



**Wessex**  
Rivers Trust



Water Vole & Otter Survey Report

Figcheldean

River Avon, Wiltshire

28 March 2022

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## 1.0 Introduction

### 1.1 Background

This report details results of a survey for water vole (*Arvicola amphibious*) and Eurasian otter (*Lutra lutra*) on the River Avon at Figheldean, Wiltshire (central OS grid reference SU 15238 47556). Surveys were undertaken to inform design and delivery of an Environment Agency / Wessex Rivers Trust partnership river restoration project. It is acknowledged that the proposed works have the potential to present a risk of disturbance, injury or killing to protected species if present. The objective of the surveys and this report is to identify the presence of these species within the working area and identify working methodologies to prevent negative impact upon the species and ensure compliance with wildlife and environmental law.

### 1.2 Conservation status and legislation

#### **Water vole**

The water vole is the United Kingdom's most rapidly declining mammal species: it has been lost from 94% of sites in the past century (Strachan, 1998) and overall decline is estimated at 30% between 2006 and 2015 across England and Wales (McGuire & Whitfield, 2017). South-east England is the national stronghold for the species and Hampshire probably contains the highest populations within the region.

Water vole has suffered declines as a result of habitat loss, pollution of waterways, industrialisation of agriculture, housing development and predation by the invasive non-native species American Mink (*Neovison vison*). Water Vole are now absent from much of the country and populations are estimated to have declined by >80% in Hampshire in the past 30 years. As a result, the species is nationally protected.

The water vole (*Arvicola amphibious*) is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 and is a priority conservation species.

This legislation makes it an offence to:

- intentionally capture, kill or injure Water Voles
- damage, destroy or block access to their places of shelter or protection (on purpose or by not taking enough care)
- disturb them in a place of shelter or protection (on purpose or by not taking enough care)
- possess, sell, control or transport live or dead Water Voles or parts of them (not Water Voles bred in captivity)

In addition to legal protection, Water Vole is a species of principle importance (SPI) in England (JNCC, 2016) and is listed by the Hampshire Biodiversity Partnership as a priority species (2000a).

#### **Eurasian otter**

The Eurasian otter (*Lutra lutra*) is the only native UK otter species. European otter populations throughout Western Europe declined over the 20th century, with the decline in the UK attributed to the introduction of cyclodiene pesticides (dieldrin and related compounds) in the mid-1950s and their subsequent bioaccumulation in the aquatic food chain. Legislation restricting or banning the use of certain pesticides and improvements in water quality have led to an increase in Otter

abundance and range. While the otter is listed as Near Threatened on the IUCN Red List, the 2008 reporting round of the UK Biodiversity Action Plan reported that population trends are increasing throughout the UK.

The European Otter is a European protected species (EPS) and is also fully protected under Schedule 5 of the Wildlife and Countryside Act 1981.

This legislation makes it an offence to:

- capture, kill, disturb or injure otters (on purpose or by not taking enough care)
- damage or destroy a breeding or resting place (deliberately or by not taking enough care)
- obstruct access to their resting or sheltering places (deliberately or by not taking enough care)
- possess, sell, control or transport live or dead otters, or parts of otters

In addition to legal protection, European Otter are species of principle importance (SPI) in England (JNCC, 2016) and is listed by the Hampshire Biodiversity Partnership as a priority species (2000ab).

## 2.0 Methodology

### 2.1 Field survey

A ~800m reach of the River Avon and adjacent riparian habitat, from SU 15468 47766 (upstream) to SU 14983 47230 (downstream) was surveyed for water vole and Eurasian otter. The surveys were undertaken on 22<sup>nd</sup> March 2022 by an experienced ecologist and assistant satisfying all necessary field survey competencies as set out by the Chartered Institute for Ecology and Environmental Management (CIEEM).

