



Greater Cambridge Partnership

CAMBOURNE TO CAMBRIDGE

Environmental Statement

Appendix TR5.12 - Otter and Water Vole Report





Greater Cambridge Partnership

Cambourne to Cambridge

Otter and Water Vole Report

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1 Introduction

1.1 Project Background

- 1.1.1. The Cambourne to Cambridge project (C2C) is a proposed new 13.6km public transport route linking Cambourne and Cambridge, hereafter referred to as the 'Scheme'. It will include a dedicated busway serving communities in Cambourne and the proposed Bourn Airfield development, as well as in Hardwick, Coton and the West Cambridge campus. A service road, to be used as a path for active travel, particularly by cyclists and pedestrians, will run alongside the busway. A new travel hub will be provided at Scotland Farm.
- 1.1.2. Scheme details are provided in the main report to the Environmental Statement (ES).

1.2 Ecological Background

- 1.2.1. The requirement for Otter *Lutra lutra* and Water Vole *Arvicola amphibius* survey followed the identification of suitable habitats that may be impacted by the Scheme. Suitable habitat comprised a number of waterbodies and ponds located within an area 250m around the Scheme Alignment (hereafter referred to as the 'Survey Area'), as shown in **Annex B**. Previous surveys for these species within all or part of the Survey Area were undertaken in 2014 and 2017 by Thomson Environmental Consultants (Thomson Environmental Consultants, 2014; Thomson Environmental Consultants, 2017), and in 2018 and 2021 by Cambridge Ecology (Cambridge Ecology, 2018; Cambridge Ecology, 2021).
- 1.2.2. Thomson found marginal-low quality habitat for Water Voles in the watercourses on their site, with disused burrows located in watercourses to the south of the site outside of our Survey Area, and no evidence of Water Voles during initial surveys (Thomson Environmental Consultants, 2014). Updated surveys in 2016-2017 did confirm fresh Water Vole field signs across watercourses on Bourn Airfield, in the form of droppings/latrines, alongside other signs indicative of Water Vole presence such as feeding stations and burrows (Thomson Environmental Consultant, 2017). Two waterbodies within the Bourn Airfield survey area (waterbodies referred to as D18 and D19 in the Thomson Environmental Consultant Report, 2019) are impacted by the Scheme. Surveys completed of these waterbodies concluded that Water Voles are likely absent. Water Vole were recorded within waterbodies connected to D18 and D19, which are within the 250m Survey Area.
- 1.2.3. The surveys conducted by Cambridge Ecology found no signs of Water Vole, Otter or American Mink *Neovison vison* during their survey visits, although the Bin Brook and watercourses to the west of Cambridge were found to provide suitable habitat to support a population of Water Vole and Otter (Cambridge Ecology, 2018; Cambridge Ecology, 2021).
- 1.2.4. The Cambridge Ecology surveys were only undertaken in April and May 2021, in the first half of the Water Vole breeding season. In line with the most up to date guidelines (Dean et al., 2016), waterbodies suitable for Water Voles should be surveyed once in the first half of

the breeding season (April to June) and once in the second half (July to September), with surveys spaced at least two months apart.

- 1.2.5. WSP identified an additional eight waterbodies which Cambridge Ecology did not have full access to during their 2021 surveys. Further Otter and Water Vole surveys were therefore undertaken to complete the baseline, inform impact assessment and mitigation and/or compensation to ensure the Scheme did not result in breaches of the relevant wildlife legislation or planning policy.
- 1.2.6. In addition, a local records search obtained through the Cambridge and Peterborough Environmental Records Centre (CPERC) in 2022, returned numerous records of Otter and Water Vole within 2km of the Scheme.

1.3 Brief and Objectives

- 1.3.1. WSP UK Ltd was commissioned by the GCP to undertake an update of existing Otter and Water Vole surveys, with the following objectives:
 - Complete updated field surveys to search for signs of Otter and Water Vole activity; to include recording the presence of holts and/or burrows and their activity status and field signs such as faeces, pathways or tracks, prints and feeding remains where present;
 - Present the findings of the historic surveys undertaken by Cambridge Ecology and Thomson Environmental Consultants within the Study Area; and
 - Present the findings of the surveys in a baseline report.
- 1.3.2. The findings of these assessments will be used to inform the impact assessment and requirement for mitigation for Otter and Water Vole across the Scheme. Details of the impact assessment and mitigation will be included within the Biodiversity Chapter of the Environmental Statement for the Scheme.

2 Relevant Legislation

2.1 Legal Compliance

- 2.1.1. Under the Conservation of Habitats and Species Regulations 2017 (as amended) Otter is listed on Schedule 2 of the Habitats Directive (Council Directive 92/43/EEC) and as such is a European Protected Species (EPS). Under Part 3 of the Habitat Regulations, it is an offence to:
- deliberately capture, injure or kill a wild Otter;
 - deliberately disturb a wild Otter; and
 - damage or destroy a breeding site or resting place used by Otter.
- 2.1.2. Otter and Water Vole are both listed on Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended), though they receive different levels of protection under this legislation. An Otter is protected from sale and from disturbance '*while it is occupying a structure or place which it uses for shelter or protection*'. It is also an offence to '*obstruct access to any structure or place used for shelter or protection*'. Water Vole receive full protection under the WCA and it is an offence to;
- intentionally kill, injure or take Water Vole;
 - intentionally or recklessly obstruct, damage or destroy any structure or place used for shelter or protection by Water Vole, or disturb Water Vole while they are occupying such a structure; and
 - sell or advertise for sale Water Vole, whether live or dead.
- 2.1.3. The Natural Environment and Rural Communities (NERC) Act 2006 reinforces the duty upon all public authorities, including planning authorities, to have regard for the conservation of biodiversity when discharging their duties. The Act refines the definition of biodiversity conservation, stating that it includes restoring or enhancing a population or habitat. Section 41 of the NERC Act requires the Secretary of State to list habitats and species of principal importance (HPIs and SPIs) for the conservation of biodiversity in England. The habitats and species listed in accordance with Section 41 largely replicate those listed on the UK Biodiversity Action Plan (BAP) which occur in England and includes Otter and Water Vole.

3 Methodology

3.1 Desk Study

- 3.1.1. An updated ecological desk study was completed in 2022. As part of this study, records of any notable or legally protected species, including Otter and Water Vole, from within the Study Area were requested from CPERC. Records of American Mink were also requested due to their known predation on Water Vole. Records from the last 10 years were included in this report. The Study Area for the desk study was defined as a 2km radius of the Scheme, as shown in **Annex A**.

3.2 Field Survey

- 3.2.1. All watercourses identified as suitable habitat in the Survey Area were subject to detailed Otter and Water Vole survey. The watercourses are labelled WC1-WC15, with the exception of two ponds, labelled as P1 and P2. WC5 is known locally as 'Callow Brook' and WC15 is known locally as 'Bin Brook', and these terms will be used hereafter to describe these watercourses. All watercourses are located throughout the Scheme. The locations of the watercourses are shown in **Annex B**.

Otter Survey Area

- 3.2.2. The survey for Otter was carried out with reference to good practice guidance (Chanin P. , 2003B) and other standard guidance documents (Chanin P. , 2003A) (Liles, 2003).
- 3.2.3. The Survey Area in relation to Otter comprised 250m sections up and downstream from the Scheme Alignment. All suitable habitat identified as having potential to support Otter populations was surveyed within the Survey Area. The Survey Area extents are shown in **Annex B**.
- 3.2.4. The Otter surveys included two visits to each watercourse within the appropriate season to look for evidence of Otters. This comprised the following:
- A walked survey of each watercourse and associated riparian/holt building habitat, accessing the channel where possible, to search for field signs of Otter; and
 - Such signs include spraints, footprints, feeding remains, Otter slides, holts and couches.

Water Vole Survey Area

- 3.2.5. The Survey Area was informed by guidance in The Water Vole Mitigation Handbook (Dean, Strachan, Gow, & Andrews, 2016) which recommends a field survey area of between 200m and 500m upstream and downstream for a scheme with the potential for permanent impacts affecting more than 50m of watercourse. The Survey Area comprised 250m sections up and downstream from the Scheme Alignment. This also included all directly connected water features and associated riparian habitat. The Survey Area extents are shown in **Annex B**.

- 3.2.6. The Water Vole surveys comprised two visits to each watercourse within the appropriate season, incorporating the following elements:
- The recording of habitat variables and features relevant to Water Voles (for example general habitat type, shore/bank substrate, bordering land use, vegetation, disturbance level, bank profile, water depth);
 - A walked survey of each watercourse, accessing the channel where possible, to search for field signs of Water Vole including faeces, latrines, feeding stations, 'lawns', burrows, nests, footprints and runways in vegetation; and
 - The recording of any field signs or evidence relating to other relevant wildlife (for example American Mink and other rodent species).

