for this section. The watercourse will not be impacted by these works. |
| Waterbeach pipeline | WB234 | - | - | A 5m buffer will be set up to avoid impacts to the northern end of the waterbody. |
| Waterbeach pipeline (directional drilling), drill pits | WB253 | | | A 5m buffer will be erected to surround the watercourse, ensuring that no works or new access routes are created within this area to avoid impacting water vole burrows. |

| Works | Waterbody | Temporary habitat loss (m) | Permanent habitat loss/ degradation (m) | Types of impact |
|---|---|---|---|---|
| | | | | Directional drilling works are planned for this section. The watercourse will not be impacted by these works. |
| Transfer tunnel, Waterbeach pipeline | WB260 | - | - | A 5m buffer will be erected to surround the watercourse, ensuring that no works or new access routes are created within this area to avoid impacting water vole burrows.<br>Tunnelling works are planned for this section. The watercourse will not be impacted by these works. |
| Waterbeach pipeline | WB264 | - | - | A 5m buffer will be erected to surround the watercourse, ensuring that no works or new access routes are created within this area to avoid impacting water vole burrows. |
| Waterbeach pipeline | WB291 | Up to 20m | - | Up to 20m of habitat loss will occur where the open cut crosses the ditch. A 5m buffer will be set up around the rest of the length, ensuring that no works or new access routes are created within this area to avoid impacting water vole burrows. |
| Landscape and ecological works | WB307 | - | - | This ditch has not yet been surveyed and it is unknown if water vole habitat is present.<br>A 5m buffer will be erected to surround the watercourse, ensuring that no works or new access routes are created within this area to avoid impacting water vole burrows. |
| Waterbeach pipeline | WB318 | Up to 20m | - | Up to 20m of habitat loss will occur where the open cut crosses the ditch. A 5m buffer will be set up around the rest of the length, ensuring that no works or new access routes are created within this area to avoid impacting water vole burrows. |
| Outfall | WB321 | N/A | N/A | A 5m buffer will be erected to surround the watercourse, ensuring that no works or new access routes are created within this area to avoid impacting water vole burrows. |
| Outfall | River Cam (WB322) | 10m along one bank | 50m along one bank | Permanent removal of habitat along one bank of the River Cam. This will impact individual water vole, burrows and foraging habitat.<br>Additional 5m of temporary habitat removal on each side of the sheet piling in order to create a buffer around the works.<br>A 565m stretch of the river lies within the Scheme Order Limits to the north. A 5m buffer will be erected, ensuring that no works or new access routes are created within this area to avoid impacting water vole burrows. |

*Source: Mott MacDonald, 2022*

### Disturbance and pollution

4.2.4 Any works within 5m of a waterbody suitable for water vole have the potential to cause disturbance through damage to water vole habitat as well as through noise or vibration (in addition to the risk of killing and injuring water vole).

4.2.5 Disturbance could result from construction activities including through the movement of vehicles and machinery. All works should be a minimum of 5m away from suitable habitat unless specific mitigation such as water vole displacement is being proposed, as detailed above.

4.2.6 During construction works, there is the potential for surface water runoff from construction works to impact habitats used by water vole. To reduce the risk of pollution entering the river or other watercourses during the construction works, strict pollution control measures are included as part of the Construction Environmental Management Plan (CEMP) and Code of Construction Practice (CoCP) for the scheme.

## 4.3 Post-construction

### Loss of and disturbance to water vole habitat from the operation of the proposed outfall

4.3.1 There will be a loss of 50m of water vole habitat, but this will be compensated for to ensure there is no overall loss of habitat for water vole, as described in Section 6.

4.3.2 Water vole are not thought to be impacted by the day-to-day operation of the proposed WWTP. Water vole are likely to benefit from the operation of the proposed WWTP due to the improvements in water quality at the outfall location and downstream.

# 5 Mitigation strategy

## 5.1 Impact mitigation

5.1.1 To mitigate the impacts outlined in Section 4 above during construction and operation, implementation of the following activities will ensure reasonable precautions have been taken to prevent disturbance of water vole whilst occupying a structure or shelter, to avoid death and/or injury of water vole during construction and operation and to conserve the local population of water vole.

5.1.2 All activities will be carried out in accordance with current best practice guidelines to avoid impacts to individual water vole following the methods described in The Water Vole Mitigation Handbook (Dean, Strachan, Gow, & Andrews, 2016) during periods of least sensitivity.

## 5.2 Displacement

5.2.1 As impacts to water vole cannot be entirely avoided, displacement will be used to relocate water vole outside of the working areas. Displacement is the process of undertaking habitat manipulation to encourage the movement of a limited number of water vole to a safe area outside the location of the works area.

5.2.2 Displacement activities would take place between 15 February and 15 April inclusive and the area requiring vegetation removal will be hand searched for nesting birds prior to stripping.

5.2.3 The following methods will be implemented in line with Appendix 1 of the Water Vole Mitigation Handbook (Dean, Strachan, Gow, & Andrews, 2016).

- All burrows in the working area will be identified and marked;
- Vegetation from the working width will be removed using a strimmer until only bare earth remains. The strimmed area will extend to the top of the bank and a further 2m;
- All arisings from the strimmed area will be raked off and removed;
- The burrow entrances will then be checked to ensure that they have not become blocked;
- The strimmed area will be monitored on a daily basis for field signs of water vole;
- A destructive search will be carried out five days following strimming and only if no signs of water vole are recorded;
- The area will be maintained as unsuitable for water vole until the works are carried out. Works will be undertaken as close to the completion of the displacement process as possible to ensure the area is not recolonised by water vole in the interim. Where there is time between the displacement being finalised and the works commencing the location will be monitored on

a regular basis (minimum every two weeks) and maintenance will be undertaken to ensure the habitat remains unsuitable for water vole; and

- Where possible (particularly on ditches), water drawn down will be also used as part of the displacement process.

5.2.4 Table 5-1 below shows the length of habitat displacement. Where this is outside of the recommended maximum of 50m of displacement within the Water Vole Mitigation Handbook Guidelines (Dean, Strachan, Gow, & Andrews, 2016), justification is provided.

**Table 5-1: Water vole displacement**

| Displacement waterbody | Works to water body | Water vole signs identified | Length displaced | Population within waterbody |
|---|---|---|---|---|
| WB001 | Temporary habitat removal for the final effluent pipelines. | Burrow, latrines, run | 30m | Medium |
| WB055 | Potential temporary habitat removal for the Waterbeach pipeline (TBC if this waterbody will be affected and how much). | Latrine | Up to 20m | Low |
| WB188 | This ditch has not yet been surveyed and it is unknown if water vole habitat is present/will be lost.<br><br>Potential temporary habitat removal for the Waterbeach pipeline (TBC if this waterbody will be affected and how much). | Not surveyed (unknown if water vole habitat) | Up to 20m | Low |
| WB291 | Potential temporary habitat removal for the Waterbeach pipeline (TBC if this waterbody will be affected and how much). | Latrines | Up to 20m | Low |
| WB318 | Potential temporary habitat removal for the Waterbeach pipeline (TBC if this waterbody will be affected and how much). | Latrines | Up to 20m | Low |
| River Cam (WB322) | Permanent habitat removal for the construction of the proposed outfall and edge protection works. | Burrow, latrines, feeding remains | 60m along one bank only. | Low |

*Source: Mott MacDonald, 2022*

5.2.5 Fifty metres of permanent habitat removal will be required at WB322 (River Cam) in order to encompass the outfall and associated sheet piling. An additional 10m of temporary habitat loss has been included in order to create a 5m buffer around the works. This habitat loss will be on one bank only and water voles will be displaced

into the River Cam on either side of the works. The opposite bank will also not be touched.

5.2.6 This is outside of the recommended maximum of 50m of displacement within the Water Vole Mitigation Handbook Guidelines (Dean, Strachan, Gow, & Andrews, 2016). However, displacement is still thought to be the best option in this situation due to the habitat availability upstream, downstream, on the opposite bank and in the surrounding ditch network in order to minimise disturbance to the species and avoid trapping. Every effort to reduce this length will be made.

# 6 Compensation Measures

## 6.1 Habitat creation details

6.1.1 Habitat compensation is proposed in the form of a network of new water-holding, vegetated ditches, of equivalent length or more to the amount lost (permanent and temporary habitat loss is currently unknown), within 150m of the affected area.

6.1.2 Land adjacent to the River Cam and located at TL 48458 61723 will be used to create new habitat for water vole. This area will contain a new ditch which will be approximately 84m in length dedicated for water vole with an additional 271m of ditch which will be suitable for water vole created for the purpose of Biodiversity Net Gain (BNG) which will provide enhancement for water vole. Photograph 1 below shows the approximate location where the new ditches will be created.

6.1.3 This new ditch network will be established over a 12-month period prior to its use as a receptor site for any displaced animals and will be created a minimum of 12 months in advance of displacement. This will provide sufficient time for newly planted vegetation to become established prior to its use by any displaced animals. The wetland habitat in the newly constructed ditches will be designed specifically to benefit water vole and will ensure that the following are provided: areas of high ground for burrowing and refuge and riparian vegetation for food and shelter (Strachan et al, 2011).

6.1.4 The proposed planting of aquatic, terrestrial and marginal plants will be undertaken using locally sourced stock as far as possible. Terrestrial and aquatic plant establishment will be accomplished via a mixture of natural colonisation, translocation of turfs and/or individual plants from on-site sources, and nursery-sourced plug plants to reduce establishment time.

6.1.5 Water vole require dense growth of herbaceous bankside and emergent vegetation to provide suitable food and cover. Native species of local provenance known to be of importance to water vole will be used (Strachan et al, 2011). These include:

- Branched bur-reed (*Sparganium erectum*);
- Floating sweet-grass (*Glyceria fluitans*);
- Flowering rush (*Butomus umbellatus*);
- Fool's watercress (*Apium nodiflorum*);
- Meadowsweet (*Filipendula ulmaria*);
- Reed canary grass (*Phalaris arundinacea*); and
- Reed sweet-grass (*Glyceria maxima*).

6.1.6 Where these species cannot be suitably sourced, similar species listed as important for water vole in the Water Vole Conservation Handbook (Strachan et al, 2011) will be used.

6.1.7 Throughout the development of the newly created habitat within the new channel, monitoring will review the success of vegetation development and establishment with regard to water vole food plant and vegetation cover, and remedial action will be taken to ensure that the habitat becomes suitable for water vole (if required).

**Photograph 1: Approximate location of new mitigation ditches (looking towards River Cam)**

*Source: Mott MacDonald, 2022.*

6.1.8 The newly created ditches will provide additional biodiversity benefit to aquatic and terrestrial invertebrates, foraging and nesting habitat for various bird species as well as additional foraging habitat for otter, amphibian and reptile species.

6.1.9 The area of land required for this mitigation is within the Scheme Order Limits and will be acquired by Anglian Water for the purpose of providing ecological mitigation and therefore no permissions will be necessary to carry out this work. This is detailed within the DCO application to which this water vole conservation licence refers.

## 6.2 Licence purpose

6.2.1 The primary purpose of this licence is to protect water vole during the construction of the proposed works and ensure that the population is retained and enhanced in the longer term to ensure continuation of a robust population of water vole in the area.

6.2.2 The provision of the above area solely for the purpose of mitigation habitat for water vole will ensure the viability of the water vole population in those areas that will be affected by the Proposed Development. Additionally, there will be complementary benefits to water vole populations downstream of the outfall, owing to the improvement in water quality discharged from the new waste water treatment plant.

# 7 Monitoring and Management Plans

## 7.1 Management plan

### River Cam

7.1.1 Water quality management within the River Cam will be monitored through the Environment Agency (EA) and in line with the water quality permit that would be granted following the project consent. Habitat management within the River Cam will additionally be undertaken through the EA and Conservators of the River Cam.

### Ditches across the Proposed Development

7.1.2 Habitat and water quality management will be carried out and monitored by Swaffham and Waterbeach Level Internal Drainage Boards (IDB) and will be agreed following project consent.

### New mitigation ditches

7.1.3 The new mitigation ditches will be maintained by Anglian Water Ltd to retain suitability for water vole occupation. Timings and details of this will be contained in the Outfall Habitat Management Plan, that will be produced after the DCO is awarded. This will detail the timings for rotational management of the ditches and will include:

- Scrub removal to stimulate growth of aquatic plants and bankside vegetation. This will have an added benefit of increasing the diversity of plant species suitable for water vole thereby offering a more reliable and sustainable food source; and
- Watercourse maintenance operations to remove a build up of silt to maintain a regular level of standing water within the ditches and ensure vegetative growth.

## 7.2 Post development monitoring plan

7.2.1 After the construction and planting of the newly designed ditch network, regular visits will be undertaken to monitor the establishment and development of vegetation along the ditch banks and to ensure adequate water levels. Monitoring checks will be undertaken annually for the first 5 years and every 5 years subsequently for 30 years. Refer to the LEMP (Mott MacDonald, 2022) for further detail. By doing this monitoring, the need for any further remedial management can be identified and implemented to ensure vegetation suitability for food and coverage for water vole.

7.2.2 Post-development monitoring will also assess the success of the displacement strategy within the local water vole population. On completion of the works, annual surveys of ditches that have been impacted by the works will be undertaken during the breeding season for a minimum of three years. This is to confirm establishment of habitat and search for field signs in accordance with Box 4 in the Water Vole Mitigation Handbook (Dean, Strachan, Gow, & Andrews, 2016).

7.2.3 All water vole field signs will be recorded and used to ascertain whether water vole is present. Latrine counts within these areas will give an approximate estimate of population size, which can be compared to pre-construction estimates.

7.2.4 Overall, the post-development monitoring will assess the success of the mitigation strategy as well as the suitability and level of occupation of the newly-created ditch network post-construction.

# 8 Timetable of Proposed Works

8.1.1 Table 8-1 below gives the approximate start and finish dates for all activities of the Proposed Development.

**Table 8-1: Proposed Works Timetable**

| | Year 1 (TBC) | | | | | | | | | | | | Year 2 (TBC) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | April | May |
| **Preparation** | | | | | | | | | | | | | | | | | |
| Pre-construction surveys (spring and autumn) | | | | x | x | | | x | x | | | | | | | | |
| Licence submission and issue | | | | | | | | | | | x** | x** | x** | | | | |
| **Habitat creation** | | | | | | | | | | | | | | | | | |
| Creation and development of new ditch network | | x* | x* | | | | | | | | | | | | | | |
| **Displacement** | | | | | | | | | | | | | | | | | |
| Strimming | | | | | | | | | | | | | | | x | x | |
| Destructive searches | | | | | | | | | | | | | | | x | x | |

** – prior to construction beginning on outfall*

*** - Licence return dates from Natural England subject to change*

# 9 References

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# 10 Appendix A

## 10.1 Water Vole Technical Appendix

**Cambridge Waste Water Treatment Plant Relocation Project**
Anglian Water Services Limited

# Appendix 8.3: Water Vole Technical Appendix

Application Document Reference: 5.4.8.3
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# Contents

# Tables



# Figures

# 1 Introduction

## 1.1 Overview

1.1.1 The water vole surveys were carried out to inform the biodiversity assessment completed for the Proposed Development as reported in Chapter 8, Biodiversity (Application Document Reference 5.2.8). These species could be potential constraints to the Proposed Development or influence its design and implementation. An extended Phase 1 Habitat Survey identified and mapped the main habitats within 5 km of the boundary of the Proposed Development as it was in 2020 – 2021.