#### Water vole

The survey comprised a detailed search of both banks of the main channel for signs of water vole activity. In addition, a ditch set back from the true left bank was also included within the scope of the survey. Survey was undertaken in accordance with the Water Vole Mitigation Handbook (Dean *et al.*, 2016). The survey was conducted from within the watercourse where conditions allowed, or from banks in localised areas where access was restricted. This involved a search for water vole burrows, latrines (sites regularly used for depositing droppings which act as territory markers), droppings (non-latrine sites), feeding remains (stacks of neatly cut vegetation), prints and runs.

The Water Vole Mitigation Handbook (Dean *et al.*, 2016) details a method for estimating relative population size and where appropriate, this method will be utilised. An extract of the document is detailed below:

*“The number of latrines recorded by the survey will give an indication of relative population size, and can be helpful in identifying the most valuable parts of a site for water voles. The survey area can be sub-divided into areas supporting water voles at ‘high’, ‘medium’ or ‘low’ density, which could be interpreted as follows:*

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

*It is not possible to make robust estimates of absolute numbers of animals from latrine counts. However, latrines provide relative indices of activity suitable for the purposes of assessing impacts or designing mitigation.”*

#### Eurasian otter

The survey comprised a detailed search of both banks of the main channel plus the adjacent ditch and suitable terrestrial habitat for signs of otter activity. The survey was conducted from both within the channel and on the banks. Signs of otter surveyed for included spraint (droppings), feeding remains, runs, couches/lay-ups and holts.

## 2.2 Nomenclature

The English names of flora and fauna species are predominantly given in the main text of this report, with scientific names only provided for reference. Vascular plants follow the nomenclature of The Botanical Society for the British Isles database (BSBI, 2007) with all other flora and fauna following the UK Species Inventory (Natural History Museum, 2016).

When referring to river banks the right bank (RB) is always on the right side of the direction in which the water is flowing when facing downstream and the left bank (LB) is always the left hand side facing downstream.

## 2.3 Limitations

Within-channel surveyor access was constrained for approximately 100m above the weir at SU 15144 47463 due to water depth. Subsequently, survey was undertaken from the bankside through this localised reach. This is not determined to have a significant impact upon survey effort.

Some banks were significantly undercut, making visual location of some latrines and feeding remains within burrow entrances unfeasible. Due to the visibility of burrow entrances above bank this is not determined to have a significant impact upon survey effort.

Whilst the standard survey season for water vole in the UK commences mid-April, surveys may commence earlier in south-east England e.g. mid-March (Dean *et al.*, 2016), particularly if recent weather conditions have been favourable. Subsequently, scheduling of the survey in late March is determined to be appropriate.

## 3.0 Results

### 3.1 Field Survey

#### **Water vole**

The locations of all field signs recorded during the survey are shown on the survey map in Appendix 1.

Evidence of water vole activity in the form of active burrows (90), latrines (20), feeding remains (7), droppings prints and runs was recorded within the site boundary. 20 latrine sites were observed during the survey, equating to 4 latrines per 100m of channel. This classifies the site as a 'medium' relative population density using the methodology devised by Dean et al., 2016. Based upon surveyor experience, it is determined that latrine abundance was likely under-recorded (see 2.3 limitations) and that there is a probable 'high' relative population density based upon abundance of other field signs, particularly considering the early season survey timing.

The survey reveals a significantly higher abundance of water vole activity, particularly burrowing, on the true right bank of the main channel than the true left bank. It is likely that burrow abundance is influenced by bank profile and composition, with the high steep faced clay-rich true right bank providing better burrowing opportunity. The true left bank has a gentler sloping profile and is heavily vegetated by emergent macrophytes. Whilst potentially less suited for burrowing, survey records indicate that the bank may be an important foraging resource.

Some spatial variation in habitat suitability is demonstrated across the site. Lengths of 'hard' artificial bank e.g. gabion baskets and aggregate combined with higher levels of riparian shade immediately upstream and downstream of the main weir provide lower quality burrowing and foraging habitat and this is reflected in a slightly reduced abundance of water vole activity in this reach.

