

# Hampshire Water Transfer and Water Recycling Project

## Environmental Statement – Appendix 8.7 Riparian mammals

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**Southern  
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The Southern Water logo consists of three stylized, wavy blue lines of varying lengths, positioned to the right of the text 'Southern Water'.



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# 1 Introduction

## 1.1 Overview

- 1.1.1 This technical report has been prepared by Southern Water Services Limited (the Applicant) in relation to the Hampshire Water Transfer and Water Recycling Project (hereafter referred to as the 'Proposed Development'). A detailed description of the Proposed Development can be found in Environmental Statement (ES) Chapter 3 Description of the Proposed Development, Volume I (Document reference 6.1, DCO Volume 6) and have informed the scope of this study. The Application Glossary (Document reference 1.7, DCO Volume 1) sets out the abbreviations and definitions used in the DCO application for the Proposed Development..
- 1.1.2 The Proposed Development comprises the construction, operation and maintenance of the following components:
1. Water Recycling Plant (WRP) site and associated pumping stations
  2. Pipelines between Budds Farm Wastewater Treatment Works (WTW) and the WRP site.
  3. Pipelines between the WRP site and Bedhampton Springs connecting into pipelines being delivered by Portsmouth Water between Bedhampton Springs and Havant Thicket Reservoir.
  4. Underground Pipeline between the WRP site and Otterbourne Water Supply Works (WSW).
  5. Above Ground Plant (AGP) comprising Intermediate Pumping Stations (IPS) and Break Pressure Tanks (BPT) located along the Pipeline between the WRP site and Otterbourne WSW.
- 1.1.3 The Proposed Development would also comprise the use of, or change of use of, the following infrastructure:
1. Havant Thicket Reservoir (currently under construction) for the storage of recycled water.
  2. Existing Eastney Long Sea Outfall (LSO), Eastney Pumping Station (PS), and associated Eastney Transfer Tunnel (TT) for the release of reject water (containing impurities removed from the treated wastewater) from the WRP.
  3. The use of pipelines that are consented separately by Portsmouth Water for the transfer of recycled water and source water between Bedhampton Springs and Havant Thicket Reservoir.
  4. The construction and operation of the Proposed Development would include other works such as landscaping and environmental mitigation measures.
- 1.1.4 This report details baseline data for riparian mammals collected between March 2022 and September 2025 and is one of nine technical reports produced to inform the ecological assessment presented within ES Chapter 8 Terrestrial and freshwater biodiversity, Volume I (Document reference 6.1, DCO Volume 6).
- 1.1.5 The survey scoping and methods used for establishing the ecological baseline for riparian mammals are provided in section 2 of this report.

## 1.2 Objectives

- 1.2.1 The assessment of likely effects on riparian mammals were informed by the following:
1. A desk study to identify any records of European otter *Lutra lutra* (hereafter referred to as otter) and European water vole *Arvicola amphibius* (hereafter referred to as water vole) within 2km of the Order Limits from the last ten years.
  2. Field surveys to confirm presence or absence of otter and water vole within suitable habitat close to watercourse crossing points.
  3. Mapped areas of key importance to riparian mammals identified from field and desk-based studies.

## 1.3 Riparian mammal ecology

- 1.3.1 This document focuses on two species: otter and water vole.
- 1.3.2 Otters require both aquatic habitat, in the form of ponds, lakes, ditches and rivers, for commuting and foraging and terrestrial habitat such as bankside habitat, scrub and woodland for foraging, commuting, breeding, rearing young, resting and holt creation. Otter can have large territories, with males up to 32km and females 20km [1]. They are carnivorous and eat a variety of fish, small mammals, amphibians, and aquatic invertebrates.
- 1.3.3 Water vole is heavily reliant on water and therefore aquatic habitat such as rivers, ditches, ponds and lakes. They also require shelter in the form of bankside vegetation and banks with a substrate into which they can dig to create a burrow system that can extend up to 3m back from the toe of bank and down below the waterline. They are herbivorous, requiring a variety of food sources including grasses, herbs, fruit and berries to sustain them all year round. Typically, territories of female water vole can extend to between 30m and 150m, while males have a significantly larger range of between 60m and 300m [2]. Due to the population expansion of the species during the breeding season, connectivity of habitats is key to ensure expanding populations of water vole have suitable habitat to create new territory.

## 1.4 Legal context

- 1.4.1 Otter and their places of shelter are strictly protected under the Conservation of Habitats and Species Regulations 2017 (as amended) [3], henceforth referred to as the Habitats Regulations. Under the Habitats Regulations, it is an offence to:
1. Deliberately kill, injure or capture otter.
  2. Damage or destroy a breeding site or resting place of an otter.
  3. Deliberately disturb an otter. Disturbance within this context includes in particular any disturbance which is likely to:
    - a. Impair their ability to survive, breed or reproduce, or to rear or nurture young, or to hibernate or migrate.
    - b. Significantly affect the local distribution or abundance of otter.