3.3 Dates of Survey and Personnel

- 3.3.1. The Otter and Water Vole surveys were led by ecologists with extensive Otter and Water Vole survey experience with a strong understanding of their ecology and the ability to identify their field signs. All lead surveyors met the criteria within the CIEEM Competencies for Species Survey for Otter (CIEEM, 2013A) and Water Vole (CIEEM, 2013B).
- 3.3.2. The Water Vole survey season is split into two periods; early and late, depending on the time of year. The early surveying season for Water Vole in south-east England is between March and the end of June and the late surveying season is between July and October.
- 3.3.3. Surveys were completed on the dates shown in **Table TR5-12-3-1** for both Otter and Water Vole between 05 May 2022 and 15 September 2022.

Table TR5-12-3-1 – Otter and Water Vole Survey Results

Date	Watercourse surveyed	Water vole surveying season (early/late)
05 May 2022	WC1, WC7-WC12(a-c), Bin Brook (north of Bin Brook footbridge)	Early
14 June 2022	Callow Brook (north of footbridge)	Early
20 June 2022	WC9	Early
24 June 2022	P1, P2, WC4, WC6	Early
27 June 2022	WC13, WC14, Bin Brook (south of Bin Brook footbridge)	Early
04 July 2022	WC2	Late
26 July 2022	WC3, Callow Brook (south of footbridge)	Late
08 September 2022	WC3, Callow Brook	Late

Date	Watercourse surveyed	Water vole surveying season (early/late)
14 September 2022	WC2, WC4, WC6, P1, P2	Late
15 September 2022	Bin Brook	Late

3.4 Notes and Limitations

- 3.4.1. Several of the watercourses within the Survey Area were not subject to field surveys as a result of lack of land access permission. WC4 and the Bin Brook (as shown in **Annex B**) were only partially subject to survey. WC4 is bisected by St Neets' Road, and it was the side to the south of this road that was not subject to survey. Approximately 300m of WC4 was not surveyed. This is not considered to be a significant limitation as the proposed route is online at this location.
- 3.4.2. The Bin Brook was surveyed to where it crossed from arable land into residential and recreational areas. The southernmost ~240m section of the Bin Brook running alongside Corpus Christi College Sports Ground (as shown in **Annex B**) was not subject to survey due to lack of land access permission. This is not expected to be a limitation to the ES, because habitat fragmentation is not a predicted impact at this location.
- 3.4.3. The northern section of WC4 which was accessible for survey (as shown in **Annex B**) could only be surveyed from specific points due to the presence of dense scrub alongside the channel, and sludge throughout the channel. This made a full assessment of field signs difficult however, this section is joined to Callow Brook (which was found to have numerous Water Vole field signs) via culvert beneath the A428 road. To overcome this limitation, Water Vole presence will be assumed throughout this watercourse. The watercourse is not considered suitable for Otter.
- 3.4.4. Two late survey season surveys were undertaken for WC2. The first survey was early July and second survey in mid-September. This is not considered to be a significant limitation given that the first survey was close to the early season (between March-end of June) and habitat suitability is not considered optimal for either species.
- 3.4.5. The presence and density of vegetation alongside or within watercourses can limit the ability to observe Otter and Water Vole field signs, and this was the case with only a few watercourses on these surveys. These included Callow Brook and WC13. All watercourses, apart from WC13 due to steep banks and thick vegetation, were surveyed from within the channel where access allowed. The extent of dense vegetation present within WC13 meant that access to the full length of the channel was not possible. Spot checks were carried out along the water channel wherever safe access was possible. During these surveys it was possible to undertake spot checks every couple of metres for the majority of the ditch, so this is not considered a limitation. Where the bottom of the ditch could be seen, the ditch appeared dry and is therefore unlikely to be optimal habitat for Otter or Water Vole.

4 Results

4.1 Overview

- 4.1.1. A summary of positive evidence of species occurrence recorded during the 2022 surveys is presented in **Table TR5-12-4-1**.

Table TR5-12-4-1 – Summary of Evidence of Species Recorded During 2022 Surveys

Species	Watercourse
Water Vole	P2, WC2, WC4, Callow Brook, Bin Brook
Otter	No definitive field signs; only possible signs.
Brown Rat	P2, Bin Brook
Small mammals, such as Bank Vole <i>Myodes glareolus</i>	Callow Brook, Bin Brook

4.2 Desk Study

- 4.2.1. The Desk Study returned 16 records of Otter within the 2km Study Area (see **Annex A**). The majority of Otter records are located in Cambridge, either in or around the River Cam and its tributaries, or the Bin Brook. A single Otter record was returned as roadkill on the M11 west of Cambridge, and further to the west, there was an Otter record by P2.
- 4.2.2. The Desk Study also returned 53 records of Water Vole within the 2km Study Area (see **Annex A**). Similar to the Otter records, the majority of Water Vole records are clustered in or around the River Cam and Bin Brook. A second cluster of Water Vole records also exist in Cambourne centre approximately 890m to the east of the Scheme Alignment. Numerous other records for Water Vole were recorded across the Study Area, with one record on Bourn Airfield ~730m south of the Scheme Alignment, and one record approximately 440m to the south of the airfield. Two further Water Vole records were returned in Bar Hill, approximately 415m north of the Scheme Alignment.
- 4.2.3. No records of American Mink were returned. Full details of the Desk Study Area and Desk Study Results are included within **Annex A**.

4.3 Habitat Descriptions

- 4.3.1. The waterbodies surveyed comprised 15 watercourses set within a combination of fallow arable and intensive arable/crops. The waterbodies also include two balancing ponds between St Neots' Road and the A428. The locations of the watercourses and ponds are shown in **Annex B**.

Watercourse 1

- 4.3.2. A watercourse with sloping earth banks that were predominantly covered in tall grasses such as Perennial Rye-Grass *Lolium perenne*, as well as shorter grass species. Herbaceous species such as Nettle *Urtica dioica* were abundant in vegetated areas on the banks alongside an abundance of shrubs and bushes such as Hawthorn *Crataegus monogyna* in these vegetated sections. The watercourse is located on the northern perimeter of Bourn Airfield, neighboured by arable crop on its south side and the A428 on its north side. Additionally, the channel was approximately 2m wide and 1m deep, and completely dry at time of survey. Overall, the shallow banks, dryness of the channel, and the presence of rubbish throughout, offered poor habitat for Otters, and limited Water Vole burrowing or foraging opportunities.

Watercourse 2

- 4.3.3. A small watercourse with earth banks covered in an abundance of herbs such as Nettle and tall grasses, with frequent occurrences of reeds such as Common Reed *Phragmites australis* and Sedges *Carex sp.* along the edge of the channel, but no submerged vegetation. There was also occasional occurrence of trees and scrub along the banks. The watercourse sits between the A428 to its north and St Neots' Road to its south and is neighboured by semi-natural grassland on its east and west sides. Additionally, the channel was less than 0.5m deep and approximately 1.0m wide, where the northern portion was dry, but the southern portion had 1-2.0cm of water present. Overall, although not suitable for Otter, the banks offered some opportunity for Water Vole burrowing and foraging. The shallow depth of water in the channel limits the opportunities for cover, although some exists in the form of vegetation.

Watercourse 3

- 4.3.4. A roadside watercourse running parallel to Scotland Road, north to south between Highfields and Dry Drayton. The watercourse had sloping earth banks, some steep, that were predominantly covered in tall and short grasses, and the channel contained discarded rubbish. Scotland Road lies directly on the east side of the watercourse, and a Hawthorn, Blackthorn *Prunus spinosa* and Hazel *Corylus avellana* hedgerow to the west. Additionally, the channel was approximately 1.5m wide and 1-1.5m deep and mostly dry at time of survey. Overall, the proximity to a busy road, lack of suitable channel vegetation and lack of water provided unsuitable habitat for Otter and offered poor opportunities for Water Vole burrowing, foraging and cover.

Watercourse 4

Northern section (north of St Neots' Road)

- 4.3.5. This section of the watercourse falls between St Neots' Road to its south and the A428 to its north, is connected to Callow Brook via culvert beneath the A428. This section of the watercourse had steep earth banks in some areas, and sloping banks in others, that were

frequently covered in herbs, scrub and an abundance of trees. The watercourse was neighboured by a small, mixed broadleaved wooded area and semi-natural grassland to its east and west sides. Additionally, the channel was approximately 1-2.0m wide and less than 0.5m deep, with sluggish water and laden with rubbish. Overall, although unsuitable for Otter, the connection of WC4 to Callow Brook, in which we have confirmed Water Vole presence, and the steep banks offered optimal habitat for Water Vole burrowing, with good habitat also for foraging and cover.