#### **Eurasian otter**

Extensive evidence of Eurasian Otter was recorded within the extent of the survey. Records comprised spraints (4), slides (3) and prints (3). The abundance and clarity of signs indicates recent use of the site by otter. No evidence of holts or couches/lay-ups were recorded during the survey.

Based upon the survey records, it is considered highly likely that otter utilise the site for foraging and migration. The reach upstream of the reach offers excellent foraging opportunity, with limited in-channel habitat complexity and an abundance of stocked fish.

## 4.0 Impact Assessment

### **Water vole**

Direct disturbance of the banks i.e. bank grading or installation of hard (i.e. aggregate) in-channel/bankside structures has the potential to result in killing/injury of water vole and a direct long-term loss of burrowing and foraging habitat.

Tracking of mobile plant within the vicinity of water vole burrows has the potential to result in killing/injury of water vole through collapse of burrows and direct medium-term disturbance through damage or loss of foraging habitat.

Indirect disturbance from elevated noise/vibration as a result of site activities is possible but is likely to be of low significance.

It is anticipated that the proposed works will secure significant long-term habitat improvements for the species. Creation of wider, more diverse margins through the reach and general improvements in macrophyte diversity and abundance will provide greater foraging opportunity and an increase in cover from predation.

### **Eurasian otter**

Significant in-channel works i.e. removal of main weir structure have the potential to result in temporary direct disturbance by preventing migration of otter through the site.

Riparian works i.e. bank grading or aggregate berm creation have the potential to result in temporary direct disturbance by reducing quality of foraging habitat through the reach until habitat re-establishes. This is determined to be of low significance considering the abundance and extent of high-quality foraging opportunities immediately upstream and downstream of the site.

## 5.0 References

### Water vole

To avoid significantly impact upon the species and to ensure legal compliance throughout the proposed works, is recommended that the following practice is incorporated within the project designs and working method statements:

- Risks should be designed-out within detailed designs/method statements to avoid or minimise significant impact upon the species. Grading of banks or installation of hard (i.e. aggregate) bankside structures i.e. aggregate berms must be located to avoid disturbance of active water vole burrows. Use of soft (i.e. woody) structures may be more appropriate to avoid/minimise impacts in those locations. Suitable open water habitat should be retained in the locality of active water vole burrows.
- A full repeat water vole survey should be undertaken in the second half of the survey season (July-September) to provide a full assessment of water vole activity within the site.
- A repeat check for water vole activity by a experienced surveyor should be undertaken in the location of works that may cause physical disturbance of the river bank or marginal vegetation immediately prior to works. Similarly, any plant tracking route to reach the channel must be inspected to ensure 5m avoidance of vole burrows where practicable. Precautions such as ground protective track matting should be utilised where appropriate.
- Active water vole burrows must be identified and clearly marked-out on site immediately prior to commencement of works to ensure a safe working distance (5m where feasible) is retained.

### Otter

It is recommended that good working practice in relation to Eurasian otter is employed during completion of the proposed works. This should include:

- Risks should be designed-out within detailed designs/method statements to avoid or minimise significant impact upon the species. Damage or disturbance of the bankside and riparian areas should be minimised where possible as to minimise impact on foraging habitat.
- Prevention of any temporary barriers that may impede continued access throughout the site to facilitate upstream/downstream otter migration during the works.

### General Guidance

It is recommended that the following generic good working practice is employed during completion of the proposed works:

- If any signs or suspected signs of protected species are observed during the delivery phase of the project, all works should cease immediately, and a suitably qualified ecologist be consulted.
- General compliance with the site-specific environmental risk assessment throughout the proposed works

## 6.0 Recommendations

### Guidance

Dean, M., Strachan, R., Gow, D., and Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series) Eds Fiona Mathews and Paul Chanin. The mammal Society, London.