- 1.4.2 Otter receives additional protection under the Wildlife and Countryside Act (WCA) 1981 (as amended) [4]. Under this Act, it is also an offence to:
1. Intentionally or recklessly disturb an otter whilst it occupies a structure or place used for shelter or protection.
  2. Intentionally or recklessly obstruct access to any structure or place used by otter for shelter or protection.
  3. Sell or possess, transport, offer or expose for the purposes of sale, or to publish or cause to be published any advert conveying the buying or selling of otter (live or dead, including any derivative).
- 1.4.3 Water vole is fully protected under Schedule 5 of the WCA 1981 (as amended). They are afforded protection under Section 9 of the WCA, which makes it an offence to:
1. Intentionally kill, injure or take a water vole.
  2. Intentionally or recklessly damage, destroy or obstruct access to any structure or place used by a water vole shelter or protection.
  3. Intentionally or recklessly disturb a water vole whilst occupying a structure or place of shelter used for that purpose.
  4. Possess or control any live or dead water vole or any part of derivative.
  5. Sell or possess, transport, offer or expose for the purposes of sale, or to publish or cause to be published any advert conveying the buying or selling of water vole (live or dead, including any derivative).
- 1.4.4 The Natural Environment and Rural Communities (NERC) Act 2006 [5] places a duty to conserve and enhance biodiversity on public authorities in England. This requires a public authority (including the Secretary of State) that has functions exercisable in relation to England to consider what action it can properly take to further the general biodiversity objective, namely the conservation and enhancement of biodiversity through the exercise of its functions. The Act also places a duty on the Secretary of State to maintain lists of species (Section 41 species) which are regarded as being of principal importance for both the conservation and enhancement of biodiversity in England. This list includes both otter and water vole.
- 1.4.5 The National Planning Policy Framework (NPPF) requires that planning policies and decisions contribute to and enhance the natural and local environment. Local Planning Authorities, when determining planning applications, must apply a series of principles relating to the protection of biodiversity and the application of the mitigation hierarchy. Species of principal importance are a material consideration in this planning process.
- 1.4.6 The riparian mammal American mink *Neovison vison* (hereafter referred to as mink) is listed under Schedule 9 to the WCA 1981 (as amended) [6] with respect to England, Wales and Scotland because it is an Invasive Non-Native Species. As such it is an offence to release or allow the escape of this species into the wild. Mink is a prolific predator of water vole.

### Protected species licences

- 1.4.7 For otter, the law provides strict protection, it also allows this protection to be set aside (derogated) under Regulation 55 of the Habitats Regulations through the issuing of European Protected Species (EPS) mitigation licences for the purpose of preserving public health, public safety, other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment.
- 1.4.8 In accordance with the requirements of the Habitats Regulations a licence can only be issued where the following requirements are met:
1. There is no satisfactory alternative.
  2. The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.
- 1.4.9 In England, EPS mitigation licence applications for otter are determined by Natural England (NE).
- 1.4.10 A water vole mitigation licence may be required from NE for any works within 5m [7, 8] of the toe of the watercourse depending on the linear length of impacted banks, and potentially for more distant works that may indirectly disturb or impact known populations of water vole e.g. flooding, pollution events.
- 1.4.11 Licences are not required to conduct an otter or water vole survey, assuming that there is no disturbance of potential resting/shelter areas. This would include above-ground resting or shelter sites of otter (couches) and below-ground resting or shelter sites of otter (holts) and water vole (burrows).

## 2 Methods

### 2.1 Background

- 2.1.1 This section describes the field survey methods used to establish the ecological baselines for otter and water vole. It has been designed to identify the distribution of otter and water vole activity within the study area.
- 2.1.2 An objective of the otter and water vole survey programme was to facilitate the application of the mitigation hierarchy in the design and assessment process to avoid by design, where possible, likely effects to the species. It would also ensure that the population with the potential to be affected by the Proposed Development would be maintained at a favourable conservation status.

### 2.2 Survey guidance

- 2.2.1 The Life in UK Rivers publication, Monitoring the Otter [9] and the Joint Nature Conservation Committee (JNCC) publication for the Common Standards Monitoring Guidance for Mammals [10] provide guidance for otter surveys in the UK. These guidelines have been considered when designing the survey methodology and programme of survey work.
- 2.2.2 Additionally, the methodology has been developed in line with advice provided by NE and the Department for Environment, Food and Rural Affairs (Defra) on assessing the impacts of development on otter [11], NatureScot, formerly Scottish Natural Heritage, guidance on otter and development [12] and NatureScot guidance relating to protected species advice for developers [13].
- 2.2.3 The Water Vole Mitigation Handbook [7] is the main and most up to date source of guidance for water vole survey methodology in the UK. This guidance sets out the industry standard for those undertaking surveys, assessing impacts and designing mitigation for water vole in the context of development or construction activities. This guidance has been considered when designing the survey methodology and programme of survey work.
- 2.2.4 The Water Vole Conservation Handbook [2] also includes additional helpful guidance on water vole survey methods.