Watercourse 5 – Callow Brook

- 4.3.6. A watercourse with steep silt banks that were heavily vegetated along the channel's length. The banks were predominantly covered in tall grass, whilst herbs such as Nettle and Docks *Rumex spp.* were frequent, with the occasional occurrence of short grasses. The watercourse was neighboured by arable crop on both sides, and to its south lies the A428, under which Callow Brook is connected to WC4 via culvert. Additionally, the channel was approximately 1.0m wide and less than 0.5m deep with slow moving water. This watercourse is unsuitable for Otter, however steep banks offered optimal habitat for Water Vole burrowing, and good opportunities for foraging and cover due to the heavily vegetated banks.

Watercourse 6

- 4.3.7. A shallow, roadside watercourse with earth banks that were predominantly covered by scrub, with frequent occurrence of herbaceous species and short grasses. The watercourse ran alongside part of St Neots' Road through Hardwick on its north side, and it is bordered by residential dwellings and pavement on its south side. Additionally, the channel was approximately 1-2.0m wide and was mostly dry during survey, with the exception of a wet section at its western extent. Overall, this watercourse offered some Water Vole burrowing opportunities with some good cover in places, however its location in a heavily residential area provided sub-optimal habitat for both Water Vole and Otter.

Watercourse 7

- 4.3.8. A watercourse with earth banks and very little vegetation cover was present, with some occurrences of herbaceous species and short grasses. At its northern extent, the watercourse ran alongside a collection of residential dwellings in Hardwick, for about half of its length on its eastern side. The rest of the eastern side was bordered by arable fields, as was the entire western side. Additionally, the channel was approximately 1-2.0m wide and dry at the time of survey. As the banks were sloping and the channel was dry, this watercourse offered poor habitat for Otter, and limited opportunities for Water Vole burrowing and a lack of good vegetation for foraging and cover.

Watercourse 8

- 4.3.9. A watercourse with earth banks that were predominantly covered by herbaceous species and occasional occurrences of trees and short grasses, but otherwise the density of

vegetation was low. The watercourse was neighboured by arable crop on both sides. Additionally, the channel was approximately 1-2.0m wide and dry at the time of survey. As the banks were sloping and the channel was dry, this watercourse offered poor habitat for Otter and limited opportunities for Water Vole burrowing and a lack of good vegetation for foraging and cover.

Watercourse 9

- 4.3.10. A watercourse with earth banks and predominantly covered in short and long grasses, and herbaceous species. The watercourse was neighboured by arable crop on both sides, and residential dwellings along its north-eastern bank for about one third of its length. Additionally, the channel was approximately 1.0m wide and dry at time of survey. Overall, this watercourse had a low suitability for Otter and Water Vole.

Watercourse 10

- 4.3.11. A watercourse with earth banks predominantly covered in tall grass species such as Perennial Rye-Grass, along with abundant herbs such as Nettle. Short grasses, trees and dense thickets of scrub including Bramble *Rubus fruticosus*, had occasional occurrence along the banks. The watercourse was neighboured by arable crop on both sides, with a short section of its north-eastern side neighbouring residential and amenity land. The banks of this watercourse were also managed by mowing. Additionally, the channel was approximately 1.0m wide and dry during survey. As a result of good vegetation cover during the summer months but a lack of water in the channel and occasional disturbance by mowing, this watercourse offered sub-optimal habitat for Water Vole and was unsuitable for Otter.

Watercourse 11

- 4.3.12. A watercourse with earth banks and set beside a hedgerow between two parcels of semi-natural grassland. The banks of the watercourse were bordered by an abundance of trees (hedgerow), with frequent occurrences of herbaceous species such as Nettle. Short grasses were also occasional along the banks. At the time of survey, the watercourse was also completely dry. Additionally, the channel was approximately 1-2.0m wide. Consequently, this watercourse offered a low suitability for both Otter and Water Vole.

Watercourse 12

WC12A - Western section

- 4.3.13. A canal with cladding on the south side of the bank, and shallow, sloping earth banks on the opposite north side. The watercourse was neighboured by a field of semi-natural grassland on its south side, and pavement and buildings forming part of the Cambridge University complex on its north side. The earth bank was dominated by an abundance of scrub including Bramble, with frequent occurrences of herbaceous species. Reeds and sedges were also occasional along the earth bank. The watercourse was approximately 1-2.0m deep and 5-10.0m wide. Although the earth banks provided habitat for burrowing, the

watercourse was isolated and the amount of suitable habitat was limited for foraging and cover, so it is considered to have poor suitability for Water Vole and for Otter.

WC12B – Middle section

- 4.3.14. This section is connected to WC12A via sluice gate. This section of watercourse is set within the Cambridge University complex, and is bordered on its north side by pavement, and semi-natural grassland fields to its south. There was an earth bank on its south side, covered predominantly by short grass species and numerous trees. There were also frequent occurrences of herbaceous species such as Greater Willowherb *Epilobium hirsutum* and reeds and sedges, such as Bulrush *Scirpoides holoschoenus*. The watercourse was 2-5.0m wide and mostly dry for its length, with some slightly wet areas. Given that this watercourse is located in an urban environment with limited vegetation for foraging and cover and the watercourse was mostly dry, it is likely unsuitable for both Otter and Water Vole.

WC12C - Eastern section

- 4.3.15. A watercourse with earth banks running between pavement and hedgerow on the Cambridge University complex. The banks were dominated by an abundance of herbaceous species including Yellow Flag Iris *Iris pseudacorus*, Water Forget-Me-Not *Myosotis scorpioides*, Water Dock *Rumex hydrolapathum* and Pond Weed *Potamogeton sp.* There was also frequent occurrence of trees (the hedgerow) and occasional occurrences of scrub and reeds and sedges, such as Pendulous Sedge *Carex pendula*. The watercourse was 2-5.0m wide and was almost dry, but sludgy in areas. Although the watercourse had good vegetation for foraging opportunities and cover, as the channel was mostly dry, the watercourse offered sub-optimal habitat both Otter and Water Vole.

Watercourse 13

- 4.3.16. A watercourse with steep earth banks dominated by trees and the channel choked by an abundance of bramble scrub and tall grass. The banks also had frequent occurrences of herbaceous species, and occasional occurrence of short grasses. The watercourse was mostly dry where access to the bottom of the channel could be made. The ditch was neighboured by arable crop on both sides, with a small area of mixed broadleaved woodland to its north. The channel was 1-2.0m deep and mostly dry. The steep banks offered optimal Water Vole burrowing habitat and the vegetation density also provided good opportunities for foraging and cover. The close proximity to watercourses with confirmed Water Vole presence increased the likelihood of use by Water Vole. Given that the watercourse was mostly dry at the time of survey, it is likely unsuitable for Otter.

Watercourse 14

- 4.3.17. This watercourse comprised a completely concrete channel and reinforced concrete banks. The ditch was neighboured by arable crop on its north side and a residential area to its south. Consequently, there was no burrowing or foraging opportunities and therefore this watercourse is unsuitable for both Water Vole and Otter.

Watercourse 15 – Bin Brook

4.3.18. The northern section of the watercourse had steep earth banks which were mostly bare, but with some trees, scrub and tall and short grasses. This section of the watercourse was bordered by gardens and grounds north of the footbridge. Where the watercourse passed under the footbridge, it also had steep earth banks and was then bordered by fallow and arable crop fields. The banks in this section were dominated by herbaceous species, with the occasional occurrence of trees, scrub, tall and short grasses. The channel was wet with slow running water, and it was approximately 2-5.0m wide and less than 0.5m deep. The steep banks offered optimal Water Vole burrowing habitat, and enough vegetation to offer good opportunities for foraging and cover. The overall health of the water in the Bin Brook was shown by the presence of Freshwater Pearl Mussels *Margaritifera margaritifera*, which would provide feeding opportunities for Otter, and so this watercourse is also considered suitable for Otter.

Pond 1

4.3.19. A balancing pond set between St Neots' Road and the A428. The pond had shallow earth banks, however approximately one third of the banks were short and steep. The banks were dominated by reeds and sedges, with frequent occurrences of herbaceous species. The pond was neighboured by arable crop on the west side, an area of semi-natural grassland to the east side and an area of scrub to its north before the A428. The pond was over 40m wide and over 2.0m deep with static water. The steep banks offered optimal Water Vole burrowing habitat, and the vegetation provided good foraging opportunities and cover.

