

# BIGLIS TO DINAS POWYS ATR

## Water Vole and Otter Survey Report

NOVEMBER 2023



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Target notes and descriptions

Target note	Description	Grid refer
1	Burrows along the channel bank immediately above the water level	ST 1 6912:

2	-Probable water vole footprints located under bridge. -Mink trap under bridge -potential for resting otter under bridge	ST 14775 69147
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3	Water vole latrine (fresh droppings) located on southern bank	ST 14780 69150
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4	- Burrow with droppings and grass cuttings (with 45° angles)	ST 14815 69180
5	<p>Photograph of exposed and cow poached river section between A4055 bridge and water vole signs.</p> <p>Grid references are for additional cattle poached river sections</p>	<p>ST 14890 69302, ST 14880 69325, ST 14983 69444</p>

6	Probable otter tracks (west bank, Cold Brook)	ST 14792 69483
7	Vegetation cut to ground from the waterline at Section A of the Cadoxton River	Between ST 14639 69068 - ST 14884 69304



8	Otter and probable water vole foot prints under bridge	ST 14773 69150
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9	Water vole burrows	ST 14788 69156
10	Rustling vegetation and 'plop' sound during second survey visit	ST 14803 69174

Arcadis Consulting (UK) Limited

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## Water Vole and Otter Survey Report

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Checker Siân Carr  
Approver Hannah Corcoran  
Document Ref. 10058585-ARC-XX-300-RP-E-00001  
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## Version Control

Version	Date	Author	Checker	Approver	Changes
01	November 2023	Rebecca Howells	Sian Carr	Hannah Corcoran	For Issue

This report dated 24 November 2023 has been prepared for Vale of Glamorgan Council (the “Client”) in accordance with the terms and conditions of appointment dated 01 May 2023(the “Appointment”) between the Client and **Arcadis Consulting (UK) Limited** (“Arcadis”) for the purposes specified in the Appointment. For avoidance of doubt, no other person(s) may use or rely upon this report or its contents, and Arcadis accepts no responsibility for any such use or reliance thereon by any other third party.

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## Drawings

Otter and Water Vole Survey Plan 10058585-ARC-XX-010-010-DR-E-00003

# Summary

Arcadis Consulting (UK) Ltd have been commissioned by Vale of Glamorgan Council to undertake water vole and otter surveys to inform the design of the proposed active travel route (ATR) between Biglis and Dinas Powys.

An extended Phase 1 habitat survey and desk study was undertaken by Arcadis Consulting (UK) Ltd in 2023. The Phase 1 habitat survey identified watercourses (Cadoxton River and Cold Brook) that offered suitable habitat for water vole and otter. No evidence of water vole or otter were identified during the survey. However, the habitat was considered to have the potential to support water vole and otter. The proposed ATR development will span the Cadoxton River and may have potential to negatively impact water vole and otter if identified as a constraint to the project.

A water vole and otter survey was therefore undertaken along sections of the Cadoxton River and Cold Brook that fall within 250m of the proposed route crossing point. The surveys identified suitable habitats within the survey area for water vole and otter. The surveys found water vole field signs along the Cadoxton River approximately 100m downstream from the proposed works and otter footprints on the banks of the Cadoxton River and Cold Brook watercourse.

The works have the potential to impact water vole and otter. A pre-construction check is recommended no more than six weeks before works commence to check for water vole burrows within at least 30 metres up and downstream for otter holts and water vole burrows from the proposed works.

If no further evidence of either species is found nearer to the scheme then it is recommended that a Method Statement is prepared and should be followed for the duration of the works and include the following avoidance measures to ensure the works comply with relevant legislation and to prevent disturbing, injuring and/or killing water vole and otter:

- An experienced ecologist should provide a toolbox talk to all contractors/ site staff and advise them of any ecological constrain on site and mitigation required before any works commence.
- Timing restrictions - Works should take place outside of the water vole breeding season (March-September);
- Exclusion zone - A minimum exclusion zone x20xm from water vole burrow;
- Standard best practice and pollution control measures to prevent polluting the watercourse;
- Night work should be avoided;
- Habitat connectivity should be maintained;
- No excavations or pipe works should be left open overnight. If this is not possible then the excavation should have a soil ramp or wooden plank installed at one end to allow animals to escape; and

- Contingency plans to respond to unexpected encounters with water vole and/ or otter, including emergency measures and protocols including consultation with an ecologist and potentially application for a licence from Natural Resources Wales.

Any new lighting to be introduced should be designed to minimise light spillage during construction and/ or from the final design and not directed onto the Cadoxton River or its riparian habitat to maintain dark corridors.