### 2.3 Zone of Influence

- 2.3.1 The geographical scope of the assessment has been informed by:
1. The Order Limits which include temporary land take for temporary construction compounds, as shown on ES Figure 1.1 Location of the Proposed Development and Order Limits, Volume III (Document reference 6.3, DCO Volume 6), access routes and lay down sites.
  2. The likely effects of the Proposed Development on ecological features within the 'Zone of Influence' (Zol).
- 2.3.2 The Zol is the area over which ecological features may receive impacts from a development. It covers the Order Limits and the wider landscape where pathways (ecological or hydrological links) exist for the transfer of impacts away from the

works area. The Zol for individual ecological features (or groups of features) may vary in size depending on the nature of the effects and the sensitivity of the ecological features to those effects.

2.3.3 Each Zol has been determined by:

1. Consideration of the activities during construction and operation associated with the Proposed Development.
2. The scale, duration, and timing of the works.
3. Ecological data, including aerial photography and Ordnance Survey (OS) mapping, biological records of protected and notable species and baseline data collected from field survey.

2.3.4 Based on the scale and duration of the Proposed Development it is considered that construction activities within the Order Limits would typically produce temporary and localised impacts. Different desk study areas have been applied for each category of ecological feature, as appropriate, to enable effective assessment of potential effects on each ecological receptor.

2.3.5 The Zol, desk study area and field study area for riparian mammals, are detailed below within Table 2-1.

**Table 2-1 Otter and water vole Zone of Influence, desk study area and field study area**

Ecological Receptor	Zol	Desk study area	Field study area
Otter	200m	2km	200m
Water vole	200m	2km	200m

2.3.6 The Zol is determined as watercourses and associated riparian habitats 200m up and downstream of crossing points identified within the Order Limits and also as this is the area where otter and water vole could be affected and the 2km desk study area provides a picture of the wider presence of otter and water vole.

2.3.7 The Proposed Development includes the use of Havant Thicket Reservoir for the storage of recycled water, the use of the Eastney LSO, Eastney PS, and associated Eastney TT for the release of reject water from the WRP site. The Proposed Development also uses pipelines that have been consented and will be constructed separately by Portsmouth Water between Bedhampton Springs and Havant Thicket Reservoir. These components are considered as part of the future baseline and are, therefore, considered to be existing infrastructure. As such, the terrestrial and freshwater biodiversity assessment only considers the operational change of use.

## 2.4 Desk study

### Data search

#### Desk-based scoping

2.4.1 Initial desk-based scoping was undertaken using aerial imagery and OS maps to identify watercourses, ditches, drains and ponds (hereafter referred to as watercourses) that fall within 2km of the Order Limits of the Proposed Development. Watercourses that are crossed by the Proposed Development are

henceforth referred to as a ‘watercourse crossing point’. Watercourses that are connected to those crossed by the Proposed Development are henceforth referred to as ‘connected’ watercourses.

- 2.4.2 A review of relevant biological data within 2km of the Order Limits was also completed to identify records within the last ten years for water vole, otter and American mink.
- 2.4.3 A search for existing protected and notable species records, was undertaken in December 2024. Records of otter and water vole within the desk study area were accessed from Hampshire Biodiversity Information Centre (HBIC) for the period 2014 to 2024.
- 2.4.4 The Multi Agency Government Information for the Countryside (MAGIC) [14] website was reviewed for EPS mitigation licences with respect to otter within 200m buffer of the scoped in watercourses.
- 2.4.5 Watercourses were then categorised as:
1. Watercourses within the Order Limits with recent records of otter and/or water vole presence.
  2. Watercourses within the Order Limits with no records, but with recent records of otter and/or water vole within the wider area (i.e. within 200m buffer).
  3. Watercourses within the Order Limits with no recent records but which have potential to support populations of otter and/or water vole due to presence of suitable habitat.
  4. Watercourses within the Order Limits with no recent records and without the potential to support populations of otter and/or water vole due to an absence of suitable habitat.
- 2.4.6 Open-source information shared by the Hampshire and Isle of Wight Wildlife Trust (HIWWT) also identified a reintroduction programme ‘Bring Back Ratty’ which released 2,548 water vole into the Meon Valley between 2013 and 2017 [15].

#### Otter

- 2.4.7 All suitable watercourse crossing points within 200m of the Order Limits, which require above-ground work, such as open-cut trenches and/or compounds were scoped in for survey.
- 2.4.8 Watercourses were scoped out for all watercourse crossing points where trenchless techniques would be employed and where no ground disturbance would take place within 30m of a crossing point.
- 2.4.9 Terrestrial habitats considered suitable habitat for otter, such as reed beds, tussocky grassland, woodland or scrub within 200m of scoped in watercourse crossing points were identified using aerial imagery.
- 2.4.10 Connected main watercourses physically linked within the 200m buffer of the Order Limits up and downstream of the watercourse crossing point were also scoped in for assessment.

Water vole

- 2.4.11 Watercourse crossing points were scoped out where trenchless techniques would be employed and where no ground disturbance would take place within 5m of the crossing point.
- 2.4.12 Watercourse crossing points were scoped in where construction could lead to ground disturbance within 5m of a watercourse. Aerial imagery was reviewed and used to determine if the watercourse crossing points were optimal or sub-optimal for water vole.
- 2.4.13 Connected watercourses physically linked 200m up and downstream of the crossing point were scoped in for additional assessment. Watercourses that were isolated from the crossing point by more than 50m were scoped out from additional assessment.