Pond 2

4.3.20. A balancing pond set between St Neots' Road and the A428. The pond had shallow earth banks, however approximately one third of the banks were short and steep. The banks were dominated by reeds such as Common Reed and Bulrush, and sedges, with occasional occurrences of herbaceous species including Water Mint *Mentha aquatica*, and some submerged vegetation. The pond was surrounded by an area of semi-natural grassland and areas of bramble scrub. The pond was over 40m wide and over 2.0m deep with static water. The steep banks offered optimal Water Vole burrowing habitat, and the vegetation provided good foraging opportunities and cover.

4.4 Otter Field Survey

- 4.4.1. The 2022 surveys recorded partial field signs of Otter within the Bin Brook only. These included partial prints and feeding remains (Freshwater Pearl Mussel shells). Whilst these field signs are not definitive evidence of Otter, as they could have been from other species, the presence of Otter in the Bin Brook cannot be discounted.
- 4.4.2. A summary of evidence of Otter is given in **Table TR5-12-4-2**. Full survey data is included in **Annex E** and **Annex F**.

4.5 Water Vole Field Survey

- 4.5.1. The 2022 surveys recorded field signs indicative of Water Vole in P2, WC2, WC4, Callow Brook, and Bin Brook. A summary of evidence of Water Vole is given in
- 4.5.2. **Table TR5-12-4-3.** Full survey data is included in **Annex C**, **Annex D** and **Annex F**.
- 4.5.3. The survey did not record any signs of Water Vole within southern sections of WC4 and Bin Brook (as shown in **Annex B**). However, as these watercourses were subject to limitations, as outlined in **Section 3.3**, and Water Vole are confirmed to be present in the surveyed northern portions of these watercourses, this information has been used to infer presence in those southern areas. It should be noted that Water Vole presence can only be confirmed through sightings or latrines/droppings.

Table TR5-12-4-2 – Evidence of Otter

Watercourse	Survey number	Date	Otter presence	Otter presence inferred from habitat suitability	Description of evidence present
Bin Brook	Survey 1 (north of footbridge)	05/05/2022	No	Yes	No evidence of Otter recorded.
Bin Brook	Survey 1 (south of footbridge)	27/06/2022	No	Yes	No evidence of Otter recorded.
Bin Brook	Survey 2	15/09/2022	Partial field signs identified – presence cannot be confirmed.	Yes	One set of feeding remains (Freshwater Pearl Mussel shells) was recorded, and one set of partial prints were found. Such field signs cannot confirm Otter presence as these are not definitive field signs for the species. However, it cannot be ruled out.

Table TR5-12-4-3 – Evidence of Water Vole

Watercourse	Survey number	Date	Water Vole presence confirmed	Water Vole presence inferred from habitat suitability	Description of evidence present
WC1	Survey 1	05/05/2022	No	No	No evidence of Water Vole recorded.
WC2	Survey 1	05/05/2022	Yes	Yes	Two burrows recorded at the northern end of the channel. Water Vole feeding remains also recorded.
WC2	Survey 2	14/09/2022	Yes	Yes	Two burrows recorded at the northern end of the channel.
WC3	Survey 1	26/07/2022	No	No	No evidence of Water Vole recorded.
WC3	Survey 2	08/09/2022	No	No	No evidence of Water Vole recorded.
WC4	Survey 1	24/06/2022	Yes	Yes	Potential Water Vole feeding remains recorded.
WC4	Survey 2	14/09/2022	No	Yes	No evidence of Water Vole recorded.
Callow Brook	Survey 1	14/06/2022 (north of footbridge)	Yes	Yes	Two Water Vole latrines were recorded with x3 and x2 droppings, respectively.
Callow Brook	Survey 1	26/07/2022 (south of footbridge)	Yes	Yes	Two Water Vole latrines were recorded, and one set of Water Vole feeding remains.
Callow Brook	Survey 2	08/09/2022	Yes	Yes	44 Water Vole burrows were recorded along the entire length of Callow Brook. Three records of blunt holes were recorded, and 16 records of Water Vole

Watercourse	Survey number	Date	Water Vole presence confirmed	Water Vole presence inferred from habitat suitability	Description of evidence present
					feeding remains. Eight Water Vole latrines were also recorded.
WC6	Survey 1	24/06/2022	No	No	No evidence of Water Vole recorded.
WC6	Survey 2	14/09/2022	No	No	No evidence of Water Vole recorded.
WC7	Survey 1	05/05/2022	No	No	No evidence of Water Vole recorded.
WC8	Survey 1	05/05/2022	No	No	No evidence of Water Vole recorded.
WC9	Survey 1	05/05/2022	No	No	No evidence of Water Vole recorded.
WC10	Survey 1	05/05/2022	No	No	No evidence of Water Vole recorded.
WC11	Survey 1	05/05/2022	No	No	No evidence of Water Vole recorded.
WC12(a-c)	Survey 1	05/05/2022	No	No	No evidence of Water Vole recorded.
WC13	Survey 1	27/06/2022	No	No	No evidence of Water Vole recorded.
WC14	Survey 1	27/06/2022	No	No	No evidence of Water Vole recorded.
Bin Brook	Survey 1 (north of footbridge)	05/05/2022	No	Yes	No evidence of Water Vole recorded.
Bin Brook	Survey 1 (south of footbridge)	27/06/2022	No	Yes	No evidence of Water Vole recorded.
Bin Brook	Survey 2 (north and	15/09/2022	Yes	Yes	Seven Water Vole burrows were recorded across the channel. Eight Water Vole

Watercourse	Survey number	Date	Water Vole presence confirmed	Water Vole presence inferred from habitat suitability	Description of evidence present
	south of footbridge)				latrines were also recorded, along with one set of feeding remains.
P1	Survey 1	24/06/2022	No	Yes	No evidence of Water Vole recorded.
P1	Survey 2	14/09/2022	No	Yes	No evidence of Water Vole recorded.
P2	Survey 1	24/06/2022	Yes	Yes	Two sets of potential Water Vole feeding remains were recorded.
P2	Survey 2	14/09/2022	No	Yes	No evidence of Water Vole recorded.

- 4.5.4. No evidence of American Mink was recorded during these surveys.
- 4.5.5. Evidence of Brown Rat was recorded in P2 and the Bin Brook.
- 4.5.6. Evidence of small mammals, such as Bank Vole, were recorded in WC2, Callow Brook and Bin Brook.

4.6 Relative Water Vole Population Density

- 4.6.1. The latrine counts from the surveys can give an indication of relative Water Vole population density for each watercourse (as described in **Section 4.3** above). This aids in identifying the most valuable parts of the Survey Area for Water Voles, along with areas most suitable for enhancement, however latrine counts cannot provide robust estimates of absolute numbers of animals. The method was informed by guidance in The Water Vole Mitigation Handbook (Dean, Strachan, Gow, & Andrews, 2016).
- 4.6.2. The thresholds used were based on the approximate number of latrines per 100m of bankside habitat and the overall threshold was decided by considering the varying thresholds met throughout the whole watercourse. During the early survey season, the thresholds were ≥ 10 for high density, 3-9 for medium density and ≤ 2 (or none with other confirmatory field signs) for low density. During the late survey season, the thresholds were ≥ 20 for high density, 6-19 for medium density and ≤ 5 (or none with other confirmatory field signs) for low density. Latrine counts from the surveys indicate the following relative population densities, as shown in **Table TR5-12-4-4**.

Table TR5-12-4-4 – Relative Water Vole Population Densities

Watercourse	Relative population densities
WC1	None.
WC2	None.
WC3	None.
WC4	None.
Callow Brook	Low.
WC6	None.
WC7	None.
WC8	None.
WC9	None.
WC10	None.



Watercourse	Relative population densities
WC11	None.
WC12(a-c)	None.
WC13	None.
WC14	None.
Bin Brook	Medium.
P1	None.
P2	None.

5 Conclusion

- 5.1.1. The desk study from CPERC returned 16 records of Otter and 53 records of Water Vole within the 2km Study Area. Previous surveys undertaken for the Scheme between 2014 and 2017 by Thomson Environmental Consultants also identified Water Vole field signs on Bourn Airfield, within the 2km Study Area.
- 5.1.2. The field surveys identified a total of 17 waterbodies within the Survey Area from the updated 2022 field surveys and those undertaken for the Scheme by Thomson Environmental Consultants and Cambridge Ecology. These comprised 15 watercourses and two ponds.
- 5.1.3. Water Vole field signs, including faeces, latrines, burrows, prints, mammal runs and feeding remains, were recorded throughout the Survey Area. Water Vole field signs were recorded at four watercourses and one pond:
 - WC2, WC4, Callow Brook and Bin Brook;
 - P2.
- 5.1.4. Within these water bodies, Water Vole presence was confirmed in Callow Brook and Bin Brook.
- 5.1.5. Possible Otter field signs, including feeding remains and prints, were also recorded on one watercourse – the Bin Brook – however as these are not definitive Otter field signs. As such, Otter presence in the Survey Area cannot be confirmed, but cannot be ruled out.
- 5.1.6. Field signs of other small mammals such as Brown Rat and Bank Vole, were also recorded along Callow Brook, Bin Brook and around P2.