Gov.co.uk (2014a). Guidance. Water Vole: surveys and mitigation for development projects. Available at: <https://www.gov.uk/guidance/water-voles-protection-surveys-and-licences>

Gov.co.uk (2014b). Guidance. Otters: surveys and mitigation for development projects. Available at: <https://www.gov.uk/guidance/otters-protection-surveys-and-licences>

Morris P.A., Morris M.J., MacPhearson D., Jefferies D.J., Strachan R. and Woodroffe G.L. (1998). Estimating numbers of the Water Vole *Arvicola terrestris*: a correction to the published method. *Journal of Zoology*. 246: p61-62.

Natural England (2016). Natural England GIS Digital Boundary Database. Available at: [http://www.gis.naturalengland.org.uk/pubs/gis/tech\\_ds.htm](http://www.gis.naturalengland.org.uk/pubs/gis/tech_ds.htm) [Accessed on 31st May 2017].

Natural History Museum. (2016). UK Species Inventory. Available at: <http://www.nhm.ac.uk/research-curation/scientific-resources/biodiversity/uk-biodiversity/uk-species/index.html> [Accessed on 31st May 2017].

Strachan, R., Moorhouse, T. and Gelling, M. (2011). Water Vole Conservation Handbook. 3rd ed. Wildlife Conservation Research Unit: Oxford.

The Water Vole in Britain 1996-1998, R Strachan, The Vincent Wildlife Trust, London, 1998.

JNCC, 2016. UK BAP priority terrestrial mammal species. Available at: <http://jncc.defra.gov.uk/page-5170>

Hampshire Biodiversity Partnership, 2000(a). Water Vole. Available at: <http://www.hampshirebiodiversity.org.uk/pdf/PublishedPlans/WaterVolejjDTPdark.pdf>

Hampshire Biodiversity Partnership, 2000(b). European Otter. Available at: <http://www.hampshirebiodiversity.org.uk/pdf/PublishedPlans/otterjjDTP3.pdf>

### Legislation

Conservation of Habitats and Species (Amendment) Regulations 2010 (as amended): <http://www.legislation.gov.uk/uksi/2012/1927/contents/made>

Countryside and Rights of Way Act 2000: <http://www.legislation.gov.uk/ukpga/2000/37/contents>

Habitats Directive: [http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index\\_en.htm](http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm)