Riparian habitat along the Cadoxton River that was accessible to cattle and heavily cow poached and was in the process of being fenced off at the time of the second survey and the riparian vegetation should be left to regenerate naturally, to allow safe passage and connect suitable habitat for water vole and otter.

Any riparian zones temporarily damaged by the works should be re-profiled and allowed to regenerate. Over hanging tree branches should be removed to reduce shading.

If possible, cattle access to the wider Cadoxton River banks should be restricted through additional fencing and left to regenerate naturally, to allow safe passage and connect suitable habitat for water vole and otter.

# 1 Introduction

## 1.1 Background

This report presents the results of otter (*Lutra lutra*) and water vole (*Arvicola amphibius*) surveys along a proposed Active Travel Route (ATR) between Biglis and Dinas Powys, undertaken by Arcadis Consulting (UK) Limited on behalf of the Vale of Glamorgan Council.

The aim of the survey was to establish the presence/likely absence of otter and water vole within the site boundary to identify potential ecological constraints to the proposed development and provide recommendations for appropriate mitigation.

## 1.2 Site Location

The proposed development is located in the Vale of Glamorgan (central grid reference ST 15393 70215). The proposed ATR links Biglis in Barry in the southwest via grazed, semi-improved grasslands and existing footpath/road along Cardiff Road to where the path will terminate at Dinas Powys train station in the north-east. The proposed development is shown in Figure 1. An alternative option to the Cardiff Road route passes through Dinas Powys skate park (blue line in Figure 1).



© Google Image

Figure 1. Overview of the two proposed routes between Biglis (south-west) to Dinas Powys (north-east).



## 1.3 Proposals

The proposals are to construct a new ATR between Dinas Powys and Biglis. An ATR is a pathway that will be used for walking and cycling (including the use of mobility scooters) for everyday journeys. The northern section of the proposed development would either be located within Cardiff Road between Dinas Powys train station to the entrance of Green Lane or an alternative route through the Dinas Powys skate park and adjacent fields is being explored. From Green Lane the proposed development would be located within grazed semi-improved grasslands, in parallel with Cardiff Road, to the Biglas roundabout that connects the A4055 to the A4231 and B4267 at the eastern edge of Barry.

The existing footpath/road along the northern section of the proposed development will likely need widening with some adjacent trees and scrub requiring some management and/or clearance. Sections of hedgerow, trees, scrub, woodland and semi-improved grassland will require some vegetation clearance along the southern section of the proposed development; however, the full extent of vegetation clearance is currently unknown. There may also be a requirement to incorporate some lighting along the ATR.

The proposed ATR will span a small area of the Cadoxton River within the southern section of the site. Therefore, an otter and water vole survey is required to confirm their presence/ likely absence.

## 1.4 Review of Existing Information

### 1.4.1 Water Vole

The desk study returned a single record of water vole on Sully Brook 2km east of the proposed development. Sully Brook is hydrologically connected to Cosmeston Lakes, which were located approximately 2.2km east of the proposed development, which was known to support a population of water vole (Ref 1).

No water vole burrows were identified during the walkover survey (Ref 2) where the proposed development crosses the Cadoxton River. The banks of the river were low and unvegetated in this section and the water was shallow at the time of the survey. It was considered likely that when water levels rise, any burrows in this section (if present) would be regularly flooded reducing the suitability of this area for water vole burrows.

Bankside vegetation was grassy, cattle grazed and short, limiting foraging opportunities for water vole within the section of the river crossed by the proposed development. Suitable food sources were located nearby up and downstream from the proposed development. Therefore, the PEA (Ref 2) concluded that there was potential for water vole to commute through the proposed development where it spans the river.

### 1.4.2 Otter

The desk study (Ref 2) returned two records of otter within 2km of the proposed development including field signs (spraint) at Cadoxton Ponds 1.3km west of the proposed development and along Cadoxton River 1.3km north of the proposed development.

Cadoxton River is crossed by the proposed development and offers suitable habitat to support commuting and foraging otter and their holts. No evidence of otter was recorded within the survey boundary during the walkover

in early 2023 (Ref 6) and there were no features suitable to support otter holts in the immediate locality (i.e., 50m of where the river is crossed). However, the PEA (Ref 2) concluded that the Cadoxton River and Cold Brook and their riparian habitats had potential to support commuting and foraging otters and their holts are likely to commute along the Cadoxton River and Cold Brook.

## 2 Legislation

### 2.1 Water Vole

Water vole are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (Ref 2) which makes it an offence to:

- Intentionally capture, kill, injure or take a water vole;
- Intentionally or recklessly damage, destroy or obstruct access to their places of shelter or protection; and
- Intentionally or recklessly disturb water vole while in a place of shelter or protection.