## 2.5 Field survey

- 2.5.1 Surveys for both otter and water vole were completed during the active seasons between April and September 2023 and between April and September 2024.

### Otter

Habitat suitability assessment

- 2.5.2 Habitat suitability assessment (HSA) surveys are not time restricted and can be undertaken at any time of year.
- 2.5.3 In addition, field sign surveys can be undertaken year-round, although evidence of breeding sites, natal dens and young are most apparent between April and October [11]. Considerations are required for fluctuating water levels. The survey period encompassed the optimal survey period in the spring when evidence is often easier to find.
- 2.5.4 HSAs were undertaken on all watercourses scoped in for assessment. The HSA guidance has been taken from current best practice as described in section 2.2. Habitat suitability was assessed for otter along the scoped-in watercourse crossing points to assess the degree of risk that otter may be present or disturbed by the proposed works. Habitat features noted were as follows:
  - 1. A good food supply (fish/shellfish) for foraging;
  - 2. Suitable bankside habitat for permanent shelter (exposed tree roots/large, covered tree cavities/fallen trees, sheltered cover, such as bank overhangs).
  - 3. Suitable terrestrial habitat within 200m of the working corridor, especially isolated woodland for natal den creation;
  - 4. Dispersal barriers, such as extensive underground culverts, flood/tidal gates
  - 5. Good connectivity to other areas of suitable habitat; and
  - 6. Level of disturbance, such as industrial or commercial sites and extensive residential areas.
- 2.5.5 Where suitability was highly likely either for permanent or temporary shelter/holt creation, foraging and commuting for otter along scoped in features these were classified as:

1. Commuting only;
2. Commuting and foraging; or
3. Commuting, foraging, resting and/or holt creation.

#### Field sign surveys

- 2.5.6 Surveys for otter field signs took place at watercourse crossing points and up to 200m upstream and downstream from the Order Limits. Other watercourses that are considered connected to the crossing point within the study area were also surveyed.
- 2.5.7 Suitable terrestrial habitats within the study area with potential breeding (i.e. holts) and resting (i.e. couches) were also considered, including:
1. Reed beds
  2. Tussocky grassland
  3. Woodland, and scrub
- 2.5.8 Checks for slides and mammal passes were also made along the entire length of the surveyed watercourse where access was possible.
- 2.5.9 Field signs recorded, if identified, were as follows:
1. Natal holts (where a female gives birth and young stay until they are mobile, approximately three-four months)
  2. Permanent couches (resting areas)
  3. Temporary couches/hovers (resting areas)
  4. Spraints (dry disintegrated, dry intact and/or fresh)
  5. Anal jelly
  6. Tracks/footprints
  7. Slides

### **Water vole**

#### Habitat suitability assessment

- 2.5.10 Water vole HSA surveys were undertaken during the active season (mid-April to September inclusive 2023 and 2024) and followed 'A Method for Assessing Water Vole Habitat Suitability' [16], a technique of assessing habitat suitability based on nine habitat indices. This approach also follows current best practice.
- 2.5.11 Habitat indices that were considered were:
1. Bankside herbaceous vegetation type and density
  2. In channel/emergent vegetation type and density
  3. Year-round availability of food sources
  4. Suitable refuge areas above extremes in water level
  5. Bank profile and substrate (banks suitable for burrowing)
  6. Permanent open water, width of channel
  7. Water depth

8. Frequency/height of water level changes
  9. Lack of disturbance and current/recent management
- 2.5.12 The HSA was calculated from the indices in paragraph 2.5.11 and determined whether the watercourse was not suitable, sub-optimal, good or optimal for water vole. The HSA informed the degree of risk of water vole being present within the ZOI in the absence of any confirmed field signs.
- 2.5.13 Watercourse crossing points determined to have no value for water vole based on HSA surveys were scoped out from additional assessment. Such crossing points included (but were not limited to):
1. Watercourses that no longer exist
  2. Dry, isolated watercourses
  3. Drainage ditches/culverts with solid engineered banks and bases with no potential for burrowing
  4. Drainage ditches/watercourses devoid of foraging, shelter and emergent in-channel vegetation
- 2.5.14 Limitations to water vole movement within the area were also recorded. These included barriers or partial barriers restricting movement between watercourses due to isolation from other watercourses or small or blocked culverts.
- 2.5.15 The study area extended out to 200m up and downstream from the crossing point, based on the suitability of habitat present. The approach confirmed if there was suitable habitat within the crossing point and whether there was enough suitable adjacent habitat to support displaced water vole. Extending the study area beyond the crossing point informs any mitigation strategy by assessing displacement as an option.