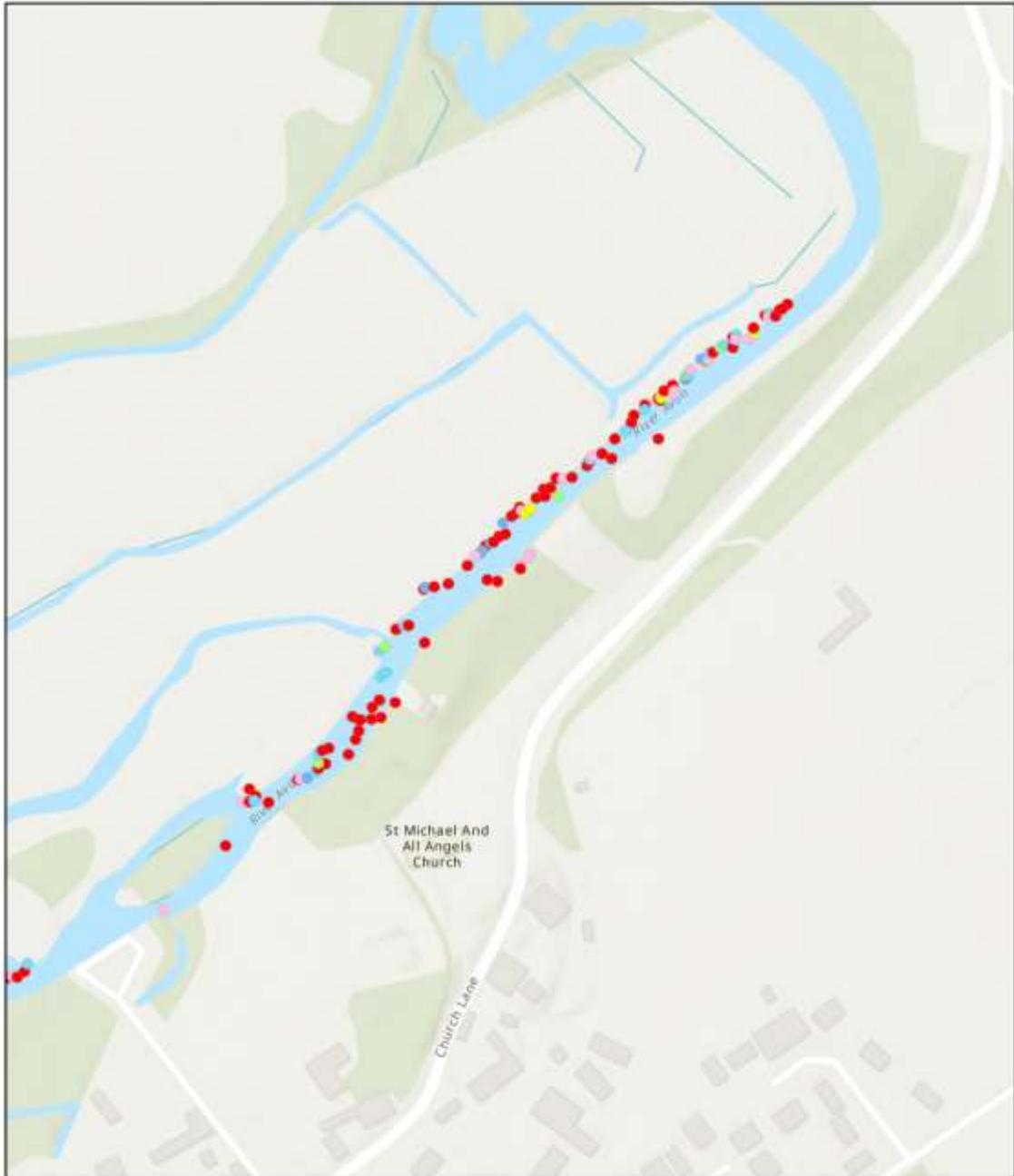
Natural Environment and Rural Communities Act 2006: <http://www.legislation.gov.uk/ukpga/2006/16/contents>

Wildlife and Countryside Act 1981: <http://www.legislation.gov.uk/ukpga/1981/69>

## 7.0 Appendices

### Appendix 1 – Drawings: Survey Results

# Figheidean River Restoration - upstream water vole survey spring 2022

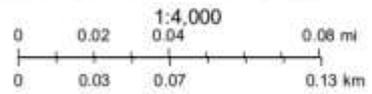


28/03/2022

Water Vole

- Burrow - Active
- Droppings
- Feeding Remains

- Latrine
- Print
- Run
- World Hillshade



Source: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Source: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

