A46 Coventry Junctions (Walsgrave) Scheme number: TR010066

6.3 Environmental Statement Appendices

Appendix 8.10 Otter and Water Vole Report

APFP Regulations 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Volume 6

November 2024

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

A46 Coventry Junctions (Walsgrave)
Development Consent Order 202[x]

ENVIRONMENTAL STATEMENT APPENDICES
Appendix 8.10 Otter and Water Vole Report

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Rev 0	November 2024	Application Issue

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Tables

1. Introduction

1.1. Scheme overview

1.1.1. The A46 is part of the strategic road network forming a significant trade and export route between the East and West Midlands. As part of the Government's Road Investment Strategy (RIS2) 2020-2025, the A46 Walsgrave Junction is being improved with the realignment of the carriageway and a new grade separated junction (the 'Scheme'). This aims to increase the road capacity to cater for future developments across the region and promote safety by separating local and long-distance traffic and reducing congestion.

1.1.2. The otter and water vole surveys were undertaken in advance of and at the commencement of preliminary design and as such the surveys were based upon the Scheme design as it was at the time.

1.1.3. Sweco were commissioned by Octavius Infrastructure on behalf of National Highways to undertake ecology surveys for the A46 Walsgrave Junction Scheme.

1.2. Site description

1.2.1. The Scheme is located in an area of approximately 25ha of natural habitat located to the east of Coventry.

1.2.2. The habitats within the Scheme comprise woodland, scrub, arable farmland, and hedgerows along with a number of watercourses and waterbodies including Coombe Pool Fishery, Smite Brook and the River Sowe.

1.2.3. Coombe Pool Fishery is a lake approximately 30m east of the Scheme, which comprises Coombe Pool Site of Special Scientific Interest (SSSI).

1.2.4. Smite Brook flows adjacent to the Scheme boundary south of the B4082. Smite Brook is fed by the overflow from Coombe Pool Fishery via a culvert which crosses beneath the A46 carriageway approximately 50m south of the Walsgrave Junction.

1.2.5. The River Sowe is present approximately 45m west of the Scheme which Smite Brook flows into. See Appendix A for the locations of all waterbodies and watercourses surveyed in relation to the Scheme.

1.3. Previous surveys

1.3.1. A Preliminary Ecological Appraisal (PEA) undertaken in 2018 (Highways England, 2018), and updated in 2020, recommended further surveys were undertaken for otter *Lutra lutra* and water vole *Arvicola amphibius* to determine potential impacts on these species and whether mitigation would be required as a result of the Scheme.

1.3.2. A desk study undertaken in 2020 included the purchase of biological records data from the Warwickshire Biological Records Centre (WBRC) (Highways England, 2018). Records of otter were identified on the River Sowe at Clifford Bridge Road (the B4082). Records of water vole were identified on the River Sowe in two locations; the first near the Walsgrave Farm access road, approximately 1.4km north east of the Walsgrave Junction, and the second located 0.28km west of the Scheme. Records were also identified on the east bank of Coombe Pool Fishery.

1.4. Purpose

1.4.1. This otter and water vole report has been prepared by Sweco for National Highways and will be used to inform the Environmental Statement (ES) biodiversity chapter at preliminary design stage for the A46 Walsgrave Junction Scheme.

1.4.2. Otter is a European Protected Species (EPS) afforded protection in England under the Conservation of Habitats and Species Regulations 2017 (as amended) and Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended). Water vole is protected under Schedule 5 of the WCA 1981 (as amended) and are listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

1.4.3. In accordance with guidelines for water vole surveys (Dean *et al.,* 2016), two surveys should be undertaken. One in the first half of the breeding season (mid-April-June) and one in the second half of the breeding season (July-September inclusive).

1.4.4. This report presents the results of the findings of otter and water vole surveys undertaken in September 2022 and May 2023, assesses any potential impacts of the Scheme on otter and water vole, and identifies the need for any measures to avoid or mitigate adverse impacts to otter and water vole and their holts/burrows.

2. Methodology

2.1. Desk study

2.1.1. Prior to the field survey, waterbodies (referring to both linear watercourses and non-linear bodies of water) within 200m of the Scheme (the 'survey area') were identified through the use of aerial imagery, online mapping tools and the results of a UK Habitat Classifications system survey of the Scheme. These previous surveys were undertaken by National Highways between June 2022 and August 2022 (National Highways, 2023).

2.2. Otter

2.2.1. An otter survey was carried out of the survey area following professional guidance (Chanin, 2003) from 27-29 September 2022 by [redacted] ACIEEM, who is a Senior Ecologist, and Assistant Ecologist [redacted] MSc, both of whom work for Sweco.

2.2.2. A second otter survey was carried out of the survey area following professional guidance (Chanin, 2003) from 2-3 May 2023 by [redacted], who is a Consultant Ecologist, and [redacted], both of whom work for Sweco.

2.2.3. Otter field signs were searched for including spraints, footprints, sign heaps and anal jelly, as well as resting sites (defined in Table 2-1). Otter resting sites were considered to be 'confirmed' if field signs indicated current or recent use (such as spraints or prints), which indicate that otter are aware of and have at least investigated such a feature. Resting sites which could be used by otter, but at which there was no additional evidence to indicate usage, were referred to as 'potential' resting sites.

Table 2-1 Definitions of otter resting sites

Resting site type	Definition
Holt	An underground resting site deep enough that the back of the cavity cannot readily be seen.
Couch	An above-ground resting site that can be used for sleeping or grooming, including temporary "nest" within vegetation.
Breeding site	A term used to identify an area of land in which otters breed, within which a natal holt is located.
Natal holt	A discrete holt used by females to give birth to and nurse the cubs.

2.3. Water vole habitat suitability assessment

2.3.1. An initial habitat suitability assessment was undertaken on each waterbody subject to survey, in accordance with Harris *et al.* (2009) to assess whether the watercourses support the features important for the establishment and maintenance of viable populations of water vole. Habitat suitability features include:

- well-developed (>60%) bankside and emergent vegetation to provide cover
- year-round availability of food sources
- suitable refuge areas above extremes in water levels
- steep banks suitable for burrowing
- permanent open water
- presence of berm (ledge at water level)
- lack of disturbance through poaching, grazing and/or recent management
- nest building opportunities in vegetation above water level

2.3.2. Features were scored '1' if present and '0' if absent. The watercourse is then scored into categories as follows; unsuitable[1] if scoring >3, sub-optimal if scoring 3 – 5 and optimal if scoring >5.