#### Field sign survey

- 2.5.16 Surveys were carried out in the optimal period for water vole surveying which is between mid-April and the end of September.
- 2.5.17 In line with current guidance [8], two surveys for water vole were undertaken to determine likely presence or absence. The first survey was completed in the early part of the breeding season (April to June). The second survey was completed between July and early September when water vole populations were at their maximum density.
- 2.5.18 Surveys were timed to not coincide during periods of heavy rain and up to 48 hours after as any potential field signs could be washed away.
- 2.5.19 Checks for field signs were undertaken on all watercourses within the Order Limits identified as suitable for water vole, and included:
1. Latrines
  2. Droppings
  3. Feeding stations
  4. Burrows
  5. Terrestrial nests
  6. Lawns

- 2.5.20 Conclusive signs of active water vole include droppings and latrines. Feeding stations and remains can be cryptic and easily confused with other small mammal feeding remains. As such only feeding stations or remains comprising large vegetation such as reed sweet-grass *Glyceria maxima*, *Typha* sp., common reed *Phragmites australis* and hemlock water dropwort *Oenanthe crocata*, all of which are too large for other small mammals, can be seen as conclusive evidence of water vole feeding remains/stations.
- 2.5.21 If no results were recorded during the first survey within habitat deemed optimal for water vole, a second survey was still completed as there is the potential for water vole to move in from over-populated areas within the wider catchment areas during the peak season.

## 2.6 Limitations and assumptions

- 2.6.1 All watercourses were accessed as far as possible and where the surveyors could not survey from within the feature, bankside observations were made using close focus binoculars.
- 2.6.2 Although limited, access to the full length of every watercourse was not possible due to dense vegetation cover and deep mud and/or sediment at the bases of some watercourses. However, in these cases sufficient access was gained at 10m intervals, such that an accurate assessment could be made and this constraint is not considered to affect the robustness of the assessment.
- 2.6.3 Where a second water vole survey could not be completed during the 2023 season due to land access restrictions, these were followed up in the 2024 season for completeness. This was restricted to completing an early season survey (April to June 2024).
- 2.6.4 There were limited instances of denied access to watercourses. However, these were restricted to small areas of watercourse away from the crossing points within the 200m Zol. Given the results of surveys completed along connecting watercourses, this is not considered to be a limitation to the overall robustness of the survey results and assumptions.

## 3 Results

### 3.1 Desk study

#### American mink

- 3.1.1 The desk study returned six records of American mink within the desk study area. The records originated from along the Rivers Hamble and Itchen dating from 2016 to 2020.

#### Otter

- 3.1.2 Otter records returned by HBIC within the 2km buffer applied for the desk study originated from the Itchen, Hamble, Meon and Wallington Rivers as well as Fisher's Pond and Bow Lake and various smaller watercourses in the upper reaches of these rivers. The closest and most abundant records were those returned for the Itchen, River Hamble, Fisher's Pond and Bow Lake.
- 3.1.3 In addition to records returned by HBIC during the desk study, otter surveys were completed on behalf of Portsmouth Water for the Havant Thicket Reservoir project by ECOSA in 2018 [17], Atkins in 2023 [18] and SWECO in 2024 [19] and 2025 [20]. No evidence of otter was reported from 2018 surveys [17], but spraint was recorded from Riders Lane Stream in 2023 [18]. Spraints, footprints and a potential otter resting site were reported along the Hermitage Stream from the 2024 surveys [19]. The potential resting site did not show evidence of occupation at the time of discovery [19] or during subsequent monitoring [20], but was associated with recent field evidence in the form of spraint and footprints located along a stretch of Hermitage Stream approximately 15m south of the potential location for temporary construction compound B1-3 and the pipeline. The other location of positive otter activity (spraint only) was further north along the Hermitage Stream, approximately 1.33km from the northern terminus of the pipeline at its closest point [19].
- 3.1.4 The water vole reintroduction programme on the River Meon has also been credited by the South Downs National Park [21] with the success of otters, with three breeding females reportedly present on the river and its tributaries.

#### Water vole

- 3.1.5 Most water vole records from the last ten years returned by HBIC originated from the River Itchen, with two originating from the Langbrook Stream (approximately 1.2km east of the WRP site in Brockhampton). Historic records were more widespread and were also returned for the River Hamble and several of its tributaries, the River Meon (though the majority of these were south of the 2km buffer applied for the desk study), around Farlington Marshes on streams to north and south of the A27 that feed into the central reed bed and various locations on the stream around the boundary of the Farlington Marshes nature reserve, and on Brockhampton Stream north and south of the A27.
- 3.1.6 A reintroduction program on the River Meon has released over 2,800 water voles into the Meon Valley since 2013. Project monitoring [21] has shown that water voles have become well-established along the river and its tributaries.

### Desk-based scoping

- 3.1.7 The desk-based scoping exercise identified watercourses within or crossing through the Zol of 200m from the Order Limits for field-based surveys. A total of 47 watercourse crossing points were identified at the time of scoping, although the number and locations watercourse crossing points were subsequently subject to refinement during the course of the project design stage.
- 3.1.8 Full detailed results of the otter and water vole desk study are illustrated in ES Figure 8.46 Riparian mammal desk study, Volume III (Document reference 6.3, DCO Volume 6).

## 3.2 Field surveys

### Habitat suitability assessment

- 3.2.1 All watercourses were assessed for their suitability for both otter and water vole. However, focus was given to main watercourses and associated tributaries within 1.5km. These were categorised as either optimal or sub-optimal and are illustrated in Annex A.

### Field sign surveys

- 3.2.2 No field signs of American mink were identified during the riparian mammals field surveys.