## Figheledean River Restoration - downstream water vole survey spring 2022

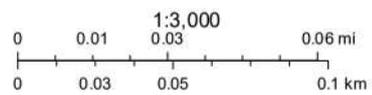


28/03/2022

Water Vole

- Burrow - Active
- Droppings
- Feeding Remains

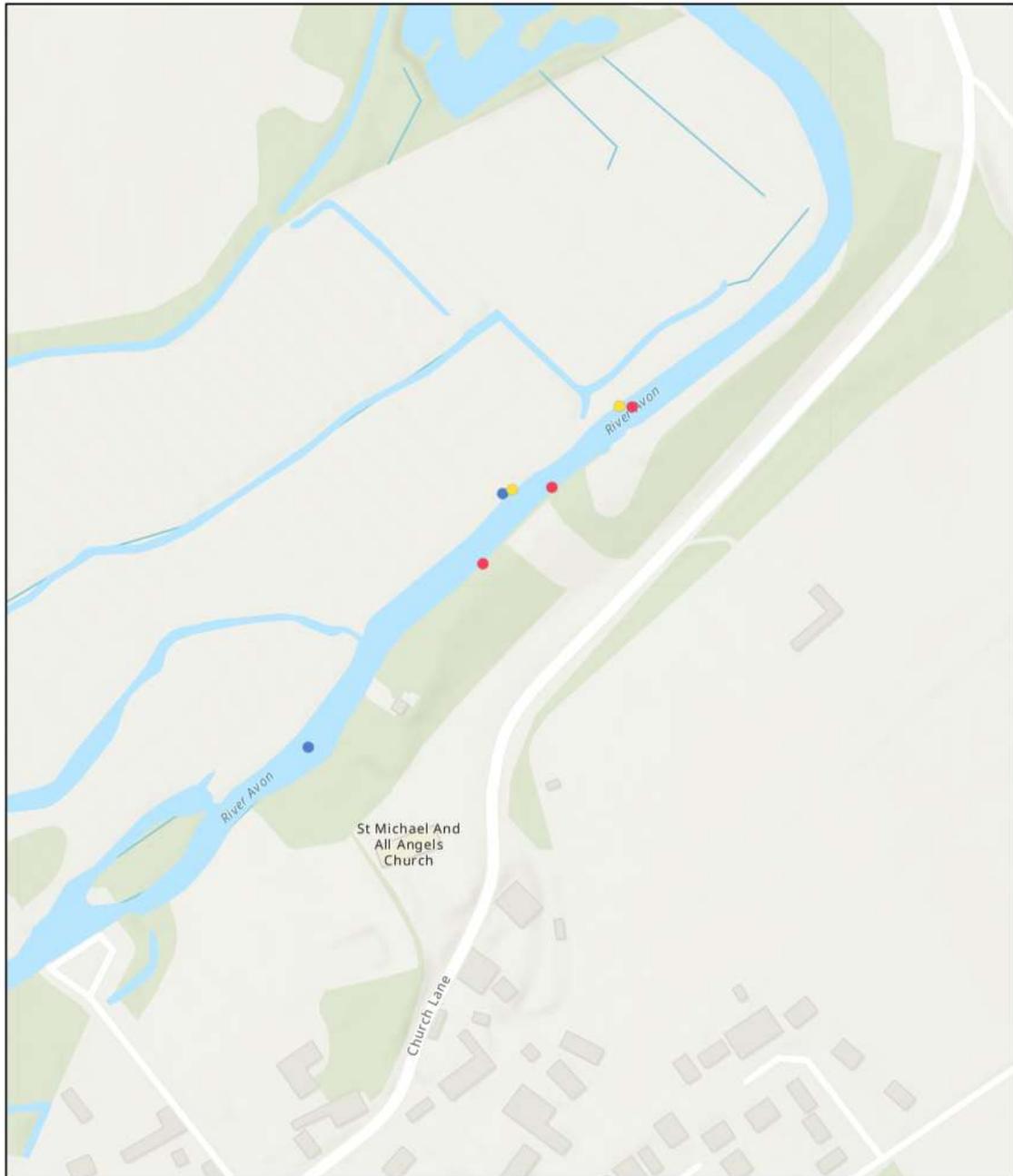
- Latrine
- Print
- Run
- World Hillshade



Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyretsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community. Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

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## Figheldean River Restoration - upstream otter survey spring 2022