Section 7 of the Environment Act (Wales) 2016 (Ref 3) includes water vole on the lists of species and habitats of principle importance in Wales.

### 2.2 Otter

Otters (and their habitat) are protected under the Conservation of Habitats and Species Regulations 2017 (Ref 4) Under this legislation it is an offence to:

- Deliberately capture, kill or injure any wild otter.
- Deliberately disturb wild otter (disturbance is defined as any activity likely to impair the ability to breed, reproduce, rear or nurture young, hibernate, migrate and/or significantly affect the local distribution or abundance of the species);
- Damage or destroy a breeding site or resting place; and
- Possess, control, transport, sell, exchange, offer for sale or exchange, any live or dead animal or part of an animal.

Otters are also protected under the Wildlife and Countryside Act 1981 (as amended) (Ref 5) which makes it an offence to intentionally or recklessly:

- Damage or destroy any structure or place which wild otter use for shelter or protection;
- Disturb wild otter while occupying a structure or place which is used for shelter or protection; and
- Obstruct access to any structure or place which any such animal uses for shelter or protection.

Section 7 of the Environment Act (Wales) 2016 (Ref 3) includes otter on the lists of species and habitats of principle importance in Wales.

## 3 Methodology

### 3.1 Water Vole Survey

Water vole surveys were undertaken on 7 July 2023 and 25 September 2023 by experienced ecological surveyor Rebecca Howells and assisted by Morgan Greedy and Rachel Turcan. The survey comprised a 250m search up and downstream where the proposed ATR crosses the Cadoxton River and Cold Brook. This survey was carried out following standard guidance within *The Water Vole Mitigation Handbook* (Ref 6) This included searching the banksides for:

- Latrines/droppings – water vole droppings are often concentrated in discrete latrine sites near the nest, at territorial boundaries and places where they regularly enter and exit the water. While most droppings will be deposited in latrines, some may be found scattered along runways in vegetation;
- Feeding stations – feeding remains in the form of neat piles of chewed lengths of vegetation are often found in runways and at haul-out platforms;
- Burrows – these are typically found along the water’s edge and on top of the bank up to 5m from the water’s edge. Holes on top of banks often have grazed ‘lawns’ around them;
- Nests – where vegetation cover is dense, and the water table is high (limiting opportunities for burrowing), water vole nests may be found woven into the base of rushes, sedges or grass tussocks; and
- Footprints – these may be identified in soft mud or silt.

Table 1. Water Vole Survey Visits.

Survey Date	Surveyors	Weather Conditions
07/07/2023	Rebecca Howells and Morgan Greedy	Warm, dry, clear sky
25/09/2023	Rebecca Howells and Rachel Turcan	Warm, dry & partly cloudy

### 3.2 Otter Survey

An otter survey was undertaken on 7 July 2023 and 25 September 2023 by experienced ecological surveyor Rebecca Howells assisted by Morgan Greedy and Rachel Turcan. The survey comprised a detailed search of each waterbody present on site and in accordance with best practice guidance (Ref 7).

Searches took place along sections of the Cadoxton River and Cold Brook within 250m of the proposed ATR looking for any evidence of otter including:

- Footprints;
- Spraints;
- Anal jelly;
- Feeding remains (such as fish/ crayfish/ amphibian/ bird);
- Mammal paths;

- Slides (paths often down steep banks to the river that become muddy where an otter will slide on their stomach);
- Lying up areas/ resting sites; and
- Holts.

Table 2. Otter Survey Visits.

Survey Date	Surveyors	Weather Conditions
07/07/2023	Rebecca Howells & Morgan Greedy	Warm, dry, clear sky
25/09/2023	Rebecca Howells and Rachel Turcan	Warm, dry & partly cloudy

### 3.3 Survey Constraints

Many sections of the Cadoxton River and Cold Brook were deep and densely vegetated during the first field survey, which made access to the water's edge difficult to search the full length of each watercourse, therefore, some sections were consequently out of view, which may have concealed signs of otter and water vole presence.

The channel banks along Section A had been flailed immediately prior to the surveyors arriving on site for the second survey. This enabled access to the channel banks and the water's edge; however, the vegetation cuttings had covered the ground and may have concealed signs of otter and water vole.

The underside of the bridge located immediately north of the proposed works span the Cadoxton River was inaccessible due to deep water. Observations made from adjacent habitat identified debris blocking part of the bridge's north face.

The survey data and recommendations provided in this report are valid for two years from the date of issue.