#### Otter field sign survey

- 3.2.3 Crossing points and connecting watercourses within the immediate Zol were scoped in for survey. Table 3-1 summarises the results found during surveys conducted in 2023 and 2024. Detailed results are presented in Annex B.
- 3.2.4 All evidence for otter found during TEP field surveys was within the Proposed Development component Pipeline between the WRP site and Otterbourne WSW.

**Table 3-1 Summary of otter results**

Component Section	Results
Section F: Boarhunt to Crockerhill, Section F	Sprints, feeding remains, temporary laying up area, rest or shelter and holts on River Wallington
Section F: Boarhunt to Crockerhill, Section F	Sprints on River Meon
Section K: River Hamble to Lower Upham, Section K	Feeding remains on watercourse south of Winters Hill, to the west of the town Bishop's Waltham
Section L: Lower Upham to Brambridge, Section L	Sprints and footprints on Bow Lake
Section M: Brambridge to Otterbourne WSW, Section M	Sprints on watercourse north of Kiln Lane, Otterbourne

- 3.2.5 Otter sprints were also found on the River Meon 700m downstream from the Proposed Development (Pipeline between WRP and Otterbourne WSW). This location is now outside of the study area as the Order Limits have been refined.

However, these results have been included here to provide context of otter populations in the wider area.

- 3.2.6 No evidence of any additional otter laying up areas, rest/shelter areas or holts were recorded in terrestrial habitats examined during the otter surveys.
- 3.2.7 Full detailed results of otter presence are illustrated in ES Figure 8.47 Otter and water vole survey results, Volume III (Document reference 6.3, DCO Volume 6).

Water vole field sign survey

- 3.2.8 Evidence of water vole was recorded on seven watercourses within the study area. Field signs recorded (from east to west) are summarised in Table 3-2, with details provided in Annex B.
- 3.2.9 All evidence was found within the Proposed Development component - Pipeline between the WRP site and Otterbourne WSW. The associated component section is given.

**Table 3-2 Summary of water vole results**

Component Section	Results
Section K: River Hamble to Lower Upham, Section K	Water vole droppings. Both these watercourse features relate to the River Hamble, south-west of Bishop’s Waltham and are interconnecting.
Section L: Lower Upham to Brambridge, Section L	Feeding Remains on Bow Lake

- 3.2.10 Extensive evidence of water vole presence was also recorded on the River Meon downstream from the Pipeline Between the WRP site and Otterbourne WSW Section F. This location is now outside of the study area as the Order Limits have been refined. However, these results have been included here to provide context of water vole populations in the wider area. The River Meon was subject to a reintroduction programme (as noted at paragraph 3.1.6) and it is considered that water voles are present throughout the survey area on the River Meon and tributaries.
- 3.2.11 Full detailed results of water vole presence are illustrated in ES Figure 8.47 Otter and water vole survey results, Volume III (Document reference 6.3, DCO Volume 6).

## 4 Summary

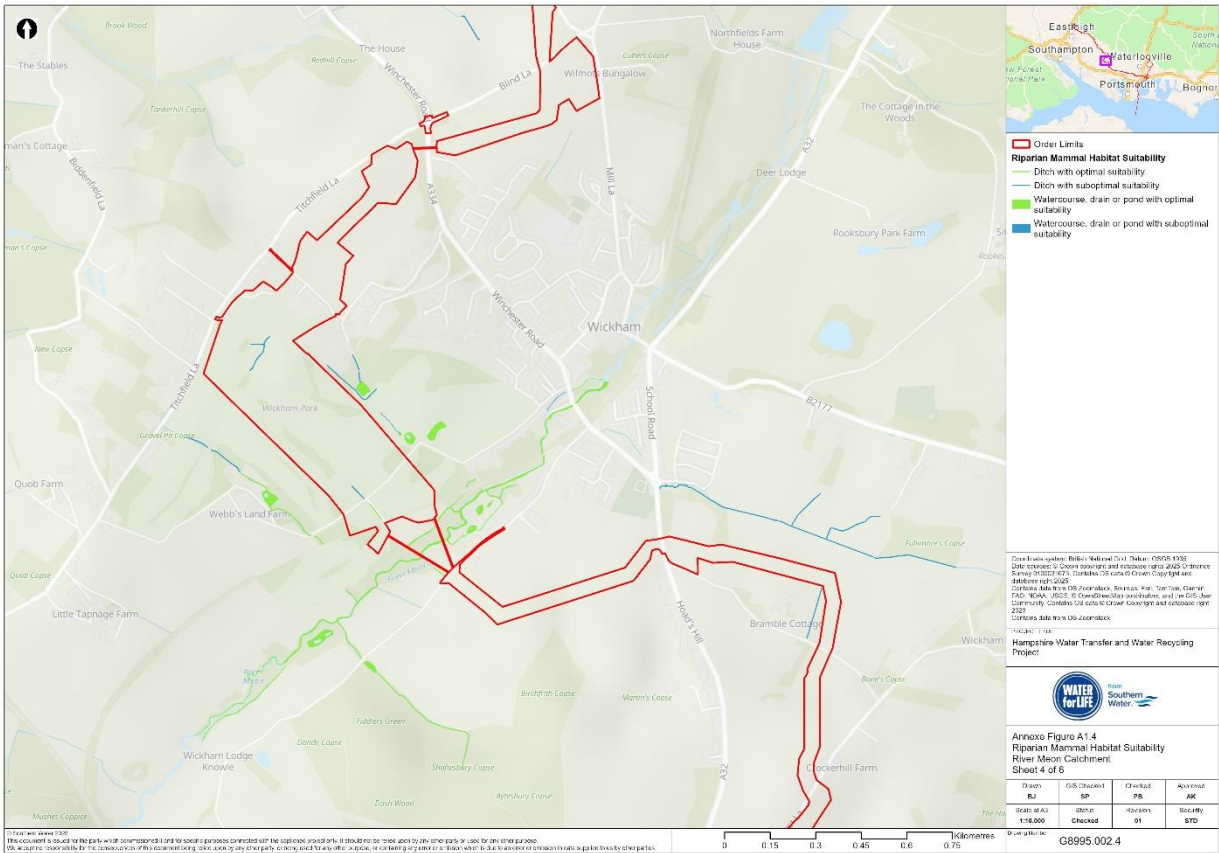
- 4.1.1 The results have identified a network of watercourses, including rivers, streams, ditches, ponds and drains, across the study area that have varying degrees of suitability for otter and water vole.
- 4.1.2 A review of the desk study data indicates that otter is active throughout the wider landscape.
- 4.1.3 The surveys undertaken in 2023 and 2024 confirmed otter present at locations on multiple watercourses across the Proposed Development area. Positive findings were concentrated on main watercourses at River Wallington, River Meon, Bow Lake, Kiln Lane (in Otterbourne) and a watercourse west of Bishops Waltham associated with the Pipeline between the WRP site and Otterbourne WSW.
- 4.1.4 Within the Proposed Development, water vole was confirmed present at two locations within the Pipeline Between the WRP site and Otterbourne WSW, both of which were interconnecting and along the River Hamble.
- 4.1.5 Otter and water vole were also confirmed present outside the Order Limits, in the wider area, in particular numerous field signs for water vole found on the River Meon. These results are now outside the Order Limits survey area but provide context of populations in the wider area.