2.3.3. The waterbodies within the survey area have been subdivided where habitat suitability varies, with a separate habitat suitability for each distinct section (see Figures 2-4 in Appendix A and C).

Population surveys

2.3.4. The first water vole survey was undertaken between 27 and 29 September 2022 by [redacted] and [redacted], both of whom work for Sweco. The second water vole survey was undertaken by [redacted] and [redacted], both of whom work for Sweco. Water vole evidence searched for during the survey included latrines, feeding evidence, feeding stations, burrows, grazed lawns, footprints and runways through vegetation.

2.4. Limitations

2.4.1. There was heavy rainfall prior to the survey on 27 September 2022 which may have washed away or eroded some field signs. There were potential otter spraints recorded on the banks of Coombe Pool Fishery (see Section 3.3);

[1] It should be noted that a score of unsuitable does not mean that water voles would unequivocally not occupy the watercourse. The habitat suitability assessment is based upon a study where water voles were generally absent from the waterbodies which scored unsuitable (Harris *et al.,* 2009).

however, these field signs had been partially washed away/impacted by rain so could not be confirmed as otter spraints. This was compensated by ensuring the second survey was undertaken in good weather conditions.

2.4.2. During the survey period for the second survey on in May 2023, there was dense leaf litter along the watercourse banks around ‘unnamed watercourse 2’ and Coombe Pool Fishery, potentially disguising any otter or water vole field signs deposited before the vegetation settled.

3. Results

3.1. Desk study

3.1.1. The waterbodies identified within the survey area include the River Sowe, Smite Brook, Coombe Pool Fishery, two unnamed watercourses (unnamed watercourses 2 and 3) within Coombe Pool SSSI, three unnamed watercourses to the south of Brinklow Road, two unnamed watercourses to the north-west of the Scheme, and one unnamed watercourse (unnamed watercourse 1) south-west of the A46 Walsgrave Junction and Smite Brook.

3.1.2. The three unnamed watercourses to the south of Brinklow Road, the two unnamed watercourses to the north-west of the Scheme, and the section of the River Sowe to the north-west of the Scheme were scoped out of survey, as the only works proposed within 200m are in-carriageway works such as lighting installation.

3.1.3. Within the survey area five further watercourses were scoped out as they were dry at the time of survey. There was one watercourse within the Coombe Pool SSSI, two arable ditches to the north of Walsgrave Junction and two unnamed watercourses adjacent to the west of the River Sowe.

3.1.4. See Appendix A for the location of all watercourses surveyed along with the survey results from 2022. See Appendix C for the location of all watercourses along with the survey results from 2023.

3.2. Otter surveys

The River Sowe

3.2.1. The River Sowe was assessed as suitable for commuting otter due to the hydrological connection with other watercourses including Smite Brook, Coombe Pool Fishery, the River Sherbourne located to the south west of the Scheme and numerous smaller watercourses further afield.

3.2.2. The river has been assessed as unsuitable for foraging otter, as the river was shallow and no food sources were noted during the surveys.

3.2.3. There are steep banks leading straight into the channel throughout the majority of the river and footpaths adjacent to the western bank which limits suitable resting habitat. There were no holts identified during the surveys.

3.2.4. During the 2022 survey of the River Sowe, multiple spraints were recorded on the southern bank beneath the bridge on Clifford Bridge Road. A further spraint

was recorded on the northern bank of the river beneath the footbridge adjacent to Clifford Bridge Road.

3.2.5. One potential couch was identified on the river within the roots of a fallen tree (see Appendix A and Plate 1). Footprints were present on the exposed mud at the channel margin; however, these were unidentifiable due to the recent heavy rainfall. The potential couch was reidentified during the 2023 survey however no field signs were noted indicating use.

Plate 1 A potential resting place on the River Sowe

Smite Brook

3.2.6. Smite Brook was assessed as having high suitability for commuting otter, with direct hydrological connections to the River Sowe and Coombe Pool Fishery.

3.2.7. The brook has been assessed as unsuitable for foraging otter, as the brook was shallow and no food sources were noted during the surveys.

3.2.8. The section of brook to the west of the A46 has been assessed as being generally unsuitable for above-ground otter resting and holt sites due to disturbance on the north/east banks from cattle and on the west and much of the south bank by human activity in the adjoining urban greenspace. The section of the brook to the east of the A46 has greater potential as couch habitat with lower disturbance recorded within the Coombe Pool SSSI woodland.

3.2.9. Otter use of Smite Brook has been confirmed, with otter prints recorded on the western bank of the brook south of the B4082 and a potential couch recorded at the base of a bankside tree (see Plate 2 and Appendix A).

Plate 2 A potential couch at the base of a tree on Smite Brook

3.2.10. Evidence of otter foraging (cockle shell remains) was also recorded on the section of Smite Brook within Coombe Pool SSSI.

3.2.11. There was no evidence of otter recorded during the 2023 survey along Smite Brook.

Coombe Pool Fishery

3.2.12. Coombe Pool Fishery was assessed as having high suitability for commuting otter, with direct hydrological connections to Smite Brook.

3.2.13. The fishery was assessed as suitable for foraging otter as it will provide food resources and feeding remains were noted around the lake during both surveys.

3.2.14. The fishery and surrounding habitat was assessed as having high suitability for resting places and holts as there will be minimal disturbance within the woodland habitat.

3.2.15. Otter presence on Coombe Pool Fishery has been confirmed by the identification of multiple feeding remains (mollusc shells) on the northern banks of the lake (see Appendix A and Appendix C). Additionally, potential spraints were recorded in the 2022 survey on the north-west banks of the lake near the confluence of Smite Brook and the lake, and near the outfall to Smite Brook.