## 4 Results

### 4.1 Habitat Descriptions

The Cadoxton River and Cold Brook watercourses and their riparian habitats were surveyed for their suitability to support water vole and otter. The watercourses have been split into Sections A – E (refer to Figure 2) and Photographs (Plate 1 - 15) are listed in Appendix A.



© Google Image

Figure 2. Overview of watercourses surveyed between Biglis (south-west) to Dinas Powys (north-east).

#### 4.1.1 Section A

Section A (Plate 1 – 5) is located south of the proposed ATR along the Cadoxton River. This section of the river was deep and the channel bank profile contained both steep and shallow slopes. The channel bank was cattle poached in areas where the bank was shallow.

This section of river was unmanaged at the time of the first survey. The upper channel banks were densely vegetated with scrub and tall ruderal plant species. The lower section of the channel bank was densely vegetated to the shoreline and contained emergent plants.

The channel banks along this section of the Cadoxton River had been flailed to ground and close to the water's surface along the west and the east channel bank was in the process of being flailed during the second visit in preparation to install a fence to prevent cattle accessing this section of the river.

A small bridge located south of Section A spans the Cadoxton River providing access between grazing fields. The riparian habitat along the underside of the bridge did not contain vegetation.

This section of the Cadoxton River contained suitable riparian habitat to support water vole and otter.

#### 4.1.2 Section B

Section B (Plate 6 & 7) was immediately connected to Section A. this section contained shallow water and was heavily vegetated with reeds. The channel banks were shallow and heavily vegetated with scrub and tall ruderal plant species (i.e., bramble (*Rubus fruticosus agg.*), common nettle (*Urtica dioica*) and rosebay willowherb (*Chamerion angustifolium*)). The outer edge of the riparian habitat was cattle poached.

This section of the watercourse had some suitability to support water vole and otter in places.

#### 4.1.3 Section C

Section C (Plate 8 & 9) contained steep banks and deep water. The upper section of the channel bank was densely vegetated with trees, scrub and tall ruderal plant species (i.e., hawthorn (*Crataegus monogyna*), willow spp. (*salix spp.*), bramble, common nettle and rosebay willowherb).

Lower sections of channel bank immediately above water's surface predominately consisted of common ivy and bare ground. The shoreline contained some pockets of aquatic plants, but this section of Cold Brook were mainly exposed immediately along the water's surface.

#### 4.1.4 Section D

Section D (Plate 10 & 11) was an unmanaged ditch was approximately 300m in length and hydrologically connected to the Cadoxton River and Cold Brook but did not extend into neighbouring fields to the north.

The ditch was dry during the first survey visit and flooded during the second visit. The banks were shallow, and the riparian vegetation consisted of terrestrial grass species, which may indicate that this watercourse only fills during periods of heavy rain.

The ditch was lined with small trees and scrub with intermittent areas of grassland and was heavily cattle poached.

This ditch did not contain any suitable habitat for otter and water vole due to its shallow profile, regular disturbance from cattle and the lack of aquatic vegetation to support foraging water voles.

#### 4.1.5 Section E

Section E (Plate 12 – 15) was located along the upper section of the Cadoxton River (immediately north of the A4055 road bridge). The channel banks were steep, and the water was deep.

The upper sections of the channel bank were dominated by trees, scrub and tall ruderal plant species (e.g., grey willow (*Salix cinerea*), bramble, common nettle and willowherb.) and the lower sections of the channel bank were predominately exposed soil, dominated by common ivy (*Hedera helix*). There were a few pockets containing heavily vegetated areas emerging from or close to the water line. However, this section mainly comprised exposed open water.

The channel banks within vegetative areas provided suitable habitat for water vole burrows, which also contained a suitable plant species assemblage to support foraging water vole. This section of the Cadoxton River also provided suitable habitat for commuting and foraging otter (and potentially their holts in areas with dense vegetation coverage).

The riparian habitat immediately north of the A4055 road bridge was heavily cattle poached and the underside of the bridge had a build-up of debris.

## 4.2 Water vole

Evidence of water vole was found during both field surveys and included burrows, droppings, feeding stations and probable footprints (see Table 3). All water vole field signs were located within Section A and are shown on the Otter and Water Vole Survey Plan 10058585-ARC-XX-010-010-DR-E-00003 with associated target notes, photographs and detailed descriptions given in Appendix B.

Table 3. Water Vole survey results.