**A1.4 River Meon Catchment**

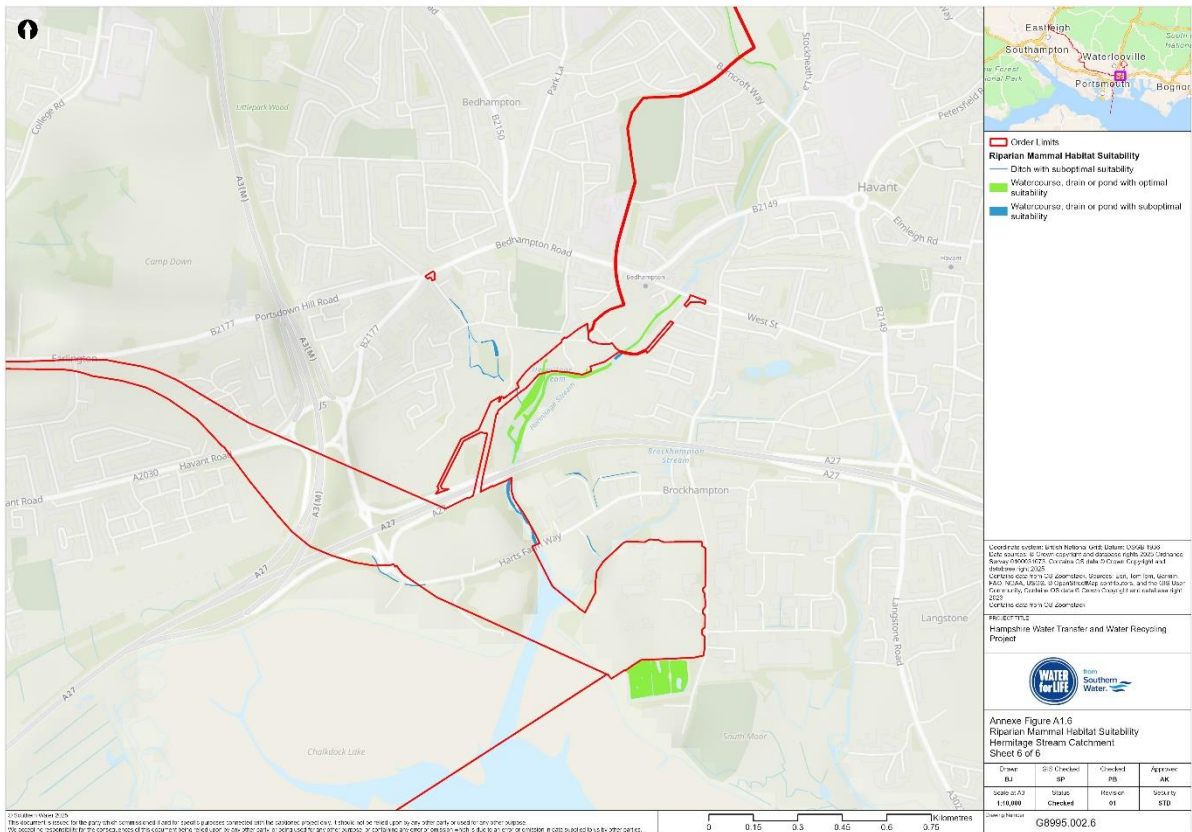


	<b>Optimal</b>		<b>Sub-Optimal</b>
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**A1.6 Hermitage Stream Catchment**