3.2.16. Two otter couches were identified during the 2022 survey on Coombe Pool Fishery:

- A confirmed couch under a horse chestnut *Aesculus hippocastanum* tree with feeding remains (mollusc shells) present adjacent to the lake bank (see Appendix A and Plate 3).
- A confirmed couch within the trunk of a bankside tree with feeding remains (mollusc shells) present (see Appendix A and Plate 4).

Plate 3 A confirmed otter couch beneath horse chestnut on the banks of Coombe Pool Fishery

Plate 4 A confirmed otter couch within a bankside tree trunk on Coombe Pool Fishery

3.2.17. The couch within the horse chestnut was reidentified during the 2023 survey however no field signs were noted indicating use.

Unnamed watercourse 1

3.2.18. This unnamed watercourse is a small drain which connects to Smite Brook and appears to act as an overflow during high water events. The watercourse was assessed as being unsuitable for commuting and foraging otter.

3.2.19. There was suitable habitat for resting places on the watercourse, with minimal disturbance on both banks. There were no holts recorded during the survey.

3.2.20. No otter field signs were recorded on this watercourse during either survey and it was found to be mostly dry during the survey in September 2022.

Unnamed watercourse 2

3.2.21. This unnamed watercourse has suitable commuting habitat for otters as it is connected to Smite Brook and Coombe Pool Fishery to the north. The watercourse is generally unsuitable for foraging otter as it was shallow and no food sources were noted during the surveys.

3.2.22. There was suitable habitat for resting places on the watercourse. Disturbance within the woodland around the watercourse is minimal, however there is evidence of human presence (litter). The watercourse is generally unsuitable for holts; however, the surrounding woodland may offer opportunities.

3.2.23. No otter field signs were recorded on this watercourse during either survey.

Unnamed watercourse 3

3.2.24. Unnamed watercourse 3 was assessed as being generally unsuitable for commuting and foraging otter. The watercourse, whilst connected to Coombe Pool Fishery to the south, does not connect to any further watercourses, and water level at the time of survey in September 2022 was low (approximately 5cm deep).

3.2.25. There was suitable habitat for resting places on the watercourse. Disturbance within the woodland around the watercourse is minimal, however there is evidence of human presence (litter). The watercourse is generally unsuitable for holts; however, the surrounding woodland may offer opportunities.

3.2.26. No otter field signs were recorded on this watercourse during either survey.

3.3. Water voles

3.3.1. Table 3.1 summarises the results of the water vole habitat suitability assessment. Full habitat suitability results are provided in Appendix B.

3.3.2. The suitability of the River Sowe for water vole varied from unsuitable in one section just east of the confluence with Smite Brook, to optimal in a section just west of the confluence with Smite Brook and a section further north in the survey area. Habitat suitability features which the River Sowe scored well include the presence of permanent open water, refuge areas above the water level and steep banks providing burrowing opportunities.

3.3.3. Smite Brook sections varied from mostly sub-optimal to optimal suitability for water voles in one small section south of the B4082. Permanent open water and refuge areas above the water level, features favoured by water vole, were consistently present on this watercourse. The majority of the sections of the

brook in the west from the River Sowe to unnamed watercourse 1 also had a berm (ledge) present at water level. These sections of the watercourse were assessed as more disturbed due to the cattle grazing field to the north and east and the urban greenspace with footpaths to the west. Sections of the brook near the A46 and east within Coombe Pool SSSI generally scored better with regards to lack of disturbance and a year-round availability of food sources.

3.3.4. Unnamed watercourse 1 was assessed as unsuitable for water voles with no permanence of open water and no berm present. The watercourse was lacking in bankside and emergent herbaceous vegetation and as such there was no year-round availability of food sources or nest building opportunities for water vole.

3.3.5. Unnamed watercourse 2 was assessed as unsuitable to sub-optimal, the latter in sections immediately south of Smite Brook. In these sections the watercourse had permanent open water and suitable refuge areas above the water level.

3.3.6. One relatively small section (section 2) of Coombe Pool Fishery just south of the outfall to Smite Brook was unsuitable for water vole due to the presence of gabions on the banks. The remainder of the surveyed Coombe Pool Fishery was sub-optimal for water vole as the banks of the fishery were shallow and therefore unsuitable for the creation of burrows

3.3.7. Unnamed watercourse 3 was assessed as sub-optimal for water vole, with steep banks for burrowing, suitable refuge areas above the water level and a lack of disturbance.

Table 3-1 Water vole habitat suitability assessments

Waterbody	Section	Approximate section length (m)	Habitat suitability score	Habitat suitability category
River Sowe	1	100	7	Optimal
	2	35	3	Sub-optimal
	3	65	6	Sub-optimal
	4	90	4	Sub-optimal
	5	55	4	Sub-optimal
	6	190	4	Sub-optimal
	7	30	4	Sub-optimal
	8	370	2	Unsuitable
	9	60	7	Optimal

Waterbody	Section	Approximate section length (m)	Habitat suitability score	Habitat suitability category
	10	55	3	Sub-optimal
Smite Brook	1	85	5	Sub-optimal
	2	20	6	Optimal
	3	80	4	Sub-optimal
	4	10	3	Sub-optimal
	5	95	5	Sub-optimal
	6	160	3	Sub-optimal
	7	55	4	Sub-optimal
	8	60	5	Sub-optimal
	9	30	5	Sub-optimal
	10	30	5	Sub-optimal
	11	50	4	Sub-optimal
	12	65	4	Sub-optimal
Unnamed watercourse 1	1	55	2	Unsuitable
	2	145	2	Unsuitable
Unnamed watercourse 2	1	170	4	Sub-optimal
	2	105	3	Sub-optimal
	3	220	1	Unsuitable
	4	70	1	Unsuitable
Coombe Pool Fishery	1	1200	5	Sub-optimal
	2	15	1	Unsuitable
Unnamed watercourse 3	1	55	3	Sub-optimal

3.3.8. One potential water vole field sign was recorded on the eastern bank of the River Sowe during the September 2022 survey (see Appendix A). A potential feeding station was recorded adjacent to a small mammal pathway. Whilst the foraged material was cut at a 45° angle, which would be expected of water vole feeding remains, it was not possible to confirm the species responsible for this field sign due to the lack of a noticeable neat pile/station of remains and lack of

further field signs. There were no further signs of water vole noted on any of the waterbodies.