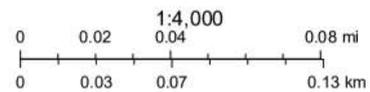


28/03/2022

Otter

- Print
- Slide
- Spraint

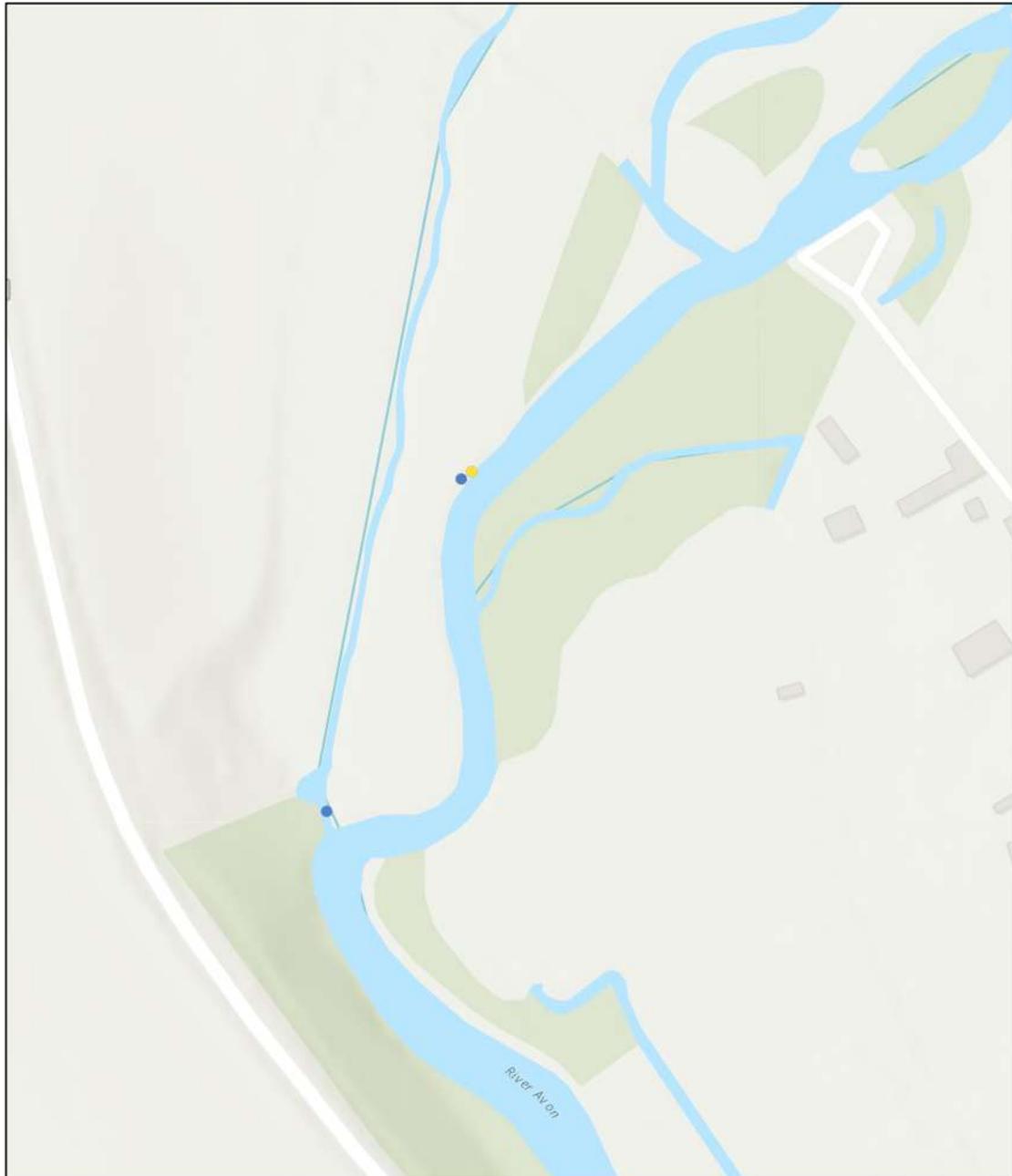
World Hillshade



Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

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## Figheidean River Restoration - downstream otter survey spring 2022

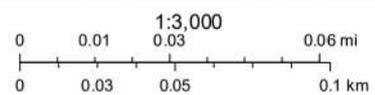


28/03/2022

Otter

- Slide
- Spraint

World Hillshade



Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

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