Survey Date	Survey Result	Section	Target Note
07/07/2023	Two water vole burrows viewed from opposite channel bank	A	TN1
07/07/2023	Probable water vole footprints and mink trap under bridge	A	TN2
07/07/2023	A pile of water vole droppings near the water's edge.	A	TN3
07/07/2023	Water vole droppings at the entrance of a single burrow and grass cuttings with 45° angles located close to the burrow entrance	A	TN4
25/09/2023	Probable water vole footprints surrounding a single hole under the bridge.	A	TN8
25/09/2023	>4 Water vole burrows	A	TN9
25/09/2023	Probable live water vole observation (rustling vegetation and characteristic 'plop' sound)	A	TN10

## 4.3 Otter

Otter footprints were identified during both field surveys (see Table 4). Otter field sign locations were found in sections A and C shown on the Otter and Water Vole Survey Plan 10058585-ARC-XX-010-010-DR-E-00003, with associated target notes, photographs and detailed descriptions given in Appendix B.



Table 4. Otter survey results.

Survey Date	Survey Result	Section	Target Note
07/07/2023	Single otter footprint on a muddy channel bank near the water's edge.	C	TN6
25/09/2023	Multiple otter footprints along muddy shelf along river beneath a small bridge and one potential holt/ resting place under the bridge within the south abutment.	A	TN8

## 5 Discussion and Conclusion

### 5.1 Water vole

Watercourse Sections B, C and E had potential to support water voles within fragmented pockets of suitable habitat. However, all watercourses (excluding Section B) contained areas of riparian habitat that had been significantly poached by cattle up to the water's edge. The patchy riparian habitat along the watercourses may deter water voles from commuting into the wider environment due to risk of being predated by a range of species (e.g., foxes, mink, birds of prey etc).

All water vole field signs were identified along Section A of the Cadoxton River. The closest field sign (water vole burrow) was identified approximately 100m downstream from the proposed works. However, the riparian habitat between the proposed works and the closest water vole field sign was heavily cattle poached on the (shallow) eastern channel bank. The bramble scrub that was identified on the (steep) western channel bank during the first survey had been flailed (down to ground level) on the day of the second field survey.

The section of the Cadoxton River located downstream between the proposed ATR and the confirmed water vole field signs (along Section A) was considered unsuitable for water vole due to the lack of vegetation for foraging. It also exposes water vole to potential predators.

The riparian habitat immediately north of the A4055 bridge was also considered unsuitable for water vole due to its exposed riparian habitat. Therefore, the ATR works are considered unlikely to directly destroy burrows or injure and/or kill foraging and/ or commuting water vole within the immediate works footprint. However, the works still have the potential to impact water vole through changes in water quality due to sediment and pollution runoff. Increased human activity and use of machinery and equipment that cause noise and artificial lighting in the area may also lead to disturbances that can disrupt water voles' natural behaviours, causing stress and displacement and their ability to forage and breed successfully. Therefore, in the absence of further survey and mitigation measures the works have the potential to disturb, injure and/ or kill water vole.

### 5.2 Otter

Watercourse Sections A, B, C and E contained suitable habitat to support commuting, foraging and resting otter and potentially their holts.

An otter footprint was identified on the channel bank of Cold Brook (TN6) within Section C on the first survey and multiple otter footprints were identified under the cattle bridge (TN8) that spans the Cadoxton River within Section A on the second survey. The findings indicate otter presence in the section of river targeted for the proposed ATR, but most likely commuting and foraging rather than resting.

The works have the potential to impact otter through increased human activity, sedimentation runoff, pollution from machinery and construction materials, artificial lighting, construction noise and any barriers used during construction that could prevent passage up and down stream. Therefore, in the absence of further survey and mitigation measures the works have the potential to disturb, injure and/ or kill otters.

## 6 Recommendations

### 6.1 Pre-construction Checks

A pre-construction survey should be undertaken no more than six weeks before works commence. These checks should include surveys for water vole burrows of at least 20m for water vole burrows and 30m for otter holts up and downstream of the proposed works.

If an otter holt and/ or resting site is found and an impact is considered likely, then a European Protected Species development licence from Natural Resources Wales (NRW) before works can commence would be required.

If evidence of water vole burrows are found within 5m of the works area, then it is likely that a Wildlife and Countryside Act licence from NRW will be required.

### 6.2 Mitigation

Final mitigation will be confirmed once pre-construction checks have been completed. The following mitigation is intended as a guide only if no further activity of water vole and otter are found.