3.3.9. There were three potential burrows recorded during the May 2023 survey, with two recorded on Unnamed watercourse 2 and one recorded on the River Sowe. While the potential burrows were the correct size there were no further field signs recorded close to the burrows or on the watercourses in general which would be expected if a population of water voles were present.

4. Discussion and mitigation

4.1. Otter

4.1.1. Otter foraging activity on Smite Brook and Coombe Pool Fishery has been confirmed through the recording of feeding remains during the survey. In addition to foraging activity, two confirmed couches were identified on the northern banks of Coombe Pool Fishery. Otter spraints were also recorded on the River Sowe.

4.1.2. The confirmed otter couches identified on Coombe Pool Fishery are approximately 70m and 80m from the Scheme and the potential otter couches on the River Sowe and Smite Brook are approximately 95m and 75m respectively from the Scheme. These features have potential as above-ground resting sites (couches) only and would not be suitable as natal holts (below-ground breeding holts) due to the absence of a below-ground cavity. **As such, should they be utilised as otter couches in future no significant direct or indirect impacts are anticipated as a result of the Scheme due to their distance from the Scheme and the nature of otter use of the features.**

4.1.3. There are two small sections of Smite Brook which are present within the Scheme which passes via culverts, beneath the A46 carriageway and the B4082 carriageway south and west of the existing A46 Walsgrave Junction, respectively, which otters are likely to use to commute between the River Sowe and Coombe Pool SSSI. The Scheme does not include any modifications to the culverts beneath the A46 and B4082 roads. If the scope of works were to change and either of the culverts were to be impacted then an appropriate design would be required such as a mammal ledge to ensure that otters would not be negatively impacted by the Scheme.

4.1.4. There is potential for commuting and foraging otters to be impacted as a result of the works, therefore it is recommended that the measures in Section 4.4 are implemented.

4.2. Water vole

4.2.1. Water vole have not been confirmed as present on any watercourses surveyed within the survey area, however one potential feeding station was recorded on the River Sowe during the 2022 survey and three potential burrows were recorded during the 2023 surveys.

4.3. Further surveys

4.3.1. In accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines on the lifespan of ecological data (2019), this report and the survey data within will remain valid until the spring/summer of 2025. **As construction is not anticipated to start until September 2026, it is anticipated that update surveys will be required in the survey season of 2025**.

4.4. Mitigation

4.4.1. It is recommended that night time works are avoided as far as practicable. However, where working during the hours of darkness is necessary, it is recommended that a construction lighting plan and method statement is developed by the Contractor and adhered to. The plan should detail specific mitigation requirements, including but not limited to measures to avoid light spill/reflections, and avoidance of white-blue spectrum and high UV emitting lighting. The lighting plan should take into account published guidance on lighting (e.g. Institution of Lighting Professionals (2011), The Royal Commission on Environmental Pollution (2009) and Bat Conservation Trust and Institution of Lighting Professionals (2018)). The construction lighting design should be developed specifically to avoid illuminating sensitive habitats, watercourses, known commuting routes, and where there is known activity of otter.

4.4.2. It is recommended that when works are within 30m of Smite Brook, the Contractor employs a ‘soft-start’ approach to all noisy activities to avoid sudden and unexpected disturbance. Each time the activity is started up after a period of inactivity, the noise levels will be gradually increased over a period of 30 minutes to allow any otter to relocate. This will apply year-round.

4.4.3. It is recommended that works within 30m of Smite Brook are timed to avoid a minimum of one hour after sunrise and one hour before sunset.

4.4.4. Trenches, holes and pits should be kept covered at night to prevent exploration by otter and potential entrapment. If any trenches, holes or pits cannot be adequately covered to safeguard from otters (or other mammals) entering, a textured ramp at a maximum angle of 45° should be used to provide a means of escape for otter that may become entrapped.

4.4.5. The positioning of construction compounds, storage areas, temporary access tracks and other ancillary works, and main construction works, should avoid otter commuting routes as far as practicable.

4.4.6. It is recommended that pollution prevention measures (GOV.UK, 2019) are detailed within an Environmental Management Plan (EMP) or similar and put in place throughout construction.