	Optimal		Sub-Optimal
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## Annex B Field survey results



Table B-1 Field survey results - otter


Grid Ref Location:	Habitat Suitability	Field Signs Recorded	Feature description
SU 49642 20670 SU 49251 20596	Commuting and Foraging	Three otter spraints at two locations	A steep sided stream which varied from 2m-5m in width and 0.5m-1m in depth and contained earth banks. Water level was between 0.5-1m deep and had a low flow at the time of the survey.
SU 49642 20670 SU 49251 20596	Commuting and Foraging	One otter spraint	A steep sided stream which varied from 2m-5m in width and 0.5m-1m in depth and contained earth banks. Water level varied between 0.5-1m deep and had a moderate flow at the time of the survey.
SU 46541 22819	Commuting and Foraging	One otter spraint	A steep sided stream which varied between 1m-2m in width and 0.5m-1m in depth and contained earth banks. Water level varied between 0.5-1m deep and had a moderate flow at the time of the survey. 
SU 46311 21594	Commuting, foraging, resting and/or holt creation	Otter footprints at three locations	A shallow sided river which varied from 5m-10m in width and was greater than 2m in depth and contained earth banks. Water level was less than 2m deep and had a moderate flow at the time of the survey.

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Grid Ref Location:	Habitat Suitability	Field Signs Recorded	Feature description
SU 53567 18011	Commuting and Foraging	Feeding remains	<p>A steep sided stream which varied from 1m-2m in width and 0.5m-1m in depth and contained earth banks. Water level was between 0.5-1m deep and had a moderate flow at the time of the survey.</p> 
SU 58522 08214	Commuting, foraging, resting and/or holt creation	<p>Seven spraints in four locations</p> <p>Temporary laying up area</p> <p>Temporary rest/shelter area</p> <p>Permanent holt</p> <p>Feeding remains</p>	<p>A steep sided river which varied from 2m-5m in width and 0.5m-1m in depth and contained earth banks. Water level was between 0.5-1m deep and had a very high flow at the time of the survey.</p> 

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Grid Ref Location:	Habitat Suitability	Field Signs Recorded	Feature description
SU 56826 10851	Commuting and Foraging	One otter spraint	<p>A shallow sided river which was 2m-5m in width and greater than 2m in depth and contained earth banks. Water level was between 1-2m deep and had a high flow at the time of the survey.</p> 
SU 52196 18918	Commuting, foraging, resting and/or holt creation	Anecdotal evidence of otter taking stocked fish	<p>A shallow sided woodland fishing pond with earth banks that were less than 0.5m high. Water level was less than 0.5m deep at the time of the survey.</p>
SU 55946 10101 SU 56145 10286	Commuting and Foraging	Spraints in two locations	<p>A shallow sided river which varied between 5m-10m in width and 1m-2m in depth and contained earth banks. Water level varied between 1-2m deep and had a very high flow at the time of the survey.</p> 

Grid Ref Location:	Habitat Suitability	Field Signs Recorded	Feature description
SU 55946 10101 SU 56145 10286	Commuting and Foraging	Spraints in two locations	<p>A shallow sided river which varied between 5m-10m in width and 1m-2m in depth and contained earth banks. Water level varied between 1-2m deep and had a very high flow at the time of the survey.</p> 

**Table B-2 Field survey results - water vole**

Grid Ref Location:	Habitat Suitability	Field Signs Recorded	Feature description
SU 54288 16810 SU 54215 16546	Good	Droppings and feeding remains	<p>A shallow sided river which varied between 5m-10m in width and 1m-2m in depth and contained earth banks. Water level varied between 1-2m deep and had a very high flow at the time of the survey.</p> 

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Grid Ref Location:	Habitat Suitability	Field Signs Recorded	Feature description
SU 55946 10101 SU 56145 10286	Good	<p>The following extensive field signs were found in 20 locations:</p> <ul style="list-style-type: none"> <li>• Feeding remains</li> <li>• Droppings</li> <li>• Latrines</li> <li>• Burrows</li> <li>• Footprints</li> <li>• Runs</li> </ul>	<p>A shallow sided river (River Meon) which varied between 5m-10m in width and 1m-2m in depth and contained earth banks. Water level was between 1-2m deep and had a very high flow at the time of the survey. Is known to be re-introduction site for water vole by the local Wildlife Trust. Evidence of active mink monitoring was also identified and is illustrated in the photographs here.</p>  <p>The photographs show a shallow river with grassy banks. One image shows a close-up of a mink's den or burrow entrance in the earth bank, with a red marker placed nearby. Another image shows a mink's footprint in the mud. The river is surrounded by trees and vegetation.</p>

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The logo graphic for Southern Water, featuring three stylized white waves of varying lengths, with the longest wave on the right.