## 1.2 Aims and objectives

1.2.1 A Preliminary Ecological Appraisal (PEA) was undertaken between July and September 2020 to establish the broad ecological baseline for the Proposed Development, which includes the Proposed Waste Water Treatment Plant (WWTP) and the Waterbeach Pipeline. Based on the findings of the PEA, habitat and protected species surveys[1] have been undertaken throughout 2021 and 2022 to determine the ecological baseline. The PEA identified 113 waterbodies which required further surveys for water vole.

1.2.2 This technical appendix presents the methodology used for surveys and the results from surveys undertaken within 100m of the Scheme Order Limits (Figure 1.1 below).

1.2.3 This report should be read in conjunction with Chapter 8: Biodiversity (App Doc Ref 5.2.8) of the Environmental Statement to which this report is appended.

## 1.3 Project description

1.3.1 The Proposed Development involves the construction of a new integrated waste water treatment plant (hereafter proposed WWTP) together with the associated waste water transfer infrastructure, comprising waste water transfer tunnel (underground tunnel), sewer rising main diversions and a treated effluent discharge outfall to the River Cam (the outfall). The Proposed Development also includes a transfer pipeline corridor, the Waterbeach Pipeline, from the Waterbeach Water Recycling Centre (WRC) to the existing Cambridge WWTP. The proposed WWTP will incorporate an integrated Sludge Treatment Centre (STC) which would treat sludge imported from other treatment plants in the Cambridge catchment.

1.3.2 A detailed project description is included in Chapter 2: Project description (App Doc Ref 5.2.2) of the Environmental Statement.

[1] Invasive species surveys were conducted in conjunction with other ecological receptor surveys and target notes and annotations on maps made when invasive species were encountered.

1.3.3 The Proposed Development is located north-east of Cambridge and is mostly comprised of arable land. The A14 and Low Fen Drove Way Country Wildlife Site (CWS) are dominant features of the landscape lying to the south and east, respectively, of the Proposed Development. The B1047 Horningsea Road boarders the proposed WWTP site to the west. The River Cam is west of the CWWTP site and is where discharges are treated effluent will occur.

1.3.4 The Scheme Order Limits cover an area of approximately 211ha. The network of ditches and ponds within the Scheme Order Limits provide potential suitable habitat for water vole. Surveys were undertaken within the Scheme Order Limits plus a 100m buffer.

1.3.5 Figure 1.1 below details the location of the Proposed Development and shows the Scheme Order Limits.

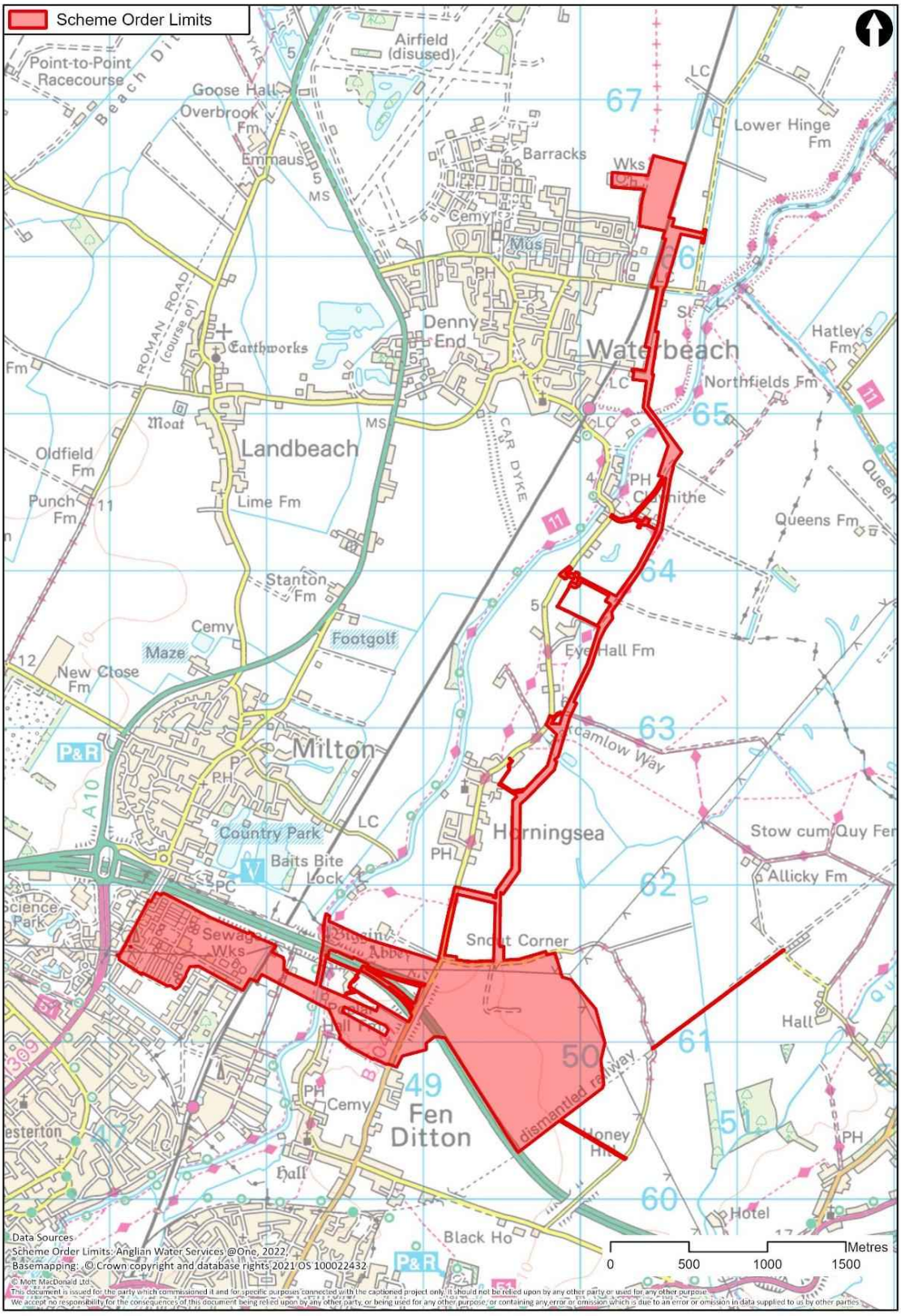


**Figure 1.1: Scheme Order Limits**

## 1.4 Legislation

1.4.1 Water voles are protected by Schedule 5 of the Wildlife and Countryside Act 1981 (HM Government, 1981) (as amended) making it illegal to:

- intentionally kill, take or injure a water vole;
- possess or control any live or dead water vole, or any part or derivative;
- intentionally or recklessly damage or destroy a water vole's place of shelter or protection;
- intentionally or recklessly disturb a water vole whilst it is occupying a structure or a place which it uses for shelter or protection;
- intentionally or recklessly obstruct access to a water vole's place of shelter or protection; and
- sell, offer for sale or possess or transport for the purposes of sale, any live or dead water vole, or any part or derivative, or advertising any of these for buying or selling.

1.4.2 Water voles are listed as a Species of Principle Importance (SPI) under Section 41 of the Natural Environment and Rural Communities Act 2006 (HM Government, 2006).

1.4.3 Water voles are recognised as a UK Biodiversity Action Plan Priority Species found in Cambridge (Cambridge City Council, 2006).

# 2 Method

## 2.1 Desk study

2.1.1 A desk study was undertaken to ascertain the presence of the following with respect to water vole:

- statutory designated sites;
- non-statutory designated sites; and
- water vole specific designations.

2.1.2 The aim of the desk study is to collate and review existing information about this site and its surroundings to inform the design of subsequent water vole surveys and inform the impact assessment for the project.

2.1.3 An initial data search was undertaken to determine the presence of records of water vole. This data search was conducted over a 5km radius from the Scheme Order Limits, with all statutory designated sites such as Special Areas of Conservation (SAC) and Sites of Special Scientific Interest (SSSI) relevant to water vole within 10km also considered.

2.1.4 Information on the above features has been accessed from:

- Multi Agency Geographic Information for the Countryside (MAGIC) (Defra, 2002);
- aerial photography at a scale of 1:25,000;
- Cambridgeshire and Peterborough Priority Species and Habitat Action Plans; and
- Ordnance Survey mapping (at scales of 1:50,000 and 1:25,000).

2.1.5 To obtain records of protected or notable species, a biological record search was undertaken within a 5km radius from the Scheme Order Limits (Cambridge and Peterborough Environmental Records Centre, 2021).

## 2.2 Field survey

2.2.1 The study area for water vole included the Proposed Development plus a 100m buffer. This included the River Cam where the treated effluent discharge outfall to the River Cam (the outfall) will be located and all ditches within 100m of the Proposed Development.

2.2.2 Owing to the extent of the ditch network throughout the survey area and the high mobility of water vole, all watercourses were scoped in for water vole surveys. Water vole will use watercourses seasonally.

2.2.3 Two survey visits were undertaken for water vole, one in the first half of the season (mid-April to June inclusive) and one in the second half of the season (July to September inclusive) (Dean, Strachan, Gow, & Andrews, 2016).

2.2.4 Water vole visits were carried out three months apart in accordance with (Dean, Strachan, Gow, & Andrews, 2016), which recommends visits are undertaken at least two months apart. Incidental records were also noted during other surveys.

2.2.5 Surveyors applied the principles of standard methodologies:

- The Water Vole Mitigation Handbook for Development and Other Construction Activities (Dean, Strachan, Gow, & Andrews, 2016);
- Water Vole Field Signs and Habitat Assessment: A Practical Guide to Water Vole Surveys (Dean M. , 2021); and
- Water Vole Conservation Handbook. Third Edition (Strachan et al., 2011) .

2.2.6 In order to undertake these surveys, a range of methods were used: walked transects, boat transects and raft surveys.

### Habitat assessment

2.2.7 A habitat assessment was undertaken for water vole for each watercourse and considered the following factors (Dean, Strachan, Gow, & Andrews, 2016):

- bank profile, channel profile and characteristics, and water levels;
- habitat types present and their suitability for each species (indication of abundance using DAFOR[2] scale);
- predominant bank substrate;
- availability of food sources;
- vegetation structure (particularly the extent of suitable marginal vegetation);
- level of shading (%);
- watercourse depth and width;
- rate of flow;
- disturbance level;
- adjoining land use; and
- a visual assessment of connectivity with other areas of suitable habitat (low, medium, high).

[2] DAFOR is a scale used to provide a quick estimate of the relative abundance of species. DAFOR stands for the categories Dominant, Abundant, Frequent, Occasional, Rare.

### Field signs

2.2.8 During each survey, the banks of each waterbody and adjacent linear habitat (a minimum 5m from the waterbody and further where possible) were visually inspected for signs of use by water vole, and each type of sign was recorded. Where access allowed both banks were surveyed.

2.2.9 Water vole field signs recorded presence of:

- latrines;
- burrows;
- runs;
- footprints;
- feeding remains; and
- sightings and/or sounds (characteristic sound entering the water) of individuals.

2.2.10 Where surveys were undertaken as walked transects field signs were mapped using GPS/ArcGIS on handheld tablets. Walked transects were not possible on the River Cam, so surveys along this watercourse were undertaken by boat or suitable watercraft, recording field signs using GPS/ArcGIS. Boat surveys were undertaken on the River Cam, 500m upstream and 500m downstream of the works that would directly affect the river.

2.2.11 A boat survey was not carried out along the River Cam where the Waterbeach pipeline will cross because this section of the pipeline will be directionally drilled underneath the river, resulting in reduced impact to the River Cam.

## 2.3 Waterbeach raft surveys

2.3.1 Raft surveys involve the installation of floating rafts made of insulation board, approximately 0.45m x 0.3m in size. The rafts are placed in the channel, approximately every 15m, and attached to the bank using string and a cane.

2.3.2 After one survey carried out on foot it was decided that raft surveys would be more appropriate for the ditches located in the Waterbeach area. Therefore, instead of a second survey visit using conventional walkover methodology in ditches within the Waterbeach area, water vole raft surveys were used to survey the ditches within 100m of the Waterbeach Pipeline.

2.3.3 The rafts were then checked every two weeks for six visits. Binoculars were used to check rafts when the channel was difficult to access.

2.3.4 Water voles are known to use floating materials to deposit latrines, so raft surveys are a good way of detecting water vole presence when access into the channel is difficult (Dean, Strachan, Gow, & Andrews, 2016).

2.3.5 A map showing the waterbodies which had rafts installed can be seen in Figure 8.17, Book of Figures – Biodiversity (App Doc Ref 5.3.8).

2.3.6 Waterbodies that underwent raft surveys are shown in Table 2-1 below.

**Table 2-1: Waterbodies requiring water vole raft surveys**

| Waterbody | Number of rafts used |
|---|---|
| **PD047** | 4 |
| **WB039** | 4 |
| **WB055** | 8 |
| **WB060/WB308** | 3 |
| **WB064** | 2 |
| **WB078** | 11 |
| **WB083** | 3 |
| **WB085** | 5 |
| **WB089** | 4 |
| **WB107** | 7 |
| **WB120** | 3 |
| **WB121** | 7 |
| **WB123** | 8 |
| **WB129** | 7 |
| **WB141** | 11 |
| **WB159** | 3 |
| **WB182** | 1 |
| **WB215** | 6 |
| **WB232** | 3 |
| **WB234** | 8 |
| **WB245** | 4 |
| **WB253** | 9 |
| **WB264** | 7 |
| **WB291** | 4 |
| **WB292** | 2 |
| **WB318** | 10 |
| **WB319** | 1 |

*Source: Mott MacDonald Ltd, 2022*

## 2.4 Survey timings

2.4.1 Surveys were completed in suitable weather conditions on the following dates and in the following areas:

Proposed WWTP and associated ditches, River Cam and outfall location:

- visit one: 27 and 28 April 2021; 10 and 11 May 2021; and
- visit two: 02, 03, 06 and 24 August 2021.

Waterbeach Pipeline:

- visit one: 13, 16, 28 and 30 September 2021.

After this visit, six raft surveys were completed as follows;

- visit one of six: 5 and 6 May 2022;
- visit two of six: 18 and 19 May 2022;
- visit three of six: 9 and 10th June 2022;
- visit four of six: 22 and 24 June 2022;
- visit five of six: 7 and 8 July 2022; and
- visit six of six: 15 and 16 August 2022.

2.4.2 Visit details are provided in Table 5.1 and 5.2, Appendix A.

## 2.5 Survey limitations and assumptions

2.5.1 Biological records obtained from third parties and presented in the desk study do not represent a full and complete species list for the area. This is not considered to be a significant limitation because surveys were carried out throughout all suitable habitat within 100m of the Scheme Order Limits. No areas were ruled out based on the results of the desk study.

2.5.2 Only data for the last ten years were included in the desk study. This is not considered to be a significant limitation because these records are considered to be the most relevant and reflect management and development that may have occurred in the local area.

2.5.3 Six waterbodies (WB001, WB012, WB020, WB035, WB062, WB260) have dense vegetation which inhibited access to sections of the watercourse; therefore, a robust search for field signs could not be undertaken along the entire length of each waterbody. However, signs of water vole presence were identified in waterbodies WB001 and WB260 so the limited access is not considered to be a limitation. Waterbodies WB012 and WB020 are adjacent to an area of the River Cam where signs of water vole were identified. It should be assumed that waterbodies so close to the River Cam are likely to have water vole present. Waterbody WB035 is located in the existing WWTP and is connected to WB260. Signs were found along WB260, and it should be assumed that water vole are also present in WB035. Waterbody WB062 is an arable ditch with very limited food sources for water vole, is heavily shaded and was dry during the final two visits. These limitations will require further action, such as pre-construction checks.