5. References

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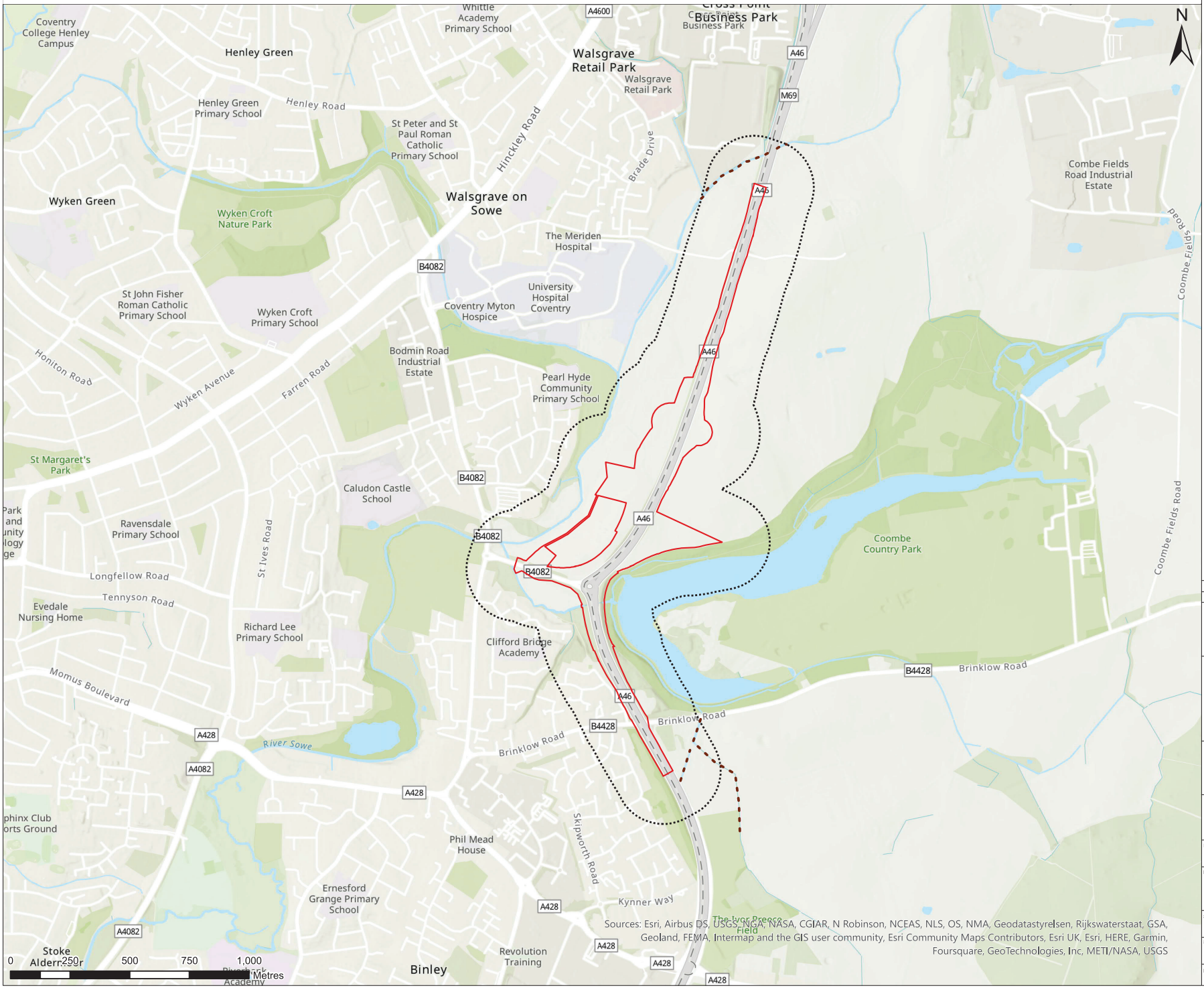
Appendix A. A46 Otter and Water Vole Signs: 2022 Survey



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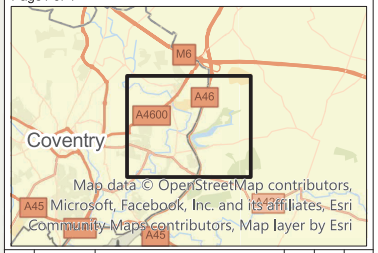

REV	DATE	REVISION NOTE	ORG	CHK'D	APP
P01	04.07.2023	FIRST ISSUE	RM	ER	BM

Designer

Contractor

Client

national highways

Project Title

A46 COVENTRY JUNCTIONS (WALSGRAVE)

Project Stage

DCO SUBMISSION

Drawing Title

A46 OTTER & WATER VOLE SIGNS 2022 SURVEY

Suitability

FOR INFORMATION

Sheet Size	Scale	Status	Revision
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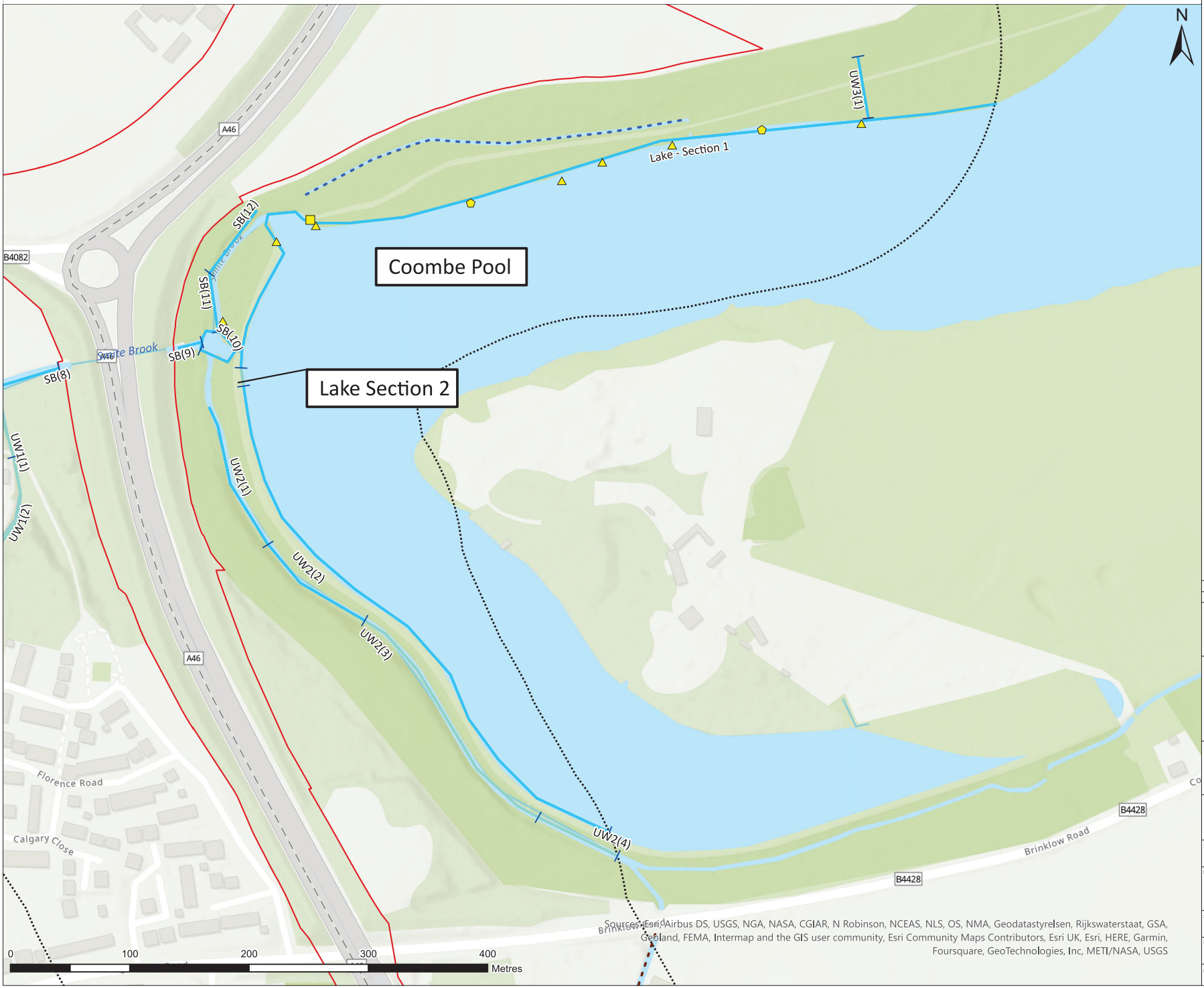
Drawing Number