6 References

Project References

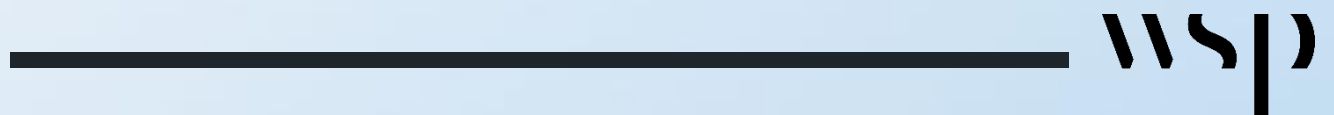
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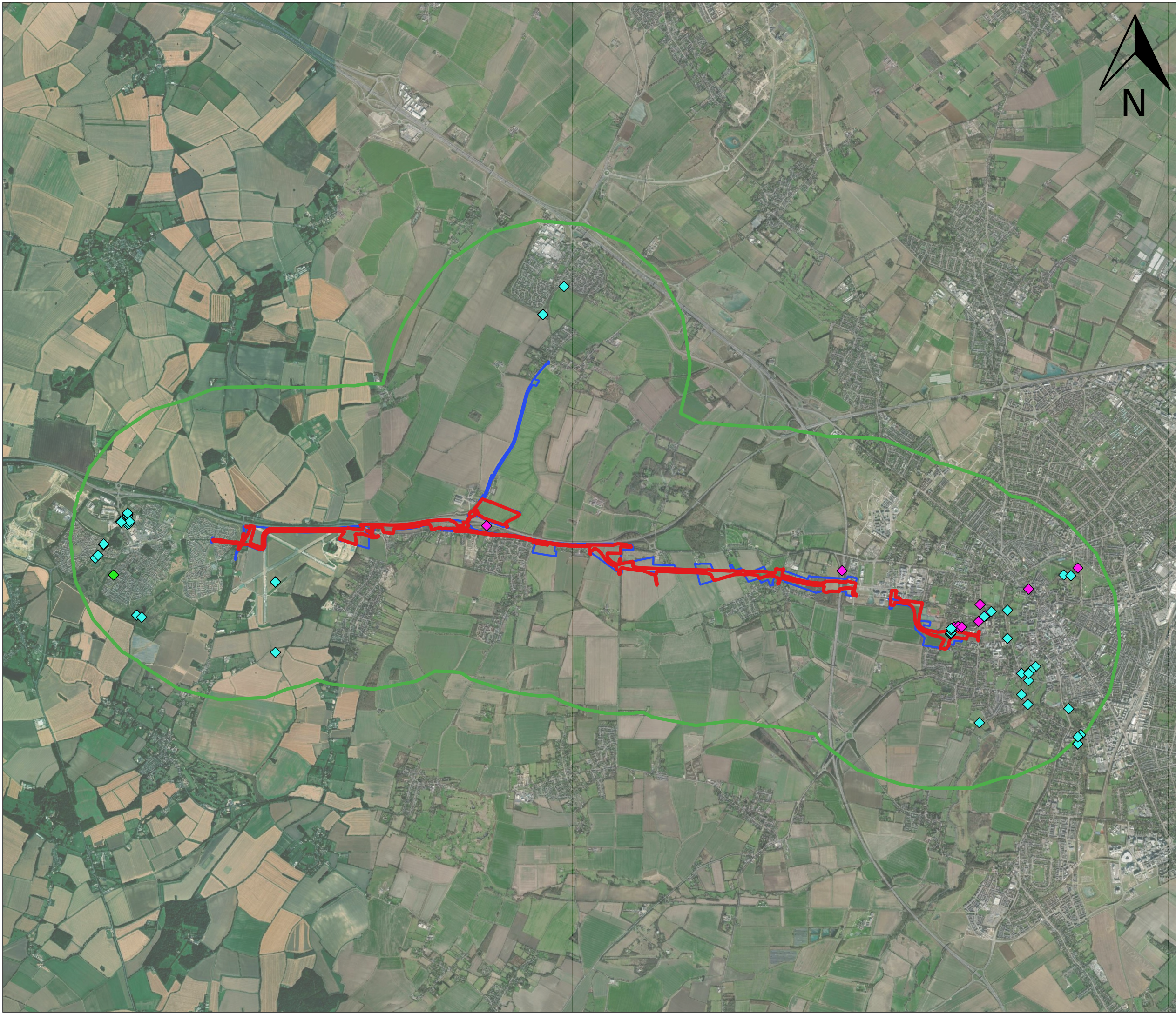
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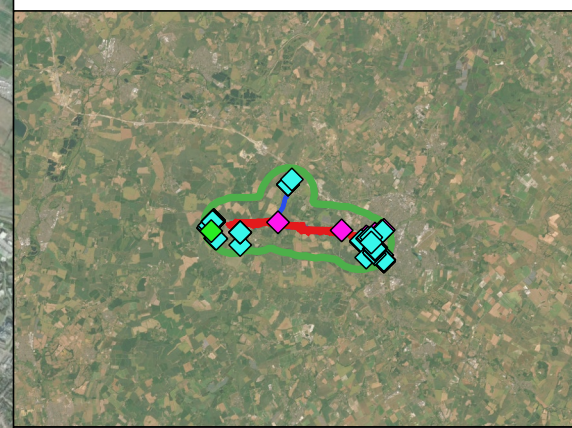
Annex A

2022 Desk Study Results



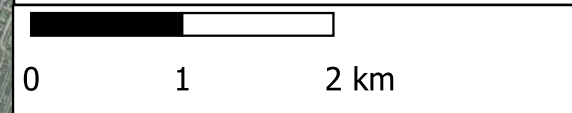


- Legend:**
- C2C Scheme Boundary (DF4)
 - Previous scheme boundary (DF3)
 - 2km Study Area
- Desk Study Species Records
- ◆ American Mink
 - ◆ European Otter
 - ◆ European Water Vole



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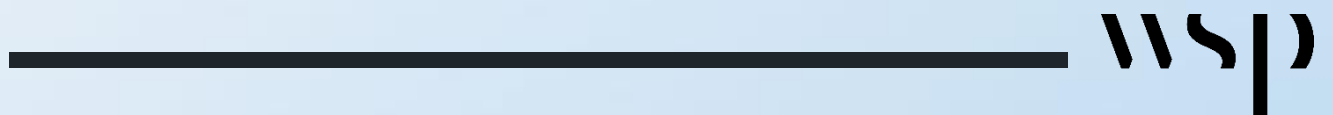
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TITLE: **2022 Otter and Water Vole Desk Study Results**

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QGIS FILE:	DATE: 12/10/23	
PROJECT No: 70086660	DRAWING No: 70086660-WV_01	REV: 0.1

Annex B

Otter and Water Vole Survey Area





- Legend:**
- C2C Scheme Boundary (DF4)
 - Previous scheme boundary (DF3)
 - 250m Survey Area
 - Waterbodies Not Surveyed
 - Waterbodies