2.5.4 Many of the watercourses on site are well connected, and absence of field signs in one section of watercourse does not mean water vole are absent from that watercourse. Water vole are a highly mobile species and may use different watercourses throughout the varying seasons. This is a limitation which will require further action, such as pre-construction checks.

2.5.5 Raft surveys were carried out in the Waterbeach area following the first check. The change in survey method is due to these ditches having very steep banks and silty channels, limiting surveys on foot to ensure the safety of the surveyor. This is not considered to be a significant limitation because using rafts is an effective method to determine the presence of water vole in cases where the waterbody cannot be accessed on foot.

2.5.6 Only five raft survey checks were caried out on waterbodies WB123, WB055 and WB215. The landowner, on whose land these waterbodies are located, removed the rafts without informing the survey team. Missing the final visit should not affect the results because evidence of water vole has been identified in those ditches and therefore, their presence has been determined. In addition to this, all three ditches had dried out on the fifth visit.

2.5.7 Rafts could not be installed on PD008 due to the presence of livestock. PD008 is a recently created agricultural reservoir which has sections of suitable vegetation; however, the banks are too shallow for water vole burrowing and connectivity to surrounding habitat is poor. This is a limitation that will require further action such as pre-construction checks.

# 3 Results

## 3.1 Desk study results

3.1.1 The desk study returned 11 records of water vole within a 5km radius from the Scheme Order Limits. Records included water vole field signs such as latrines, feeding signs and a sighting of a juvenile.

3.1.2 There are no statutory or non-statutory designated sites with water vole as reason for their designation returned within 10km of the Scheme Order Limits.

3.1.3 Desk study results are detailed in Table 5.3, Appendix A.

## 3.2 Habitat assessment

3.2.1 Following the PEA, a total of 115 waterbodies were scoped in for a habitat assessment.

3.2.2 Out of the 115 waterbodies, 54 were in the proposed WWTP area. Habitat assessments were only carried out on 49 of these waterbodies. Of the five remaining waterbodies, three (WB250, WB162 and WB113) were found not to exist and there was no evidence of aquatic vegetation, and two (WB053 and WB161) were not accessible due to the presence of a dual carriageway and fencing.

3.2.3 The remaining 61 waterbodies were located in the Waterbeach area. A habitat assessment was carried out on 53 of these waterbodies. The remaining eight waterbodies (WB178, WB185, WB203, WB20, WB242, WB160, WB256, WB087) were found to not exist and have no evidence of aquatic vegetation.

3.2.4 The results of the habitat assessments are shown in Table 5.4, Appendix A.

## 3.3 Field signs

3.3.1 Following the habitat assessment, waterbodies were searched for signs of water vole.

3.3.2 In the proposed WWTP area, all 49 waterbodies were searched for signs of water vole during the first visit. Eighteen of these waterbodies were dry on both the first and second visit.

3.3.3 In the Waterbeach area, all 53 waterbodies were searched for signs of water vole during the first visit. During the second visit when rafts were installed, 26 waterbodies were scoped out of further surveys. Of the 26 waterbodies, 24 were dry on both the first and second visit, one was scoped out due to the presence of livestock and one was scoped out due to no longer being within the 100m buffer after a change in design.

3.3.4 Scoped-out waterbodies within the Scheme Order Limits are shown on Figure 8.18, Book of Figures – Biodiversity (App Doc Ref 5.3.8).

3.3.5 Scoped-in waterbodies within the Scheme Order Limits are shown on Figure 8.17, Book of Figures – Biodiversity (App Doc Ref 5.3.8).

3.3.6 Field signs of water vole were identified on 31 watercourses within the Scheme Order Limits and on immediately adjacent watercourses, as shown in Table 3-1.

3.3.7 Water vole field signs are shown on Figure 8.20, Book of Figures – Biodiversity (App Doc Ref 5.3.8) and in Table 5.5, Appendix A.

**Table 3-1: Water vole field signs summary**

| Waterbody ID | Number of burrows | Number of latrines | Number of piles of feeding remains | Other signs | Number of survey visits undertaken |
|---|---|---|---|---|---|
| **WB001** | 2 | 10 | None | 1 run | 2 |
| **WB017** | None | 1 | None | None | 2 |
| **WB043** | None | 1 | None | None | 2 |
| **WB045** | None | 1 | None | None | 2 |
| **WB055** | None | 8 | None | None | 5 |
| **WB064** | None | 1 | None | None | 6 |
| **WB078** | None | 3 | None | None | 6 |
| **WB085** | None | 2 | None | None | 6 |
| **WB095** | 1 | None | None | None | 1 – Incidental sighting |
| **WB100** | 4 | 2 | None | None | 2 |
| **WB105** | 4 | 6 | None | 1 footprint | 2 |
| **WB107** | None | 1 | None | None | 6 |
| **WB120** | None | 2 | None | None | 6 |
| **WB121** | None | 1 | None | 1 sighting | 6 |
| **WB123** | None | 2 | None | 1 sighting | 5 |
| **WB129** | None | 1 | None | None | 6 |
| **WB141** | 4 | 20 | None | 1 run, 1 footprint, 2 sightings. Sightings regularly reported by land owner. | 6 |
| **WB159** | 1 | 1 | 1 | 1 sighting | 6 |
| **WB171** | 1 | 7 | 1 | None | 2 |
| **WB191** | None | 2 | 3 | None | 2 |
| **WB215** | None | 3 | None | None | 5 |
| **WB234** | 2 | 9 | None | 2 runs | 6 |
| **WB243** | None | 1 | None | None | 1 – Incidental sighting |
| **WB253** | None | 2 | None | 1 sighting | 6 |
| **WB260** | 11 | 11 | None | 1 footprint | 2 |
| **WB264** | None | 2 | None | None | 6 |
| **WB291** | None | 1 | None | None | 6 |
| **WB318** | None | 10 | None | None | 6 |
| **WB320** | None | 2 | 1 | None | 2 |
| **WB321** | 13 | 4 | None | 1 run | 2 |

| Waterbody ID | Number of burrows | Number of latrines | Number of piles of feeding remains | Other signs | Number of survey visits undertaken |
|---|---|---|---|---|---|
| **River Cam (WB322)** | 23 | 21 | 2 | None | 2 |

*Source: Mott MacDonald Ltd, 2022*

### Incidental Records

3.3.8 Some water vole signs were identified during otter surveys of the same waterbodies undertaken outside the optimal survey season for water voles. Water vole signs were also identified during ecology surveys for other species. These have been included in the results in Table 3-1 above and in Table 5.5, Appendix A.

# 4 References

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# 5 Appendix A

## 5.1 Water vole survey: Visit dates for the proposed WWTP

| Waterbody | Visit 1 | Visit 2 |
|---|---|---|
| **PD048 (pond)** | 11/05/2021 | 06/08/2021 |
| **WB001** | 27/04/2021 | 02/08/2021 |
| **WB010** | 11/05/2021 | 03/08/2021 |
| **WB104** | 11/05/2021 | 03/08/2021 |
| **WB012** | 27/04/2021 | 02/08/2021 |
| **WB017** | 28/04/2021 | 02/08/2021 |
| **WB019** | 10/05/2021 | 06/08/2021 |
| **WB020** | 27/04/2021 | 02/08/2021 |
| **WB021** | 11/05/2021 | 03/08/2021 |
| **WB030** | 11/05/2021 | 03/08/2021 |
| **WB031** | 11/05/2021 | 06/08/2021 |
| **WB035** | 28/04/2021 | 02/08/2021 |
| **WB043** | 10/05/2021 | 06/08/2021 |
| **WB045** | 27/04/2021 | 06/08/2021 |
| **WB053** | 10/05/2021 | N/A- inaccessible |
| **WB062** | 11/05/2021 | 03/08/2021 |
| **WB065** | 11/05/2021 | 03/08/2021 |
| **WB071** | 27/04/2021 | 03/08/2021 |
| **WB080** | 27/04/2021 | 03/08/2021 |
| **WB105** | 28/04/2021 | 02/08/2021 |
| **WB112** | 10/05/2021 | 06/08/2021 |
| **WB113** | 30/09/2021 | N/A- no ditch present |
| **WB114** | 11/05/2021 | 06/08/2021 |
| **WB116** | 10/05/2021 | 06/08/2021 |
| **WB118** | 11/05/2021 | 06/08/2021 |
| **WB122** | 11/05/2021 | 06/08/2021 |
| **WB146** | 28/04/2021 | 03/08/2021 |
| **WB151** | 10/05/2021 | 06/08/2021 |
| **WB152** | 28/04/2021 | 02/08/2021 |
| **WB161** | 11/05/2021 | N/A- inaccessible |
| **WB162** | 30/09/2021 | N/A-no ditch present |
| **WB170** | 10/05/2021 | 06/08/2021 |
| **WB171** | 28/04/2021 | 02/08/2021 |
| **WB183** | 11/05/2021 | 03/08/2021 |
| **WB184** | 11/05/2021 | 06/08/2021 |
| **WB191** | 10/05/2021 | 06/08/2021 |
| **WB199** | 11/05/2021 | 06/08/2021 |
| **WB210** | 10/05/2021 | 06/08/2021 |
| **WB213** | 11/05/2021 | 06/08/2021 |
| **WB214** | 27/04/2021 | 03/08/2021 |
| **WB230** | 28/04/2021 | 02/08/2021 |
| **WB238** | 10/05/2021 | 06/08/2021 |
| **WB244** | 10/05/2021 | 06/08/2021 |

| Waterbody | Visit 1 | Visit 2 |
|---|---|---|
| **WB250** | 30/09/2021 | N/A- no ditch present |
| **WB251** | 10/05/2021 | 06/08/2021 |
| **WB252** | 11/05/2021 | 03/08/2021 |
| **WB258** | 10/05/2021 | 06/08/2021 |
| **WB260** | 28/04/2021 | 02/08/2021 |
| **WB311** | 10/05/2021 | 06/08/2021 |
| **WB315** | 28/04/2021 | 02/08/2021 |
| **WB316** | 27/04/2021 | 02/08/2021 |
| **WB320** | 27/04/2021 | 03/08/2021 |
| **WB321** | 27/04/2021 | 03/08/2021 |
| **WB322 – River Cam** | 27/04/2021 | 24/08/2021 |

*Source: Mott MacDonald, 2022*

## 5.2 Water Vole Surveys: Visit dates for Waterbeach

| Waterbody | Visit 1 – ditch search | Visit 1 – rafts | Visit 2 – rafts | Visit 3 – rafts | Visit 4 – rafts | Visit 5 – rafts | Visit 6 – rafts |
|---|---|---|---|---|---|---|---|
| **PD008** | 30/09/2021 | N/A – livestock present | N/A – livestock present | N/A – livestock present | N/A – livestock present | N/A – livestock present | N/A – livestock present |
| **PD047** | 28/09/2021 | 06/05/2022 | 19/05/2022 | 10/06/2022 | 24/06/2022 | 08/07/2022 | 16/08/2022 |
| **WB003** | 13/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB007** | 30/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB008** | 16/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB039** | 28/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 16/08/2022 |
| **WB041** | 13/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB047** | 30/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB055** | 16/09/2021 | 06/05/2022 | 19/05/2022 | 10/06/2022 | 24/06/2022 | 08/07/2022 | N/A-Farmer removed rafts |
| **WB056** | 28/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB059** | 16/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB060** | 28/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |

| Waterbody | Visit 1 – ditch search | Visit 1 – rafts | Visit 2 – rafts | Visit 3 – rafts | Visit 4 – rafts | Visit 5 – rafts | Visit 6 – rafts |
|---|---|---|---|---|---|---|---|
| **WB061** | 30/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB064** | 28/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |
| **WB078** | 13/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |
| **WB083** | 28/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |
| **WB085** | 13/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |
| **WB087** | 28/09/2021 | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present |
| **WB089** | 28/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |
| **WB091** | 30/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB092** | 16/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB106** | 28/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB107** | 13/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |
| **WB120** | 28/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |
| **WB121** | 13/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |

| Waterbody | Visit 1 – ditch search | Visit 1 – rafts | Visit 2 – rafts | Visit 3 – rafts | Visit 4 – rafts | Visit 5 – rafts | Visit 6 – rafts |
|---|---|---|---|---|---|---|---|
| **WB123** | 16/09/2021 | 06/05/2022 | 19/05/2022 | 10/06/2022 | 24/06/2022 | 08/07/2022 | N/A-Farmer removed rafts |
| **WB129** | 13/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |
| **WB141** | 16/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 24/06/2022 | 07/07/2022 | 16/08/2022 |
| **WB155** | 16/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB158** | 28/09/2021 | N/A – outside the boundary | N/A – outside the boundary | N/A – outside the boundary | N/A – outside the boundary | N/A – outside the boundary | N/A – outside the boundary |
| **WB159** | 28/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |
| **WB160** | 28/09/2021 | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present |
| **WB175** | 30/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB178** | 13/09/2021 | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present |
| **WB182** | 13/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 24/06/2022 | 08/07/2022 | 16/08/2022 |
| **WB185** | 13/09/2021 | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present |

| Waterbody | Visit 1 – ditch search | Visit 1 – rafts | Visit 2 – rafts | Visit 3 – rafts | Visit 4 – rafts | Visit 5 – rafts | Visit 6 – rafts |
|---|---|---|---|---|---|---|---|
| **WB203** | 13/09/2021 | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present |
| **WB205** | 13/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB206** | 28/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB208** | 30/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB211** | 16/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB215** | 16/09/2021 | 06/05/2022 | 19/05/2022 | 10/06/2022 | 24/06/2022 | 08/07/2022 | N/A-Farmer removed rafts |
| **WB220** | 13/09/2021 | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present |
| **WB225** | 13/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB232** | 30/09/2021 | 06/05/2022 | 19/05/2022 | 10/06/2022 | 24/06/2022 | 08/07/2022 | 16/08/2022 |
| **WB234** | 13/09/2021 | 06/05/2022 | 18/05/2022 | 10/06/2022 | 24/06/2022 | 08/07/2022 | 16/08/2022 |
| **WB240** | 28/09/2021 | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry | N/A – dry |
| **WB242** | 13/09/2021 | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present |

| Waterbody | Visit 1 – ditch search | Visit 1 – rafts | Visit 2 – rafts | Visit 3 – rafts | Visit 4 – rafts | Visit 5 – rafts | Visit 6 – rafts |
|---|---|---|---|---|---|---|---|
| **WB245** | 13/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |
| **WB253** | 13/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |
| **WB256** | 13/09/2021 | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present | N/A – no ditch present |
| **WB264** | 13/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |
| **WB291** | 30/09/2021 | 06/05/2022 | 19/05/2022 | 10/06/2022 | 24/06/2022 | 08/07/2022 | 16/08/2022 |
| **WB292** | 30/09/2021 | 06/05/2022 | 19/05/2022 | 10/06/2022 | 24/06/2022 | 08/07/2022 | 16/08/2022 |
| **WB294** | 30/09/2021 | N/A- dry | N/A- dry | N/A- dry | N/A- dry | N/A- dry | N/A- dry |
| **WB295** | 30/09/2021 | N/A- dry | N/A- dry | N/A- dry | N/A- dry | N/A- dry | N/A- dry |
| **WB297** | 16/09/2021 | N/A- dry | N/A- dry | N/A- dry | N/A- dry | N/A- dry | N/A- dry |
| **WB300** | 13/09/2021 | N/A- dry | N/A- dry | N/A- dry | N/A- dry | N/A- dry | N/A- dry |
| **WB301** | 13/09/2021 | N/A- dry | N/A- dry | N/A- dry | N/A- dry | N/A- dry | N/A- dry |
| **WB318** | 13/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |
| **WB319** | 13/09/2021 | 05/05/2022 | 18/05/2022 | 09/06/2022 | 22/06/2022 | 07/07/2022 | 15/08/2022 |