HE604820-OIL-EVD-00-DR-LB-30036



Legend

- Draft Order Limits
- 200m buffer
- Scoped out watercourse

Otter Sign

- Couch
- Potential feeding remains
- Spraint

Water vole habitat suitability

- Sub-optimal
- Unsuitable
- Dry watercourse

**River reference denotes river name and section e.g. RS(1) shows River Sowe section 1*

RS - River Sowe
SB - Smite Brook
UW- Unnamed watercourse

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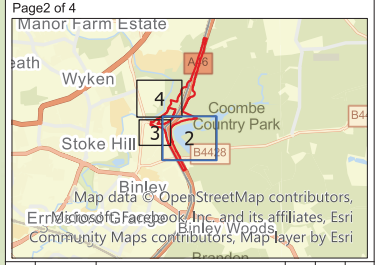

REV	DATE	REVISION NOTE	ORG	CHK'D	APP
P02	04.07.2023	UPDATED LAYERS	RM	ER	BM

Designer

Contractor

Client

national highways

Project Title
A46 COVENTRY JUNCTIONS (WALSGRAVE)

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Drawing Title
A46 OTTER & WATER VOLE SIGNS 2022 SURVEY

Suitability
FOR INFORMATION

Sheet Size	Scale	Status	Revision
A3	1:3,000	S3	P01

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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, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

Legend

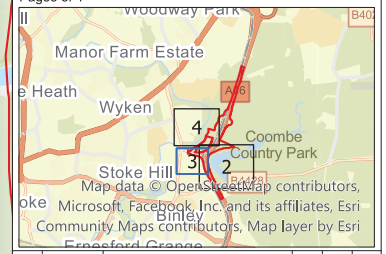
- Draft Order Limits
- 200m buffer

Otter Sign
- Couch
- Print

Water vole habitat suitability
- Optimal
- Sub-optimal
- Unsuitable

**River reference denotes river name and section e.g. RS(1) shows River Sowe section 1*

RS - River Sowe
SB - Smite Brook
UW- Unnamed watercourse



REV	DATE	REVISION NOTE	ORG	CHK'D	APP
P02	04.07.2023	UPDATED LAYERS	RM	ER	BM

Designer

Contractor

Client

national highways

Project Title
A46 COVENTRY JUNCTIONS (WALSGRAVE)

Project Stage
DCO SUBMISSION

Drawing Title
A46 OTTER & WATER VOLE SIGNS 2022 SURVEY

Suitability
FOR INFORMATION

Sheet Size	Scale	Status	Revision
A3	1:1,750	S3	P01

Drawing Number
HE604820-OIL-EVD-00-DR-LB-30036

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, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

Legend

- Draft order limits
- 200m buffer

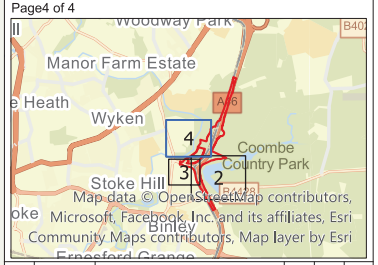
Otter Sign
- Couch

Water vole (sign)
- Feeding Station

Water vole habitat suitability
- Optimal
- Sub-optimal
- Unsuitable
- Dry watercourse

River reference denotes river name and section e.g. RS(1) shows River Sowe section 1

RS - River Sowe
SB - Smite Brook
UW- Unnamed watercourse



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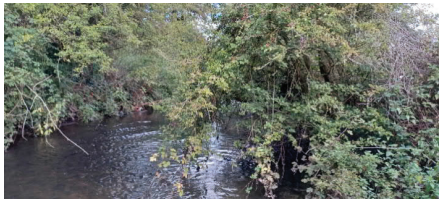
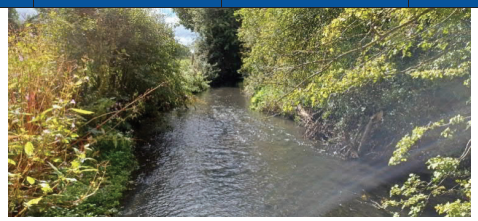
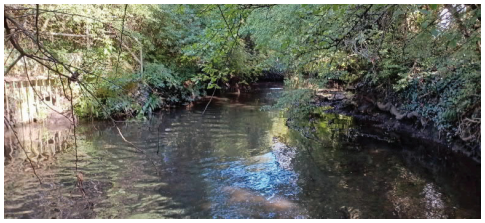
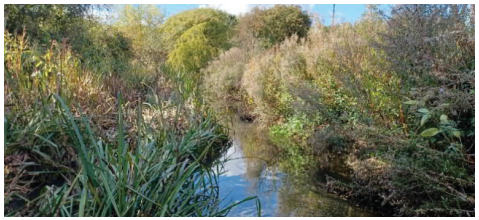
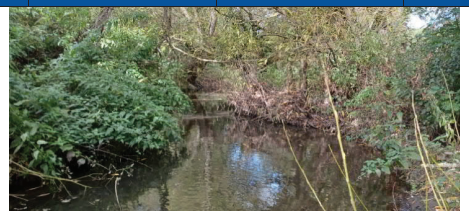
Drawing Number: HE604820-OIL-EVD-00-DR-LB-30036