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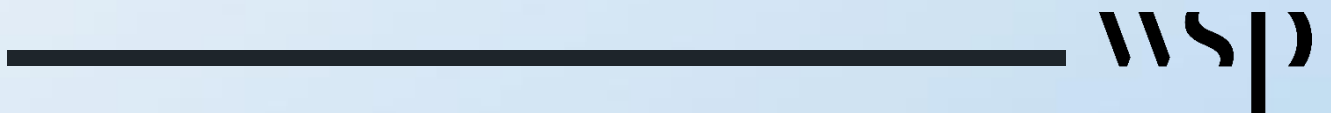
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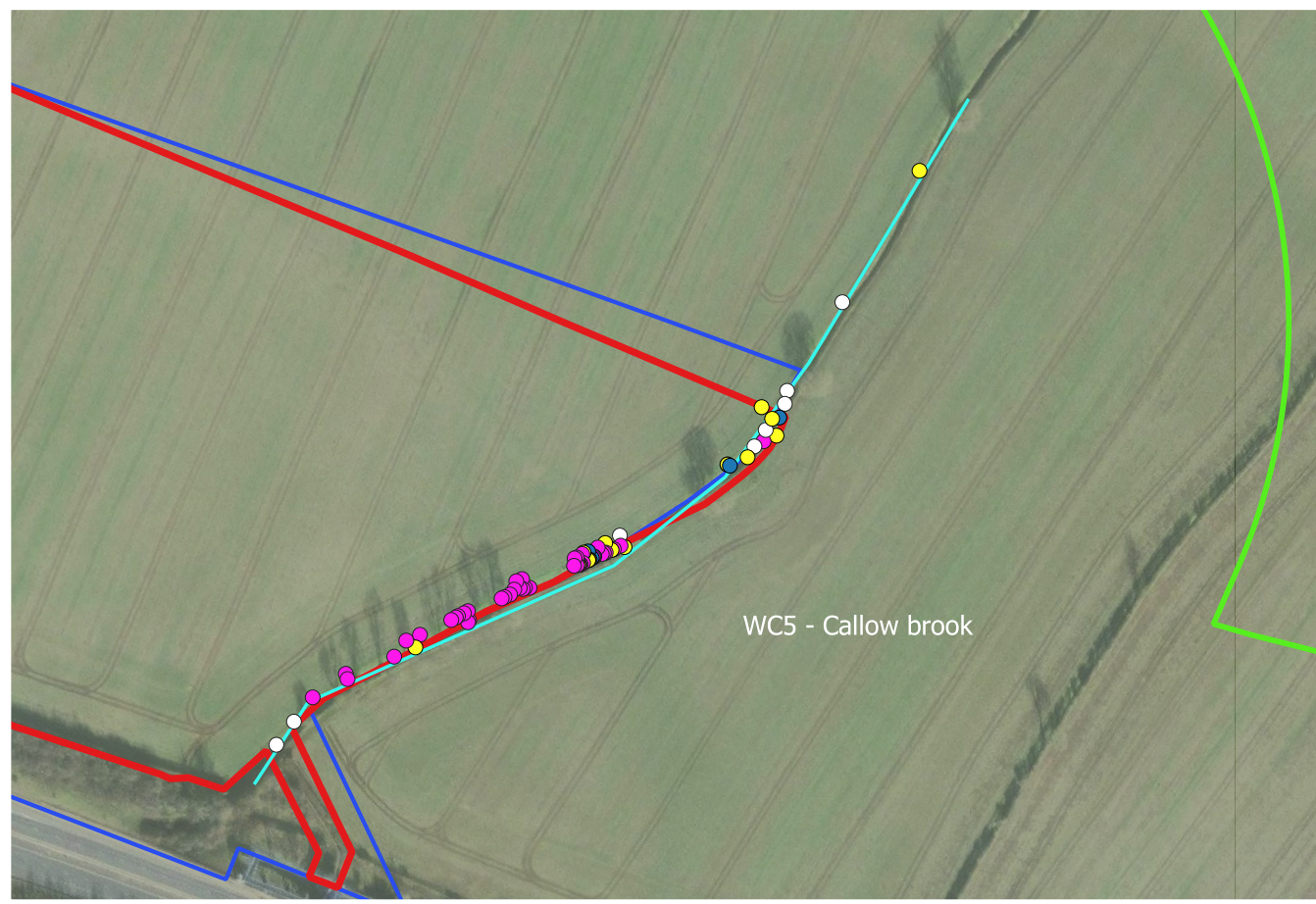
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Annex C

Water Vole Survey Results – West (Ponds and Callow Brook)





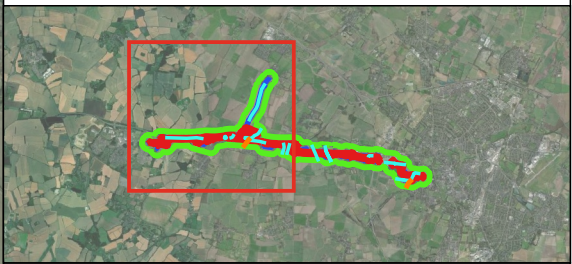
Legend:

- C2C Scheme Boundary (DF4)
- Previous scheme boundary (DF3)
- 250m Survey Area
- Waterbodies
- Waterbodies Not Surveyed

Water Vole Field Signs

- Burrow
- Droppings
- Feeding remains/signs
- Latrine

0 0.5 1 km



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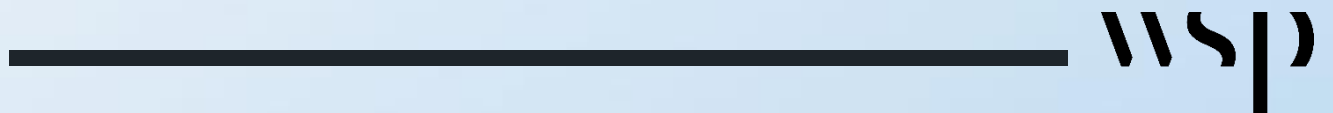
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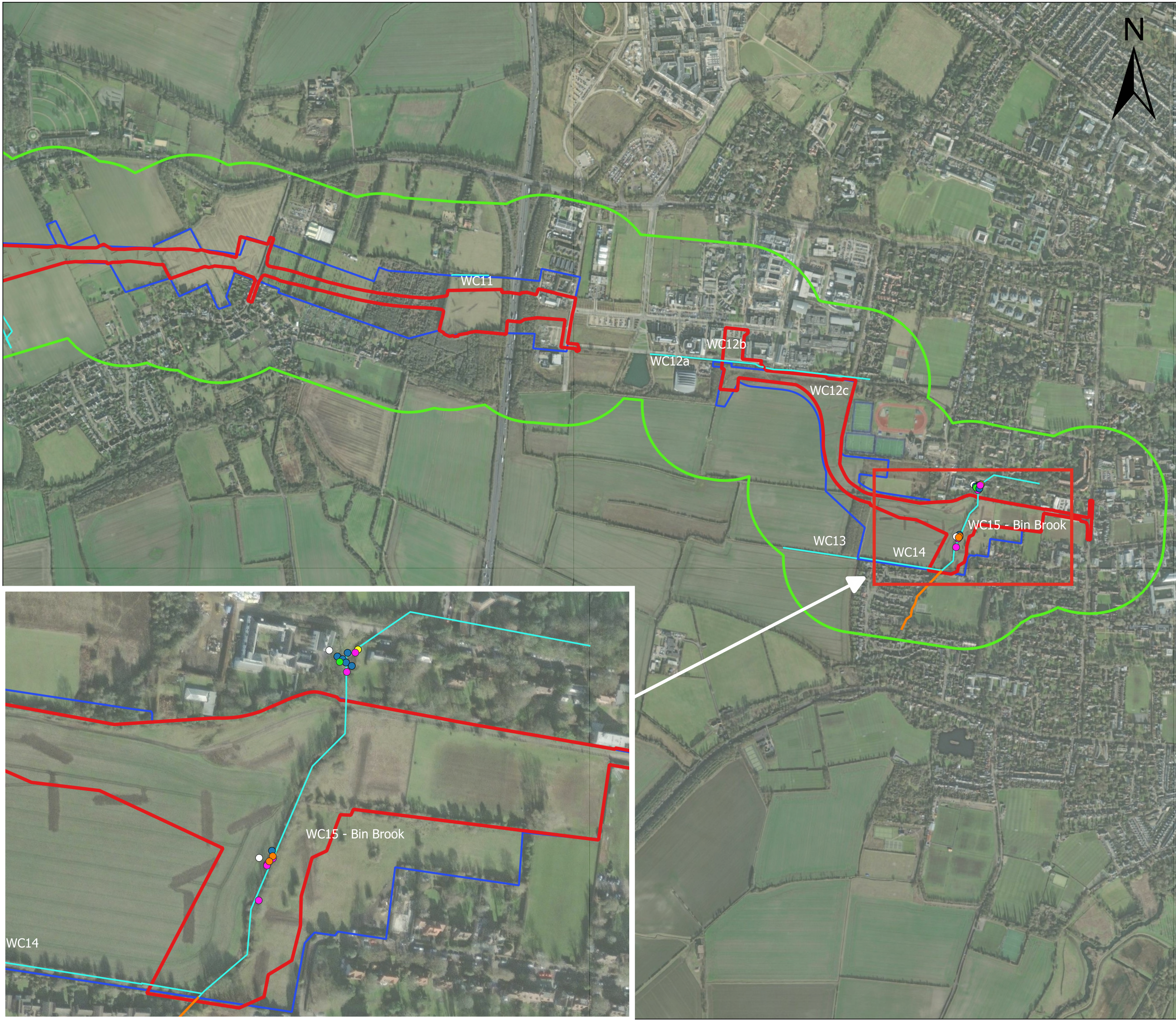
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Annex D

Water Vole Survey Results – East (Bin Brook)