*Source: Mott MacDonald, 2022*

## 5.3 Desk Study Results

| Common name | Scientific name | Grid reference | Precision | Comments |
|---|---|---|---|---|
| **European Water Vole** | Arvicola amphibius | TL47185923 | 10m | 2 latrines. |
| **European Water Vole** | Arvicola amphibius | TL47715821 | 10m | 3 latrines. |
| **European Water Vole** | Arvicola amphibius | TL47545876 | 10m | 6 latrines. |
| **European Water Vole** | Arvicola amphibius | TL476601 | 100m | Several latrines seen with feeding signs. |
| **European Water Vole** | Arvicola amphibius | TL47715821 | 10m | Some feeding signs seen. |
| **European Water Vole** | Arvicola amphibius | TL521618 | 100m | A couple of latrines found, with regular feeding signs and active burrows. |
| **European Water Vole** | Arvicola amphibius | TL48756221 | 10m | Several latrines seen with feeding signs. |
| **European Water Vole** | Arvicola amphibius | TL52176444 | 10m | Bark gnawing noted. |
| **European Water Vole** | Arvicola amphibius | TL480602 | 100m | Feeding signs seen. |
| **European Water Vole** | Arvicola amphibius | TL481568 | 100m | 'Plop' heard in the water. |
| **European Water Vole** | Arvicola amphibius | TL4457 | 1km | Juvenile swimming underwater and across the channel from bank to bank. |