#### 6.2.1 Method Statement

A Method Statement (MS) will be required and should be followed for the duration of the works and include (and not limited to) the following avoidance measures to ensure the works comply with relevant legislation and to prevent disturbing, injuring and/or killing water vole and otter:

- An experience ecologist should provide a toolbox talk to all contractors/ site staff and advise them of any ecological constrain on site and mitigation required before any works commence.
- Timing restrictions - Works should take place outside of the water vole breeding season (March-September);
- Exclusion zone - A minimum exclusion zone of 30m from otter holt and water vole burrow;
- Standard best practice and pollution control measures to prevent polluting the watercourse to include silt management;
- Night work should be avoided;
- Habitat connectivity should be maintained;
- No excavations should be left open overnight. If this is not possible then the excavation should have a soil ramp or wooden plank installed at one end to allow animals to escape; and
- Contingency plans to respond to unexpected encounters with water vole and/ or otter, including emergency measures and protocols including contacting an ecologist and may lead to the requirement for a licence (see above).

### 6.3 Artificial Lighting Restrictions

The use of artificial lighting inappropriately can result in significant disturbance to nocturnal animals using the site. During construction if night-works cannot be avoided, advice must be sought from an appropriately qualified ecologist to ensure task lighting is appropriate and directed away from key habitats for nocturnal species.

If any new lighting is to be introduced for the ATR it should be designed to minimise light spillage during construction and/ or from the final design and not directed onto the Cadoxton River or its riparian habitat to maintain dark corridors. If lighting cannot be avoided, then it should be designed to avoid light spill to reduce disturbance to otter, water vole and other species (e.g., bats) during their nocturnal activities (Ref 8).

## **6.4 Enhancement Measures**

### **6.4.1 Restoration of Riparian Zones**

Any riparian zones temporarily damaged by the works should be re-profiled and allowed to regenerate.

Over hanging tree branches should be removed to reduce shading.

If possible, cattle access to the wider Cadoxton River banks should be restricted through additional fencing and left to regenerate naturally, to allow safe passage and connect suitable habitat for water vole and otter.

## 7 References

- Ref 1:** Vale of Glamorgan Council (2023). Water Voles. Available at: [<https://www.valeofglamorgan.gov.uk/en/enjoying/Coast-and-Countryside/Habitats-and-Wildlife/Water-Voles.aspx>].
- Ref 2:** Arcadis Consulting (UK) Ltd (2023). Biglis to Dinas Powys ATR Preliminary Ecological Appraisal. Document reference: 10058585-ARC-XX-XXX-RP-E-0001-P01
- Ref 3:** His Majesty's Stationery Office (2016). The Environment Wales Act.
- Ref 4:** His Majesty's Stationery Office (2017). The Conservation of Habitats and Species Regulations 2017(as amended by the EU Exit Regulations 2019).
- Ref 5:** His Majesty's Stationery Office. (1981). The Wildlife and Countryside Act 1981 (as amended).
- Ref 6:** 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.
- Ref 7:** Chanin P (2003). Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough.
- Ref 8:** BCT (2023) Bats and Artificial Lighting. Guidance Note 08/2023. Bat Conservation Trust.

# Drawings

Otter and Water Vole Survey Plan 10058585-ARC-XX-010-010-DR-E-00003

# Appendix A

## Photographs and Habitat Descriptions




Plate	Description	Photograph
1	Section A – area of dense vegetation during the first survey visit.	
2	Section A – flailed channel bank during the second survey (facing downstream)	
3	Section A – Small bridge spanning the Cadoxton River.	

Plate	Description	Photograph
4	Section A – flailed channel bank during the second survey (facing upstream)	
5	Section A – cattle poached channel bank adjacent to proposed ATR route.	




Plate	Description	Photograph
6	Section B	
7	Section B	
8	Section C	



Plate	Description	Photograph
9	Section C	
10	Section D during the first field survey	







Plate	Description	Photograph
11	Section D during the second field survey	
12	Section E – southern stretch of Section E with dense vegetation	

Plate	Description	Photograph
13	Junction between Sections A, C, D and E (north of A4055)	
14	Section E – bare ground and plastic waste along the Cadoxton River.	
15	Section E – most northern section of the Cadoxton River survey boundary	



# Appendix B

## Target notes and descriptions

Target note	Description	Grid reference	Photograph
1	Burrows along the channel bank immediately above the water level	ST 14740 69122	

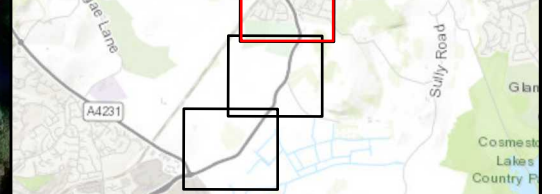


Legend

- Site boundary
- ⊙ Target note


**Note :** No evidence of badger to the north end of route was found during the survey.

World Imagery: Maxar, Microsoft  
World Topographic Map: Esri UK, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA