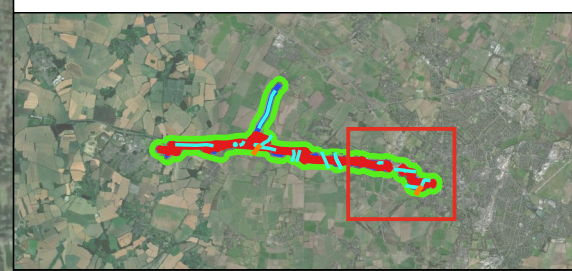
Legend:

- C2C Scheme Boundary (DF4)
- Previous scheme boundary (DF3)
- 250m Survey Area
- Waterbodies
- Waterbodies Not Surveyed

Water Vole Field Signs

- Burrow
- Droppings
- Feeding remains/signs
- Footprint
- Latrine
- Mammal run

0 0.25 0.5 km



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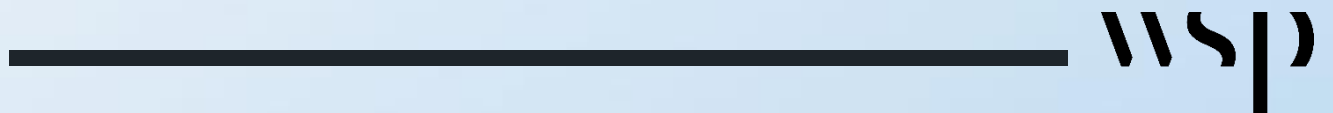
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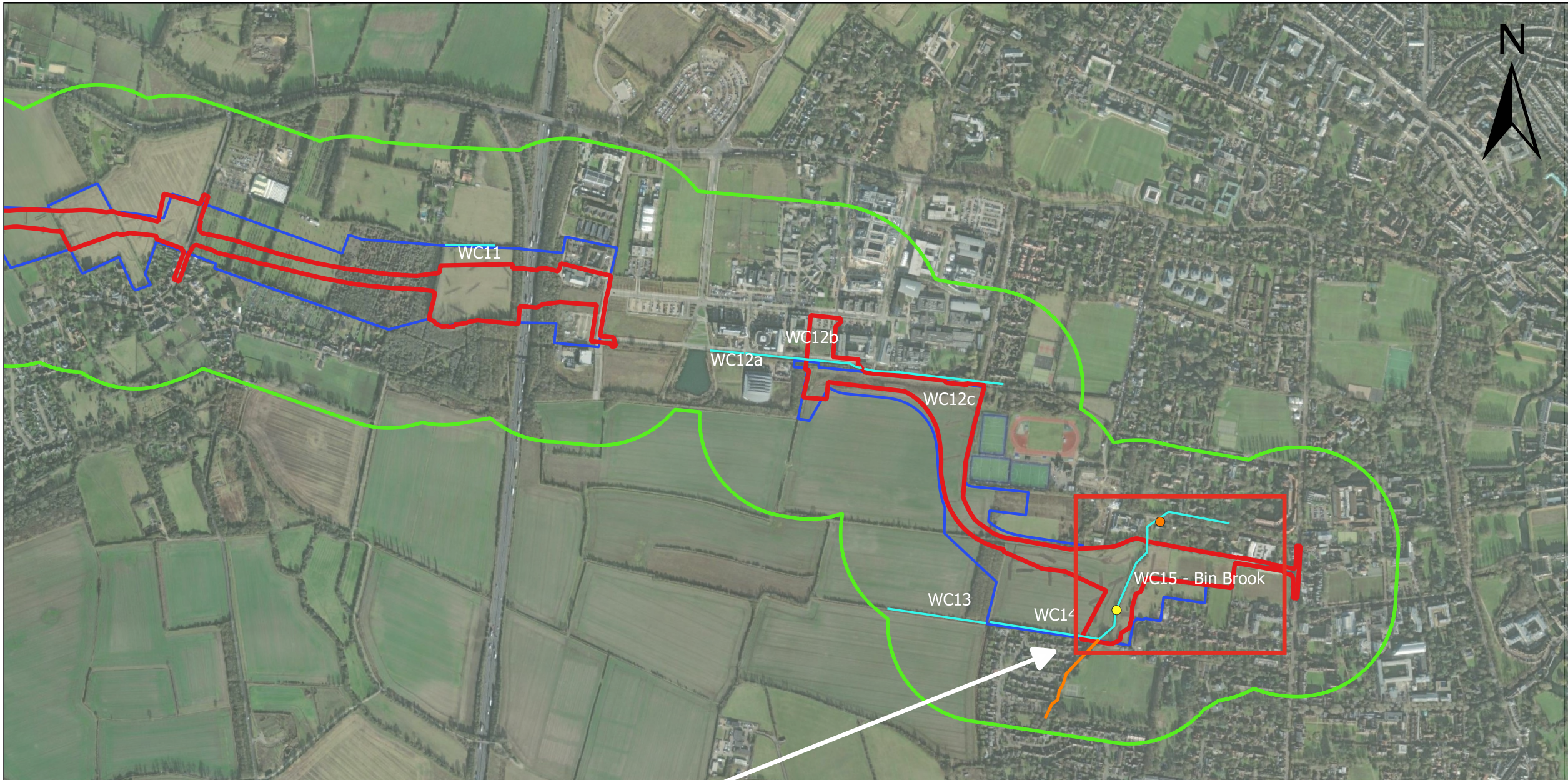
TITLE: **Water Vole Survey Results - East**

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PROJECT No: 70086660	DRAWING No: 70086660-WV_04	REV: 0.1

Annex E

Otter Survey Results – East (Bin Brook)





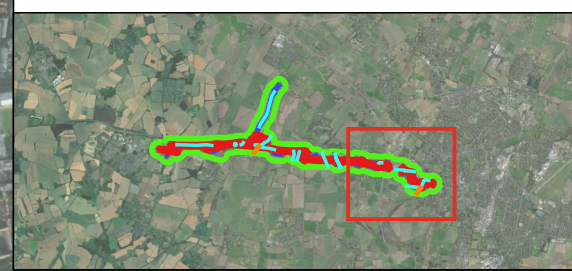
Legend:

- C2C Scheme Boundary (DF4)
- Previous scheme boundary (DF3)
- 250m Survey Area
- Waterbodies
- Waterbodies Not Surveyed

Indicative Otter Field Signs

- Feeding remains/signs
- Print

0 0.25 0.5 km



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PROJECT: **Cambridge to Cambourne**

TITLE: **Otter Survey Results - East**

SCALE @A3:	CHECKED: MP	APPROVED: IE
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Annex F

Field Survey Data

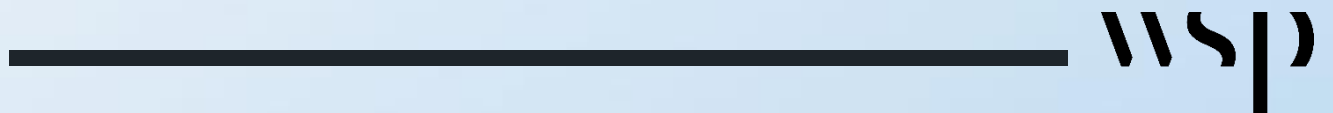


Table TR5-12-6-1 – Watercourse 2 Field Survey Results

Date	Field Sign	Species	Description
05.05.2022	Feeding remains	Water Vole	Feeding station, possible Water Vole.
05.05.2022	Burrow	Water Vole	Water Vole burrow, 4ft from ditch.
14.09.2022	Burrow	Water Vole	
05.05.2022	Burrow	Water Vole	Burrow 4ft from ditch.
05.05.2022	Feeding remains	Other small mammal	Feeding remains at the entrance to a likely Field Vole burrow.
14.09.2022	Burrow	Water Vole	Water Vole burrow.