*Source: Cambridge and Peterborough Environmental Records Centre, 2021*

## 5.4 Habitat assessment Results

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27/04/2021 | WB001 | Ditch | 1 | Moderate | Earth | Moderate | Grassland | R | O | O | O | O | F | D | 0-10% | Slow | Good food sources | Medium | Arable ditch adjacent to the River Cam with footpath present. |
| 27/04/2021 | WB012 | Ditch | 1 | Low | Earth | Low | Arable | O | F | A | R | R | R | R | 70-80% | Slow | Limited food sources | Medium | Heavily shaded ditch with limited suitability for water vole. Poor vegetation structure. Shaded heavily by bramble scrub. |
| 27/04/2021 | WB020 | Ditch | 1 | Low | Earth | Low | Arable | O | F | A | R | R | R | R | 70-80% | Slow | Limited food sources | Medium | Heavily shaded ditch with limited suitability for water vole. Poor vegetation structure. Shaded heavily by bramble scrub. |
| 27/04/2021 | WB043 | Ditch | 1 | Low | Earth | Low | Arable | R | A | A | F | R | R | F | 10-20% | Slow | Good food sources | Medium | Arable ditch with emergent macrophytes. Grassy banks with a hedgerow on one side. |
| 27/04/2021 | WB045 | Ditch | 1 | Low | Earth | High | Urban/ industrial | F | F | F | R | R | O | F | 30-40% | Slow | Limited food sources | Poor | Ditch adjacent to a road with some shading from a hedge on one side. |
| 27/04/2021 | WB053 | Ditch | 1 | Low | Earth | High | Urban/ industrial | F | F | F | R | R | O | F | 90-100% | Slow | Limited food sources | Poor | Arable ditch adjacent to a busy road. Heavily shaded by a hedgerow on one side. |
| 27/04/2021 | WB071 | Ditch | 1 | Low | Earth | Low | Arable | F | R | F | R | R | R | F | 0-10% | Slow | Limited food sources | Poor | Narrow drainage ditch with very steep banks. No vegetation along the banks at water level. |
| 27/04/2021 | WB080 | Ditch | 1 | Low | Earth | Low | Arable | F | R | O | R | R | R | F | 0-10% | Slow | Some suitable vegetation | Poor | Grassy ditch with steep banks and herb cover. |
| 27/04/2021 | WB214 | Ditch | 1 | Low | Earth | Low | Arable | F | R | R | R | R | R | F | 10-20% | Static | Limited food sources | Poor | Mostly dry grassy ditch with a stagnant pool at one end. |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27/04/2021 | WB316 | Pond | 1 | Low | Earth | High | Park / garden | R | F | R | R | R | R | R | 70-80% | Static | No food sources | Poor | Densely shaded pond with bramble and small open section to the east. No food present for water vole. |
| 27/04/2021 | WB320 | Ditch | 1 | Low | Earth | Low | Arable | R | R | A | O | R | F | A | 0-10% | Slow | Good food sources | Poor | Nice ditch with grasses and herbs present. Open habitat suited to water vole. |
| 27/04/2021 | WB321 | Ditch | 1 | Moderate | Earth | Low | Arable | O | O | F | R | O | O | F | 50-60% | Slow | Good food sources | Medium | Arable ditch with bankside trees and suitable vegetation present for water vole. Adjacent to the River Cam. |
| 27/04/2021 | WB322 | River | 1 | Moderate | Earth | High | Grassland | F | O | O | O | O | O | F | 0-10% | Moderate | Limited food sources | Medium | The River Cam is regularly disturbed by boats and walkers. The east bank it suitable for water vole but the west is mostly reinforced. Sections of the river provide lots of suitable vegetation for water vole. |
| 28/04/2021 | WB017 | Ditch | 1 | Low | Earth | None | Woodland | R | F | A | R | R | R | R | 40-50% | Slow | Limited food sources | Poor | Ditch adjacent to the A14 but not disturbed. Mostly dry and covered with tall ruderals. Limited food structure for water vole. |
| 28/04/2021 | WB035 | Stream | 1 | Low | Earth | Low | Grassland | F | F | O | R | R | R | R | 70-80% | Slow | Limited food sources | Medium | A stream within the exiting WWTP. Highly shaded by trees and bushes with limited vegetation structure. |
| 28/04/2021 | WB105 | Stream | 1 | Moderate | Earth | Low | Urban / industrial | F | F | F | O | O | O | O | 50-60% | Slow | Limited food sources | Medium | A stream with steep banks. Highly shaded by trees and bushes with limited vegetation structure. |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 28/04/2021 | WB146 | Ditch | 1 | Low | Earth | High | Grassland | F | R | R | R | O | R | R | 80-90% | Slow | Limited food sources | Medium | Shaded ditch parallel to the River Cam. Reinforced banks would make access difficult for water vole from the River Cam. |
| 28/04/2021 | WB152 | Ditch | 1 | None | Earth | High | Woodland | F | O | R | R | R | R | R | 80-90% | N/A-dry | No food sources | Medium | Heavily shaded ditch with lots of woody debris present. Adjacent to a footpath. Dry with no suitable vegetation present. |
| 28/04/2021 | WB171 | Ditch | 1 | Low | Earth | Moderate | Grassland | O | R | F | R | O | O | R | 30-40% | Slow | Some suitable vegetation | Medium | Ditch adjacent to the River Cam. Lower banks are bare but some areas of sedge which are suitable for water vole. |
| 28/04/2021 | WB230 | Ditch | 1 | Low | Earth | Low | Grassland | R | R | O | O | F | F | R | 0-10% | Slow | Good food sources | High | Wide, open ditch adjacent to the River Cam. Suitable vegetation present for water vole. |
| 28/04/2021 | WB260 | Stream | 1 | Low | Earth | Low | Grassland | F | O | F | R | R | F | O | 30-40% | Slow | Good food sources | Medium | Stream located in the existing WWTP. Plenty of aquatic vegetation and good banks for water vole. Some areas shaded by bramble scrub. |
| 28/04/2021 | WB315 | Ditch | 1 | None | Earth | Low | Grassland | R | R | R | R | R | R | R | 10-20% | N/A-dry | No food sources | Medium | Dry ditch in horse paddock dug by landowner. No aquatic vegetation present. |
| 28/04/2021 | WB113 | Ditch | 1 | N/A- no ditch present | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | Poor | Hedgerow with no ditch present. |
| 10/05/2021 | WB019 | Ditch | 1 | None | Earth | Low | Arable | R | R | R | R | R | R | A | 0-10% | N/A-dry | No food sources | Poor | Dry, grassy, isolated ditch between arable fields. Unlikely to hold significant water levels |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | and no aquatic vegetation present. |
| 10/05/2021 | WB112 | Ditch | 1 | None | Earth | Low | Arable | O | R | A | O | O | O | A | 0-10% | N/A-dry | Limited food sources | Medium | Dry grassy ditch between arable fields. May hold water seasonally. Some suitable vegetation for water vole. |
| 10/05/2021 | WB116 | Ditch | 1 | Low | Earth | Low | Arable | A | A | R | R | R | R | F | 0-10% | Slow | Limited food sources | | Arable ditch which is heavily shaded by bramble scrub. Very limited vegetation for water vole. |
| 10/05/2021 | WB151 | Ditch | 1 | None | Earth | Low | Arable | O | R | F | R | R | O | A | 0-10% | N/A-dry | Limited food sources | Medium | Dry, arable ditch with grassy banks. Limited vegetation structure for water vole. |
| 10/05/2021 | WB170 | Ditch | 1 | Low | Earth | Low | Arable | R | O | A | O | R | F | A | 10-20% | Slow | Good food sources | Medium | Arable ditch with suitable vegetation for water vole. Some sections shaded by bramble. |
| 10/05/2021 | WB191 | Ditch | 1 | Low | Earth | Low | Arable | O | R | A | O | F | F | O | 10-20% | Slow | Good food sources | | Grassy ditch with good vegetation structure for water vole. Steep banks with some sections shaded by bramble. |
| 10/05/2021 | WB210 | Ditch | 1 | Low | Earth | Low | Arable | R | O | A | O | R | F | A | 10-20% | Slow | Good food sources | Medium | Arable ditch with suitable vegetation for water vole. Some sections shaded by bramble. |
| 10/05/2021 | WB238 | Ditch | 1 | None | Earth | Low | Arable | O | F | R | R | R | R | F | 10-20% | N/A-dry | No food sources | Poor | Arable, dry ditch with steep banks. No suitable vegetation for water vole. |
| 10/05/2021 | WB244 | Ditch | 1 | Low | Earth | Low | Arable | R | R | F | R | F | F | A | 0-10% | Slow | Good food sources | Medium | Arable ditch that is almost dry. Aquatic species present. |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10/05/2021 | WB251 | Ditch | 1 | None | Earth | Low | Arable | R | R | A | R | R | R | F | 30-40% | N/A-dry | Limited food sources | Medium | Arable, dry ditch with grassy banks. Limited food structure for water vole. Shaded by a hedgerow on one side. |
| 10/05/2021 | WB258 | Ditch | 1 | None | Earth | Low | Arable | R | R | A | R | R | R | A | 0-10% | N/A-dry | Limited food sources | Poor | Dry grassy ditch between arable fields. Limited suitability for water vole. |
| 10/05/2021 | WB311 | Ditch | 1 | None | Earth | Low | Arable | R | R | F | R | F | F | A | 0-10% | N/A-dry | Limited food sources | Medium | Dry, arable ditch with grassy banks. Limited vegetation structure for water vole. Lots of ruderal species but no aquatic species. |
| 11/05/2021 | PD048 | Pond | 1 | Moderate | Earth | Low | Grassland | R | R | O | A | R | R | A | 10-20% | Static | Limited food sources | Poor | Small pond with grassy banks. One side shaded by bramble. Limited food sources for water vole. |
| 11/05/2021 | WB010 | Ditch | 1 | None | Earth | Low | Arable | O | F | A | R | R | R | F | 90-100% | N/A-dry | Limited food sources | Medium | Dry ditch with a hedgerow on one side. Limited vegetation for water vole. |
| 11/05/2021 | WB104 | Ditch | 1 | None | Earth | None | Arable | F | F | F | R | R | R | F | 90-100% | Slow | Limited food sources | Medium | Limited food structure for water vole. |
| 11/05/2021 | WB021 | Ditch | 1 | None | Earth | Low | Arable | R | R | A | R | R | R | F | 90-100% | N/A-dry | Limited food sources | Poor | Dry ditch with a hedgerow on one side. Limited vegetation for water vole. Heavily shaded. |
| 11/05/2021 | WB030 | Ditch | 1 | Low | Earth | Low | Arable | A | A | F | R | R | O | R | 90-100% | Slow | Limited food sources | Poor | Limited vegetation structure with not many grasses, reeds or sedges. Shaded by lots of bramble on the banks. |
| 11/05/2021 | WB031 | Ditch | 1 | None | Earth | Low | Arable | R | F | A | R | R | R | A | 70-80% | N/A-dry | Limited food sources | Poor | Dry, grassy ditch with steep banks, between |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | arable fields. Heavily shaded by scrub. |
| 11/05/2021 | WB062 | Ditch | 1 | Low | Earth | Low | Arable | A | A | F | R | R | R | R | 90-100% | Slow | Limited food sources | Poor | Limited vegetation structure with not many grasses, reeds or sedges. Shaded by lots of bramble on the banks. |
| 11/05/2021 | WB065 | Ditch | 1 | Low | Earth | Low | Arable | A | A | F | R | R | F | R | 90-100% | Slow | Limited food sources | Poor | Limited vegetation structure with not many grasses, reeds or sedges. Shaded by lots of bramble on the banks. |
| 11/05/2021 | WB114 | Ditch | 1 | Low | Earth | Low | Arable | F | A | A | F | R | R | A | 20-30% | Slow | Limited food sources | Poor | Ditch with hedgerow along one bank. Almost dry and shaded by bramble scrub. Limited food structure for water vole. |
| 11/05/2021 | WB118 | Ditch | 1 | Low | Earth | Low | Arable | R | A | F | O | R | R | A | 50-60% | Slow | Limited food sources | Poor | Ditch with hedgerow along one bank. Almost dry and shaded by bramble scrub. Limited food structure for water vole. |
| 11/05/2021 | WB122 | Ditch | 1 | None | Earth | Low | Grassland | R | O | O | O | O | F | A | 40-50% | N/A-dry | Limited food sources | Poor | Grassy ditch with limited vegetation structure for water vole. |
| 11/05/2021 | WB161 | Ditch | 1 | None | Earth | High | Arable | R | A | R | R | R | R | R | 80-90% | N/A-dry | No food sources | Poor | Dry ditch adjacent to the A14, heavily shaded by hedgerow. No suitable vegetation for water vole. |
| 11/05/2021 | WB162 | Ditch | 1 | N/A- no ditch present | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | Poor | Hedgerow with no ditch present. |
| 11/05/2021 | WB183 | Ditch | 1 | None | Earth | Low | Arable | R | R | F | R | R | R | F | 90-100% | N/A-dry | Limited food sources | Poor | Dry ditch at the edge of an arable field. Limited food structure for water vole. |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/05/2021 | WB184 | Ditch | 1 | None | Earth | Low | Arable | A | A | F | R | R | R | F | 0-10% | N/A-dry | Limited food sources | Poor | Dry, grassy ditch with steep banks. Grasses and herb present but vegetation limited for water vole. |
| 11/05/2021 | WB199 | Ditch | 1 | Low | Earth | Low | Arable | R | R | A | O | R | O | A | 40-50% | Slow | Limited food sources | Poor | Grassy ditch with steep banks, between arable fields. Shaded in some places by scrub. Lots of tall ruderal species but vegetation limited for water vole. |
| 11/05/2021 | WB213 | Ditch | 1 | None | Earth | High | Urban/industrial | O | R | R | R | R | O | A | 10-20% | N/A-dry | No food sources | Poor | Arable ditch parallel to a road. Dry and grassy with no aquatic vegetation. |
| 11/05/2021 | WB252 | Ditch | 1 | None | Earth | Low | Arable | O | R | R | R | R | R | F | 90-100% | N/A-dry | Limited food sources | Poor | Dry ditch at the edge of an arable field. Limited food structure for water vole. |
| 11/05/2021 | WB250 | Ditch | 1 | N/A- no ditch present | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | Poor | Hedgerow with no ditch present. |
| 02/08/2021 | WB001 | Ditch | 2 | Moderate | Earth | Moderate | Grassland | R | O | O | O | O | F | D | 0-10% | Slow | Good food sources | Medium | Arable ditch adjacent to the River Cam with footpath present. |
| 02/08/2021 | WB012 | Ditch | 2 | Low | Earth | Low | Arable | O | F | A | R | R | R | R | 70-80% | Slow | Limited food sources | Medium | Heavily shaded ditch with limited suitability for water vole. Poor vegetation structure. Shaded heavily by bramble scrub. |
| 02/08/2021 | WB020 | Ditch | 2 | Low | Earth | Low | Arable | O | F | A | R | R | R | R | 70-80% | Slow | Limited food sources | Medium | Heavily shaded ditch with limited suitability for water vole. Poor vegetation structure. Shaded heavily by bramble scrub. |
| 02/08/2021 | WB316 | Pond | 2 | Low | Earth | High | Park/garden | R | F | R | R | R | R | R | 60-70% | Static | Limited food sources | Poor | Densely shaded pond with bramble and small open section to |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | the east. No food present for water vole. |
| 02/08/2021 | WB017 | Ditch | 2 | Low | Earth | None | Woodland | R | F | A | R | R | R | R | 90-100% | Slow | Limited food sources | Poor | Ditch adjacent to the A14 but not disturbed. Mostly dry and covered with tall ruderals. Limited food structure for water vole. |
| 02/08/2021 | WB035 | Stream | 2 | Low | Earth | Moderate | Woodland | F | F | O | R | R | R | R | 80-90% | Slow | Limited food sources | Medium | A stream within the existing WWTP. Highly shaded by trees and bushes with limited vegetation structure. |
| 02/08/2021 | WB105 | Stream | 2 | Moderate | Earth | Low | Urban/industrial | F | F | F | O | O | O | O | 70-80% | Slow | Limited food sources | Medium | A stream with steep banks. Highly shaded by trees and bushes with limited vegetation structure. |
| 02/08/2021 | WB152 | Ditch | 2 | None | Earth | High | Woodland | F | O | R | R | R | R | R | 80-90% | N/A-dry | No food sources | Medium | Heavily shaded ditch with lots of woody debris present. Adjacent to a footpath. Dry with no suitable vegetation present. |
| 02/08/2021 | WB171 | Ditch | 2 | Low | Earth | Moderate | Grassland | O | R | F | R | O | O | R | 30-40% | Slow | Some suitable vegetation | Medium | Ditch adjacent to the River Cam. Lower banks are bare but some areas of sedge which are suitable for water vole. |
| 02/08/2021 | WB230 | Ditch | 2 | Low | Earth | Low | Grassland | R | R | O | O | F | F | R | 0-10% | Slow | Good food sources | High | Wide, open ditch adjacent to the River Cam. Suitable vegetation present for water vole. |
| 02/08/2021 | WB260 | Stream | 2 | Low | Earth | Low | Grassland | F | O | A | O | O | F | O | 60-70% | Slow | Good food sources | Medium | Stream located in the existing WWTP. Plenty of aquatic vegetation and good banks for water vole. Some |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | areas shaded by bramble scrub. |
| 02/08/2021 | WB315 | Ditch | 2 | None | Earth | Low | Grassland | R | R | R | R | R | R | R | 10-20% | N/A-dry | No food sources | Medium | Dry ditch in horse paddock dug by landowner. No aquatic vegetation present. |
| 03/08/2021 | WB071 | Ditch | 2 | Low | Earth | Low | Arable | F | R | F | R | R | R | F | 10-20% | Slow | Limited food sources | Poor | Narrow drainage ditch with very steep banks. No vegetation along the banks at water level. |
| 03/08/2021 | WB080 | Ditch | 2 | Low | Earth | Low | Arable | F | R | O | R | R | R | F | 10-20% | Slow | Limited food sources | Poor | Grassy ditch with steep banks and herb cover. |
| 03/08/2021 | WB214 | Ditch | 2 | None | Earth | Low | Arable | F | R | F | R | R | R | F | 10-20% | N/A-dry | No food sources | Poor | Dry grassy ditch. |
| 03/08/2021 | WB320 | Ditch | 2 | Low | Earth | Low | Arable | R | R | A | O | R | F | A | 0-10% | Slow | Good food sources | Poor | Nice ditch with grasses and herbs present. Open habitat suited to water vole. |
| 03/08/2021 | WB321 | Ditch | 2 | Moderate | Earth | Low | Arable | O | O | F | R | O | O | F | 50-60% | Slow | Good food sources | Medium | Arable ditch with bankside trees and suitable vegetation present for water vole. Adjacent to the River Cam. |
| 03/08/2021 | WB146 | Ditch | 2 | None | Earth | High | Grassland | F | R | R | R | F | R | R | 80-90% | N/A-dry | Limited food sources | Medium | Shaded, dry ditch parallel to the River Cam. Reinforced banks would make access difficult for water vole from the River Cam. |
| 03/08/2021 | WB010 | Ditch | 2 | None | Earth | Low | Arable | F | F | F | R | R | R | F | 90-100% | N/A-dry | Limited food sources | Medium | Dry ditch with a hedgerow on one side. Limited vegetation for water vole. |
| 03/08/2021 | WB021 | Ditch | 2 | None | Earth | Low | Arable | R | R | A | R | R | R | F | 90-100% | N/A-dry | Limited food sources | Poor | Dry ditch with a hedgerow on one side. Limited vegetation for water vole. Heavily shaded. |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 03/08/2021 | WB030 | Ditch | 2 | Low | Earth | Low | Arable | A | A | F | R | R | F | R | 90-100% | N/A-dry | Limited food sources | Poor | Dry ditch. Limited vegetation structure with not many grasses, reeds or sedges. Shaded by lots of bramble on the banks. |
| 03/08/2021 | WB062 | Ditch | 2 | Low | Earth | Low | Arable | A | A | F | R | R | R | R | 90-100% | N/A-dry | Limited food sources | Poor | Dry ditch. Limited vegetation structure with not many grasses, reeds or sedges. Shaded by lots of bramble on the banks. |
| 03/08/2021 | WB065 | Ditch | 2 | Low | Earth | Low | Arable | A | A | F | R | R | R | R | 90-100% | N/A-dry | Limited food sources | Poor | Dry ditch. Limited vegetation structure with not many grasses, reeds or sedges. Shaded by lots of bramble on the banks. |
| 03/08/2021 | WB104 | Ditch | 2 | None | Earth | None | Arable | F | F | F | R | R | R | F | 90-100% | Slow | Limited food sources | Medium | limited food structure for watervole. |
| 03/08/2021 | WB183 | Ditch | 2 | None | Earth | Low | Arable | R | R | F | R | R | R | F | 90-100% | N/A-dry | Limited food sources | Poor | Dry ditch at the edge of an arable field. Limited food structure for water vole. |
| 03/08/2021 | WB252 | Ditch | 2 | None | Earth | Low | Arable | O | R | F | R | R | R | F | 90-100% | N/A-dry | Limited food sources | Poor | Dry ditch at the edge of an arable field. Limited food structure for water vole. |
| 06/08/2021 | WB043 | Ditch | 2 | Low | Earth | Low | Arable | R | A | A | F | R | R | F | 10-20% | N/A-dry | Good food sources | Medium | Arable ditch with emergent macrophytes. Grassy banks with a hedgerow on one side. |
| 06/08/2021 | WB045 | Ditch | 2 | None | Earth | High | Urban/industrial | F | F | F | R | R | O | F | 90-100% | N/A-dry | Limited food sources | Poor | Dry ditch adjacent to a road with some shading from a hedge on one side. |
| 06/08/2021 | WB019 | Ditch | 2 | None | Earth | Low | Arable | R | R | F | R | O | O | A | 0-10% | N/A-dry | No food sources | Medium | Dry, grassy, isolated ditch between arable fields. Unlikely to hold significant water levels |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | and no aquatic vegetation present. |
| 06/08/2021 | WB112 | Ditch | 2 | None | Earth | Low | Arable | O | R | A | O | O | O | A | 0-10% | N/A-dry | Limited food sources | Medium | Dry grassy ditch between arable fields. May hold water seasonally. Some suitable vegetation for water vole. |
| 06/08/2021 | WB116 | Ditch | 2 | Low | Earth | Low | Arable | A | A | O | R | R | R | F | 0-10% | Slow | Limited food sources | Medium | Arable ditch which is heavily shaded by bramble scrub. Very limited vegetation for water vole. |
| 06/08/2021 | WB151 | Ditch | 2 | None | Earth | Low | Arable | A | A | F | R | R | R | F | 0-10% | N/A-dry | Limited food sources | Medium | Dry, arable ditch with grassy banks. Limited vegetation structure for water vole. |
| 06/08/2021 | WB170 | Ditch | 2 | Low | Earth | Low | Arable | R | O | A | O | R | F | A | 0-10% | N/A-dry | Some suitable vegetation | Medium | Dry arable ditch with suitable vegetation for water vole. Some sections shaded by bramble. |
| 06/08/2021 | WB191 | Ditch | 2 | Low | Earth | Low | Arable | O | R | A | O | F | F | O | 10-20% | N/A-dry | Good food sources | Medium | Dry, grassy ditch with good vegetation structure for water vole. Steep banks with some sections shaded by bramble. |
| 06/08/2021 | WB210 | Ditch | 2 | Low | Earth | Low | Arable | R | O | A | O | R | F | A | 0-10% | N/A-dry | Good food sources | Medium | Dry, arable ditch with suitable vegetation for water vole. Some sections shaded by bramble. |
| 06/08/2021 | WB238 | Ditch | 2 | None | Earth | Low | Arable | O | F | F | R | R | R | F | 10-20% | N/A-dry | No food sources | Poor | Arable, dry ditch with steep banks. No suitable vegetation for water vole. |
| 06/08/2021 | WB244 | Ditch | 2 | Low | Earth | Low | Arable | R | R | F | R | F | F | A | 0-10% | Slow | Good food sources | Medium | Arable ditch that is almost dry. Aquatic species present. |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 06/08/2021 | WB251 | Ditch | 2 | None | Earth | Low | Arable | R | R | A | R | R | R | F | 0-10% | N/A-dry | Limited food sources | Medium | Arable, dry ditch with grassy banks. Limited food structure for water vole. Shaded by a hedgerow on one side. |
| 06/08/2021 | WB258 | Ditch | 2 | None | Earth | Low | Arable | R | R | A | R | R | R | A | 0-10% | N/A-dry | Limited food sources | Poor | Dry grassy ditch between arable fields. Limited suitability for water vole. |
| 06/08/2021 | WB311 | Ditch | 2 | None | Earth | Low | Arable | R | R | F | R | F | F | A | 0-10% | N/A-dry | Limited food sources | Medium | Dry, arable ditch with grassy banks. Limited vegetation structure for water vole. Lots of ruderal species but no aquatic species. |
| 06/08/2021 | PD048 | Pond | 2 | None | Earth | Low | Grassland | R | O | O | O | O | O | O | 10-20% | N/A-dry | Limited food sources | Poor | Small, dried up pond with grassy banks. One side shaded by bramble. Limited food sources for water vole. |
| 06/08/2021 | WB031 | Ditch | 2 | None | Earth | Low | Arable | R | F | A | R | R | R | A | 40-50% | N/A-dry | Limited food sources | Poor | Dry, grassy ditch with steep banks, between arable fields. Heavily shaded by scrub. |
| 06/08/2021 | WB114 | Ditch | 2 | None | Earth | Low | Arable | F | A | A | F | R | R | A | 20-30% | N/A-dry | Limited food sources | Poor | Ditch with hedgerow along one bank. Dry and shaded by bramble scrub. Limited food structure for water vole. |
| 06/08/2021 | WB118 | Ditch | 2 | None | Earth | Low | Arable | R | A | F | O | R | R | A | 50-60% | N/A-dry | Limited food sources | Poor | Ditch with hedgerow along one bank. Dry and shaded by bramble scrub. Limited food structure for water vole. |
| 06/08/2021 | WB122 | Ditch | 2 | None | Earth | Low | Grassland | R | O | O | O | O | F | A | 40-50% | N/A-dry | Limited food sources | Poor | Dry, grassy ditch with limited vegetation structure for water vole. |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 06/08/2021 | WB184 | Ditch | 2 | None | Earth | Low | Arable | A | A | F | R | R | R | F | 0-10% | N/A-dry | Limited food sources | Medium | Dry, grassy ditch with steep banks. Grasses and herb present but vegetation limited for water vole. |
| 06/08/2021 | WB199 | Ditch | 2 | None | Earth | Low | Arable | R | R | A | O | R | O | A | 40-50% | N/A-dry | Limited food sources | Poor | Dry, grassy ditch with steep banks, between arable fields. Shaded in some places by scrub. Lots of tall ruderal species but vegetation limited for water vole. |
| 06/08/2021 | WB213 | Ditch | 2 | None | Earth | High | Urban/industrial | O | R | A | R | R | O | A | 10-20% | N/A-dry | Limited food sources | Poor | Dry, arable ditch parallel to a road. Dry and grassy with no aquatic vegetation. |
| 24/08/2021 | WB322 | River | 2 | Moderate | Earth | High | Grassland | F | O | O | O | O | O | F | 0-10% | Moderate | Limited food sources | Medium | The River Cam is regularly disturbed by boats and walkers. The east bank it suitable for water vole but the west is mostly reinforced. Sections of the river provide lots of suitable vegetation for water vole. |
| 13/09/2021 | WB041 | Ditch | 1 | None | Earth | Low | Grassland | O | O | F | R | R | F | O | 0-10% | N/A-dry | Limited food sources | Medium | Dry ditch. Steep sided in arable field. Limited vegetation structure for water vole. |
| 13/09/2021 | WB078 | Ditch | 1 | Moderate | Earth | Low | Arable | R | R | R | R | R | R | F | 0-10% | Slow | Limited food sources | High | Wide and deep drainage ditch that goes into the River Cam. All drains in the Waterbeach area flow through this ditch into the River Cam. Grassy banks but limited vegetation for water vole. |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13/09/2021 | WB085 | Ditch | 1 | Moderate | Earth | Low | Grassland | R | R | F | R | R | R | R | 0-10% | Slow | Limited food sources | Medium | Steep sided ditch with grassy banks. Limited vegetation for water vole. |
| 13/09/2021 | WB107 | Ditch | 1 | Low | Earth | Low | Arable | O | O | F | R | R | R | R | 0-10% | Slow | Limited food sources | High | Steep sided ditch covered in duck weed. Limited vegetation for water vole. |
| 13/09/2021 | WB121 | Ditch | 1 | Moderate | Earth | Low | Arable | R | R | R | R | R | R | F | 0-10% | Slow | Limited food sources | Medium | Steep sided ditch with grassy banks. Limited vegetation for water vole. |
| 13/09/2021 | WB129 | Ditch | 1 | Moderate | Earth | Low | Arable | R | R | F | R | R | R | A | 0-10% | Slow | Limited food sources | Medium | Steep sided ditch adjacent to the road and arable land. Limited vegetation for water vole. |
| 13/09/2021 | WB178 | Ditch | 1 | N/A- no ditch present | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | Poor | No ditch present. |
| 13/09/2021 | WB182 | Ditch | 1 | Low | Earth | Low | Grassland | O | O | F | R | R | F | O | 0-10% | Slow | Limited food sources | Medium | Small ditch with limited vegetation for water vole. Steep, grassy banks with tall ruderal vegetation. |
| 13/09/2021 | WB185 | Ditch | 1 | N/A- no ditch present | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | Medium | No ditch present. |
| 13/09/2021 | WB203 | Ditch | 1 | N/A- no ditch present | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | Medium | No ditch present. |
| 13/09/2021 | WB205 | Ditch | 1 | None | Earth | Low | Arable | O | F | R | R | R | R | R | 90-100% | N/A-Dry | No food sources | Poor | Dry ditch shaded by bramble scrub. |
| 13/09/2021 | WB220 | Ditch | 1 | N/A- no ditch present | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | Medium | No ditch present. |
| 13/09/2021 | WB225 | Ditch | 1 | None | Earth | Low | Arable | R | F | R | R | R | R | R | 0-10% | N/A-Dry | No food sources | Medium | Dry ditch shaded by bramble scrub. |
| 13/09/2021 | WB234 | Ditch | 1 | Low | Earth | Low | Grassland | O | O | F | R | R | F | O | 0-10% | Slow | Good food sources | High | Ditch with some vegetation for water vole. Steep, grassy banks. |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13/09/2021 | WB242 | Ditch | 1 | None | Earth | Low | Arable | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | Poor | No ditch present. |
| 13/09/2021 | WB245 | Ditch | 1 | Moderate | Earth | Low | Arable | R | R | R | R | R | R | R | 0-10% | Slow | Limited food sources | Medium | Steep sided ditch with gassy banks. Limited vegetation structure for water vole. Open habitat suitable for water vole. |
| 13/09/2021 | WB253 | Ditch | 1 | Moderate | Earth | Low | Arable | R | A | O | R | R | R | R | 20-30% | Slow | Limited food sources | Medium | Ditch with steep banks. Partially shaded by hedgerow and bramble. No vegetation in channel. |
| 13/09/2021 | WB264 | Ditch | 1 | Moderate | Earth | Low | Arable | R | R | R | R | R | R | R | 0-10% | Slow | Limited food sources | Medium | Steep sided ditch with gassy banks. Limited vegetation structure for watervole. Open habitat suitable for water vole. |
| 13/09/2021 | WB300 | Ditch | 1 | None | Earth | Low | Arable | R | R | R | R | R | R | F | 0-10% | N/A-Dry | No food sources | Poor | Dry grassy ditch with no aquatic vegetation. |
| 13/09/2021 | WB301 | Ditch | 1 | None | Earth | Low | Arable | R | R | R | R | R | R | F | 0-10% | N/A-Dry | No food sources | Medium | Dry grassy ditch with no aquatic vegetation. |
| 13/09/2021 | WB318 | Ditch | 1 | Moderate | Earth | Moderate | Arable | R | R | O | O | A | O | O | 0-10% | Slow | Good food sources | Poor | Arable ditch with steep grassy banks. Suitable vegetation for water vole. |
| 13/09/2021 | WB319 | Ditch | 1 | Moderate | Earth | Low | Grassland | R | R | R | R | R | R | R | 0-10% | Slow | Limited food sources | Medium | Ditch with steep banks. Partially shaded by hedgerow and bramble. No vegetation in channel. |
| 16/09/2021 | WB008 | Ditch | 1 | None | Silt | Low | Arable | R | R | R | R | R | R | F | 0-10% | N/A-Dry | No food sources | Poor | Dry ditch adjacent to road. Very open and exposed. Leaf litter present in channel. No suitable. vegetation for water vole. |
| 16/09/2021 | WB055 | Ditch | 1 | Low | Silt | Low | Arable | R | R | A | O | R | O | R | 0-10% | Slow | Good food sources | High | Well vegetated ditch with steep sides in an arable field. Suitable |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | aquatic vegetation present. |
| 16/09/2021 | WB059 | Ditch | 1 | Low | Earth | Low | Arable | A | A | R | R | R | R | F | 40-50% | Slow | Limited food sources | Medium | Dry ditch adjacent to road. Very open and exposed. Leaf litter present in channel. No suitable vegetation for water vole. |
| 16/09/2021 | WB092 | Ditch | 1 | None | Earth | Moderate | Arable | O | O | R | R | R | R | R | 20-30% | N/A-Dry | No food sources | Poor | Dry grassy ditch with no aquatic vegetation. |
| 16/09/2021 | WB123 | Ditch | 1 | Low | Silt | Low | Arable | R | O | F | R | F | F | R | 10-20% | Slow | Good food sources | High | Long ditch partly dry, covered in duck weed. Lots of aquatic vegetation present for water vole. Some areas shaded by overhanging scrub. Parallel to the River Cam. |
| 16/09/2021 | WB141 | Ditch | 1 | Low | Silt | Low | Arable | R | O | D | A | R | A | O | 0-10% | Slow | Good food sources | Medium | Well vegetated ditch with large areas of lesser reedmace. Good vegetation structure for water vole. |
| 16/09/2021 | WB155 | Ditch | 1 | None | Earth | Low | Arable | R | A | O | R | R | R | O | 80-90% | N/A-Dry | No food sources | Poor | Dry ditch heavily shaded by bramble scrub. No suitable vegetation for water vole. |
| 16/09/2021 | WB211 | Ditch | 1 | None | Earth | Low | Crop | O | A | R | R | R | R | A | 90-100% | N/A-Dry | No food sources | Poor | Dry ditch heavily shaded by bramble scrub. No suitable vegetation for water vole. |
| 16/09/2021 | WB215 | Ditch | 1 | Low | Silt | Low | Arable | R | R | O | R | D | R | F | 0-10% | Slow | Good food sources | High | Arable ditch with grassy banks. Ditch dominated by sedge. |
| 16/09/2021 | WB297 | Ditch | 1 | None | Earth | Low | Arable | R | R | F | R | R | R | A | 0-10% | N/A-Dry | Limited food sources | Medium | Dry grassy ditch with no aquatic vegetation. |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16/09/2021 | WB160 | Ditch | 1 | N/A- no ditch present | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | Medium | Hedgerow with no ditch present. |
| 16/09/2021 | WB256 | Ditch | 1 | N/A- no ditch present | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | Medium | Hedgerow with no ditch present. |
| 28/09/2021 | PD047 | Pond | 1 | Low | Sand | Low | Arable | D | F | A | R | O | R | R | 80-90% | Static | Good food sources | Medium | Pond in an area of woodland. Good vegetation structure. Heavily shaded by trees and scrub present. Very shallow with very little bank present. |
| 28/09/2021 | WB039 | Ditch | 1 | None | Silt | Low | Arable | O | O | O | R | F | R | R | 30-40% | N/A-Dry | Good food sources | Medium | Arable ditch with lots of common reed present. Shaded by trees and scrub. |
| 28/09/2021 | WB056 | Ditch | 1 | None | Silt | Low | Arable | O | R | R | R | R | R | R | 60-70% | N/A-dry | No food sources | Medium | Dry ditch. Overgrown with bramble and no aquatic vegetation. |
| 28/09/2021 | WB060/WB308 | Ditch | 1 | Moderate | Silt | Low | Arable | R | R | R | R | R | R | D | 0-10% | Slow | Limited food sources | Medium | Arable ditch with short grassy banks. Vegetation structure is limited. |
| 28/09/2021 | WB064 | Ditch | 1 | Low | Silt | Low | Arable | R | R | R | R | R | R | D | 0-10% | Slow | Limited food sources | Medium | Arable ditch with short grassy banks. Vegetation structure is limited. |
| 28/09/2021 | WB083 | Ditch | 1 | Low | Silt | Low | Arable | R | R | R | R | R | R | D | 0-10% | Slow | Limited food sources | Medium | Arable ditch with short grassy banks. Vegetation structure is limited. |
| 28/09/2021 | WB087 | Ditch | 1 | N/A- no ditch present | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | Poor | Hedgerow with no ditch present. |
| 28/09/2021 | WB089 | Ditch | 1 | Low | Silt | Low | Arable | R | R | R | R | R | R | F | 0-10% | Slow | Limited food sources | Medium | Arable ditch with short grassy banks. Vegetation structure is limited. |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 28/09/2021 | WB106 | Ditch | 1 | None | Silt | Low | Arable | O | O | O | R | O | A | R | 10-20% | N/A-Dry | Limited food sources | Medium | Dry, shallow arable ditch. Some suitable vegetation. Shaded at one end by trees and scrub. |
| 28/09/2021 | WB120 | Ditch | 1 | None | Silt | Low | Arable | R | R | R | R | R | R | F | 0-10% | N/A-Dry | Limited food sources | Medium | Arable ditch with short grassy banks. Vegetation structure is limited. |
| 28/09/2021 | WB158/WB309 | Ditch | 1 | Low | Silt | Low | Arable | F | F | R | R | R | F | O | 30-40% | Slow | Limited food sources | Medium | Arable ditch with steep banks. Some suitable vegetation for water vole but limited. |
| 28/09/2021 | WB159 | Ditch | 1 | Low | Silt | Low | Grassland | R | O | R | R | R | R | D | 0-10% | Slow | Limited food sources | Medium | Arable ditch with steep banks. Some suitable vegetation for water vole but limited. |
| 28/09/2021 | WB206 | Ditch | 1 | None | Silt | Low | Arable | O | O | O | R | R | R | O | 10-20% | N/A-dry | No food sources | Medium | Arable ditch with no evidence of aquatic vegetation. Ruderal vegetation present with some trees shading the ditch. |
| 28/09/2021 | WB240 | Ditch | 1 | None | Silt | Low | Grassland | O | O | R | R | R | R | D | 30-40% | N/A-Dry | Limited food sources | Medium | Dry ditch, heavily scrubbed over with vegetation. no aquatic vegetation present. Adjacent to boat yard. |
| 30/09/2021 | PD008 | Pond | 1 | Moderate | Gravel | Low | Arable | R | F | R | R | O | O | O | 0-10% | Static | Some suitable vegetation | Medium | Arable reservoir surrounded by scattered scrub. Banks are shallow and bare. Some aquatic vegetation present in small areas. |
| 30/09/2021 | WB007 | Ditch | 1 | None | Silt | Low | Arable | R | O | R | R | R | R | R | 0-10% | N/A-dry | Limited food sources | Medium | Dry, arable ditch shaded by bramble scrub. |
| 30/09/2021 | WB047 | Ditch | 1 | None | Silt | Low | Arable | O | O | O | R | R | R | R | 0-10% | N/A-dry | Limited food sources | Medium | Dry, arable ditch shaded by bramble scrub. |