Appendix B. Water vole habitat suitability results

Watercourse Section	>60% presence of bankside and emergent vegetation	Year-round availability of food sources	Suitable refuge areas above extremes in water levels	Steep banks suitable for burrowing	Permanent open water	Presence of berm (ledge at water level)	Lack of disturbance (poaching, grazing and/or recent management)	Nest building opportunities in vegetation above water level	Total score and category
River Sowe									
Section 1	1	1	1	1	1	0	1	1	**7 – optimal**
Description: The river was approximately 5-20cm deep with a sandy and rocky bed and a fast rippled flow. Vegetation on the eastern bank comprised Himalayan balsam *Impatiens glandulifera* with hawthorn and elder *Sambucus nigra*. The west bank was dominated by Himalayan balsam with scrub and trees. Unidentified aquatic vegetation was present. Both banks were steep, and unidentified grass species were present on the west bank. **Section length: 100m** 									
Section 2	0	0	1	1	1	0	0	0	**3 – sub-optimal**
Description: The river was 10cm deep with a fast rippled flow. The bed is pebble/cobble with an unidentified submerged species growing between the pebbles. Public footpaths are present on both banks. The eastern bank was largely bare with the exception of bankside trees dominated by ash *Fraxinus excelsior* and hawthorn *Crataegus monogyna*. The western bank was wooded with ash and sycamore *Acer psueodplatanus* noted and nettles *Urtica dioica* and ivy *Hedera helix* on the bank itself. **Section length: 35m** 									
Section 3	1	1	1	1	1	0	0	1	**6 – optimal**
Description: The river was approximately 30cm deep with a smooth flow and a rocky bed. The eastern bank was approximately 60 degrees with nettle, Himalayan balsam and unidentified grass species; however, evidence of vegetation management was present. The western bank was dominated by willow *Salix* sp. and blackthorn *Prunus spinosa* with nettle and Himalayan balsam in the ground flora. Hornwort *Ceratophyllum demersum* was present in the channel. There were footpaths on both sides of the watercourse so there is considered to be disturbance to the watercourse. **Section length: 65m**									
Section 4	1	0	1	1	1	0	0	0	**4 – sub-optimal**
Description: The river was 5-10cm deep with a fast rippled flow and a pebble bed. Small amounts of an unidentified submerged aquatic species were present. The eastern bank was vegetated with Himalayan balsam dominant leading into a field grazed by cows, with evidence of grazing pressure on the bank itself. The western bank was vegetated with ivy which led into small section of woodland dominated by hawthorn and blackthorn with a public footpath. **Section length: 90m**									

Watercourse Section	>60% presence of bankside and emergent vegetation	Year-round availability of food sources	Suitable refuge areas above extremes in water levels	Steep banks suitable for burrowing	Permanent open water	Presence of berm (ledge at water level)	Lack of disturbance (poaching, grazing and/or recent management)	Nest building opportunities in vegetation above water level	Total score and category
									
Section 5	1	0	1	1	1	0	0	0	**4 – sub-optimal**
Description: The river was 30cm deep with both smooth and rippled flows and a rocky bed. Vegetation on the eastern bank comprises ivy, grass and nettles, leading into a grazed field. The western bank was dominated by bramble *Rubus fruticosus agg.* with a footpath behind. **Section length: 55m.** 									
Section 6	1	0	1	1	1	0	0	0	**4 – sub-optimal**
Description: The river was 5-20cm deep with a fast rippled flow and a rocky bed. Water starwort *Callitriche* sp. was present in areas. Vegetation on the eastern bank included nettle, grass species and bramble and lead into a grazed field. The western bank was vegetated by bramble and hawthorn leading to a footpath. **Section length: 190m**. 									
Section 7	0	0	1	1	1	1	0	0	**4 – sub-optimal**
Description: A section on a bend in the river, where water level was 1m deep and the bed was silt. The river was slow flowing with some watercress *Nasturtium officinale* growing on the margins. The eastern bank was vegetated by bramble with a grazed field behind it. Vegetation on the western bank included nettles with bankside trees, and a public footpath. Evidence of hand pulling of Himalayan balsam was recorded. **Section length: 30m.** 									

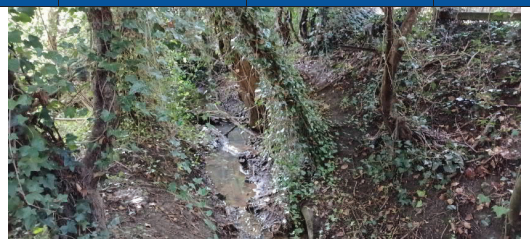
Watercourse Section	>60% presence of bankside and emergent vegetation	Year-round availability of food sources	Suitable refuge areas above extremes in water levels	Steep banks suitable for burrowing	Permanent open water	Presence of berm (ledge at water level)	Lack of disturbance (poaching, grazing and/or recent management)	Nest building opportunities in vegetation above water level	Total score and category
Section 8	0	0	1	1	1	0	0	0	**3 - sub-optimal**
Description: The river was 10-20cm deep with a fast rippled flow on a sand and pebble bed. No aquatic species were recorded. The eastern bank was vegetated by trees with ivy at ground level leading into grazed field. The western bank was vegetated with bankside trees with some grass on the bank top although bare ground on the bank faces for the majority of the section, with a small amount of ivy in places. **Section length: 370m.** 									
Section 9	1	1	1	1	1	1	0	1	**7 – optimal**
Description: The river was 30cm deep with a smooth fast flow, with a rocky bed. Common reed *Phragmites australis* was present on the 45 degrees eastern bank with hawthorn trees and Himalayan balsam present. The common reed offers potential nesting habitat. The western bank was 80 degrees in profile with tall ruderal willowherb *Epilobium* sp., Himalayan balsam, nettle and some grass species. Potential disturbance could come from the public footpath on the west bank. **Section length: 60m.** 									
Section 10	0	0	1	1	1	0	0	0	**3 – sub-optimal**
Description: The river was 5-10 cm deep with a fast rippled flow on a pebble bed. The south bank was composed of a mix of stone and earth, with a steep profile and ivy cover and bankside hawthorn. The northern bank had a steep profile and comprised earth, with nettle, ivy and hawthorn present. A lack of food sources and cover for water voles was noted. **Section length: 55m.** 									
Smite Brook									
Section 1	1	1	1	0	1	1	0	0	**5 – sub-optimal**
Description: The brook was 40cm deep with a smooth flow and a pebble and silt bed. The vegetation on the north bank comprised willow trees with nettle, hogweed *Heracleum sphondylium* and grass species whilst the south bank comprised nettle, apple *Malus* sp., bramble and willow. Common Reed was present within the channel. The banks were shallow and 45 degrees in profile. **Section length: 85m.**									