Table TR5-12-6-2 – Pond 2 Field Survey Results

Date	Field Sign	Species	Description
14.09.2022	Feeding remains	Water Vole	
14.09.2022	Footprint	Rat	
14.09.2022	Feeding remains	Water Vole	

Table TR5-12-6-3 – Watercourse 3 Filed Survey Results

Date	Field Sign	Species	Description
24.06.2022	Feeding remains	Water Vole	

Table TR5-12-6-4 – Callow Brook (watercourse 5) Field Survey Results

Date	Field Sign	Species	Description
26.07.2022	Latrine	Water Vole	Water Vole droppings, x3
08.09.2022	Burrow	Water Vole	
26.07.2022	Latrine	Water Vole	Water Vole droppings, x2
08.09.2022	Burrow	Other small mammal	5+ holes
08.09.2022	Burrow	Water Vole	Burrow at water-level
08.09.2022	Burrow	Water vole	Burrow with feeding remains
08.09.2022	Burrow	Water Vole	Hole at water-level
08.09.2022	Burrow	Other small mammal	Hole at water-level
08.09.2022	Feeding remains	Water Vole	Old feeding remains at hole at water-level
08.09.2022	Burrow	Water Vole	
08.09.2022	Burrow	Water Vole	Hole at water-level
08.09.2022	Burrow	Water Vole	Multiple holes
08.09.2022	Burrow	Water Vole	Hole with old feeding remains

Date	Field Sign	Species	Description
08.09.2022	Burrow	Water Vole	
08.09.2022	Burrow	Water Vole	
08.09.2022	Burrow	Water Vole	Hole at water-level
08.09.2022	Burrow	Water Vole	Burrow 30-40cm above water-level
08.09.2022	Burrow	Water Vole	X2 burrows at water-level
08.09.2022	Burrow	Water Vole	Burrow at water-level
08.09.2022	Mammal run	Other small mammal	
08.09.2022	Burrow	Water Vole	Burrow 50cm above water-level
08.09.2022	Burrow	Water Vole	
08.09.2022	Burrow	Water Vole	Burrow at water-level
08.09.2022	Blunt hole	Water Vole	
08.09.2022	Burrow	Water Vole	Burrow at water-level
08.09.2022	Burrow	Water Vole	Underwater burrow
08.09.2022	Burrow	Water Vole	Burrow 40cm from water-level
08.09.2022	Burrow	Water Vole	Burrow at water-level
08.09.2022	Burrow	Water Vole	Burrow at water-level
08.09.2022	Burrow	Water Vole	
08.09.2022	Burrow	Water Vole	Burrow with track from water. 50cm above water-level.
08.09.2022	Burrow	Water Vole	Burrow at water-level with feeding remains at entrance.
08.09.2022	Burrow	Water Vole	Burrow 10cm above water-level.
08.09.2022	Feeding remains	Water Vole	Feeding station with x1 dropping.
08.09.2022	Burrow	Water Vole	Burrow 20cm above water-level.
08.09.2022	Burrow	Water Vole	Burrow at water-level.
08.09.2022	Burrow	Water Vole	
08.09.2022	Burrow	Water Vole	x2 burrows at water-level.
08.09.2022	Burrow	Water Vole	Burrow 10cm above water-level.
08.09.2022	Burrow	Water Vole	Burrow at water-level.
08.09.2022	Feeding remains	Other small mammal	Feeding station with bank vole/mouse droppings.
08.09.2022	Burrow	Water Vole	
08.09.2022	Burrow	Water Vole	x2 burrows at water-level.

Date	Field Sign	Species	Description
08.09.2022	Feeding remains	Water Vole	Feeding station ~40cm above water-level.
08.09.2022	Feeding remains	Water Vole	Old feeding station
08.09.2022	Burrow	Water Vole	Burrow 60cm above water-level.
08.09.2022	Feeding remains	Water Vole	Feeding station (fresh)
08.09.2022	Latrine + Burrow	Water Vole	x12 droppings and one burrow
08.09.2022	Latrine	Water Vole	21+ droppings
08.09.2022	Burrow	Water Vole	Burrow 1m above water-level
08.09.2022	Burrow	Water Vole	
08.09.2022	Burrow + Latrine	Water Vole	x2 holes and x2 droppings and old feeding remains
08.09.2022	Latrine + Feeding remains	Water Vole	x7 droppings with some feeding remains
08.09.2022	Blunt hole	Other small mammal	
08.09.2022	Mammal run	Other small mammal	Track across bank
08.09.2022	Mammal run	Other small mammal	
08.09.2022	Burrow	Water Vole	Burrow with x1 dropping and old feeding remains at entrance hole
08.09.2022	Burrow	Water Vole	Burrow 40cm above water-level
08.09.2022	Burrow	Water Vole	Burrow with fresh feeding remains outside
08.09.2022	Burrow	Water Vole	Burrow with feeding remains
08.09.2022	Feeding remains	Water Vole	Old feeding station
08.09.2022	Burrow	Water Vole	x2 holes, 20cm above water-level
08.09.2022	Feeding remains	Water Vole	Old feeding station
08.09.2022	Blunt hole	Water Vole	Extends 15-20cm
08.09.2022	Feeding remains	Water Vole	Feeding station
08.09.2022	Burrow	Other small mammal	Hole 30cm from water-level
08.09.2022	Blunt hole	Water Vole	With x1 dropping outside hole
08.09.2022	Burrow	Other small mammal	
08.09.2022	Mammal run	Other small mammal	Mammal run from bank up 0.5m and back down to water; total length 1.5-2.0m

Date	Field Sign	Species	Description
08.09.2022	Burrow	Other small mammal	Burrow on east bank 0.6m above water-level
08.09.2022	Burrow	Other small mammal	
08.09.2022	Burrow	Other small mammal	
08.09.2022	Burrow	Other small mammal	
08.09.2022	Latrine	Water Vole	15 droppings
26.07.2022	Feeding remains	Water Vole	Feeding station
08.09.2022	Feeding remains	Water Vole	Feeding station (fresh) at water-level
08.09.2022	Mammal run	Water Vole	Mammal run with feeding remains and with x6 old droppings; 0.2m above water-level.
08.09.2022	Burrow	Water Vole	Hole at water-level
08.09.2022	Feeding remains	Water Vole	
08.09.2022	Feeding remains	Water Vole	Feeding remains with x3 droppings 0.15m above water-level
08.09.2022	Feeding remains	Water Vole	
08.09.2022	Latrine	Water Vole	x5 fresh and old droppings
08.09.2022	Feeding remains	Water Vole	Feeding station 0.25m up bank
08.09.2022	Mammal run	Water Vole	Small mammal run on west bank, 1.5m in length running along water's edge leading to small pile of feeding remains and x1 water vole dropping
08.09.2022	Feeding remains	Other small mammal	
08.09.2022	Latrine	Water Vole	x4 droppings
08.09.2022	Burrow	Other small mammal	Hole 5cm above water-level, likely rat
08.09.2022	Burrow	Other small mammal	
08.09.2022	Burrow	Other small mammal	Hole 30cm above water-level; only partially used/disused
08.09.2022	Burrow	Other small mammal	Hole at water-level
08.09.2022	Burrow	Other small mammal	
08.09.2022	Burrow	Other small mammal	Hole 10cm above water-level
08.09.2022	Mammal run	Other small mammal	
08.09.2022	Latrine	Water Vole	x1 dropping
08.09.2022	Feeding remains	Other small mammal	



Date	Field Sign	Species	Description
08.09.2022	Burrow	Other small mammal	
08.09.2022	Feeding remains	Other small mammal	
08.09.2022	Feeding remains	Other small mammal	
08.09.2022	Feeding remains	Water Vole	

Table TR5-12-6-5 – Bin Brook Field Survey Results

Date	Field Signs	Species	Description
15.09.2022	Latrine	Rat	Droppings
15.09.2022	Burrow	Water Vole	x3 burrows
15.09.2022	Feeding remains	Otter	Freshwater Pearl Mussel shells – can only be used as a partial field sign as not definitive evidence of Otter.
15.09.2022	Latrine	Rat	Droppings
15.09.2022	Burrow	Water Vole	
15.09.2022	Burrow	Water Vole	
15.09.2022	Latrine	Water Vole	Droppings
15.09.2022	Print	Water Vole	
15.09.2022	Burrow	Water Vole	
15.09.2022	Print	Water Vole	
15.09.2022	Latrine	Rat	Droppings
15.09.2022	Burrow	Water Vole	
15.09.2022	Latrine	Water Vole	x8 new droppings, older ones had collected together
15.09.2022	Print	Rat	
15.09.2022	Latrine	Rat	
15.09.2022	Print	Rat	
15.09.2022	Latrine	Rat	
15.09.2022	Latrine	Rat	
15.09.2022	Latrine	Other small mammal	
15.09.2022	Latrine	Rat	
15.09.2022	Burrow	Water Vole	
15.09.2022	Latrine	Water Vole	
15.09.2022	Latrine	Water Vole	x6 droppings
15.09.2022	Mammal run	Water Vole	
15.09.2022	Latrine	Water Vole	x20 droppings
15.09.2022	Latrine	Water Vole	
15.09.2022	Latrine	Water Vole	
15.09.2022	Latrine	Water Vole	
15.09.2022	Burrow	Water Vole	
15.09.2022	Feeding remains	Water Vole	
15.09.2022	Print	Otter	Otter prints beneath bridge, partially washed away. Can



Date	Field Signs	Species	Description
			only be considered a partial field sign as this is not definitive evidence of Otter.
15.09.2022	Print	Other small mammal	



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