| Date | Waterbody ID | Waterbody type | Visit number | Water level | Shore bank type | Disturbance | Bordering land use | Bankside trees | Bushes | Herbs | Submerged weed | Reeds sedges | Tall grasses | Short grasses | Level of shading | Rate of flow | Food availability | Connectivity | Habitat description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30/09/2021 | WB061 | Ditch | 1 | None | Silt | Low | Arable | O | O | O | R | R | R | R | 0-10% | N/A-dry | Limited food sources | Medium | Dry arable ditch. Limited vegetation structure. |
| 30/09/2021 | WB091 | Ditch | 1 | None | Silt | Low | Arable | O | O | F | R | O | R | R | 0-10% | N/A-dry | Limited food sources | Medium | Dry arable ditch. Limited vegetation structure. |
| 30/09/2021 | WB175 | Ditch | 1 | None | Earth | Low | Arable | O | O | F | R | O | R | R | 0-10% | N/A-dry | Limited food sources | Medium | Dry arable ditch. Limited vegetation structure. |
| 30/09/2021 | WB208 | Ditch | 1 | None | Silt | Low | Arable | O | O | F | R | O | R | R | 0-10% | N/A-dry | Limited food sources | Medium | Arable dry ditch with grassy banks. Limited vegetation structure. |
| 30/09/2021 | WB232 | Ditch | 1 | Low | Silt | Low | Arable | O | O | F | R | O | R | R | 0-10% | Slow | Some suitable vegetation | Medium | Arable ditch with soe suitable vegetation for water vole. |
| 30/09/2021 | WB291 | Ditch | 1 | Low | Silt | Low | Arable | F | F | O | R | R | R | F | 40-50% | Slow | Limited food sources | Medium | Arable ditch with grassy banks. No vegetation in the channel. Shaded by scrub. |
| 30/09/2021 | WB292 | Ditch | 1 | Low | Silt | Low | Arable | O | O | F | R | O | R | R | 0-10% | Slow | Good food sources | Medium | Arable ditch adjacent to a footpath. Lots of ruderal species and grasses present. |
| 30/09/2021 | WB294 | Ditch | 1 | None | Silt | Low | Arable | O | O | R | R | R | R | R | 0-10% | N/A-dry | No food sources | Medium | Dry arable ditch. Limited vegetation structure. |
| 30/09/2021 | WB295 | Ditch | 1 | None | Earth | Low | Arable | O | O | R | R | R | R | R | 0-10% | N/A-dry | No food sources | Medium | Dry arable ditch. Limited vegetation structure. |
| 30/09/2021 | WB003 | Ditch | 1 | None | Earth | Low | Arable | R | R | R | R | R | R | F | 0-10% | N/A-dry | No food sources | Medium | Dry grassy ditch in arable fields. No aquatic vegetation present. |

## 5.5 Water vole field signs table

| Date | Waterbody ID | Survey type | Grid reference | Field sign | Notes |
|---|---|---|---|---|---|
| **13/04/2021** | WB321 | Incidental sighting | TL4842061756 | Other | Sighting of water vole being eaten by a heron. |
| **21/04/2021** | WB100 | Walked transect | TL4877661881 | Latrine | Identified during other surveys. |
| **21/04/2021** | WB100 | Incidental sighting | TL4878161881 | Latrine | Identified during other surveys. |
| **21/04/2021** | WB100 | Incidental sighting | TL4877661870 | Burrow | With droppings outside. Identified during other surveys. |
| **21/04/2021** | WB100 | Incidental sighting | TL4877961875 | Burrow | Identified during other surveys. |
| **21/04/2021** | WB100 | Incidental sighting | TL4878161885 | Burrow | Identified during other surveys. |
| **21/04/2021** | WB100 | Incidental sighting | TL4877561862 | Burrow | Identified during other surveys. Some footprints. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4839561697 | Burrow | Burrow in the bank. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4839661702 | Latrine | 1 latrine. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4839561702 | Burrow | In the top of the bank. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4839461703 | Burrow | Burrow in the bank. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4831361096 | Burrow | 4 burrows in bank, likely water vole. Possible latrine in entrance. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4832561141 | Latrine | 2 burrows and 2 latrines. |