Rev	Date	Description	Drawn	Check	Approv
01	08-11-23	INITIAL ISSUE	RP	EH	SW

Client:



**VALE of GLAMORGAN**  
**BRO MORGANNWG**

**PROJECT:**  
**BIGLIS TO DINAS**  
**POWYS ATR**

**Site**

Biglis to Dinas Powys ATR

**Client**

Vale of Glamorgan County Borough Council



Registered office:  
80 Fen  
80 Fenchurch Street  
London  
EC3M 4BY

Coordinating Office:  
Cymru House  
St Mellons Business Park  
Fortran Road  
Cardiff, CF3 0EY

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Title:

**Otter and Water Vole Survey Plan**

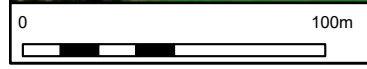
Page 1 of 3

Designed	E. Hopkins	Date	08 NOV 23	Signed
Drawn	R. Pakhare	Date	08 NOV 23	Signed
Checked	E. Hopkins	Date	08 NOV 23	Signed
Approved	S. Walters	Date	08 NOV 23	Signed
Scale:	1:2,500	Datum:	AOD	
Original Size:	A3	Grid:	OS	
Suitability Code:	S2	Project Number:	10058585	

Suitability Description:

For Information

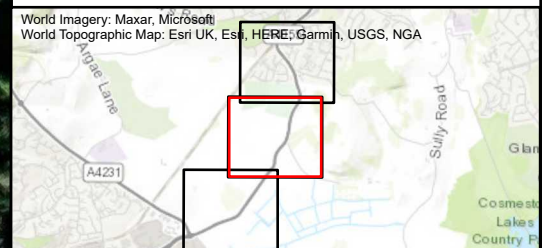
Drawing Number: 10058585-ARC-XX-010-DR-E-00002      Revision: P01






- Legend**
- Site boundary
  - No Access
  - ⊙ Target note

**Note :** No evidence of badger to the north end of route was found during the survey.



Rev	Date	Description	Drawn	Check	Approv
01	08-11-23	INITIAL ISSUE	RP	EH	SW

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**Otter and Water Vole Survey Plan**

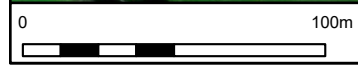
Page 2 of 3

Designed	E. Hopkins	Date	08 NOV 23	Signed	
Drawn	R. Pakhare	Date	08 NOV 23	Signed	
Checked	E. Hopkins	Date	08 NOV 23	Signed	
Approved	S. Walters	Date	08 NOV 23	Signed	
Scale:	1:2,500	Datum:	AOD		
Original Size:	A3	Grid:	OS		
Suitability Code:	S2	Project Number:	10058585		

Suitability Description:

**For Information**

Drawing Number: **10058585-ARC-XX-010-DR-E-00002**      Revision: **P01**

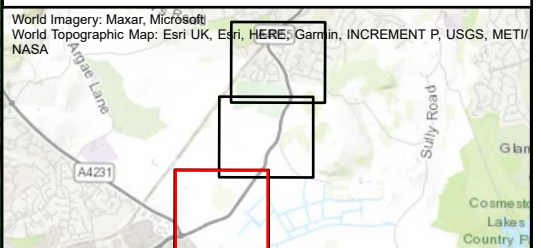







- Legend**
- Site boundary
  - No Access
  - Waterbody
  - Target note

**Note :** No evidence of badger to the north end of route was found during the survey.



Rev	Date	Description	Drawn	Check	Approv
01	08-11-23	INITIAL ISSUE	RP	EH	SW

Client:



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**Otter and Water Vole Survey Plan**

Page 3 of 3

Designed	E. Hopkins	Date	08 NOV 23	Signed
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Scale:	1:2,500	Datum:	AOD	
Original Size:	A3	Grid:	OS	
Suitability Code:	S2	Project Number:	10058585	