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| **27/04/2021** | River Cam (WB322) | Boat transect | TL4832961253 | Burrow | 2 burrows. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4833661290 | Latrine | Old latrine on log. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4834161344 | Latrine | 1 latrine. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4835761401 | Latrine | Droppings on plank of wood. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4839061614 | Latrine | With feeding remains. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4839661615 | Latrine | 1 latrine. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4839061634 | Latrine | 1 latrine. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4839561631 | Burrow | Burrow in the bank. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4839961661 | Burrow | With old droppings in entrance. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4839261684 | Burrow | With latrine outside. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4839761693 | Burrow | In top of the bank. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4839761742 | Burrow | Burrow in bank. |
| **27/04/2021** | River Cam (WB322) | Boat transect | TL4840761798 | Burrow | Burrows in bank behind bramble. |
| **27/04/2021** | WB001 | Walked transect | TL4841561645 | Latrine | 2 latrines. |
| **27/04/2021** | WB001 | Walked transect | TL4841661676 | Burrow | Burrow in bank. |

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| **27/04/2021** | WB001 | Walked transect | TL4841161711 | Burrow | Burrow leading to water with feeding signs. |
| **27/04/2021** | WB001 | Walked transect | TL4840861718 | Latrine | 1 latrine. |
| **27/04/2021** | WB001 | Walked transect | TL4841061739 | Latrine | 2 latrines. |
| **27/04/2021** | WB001 | Walked transect | TL4840961722 | Latrine | 1 latrine. |
| **27/04/2021** | WB001 | Walked transect | TL4840961731 | Latrine | 1 latrine. |
| **27/04/2021** | WB321 | Walked transect | TL4843261750 | Burrow | Two burrows in bank. |
| **27/04/2021** | WB321 | Walked transect | TL4842661753 | Burrow | Burrow in bank. |
| **27/04/2021** | WB321 | Walked transect | TL4843461750 | Burrow | Droppings outside entrance. |
| **27/04/2021** | WB321 | Walked transect | TL4847061732 | Latrine | 1 latrine. |
| **27/04/2021** | WB321 | Walked transect | TL4846561735 | Burrow | Two burrows. |
| **27/04/2021** | WB321 | Walked transect | TL4856561690 | Burrow | On opposite bank. |
| **27/04/2021** | WB320 | Walked transect | TL4889261685 | Latrine | 1 latrine. |
| **27/04/2021** | WB320 | Walked transect | TL4888161653 | Feeding remains | Feeding remains outside burrow. |
| **28/04/2021** | WB260 | Walked transect | TL4806261658 | Latrine | 1 latrine. |
| **28/04/2021** | WB260 | Walked transect | TL4805361663 | Burrow | Burrow in the bank. |
| **28/04/2021** | WB017 | Walked transect | TL4805361660 | Latrine | Under bridge. |
| **28/04/2021** | WB260 | Walked transect | TL4803061618 | Burrow | Burrow in the bank. |
| **28/04/2021** | WB260 | Walked transect | TL4801661599 | Burrow | 2 burrows. |
| **28/04/2021** | WB260 | Walked transect | TL4801161565 | Burrow | 2 burrows. |
| **28/04/2021** | WB260 | Walked transect | TL4787661343 | Burrow | Burrow in the bank. |
| **28/04/2021** | WB105 | Walked transect | TL4719161180 | Latrine | 2 latrines. |
| **28/04/2021** | WB105 | Walked transect | TL4718861186 | Latrine | 1 latrine. |
| **28/04/2021** | WB105 | Walked transect | TL4716561205 | Latrine | 1 latrine. |
| **28/04/2021** | WB105 | Walked transect | TL4716861204 | Burrow | Leading to water. |
| **28/04/2021** | WB105 | Walked transect | TL4713861232 | Latrine | 1 latrine. |
| **28/04/2021** | WB105 | Walked transect | TL4706361278 | Burrow | Burrow in the bank. |

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| **28/04/2021** | WB095 | Incidental sighting | TL4810861740 | Burrow | Water vole burrow identified during other surveys. |
| **28/04/2021** | WB171 | Incidental sighting | TL4826461843 | Other | Report of water vole signs during other surveys. |
| **10/05/2021** | WB045 | Walked transect | TL5034359574 | Latrine | Old water vole latrine. |
| **10/05/2021** | WB191 | Walked transect | TL5048160242 | Latrine | Latrine, burrow and feeding remains. |
| **10/05/2021** | WB191 | Walked transect | TL5049560245 | Feeding remains | One pile of feeding remains. |
| **10/05/2021** | WB191 | Walked transect | TL5050160244 | Feeding remains | One pile of feeding remains. |
| **10/05/2021** | WB191 | Walked transect | TL5050560247 | Feeding remains | One pile of feeding remains. |
| **10/05/2021** | WB191 | Walked transect | TL5051260247 | Latrine | 1 latrine. |
| **02/08/2021** | WB260 | Walked transect | TL4798561532 | Footprint | Footprints seen in mud by the water. |
| **02/08/2021** | WB105 | Walked transect | TL4707061281 | Latrine | Droppings at edge on north bank. |
| **02/08/2021** | WB105 | Walked transect | TL4707661276 | Footprint | South bank at edge of water course. |
| **02/08/2021** | WB171 | Walked transect | TL4832661761 | Latrine | Sample taken. Water vole droppings. Not fresh. |
| **02/08/2021** | WB171 | Walked transect | TL4831861771 | Feeding remains | One pile of feeding remains. |
| **02/08/2021** | WB171 | Walked transect | TL4834061742 | Latrine | On the north bank. |
| **02/08/2021** | WB171 | Incidental sighting | TL4824361871 | Burrow | Identified during surveys for other species. Burrow with potential areas of footprints and some chewed vegetation. |
| **02/08/2021** | WB001 | Walked transect | TL4840861718 | Latrine | 1 latrine. |
| **02/08/2021** | WB001 | Walked transect | TL4840961654 | Run | Up through bank vegetation. |

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| **03/08/2021** | WB321 | Walked transect | TL4852861711 | Burrow | Water vole burrow on opposite bank. |
| **03/08/2021** | WB321 | Walked transect | TL4852461713 | Burrow | Three holes on opposite bank. |
| **03/08/2021** | WB321 | Walked transect | TL4850561717 | Burrow | Burrow with dropping outside. |
| **03/08/2021** | WB001 | Walked transect | TL4845861826 | Latrine | Droppings on north west bank. |
| **23/08/2021** | River Cam (WB322) | Boat transect | TL4839661662 | Other | Feeding remains and potential run through vegetation. |
| **24/08/2021** | River Cam (WB322) | Boat transect | TL4832961239 | Latrine | 1 latrine. |
| **24/08/2021** | River Cam (WB322) | Boat transect | TL4833261341 | Latrine | 1 latrine. |
| **24/08/2021** | River Cam (WB322) | Boat transect | TL4834761347 | Latrine | 1 latrine. |
| **24/08/2021** | River Cam (WB322) | Boat transect | TL4839361629 | Latrine | Difficult to discern droppings from soil on photograph. |
| **24/08/2021** | River Cam (WB322) | Boat transect | TL4845161867 | Burrow | Hole above water line, potentially water vole. May no longer be in use. |
| **16/09/2021** | WB141 | Walked transect | TL5053865507 | Footprint | Possible water vole footprints on south bank but no safe access to confirm. |

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| **16/09/2021** | WB141 | Walked transect | TL5056465507 | Other | Heard water vole going into the water. |
| **16/09/2021** | WB141 | Walked transect | TL5057465507 | Run | Run into ditch on north side. |
| **16/09/2021** | WB141 | Walked transect | TL5059565503 | Latrine | Latrine on south bank. |
| **16/09/2021** | WB141 | Walked transect | TL5059665503 | Latrine | Latrine on south bank. |
| **16/09/2021** | WB141 | Walked transect | TL5059565504 | Latrine | Latrine on north bank. |
| **16/09/2021** | WB141 | Walked transect | TL5061365500 | Latrine | Latrine on south bank. |
| **16/09/2021** | WB141 | Walked transect | TL5061165501 | Latrine | Latrine on south bank. |
| **16/09/2021** | WB141 | Walked transect | TL5063465495 | Latrine | 1 latrine. |
| **16/09/2021** | WB141 | Walked transect | TL5063665501 | Latrine | Latrine on south bank. |
| **03/11/2021** | WB171 | Walked transect | TL4888661665 | Latrine | A few droppings along the bank. Identified during otter surveys. |

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| **04/11/2021** | WB001 | Walked transect | TL4846361739 | Latrine | 2 latrines. Identified during otter surveys. |
| **04/11/2021** | WB320 | Walked transect | TL4843861807 | Latrine | Latrine with feeding signs and burrow. Identified during otter surveys. |
| **04/11/2021** | WB321 | Walked transect | TL4846761737 | Latrine | Identified during otter surveys. |
| **04/11/2021** | WB321 | Walked transect | TL4847161737 | Latrine | Identified during otter surveys. |
| **04/11/2021** | WB321 | Walked transect | TL4847961730 | Run | With latrine and burrow. Identified during otter surveys. |
| **24/11/2021** | WB260 | Walked transect | TL4805761663 | Latrine | Some fresh, some old. Identified during November otter survey. |
| **24/11/2021** | WB260 | Walked transect | TL4805661667 | Latrine | Identified during November otter survey. |
| **24/11/2021** | WB260 | Walked transect | TL4806461662 | Latrine | Identified during November otter survey. |
| **24/11/2021** | WB260 | Walked transect | TL4805961659 | Latrine | 2 latrines. Identified during November otter survey. |
| **24/11/2021** | WB260 | Walked transect | TL4805961659 | Burrow | 3 burrows. Identified during November otter survey. |
| **24/11/2021** | WB260 | Walked transect | TL4806061659 | Latrine | 3 latrines. Identified during November otter survey. |
| **24/11/2021** | WB260 | Walked transect | TL4800361567 | Latrine | Identified during November otter survey. |
| **24/11/2021** | WB260 | Walked transect | TL4799361549 | Latrine | Identified during November otter survey. |
| **24/11/2021** | WB260 | Walked transect | TL4799461548 | Burrow | Identified during November otter survey. |
| **24/11/2021** | WB105 | Walked transect | TL4706561284 | Burrow | Identified during November otter survey. |

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| **24/11/2021** | WB105 | Walked transect | TL4706661283 | Burrow | Identified during November otter survey. |
| **24/11/2021** | WB171 | Walked transect | TL4834261751 | Latrine | 2 latrines. Identified during November otter survey. |
| **24/11/2021** | WB171 | Walked transect | TL4834161754 | Latrine | Identified during November otter survey. |
| **24/11/2021** | WB171 | Walked transect | TL4833161757 | Latrine | 2 droppings on log. Identified during November otter survey. |
| **24/11/2021** | WB043 | Walked transect | TL4980959758 | Latrine | Identified during November otter survey. |
| **16/12/2021** | River Cam (WB322) | Boat transect | TL4830561092 | Burrow | 2 burrows. |
| **16/12/2021** | River Cam (WB322) | Boat transect | TL4834561353 | Latrine | Identified during December otter boat survey. |
| **16/12/2021** | River Cam (WB322) | Boat transect | TL4834861351 | Latrine | Identified during December otter boat survey. |
| **16/12/2021** | River Cam (WB322) | Boat transect | TL4834861356 | Latrine | Identified during December otter boat survey. |
| **16/12/2021** | River Cam (WB322) | Boat transect | TL4834861357 | Latrine | Identified during December otter boat survey. |
| **16/12/2021** | River Cam (WB322) | Boat transect | TL4836261435 | Latrine | Identified during December otter boat survey. |
| **16/12/2021** | River Cam (WB322) | Boat transect | TL4840161666 | Burrow | Identified during December otter boat survey. |
| **16/12/2021** | River Cam (WB322) | Boat transect | TL4839961675 | Feeding remains | Identified during December otter boat survey. |
| **16/12/2021** | River Cam (WB322) | Boat transect | TL4839961682 | Burrow | Identified during December otter boat survey. |
| **16/12/2021** | River Cam (WB322) | Boat transect | TL4839861688 | Latrine | Identified during December otter boat survey. |

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| **16/12/2021** | River Cam (WB322) | Boat transect | TL4840061744 | Latrine | And burrow. Identified during December otter boat survey. |
| **16/12/2021** | River Cam (WB322) | Boat transect | TL4840261752 | Latrine | Identified during December otter boat survey. |
| **05/01/2022** | WB141 | Walked transect | TL5050965520 | Latrine | 1 latrine. |
| **05/01/2022** | WB141 | Walked transect | TL5050365518 | Burrow | Burrow in the bank. |
| **05/01/2022** | WB141 | Walked transect | TL5052165516 | Burrow | Burrow in the bank. |
| **05/01/2022** | WB141 | Walked transect | TL5057665509 | Burrow | Burrow in the bank. |
| **22/01/2022** | WB260 | Walked transect | TL4806061668 | Latrine | Old water vole latrine. |
| **28/03/2022** | River Cam (WB322) | Boat transect | TL4832961190 | Latrine | 1 latrine. |
| **28/03/2022** | River Cam (WB322) | Boat transect | TL4833361295 | Latrine | 1 latrine. |
| **28/03/2022** | River Cam (WB322) | Boat transect | TL4833861299 | Latrine | 1 latrine. |
| **28/03/2022** | River Cam (WB322) | Boat transect | TL4834861355 | Latrine | 1 latrine. |
| **28/03/2022** | River Cam (WB322) | Boat transect | TL4839461626 | Latrine | 1 latrine. |
| **28/03/2022** | River Cam (WB322) | Boat transect | TL4839561634 | Latrine | With feeding remains. |
| **28/03/2022** | River Cam (WB322) | Boat transect | TL4839561636 | Feeding remains | With droppings. |

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| **28/03/2022** | River Cam (WB322) | Boat transect | TL4839861653 | Latrine | 1 latrine. |
| **28/03/2022** | River Cam (WB322) | Boat transect | TL4839861663 | Latrine | 1 latrine. |
| **28/03/2022** | River Cam (WB322) | Boat transect | TL4839961670 | Latrine | 1 latrine. |
| **28/03/2022** | River Cam (WB322) | Boat transect | TL4841461817 | Burrow | With latrine. |
| **28/03/2022** | River Cam (WB322) | Boat transect | TL4847861899 | Latrine | 2 latrines. |
| **14/04/2022** | WB123 | Walked transect | TL5058464937 | Other | Water vole sighting. Seen on the bank then went under the water. |
| **13/04/2022** | WB253 | Walked transect | TL5047165540 | Other | Water vole sighting. |
| **05/05/2022** | WB264 | Walked transect | TL5078966030 | Latrine | Latrine on raft. |
| **05/05/2022** | WB318 | Walked transect | TL5075166113 | Latrine | Latrine on raft. |
| **05/05/2022** | WB318 | Walked transect | TL5068166128 | Latrine | Latrine on raft. |
| **05/05/2022** | WB159 | Walked transect | TL5039665811 | Other | Potential sighting, plop and scurry into burrow and feeding signs. |
| **05/05/2022** | WB159 | Walked transect | TL5036665811 | Sighting | Seen going from bank into the water. |
| **06/05/2022** | WB234 | Walked transect | TL5032165177 | Latrine | Latrine on raft. |
| **05/05/2022** | WB141 | Walked transect | TL5064965497 | Latrine | Latrine on raft. |
| **05/05/2022** | WB141 | Walked transect | TL5063465501 | Latrine | 1 latrine. |
| **05/05/2022** | WB141 | Walked transect | TL5063765495 | Burrow | Burrow in the bank. |
| **05/05/2022** | WB141 | Walked transect | TL5061765500 | Latrine | Latrine on raft. |
| **05/05/2022** | WB141 | Walked transect | TL5056965505 | Latrine | Latrine on raft. |
| **05/05/2022** | WB141 | Walked transect | TL5052065513 | Latrine | Latrine on raft. |
| **05/05/2022** | WB141 | Walked transect | TL5050765517 | Latrine | Latrine on raft. |
| **05/05/2022** | WB078 | Walked transect | TL5053565785 | Latrine | Latrine on raft. |
| **05/05/2022** | WB078 | Walked transect | TL5059165778 | Latrine | Latrine on raft. |