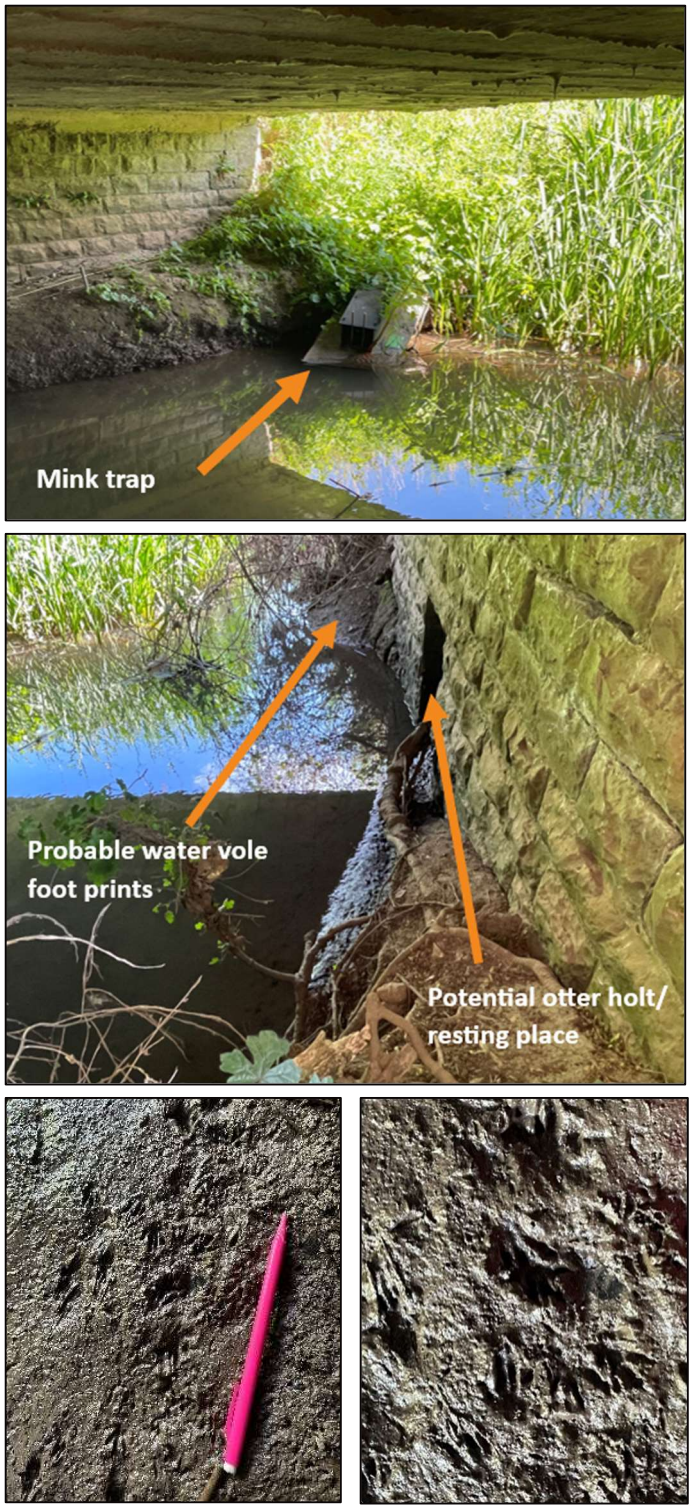
Suitability Description: **For Information**


Drawing Number:	Revision:
10058585-ARC-XX-010-DR-E-00002	P01

## Appendix B



### Target notes and descriptions


Target note	Description	Grid reference	Photograph
1	Burrows along the channel bank immediately above the water level	ST 14740 69122	


Target note	Description	Grid reference	Photograph
2	<p>-Probable water vole footprints located under bridge.</p> <p>-Mink trap under bridge</p> <p>-potential for resting otter under bridge</p>	ST 14775 69147	

Target note	Description	Grid reference	Photograph
3	Water vole latrine (fresh droppings) located on southern bank	ST 14780 69150	



Target note	Description	Grid reference	Photograph
			
4	- Burrow with droppings and grass cuttings (with 45° angles)	ST 14815 69180	

Target note	Description	Grid reference	Photograph
5	<p>Photograph of exposed and cow poached river section between A4055 bridge and water vole signs.</p> <p>Grid references are for additional cattle poached river sections</p>	<p>ST 14890 69302, ST 14880 69325, ST 14983 69444</p>	
6	<p>Probable otter tracks (west bank, Cold Brook)</p>	<p>ST 14792 69483</p>	

Target note	Description	Grid reference	Photograph
7	Vegetation cut to ground from the waterline at Section A of the Cadoxton River	Between ST 14639 69068 - ST 14884 69304	

Target note	Description	Grid reference	Photograph
8	Otter and probable water vole foot prints under bridge	ST 14773 69150	 <p data-bbox="1093 1003 1246 1037">Otter prints</p> <p data-bbox="676 1603 1023 1659">Probable water vole footprints and potential burrow</p>



Target note	Description	Grid reference	Photograph
9	Water vole burrows	ST 14788 69156	
10	Rustling vegetation and 'plop' sound during second survey visit	ST 14803 69174	

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