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| **05/05/2022** | WB078 | Walked transect | TL5060865776 | Latrine | Latrine on raft. |
| **05/05/2022** | WB085 | Walked transect | TL5050565691 | Latrine | Latrine on raft. |
| **05/05/2022** | WB085 | Walked transect | TL5050565691 | Latrine | Latrine on raft. |
| **05/05/2022** | WB234 | Walked transect | TL5048965642 | Latrine | Latrine on raft. |
| **05/05/2022** | WB234 | Walked transect | TL5032065179 | Burrow | Trail in the submerged vegetation with small clearing on bank. |
| **05/05/2022** | WB234 | Walked transect | TL5031865160 | Latrine | 1 latrine. |
| **05/05/2022** | WB234 | Walked transect | TL5031565137 | Latrine | 1 latrine. |
| **05/05/2022** | WB234 | Walked transect | TL5031265112 | Latrine | 1 latrine. |
| **05/05/2022** | WB234 | Walked transect | TL5031065112 | Burrow | Trail in submerged vegetation to raft and bank. |
| **18/05/2022** | WB064 | Walked transect | TL5041766363 | Latrine | 1 latrine. |
| **18/05/2022** | WB234 | Walked transect | TL5031765186 | Latrine | 1 latrine. |
| **19/05/2022** | WB243 | Walked transect | TL5084265995 | Latrine | 1 latrine. |
| **19/05/2022** | River Cam (WB322) | Walked transect | TL4925062929 | Latrine | Dried out droppings. |
| **20/05/2022** | River Cam (WB322) | Walked transect | TL4925062929 | Latrine | 1 latrine. |
| **09/06/2022** | WB264 | Walked transect | TL5074465283 | Latrine | Latrine on raft. |
| **09/06/2022** | WB318 | Walked transect | TL5078866046 | Latrine | Latrine on raft. |
| **09/06/2022** | WB318 | Walked transect | TL5077766109 | Latrine | Latrine on raft. |
| **09/06/2022** | WB318 | Walked transect | TL5075166114 | Latrine | Latrine on raft. |
| **09/06/2022** | WB318 | Walked transect | TL5073566116 | Latrine | Latrine on raft. |
| **09/06/2022** | WB318 | Walked transect | TL5069866125 | Latrine | Latrine on raft |
| **09/06/2022** | WB129 | Walked transect | TL5068166129 | Latrine | Latrine on raft. |
| **09/06/2022** | WB141 | Walked transect | TL5052065786 | Latrine | Latrine on raft. |
| **09/06/2022** | WB141 | Walked transect | TL5053665511 | Latrine | Latrine on raft. |
| **09/06/2022** | WB141 | Walked transect | TL5052265518 | Sighting | Seen while conducting raft surveys. |
| **10/06/2022** | WB055 | Walked transect | TL5050165520 | Latrine | Latrine on raft. |

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| **10/06/2022** | WB055 | Walked transect | TL5044864844 | Latrine | Latrine on raft. |
| **10/06/2022** | WB055 | Walked transect | TL5046264830 | Latrine | Latrine on raft. |
| **10/06/2022** | WB055 | Walked transect | TL5047764819 | Latrine | Latrine on raft. |
| **10/06/2022** | WB055 | Walked transect | TL5049664802 | Latrine | Latrine on raft. |
| **10/06/2022** | WB055 | Walked transect | TL5051264789 | Latrine | Latrine on raft. |
| **10/06/2022** | WB055 | Walked transect | TL5052664777 | Latrine | Latrine on rafts. |
| **10/06/2022** | WB215 | Walked transect | TL5054264763 | Latrine | Latrine on raft. |
| **10/06/2022** | WB215 | Walked transect | TL5040164641 | Latrine | Latrine on raft. |
| **10/06/2022** | WB215 | Walked transect | TL5036564669 | Latrine | Latrine on raft. |
| **24/06/2022** | WB141 | Walked transect | TL5063165499 | Latrine | Latrine on raft. |
| **24/06/2022** | WB141 | Walked transect | TL5056865506 | Latrine | Latrine on raft. |
| **07/07/2022** | WB253 | Walked transect | TL5048165576 | Latrine | Latrine on raft. |
| **07/07/2022** | WB253 | Walked transect | TL5047565558 | Latrine | Latrine on raft. |
| **07/07/2022** | WB107 | Walked transect | TL5044365371 | Latrine | Latrine on raft. |
| **07/07/2022** | WB121 | Walked transect | TL5080666149 | Latrine | Latrine on raft. |
| **07/07/2022** | WB121 | Walked transect | TL5081366191 | Latrine | Latrine on raft. |
| **07/07/2022** | WB121 | Walked transect | TL5081366191 | Other | Water vole sighting. |
| **07/07/2022** | WB121 | Walked transect | TL5077366110 | Other | Water vole sighting. |
| **07/07/2022** | WB318 | Walked transect | TL5077366110 | Latrine | Latrine on raft. |
| **07/07/2022** | WB318 | Walked transect | TL5056865506 | Latrine | Latrine on raft. |
| **07/07/2022** | WB141 | Walked transect | TL5063465496 | Latrine | Latrine on raft. |
| **07/07/2022** | WB141 | Walked transect | TL5048066616 | Latrine | Latrine on raft. |
| **07/07/2022** | WB120 | Walked transect | TL5048066616 | Latrine | Latrine on raft. |
| **07/07/2022** | WB120 | Walked transect | TL5045966552 | Latrine | Latrine on raft. |
| **07/07/2022** | WB120 | Walked transect | TL5042665803 | Latrine | Latrine on raft. |
| **07/07/2022** | WB159 | Walked transect | TL5032365214 | Latrine | Latrine on raft. |
| **08/07/2022** | WB234 | Walked transect | TL5032465212 | Latrine | Latrine on raft. |
| **08/07/2022** | WB234 | Walked transect | TL5032465212 | Latrine | Latrine on raft. |

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| **08/07/2022** | WB234 | Walked transect | TL5029965049 | Latrine | Latrine on raft. |
| **08/07/2022** | WB234 | Walked transect | TL5047864821 | Latrine | Latrine on raft. |
| **08/07/2022** | WB055 | Walked transect | TL5045864880 | Latrine | Latrine on raft. |
| **08/07/2022** | WB123 | Walked transect | TL5056064928 | Latrine | Latrine on raft. |
| **08/07/2022** | WB123 | Walked transect | TL5077466108 | Latrine | Latrine on raft. |
| **15/08/2022** | WB318 | Walked transect | TL5075466113 | Latrine | Latrine on raft. |
| **15/08/2022** | WB318 | Walked transect | TL5053765509 | Latrine | Latrine on raft. |
| **16/08/2022** | WB141 | Walked transect | TL5056765503 | Latrine | Latrine on raft. |
| **16/08/2022** | WB141 | Walked transect | TL4983762798 | Latrine | Latrine on raft. |

*Source: Mott MacDonald Ltd, 202*

# Get in touch

**You can contact us by:**

Emailing at **info@cwwtpr.com**

Calling our Freephone information line on **0808 196 1661**



Writing to us at **Freepost: CWWTPR**

Visiting our website at [redacted]

You can view all our DCO application documents and updates on the application on The Planning Inspectorate website:

**https://infrastructure.planninginspectorate.gov.uk/projects/eastern/cambridge-waste-water-treatment-plant-relocation/**

# 11 Appendix B

## 11.1 Water Vole Impact Map

Scheme Order Limits
Survey extent
Impact assessment
No impact
5m buffer maintained
Up to 5m temporary habitat loss
Up to 20m temporary habitat loss
Up to 30m temporary habitat loss
Up to 50m permanent habitat loss

Milton
Milton Fen
Cambridge Road
Thirteenth Public Drain
Todd's Pit
Dickerson's Pit
A14
A1309
Milton Road
WB171
WB152
WB001
WB321
WB260
WB322
Biggin Abbey Cottages
Northern Bridge Farm
Red House Close
First Public Drain
B1047
Hornings
Cambridge North
River Cam
High Street

0 200 400 600 800 1,000 Metres

Data Sources
Scheme Order Limits: Anglian Water Services @One 2022
Water vole survey: Mott MacDonald, 2022
Basemapping: © Crown copyright and database rights 2021 OS 100022432

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Client: love every drop anglianwater

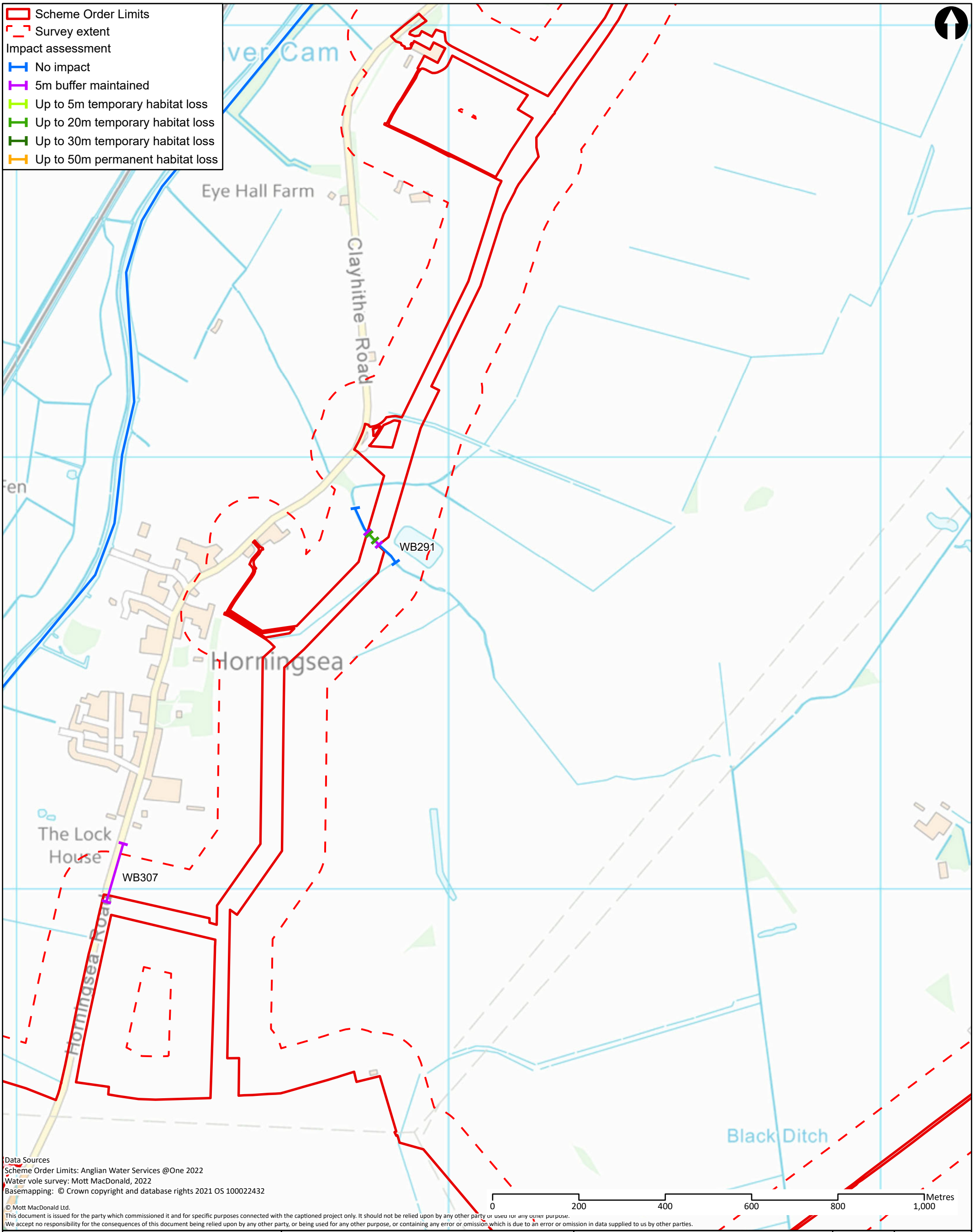
| Rev | Date | Drawn | Description | Ch'k'd | App'd |
|---|---|---|---|---|---|
| P1 | 15/11/22 | KL | First Draft | AW | CS |
| | | | | | |

Title
Cambridge Waste Water Treatment Plant Relocation Project
Water voles
Impact assessment

| | |
|---|---|
| Drawn | KL |
| Checked | AW |
| Approved | CS |
| Scale at A3 | 1:8,000 |

Drawing Number: WW01003-CAMEST-MOT-05-XX-DR-X-1147

| Security | Status | Rev |
|---|---|---|
| STD | PRE | P1 |




Data Sources
Scheme Order Limits: Anglian Water Services @One 2022
Water vole survey: Mott MacDonald, 2022
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| Rev | Date | Drawn | Description | Ch'k'd | App'd |
|---|---|---|---|---|---|
| P1 | 15/11/22 | KL | First Draft | AW | CS |
| | | | | | |

Title
Cambridge Waste Water Treatment Plant
Relocation Project
Water voles
Impact assessment

| | |
|---|---|
| Drawn | KL |
| Checked | AW |
| Approved | CS |
| Scale at A3 | 1:8,000 |

Drawing Number: WW01003-CAMEST-MOT-05-XX-DR-X-1148

| Security | Status | Rev |
|---|---|---|
| STD | PRE | P1 |

Scheme Order Limits
Survey extent
Impact assessment
No impact
5m buffer maintained
Up to 5m temporary habitat loss
Up to 20m temporary habitat loss
Up to 30m temporary habitat loss
Up to 50m permanent habitat loss

WB120
WB089
WB064
WB060
WB308
WB121
WB318
WB264
WB129
WB078
WB085
WB253
WB141
WB107
WB182
WB234
WB188
WB123
WB055
WB322

Bannold Road
Station Road
Lane
Way
Waterbeach
Lock Farm
The Cottage
Hall Crest Farm
Northfields Farm Cottages
Mulberry House Farm
Clayhithe

0 200 400 600 800 1,000 Metres

Data Sources
Scheme Order Limits: Anglian Water Services @One 2022
Water vole survey: Mott MacDonald, 2022
Basemapping: © Crown copyright and database rights 2021 OS 100022432

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| Rev | Date | Drawn | Description | Ch'k'd | App'd |
|---|---|---|---|---|---|
| P1 | 15/11/22 | KL | First Draft | AW | CS |

Title
Cambridge Waste Water Treatment Plant Relocation Project
Water voles
Impact assessment

| | |
|---|---|
| Drawn | KL |
| Checked | AW |
| Approved | CS |
| Scale at A3 | 1:8,000 |

Drawing Number: WW01003-CAMEST-MOT-05-XX-DR-X-1149

| Security | Status | Rev |
|---|---|---|
| STD | PRE | P1 |

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