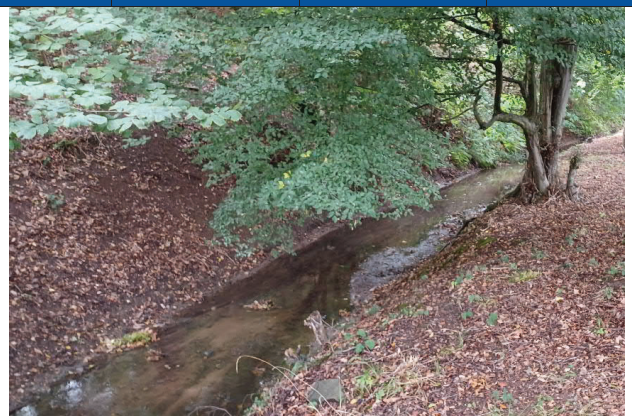
Watercourse Section	>60% presence of bankside and emergent vegetation	Year-round availability of food sources	Suitable refuge areas above extremes in water levels	Steep banks suitable for burrowing	Permanent open water	Presence of berm (ledge at water level)	Lack of disturbance (poaching, grazing and/or recent management)	Nest building opportunities in vegetation above water level	Total score and category
									
Section 2	1	1	1	0	1	1	1	0	**6 - optimal**
Description: The brook was 20cm deep and slow flowing with a silty bed with small amounts of pebbles. The west bank 40cm tall steep and earthen with nettles and a stone wall behind the bank. The eastern bank was shallow and stone with willow *Salix* sp., common reed and willowherb. **Section length: 20m.**									
					 				
Section 3	0	0	1	1	1	0	1	0	**4 – sub-optimal**
Description: The brook was 10cm deep with a slow flow and a pebble and sand bed. The western bank was 40cm high and comprised bare earth with some nettle. The eastern bank was 2m high with some shallow and steeper profile areas. Vegetation on the eastern bank included the bankside trees Norway maple *Acer platanoides* and hawthorn, and ivy and privet *Ligustrum* sp. ground flora. **Section length: 80m.**									
									
Section 4	0	0	1	0	1	1	0	0	**3 – sub-optimal**
Description: The brook was 10cm deep with a fast rippled flow and a cobbles and silt bed. The eastern bank was a concrete wall and the western bank was earthen and shallower in profile at 45 degrees with ivy cover. This section is close to public footpaths and dogs are likely to use the water regularly. **Section length: 10m.**									
									
Section 5	1	0	1	1	1	1	0	0	**5 – sub-optimal**

Watercourse Section	>60% presence of bankside and emergent vegetation	Year-round availability of food sources	Suitable refuge areas above extremes in water levels	Steep banks suitable for burrowing	Permanent open water	Presence of berm (ledge at water level)	Lack of disturbance (poaching, grazing and/or recent management)	Nest building opportunities in vegetation above water level	Total score and category
Description: The brook was 30cm deep with a slow flow and a silt bed. Vegetation on the west bank included nettle and common reed with hawthorn and willow trees. A ledge was present at the bottom of the west bank. The eastern bank was 1m high and mostly bare with some nettles and grass species on top leading to grazed field. **Section length: 95m.** 									
Section 6	0	0	1	0	1	1	0	0	**3 – sub-optimal**
Description: The brook was 40cm deep with a slow rippled flow. The northern bank was shallow in profile (45°) with some nettle however mostly bare of vegetation. The southern bank was vegetated by ivy, hawthorn and willow; however areas of bare bank were present. Disturbance was recorded on both sides and the bed was recorded as silt. **Section length: 160m.** 									
Section 7	1	0	1	1	1	0	0	0	**4 – sub-optimal**
Description: The brook was 20cm deep with a silt bed and a slow rippled flow. The northern bank was 1.5m high and earthen with nettle and willow trees. The southern bank was shallow with very dense nettle and willow which would provide cover for water voles. Disturbance was recorded on both sides of the brook. **Section length: 55m.** 									
Section 8	1	1	0	0	1	0	1	1	**5 – sub-optimal**
Description: The brook section leads to a culvert under the A46 and is 40cm deep. The bed was silt and the water flow was fast and rippled. The northern bank was shallow and dominated by common reed with nettles and willowherb present. The emergent vegetation common reed was noted as suitable water vole nesting building habitat. The south bank was composed of stone for the bottom-most 20cm, whilst the upper bank was earthen and steep in profile and dominated by grass species and the occasional hawthorn and oak *Quercus* sp. **Section length: 60m.**									

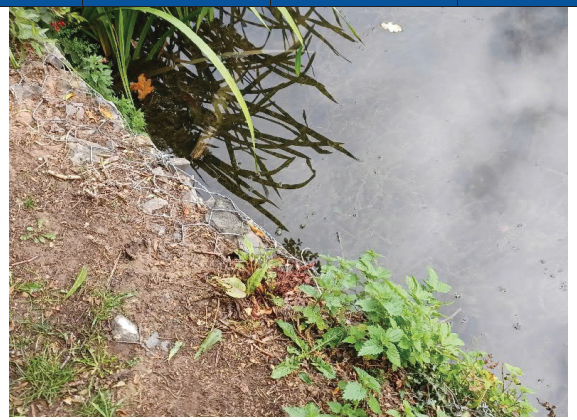
Watercourse Section	>60% presence of bankside and emergent vegetation	Year-round availability of food sources	Suitable refuge areas above extremes in water levels	Steep banks suitable for burrowing	Permanent open water	Presence of berm (ledge at water level)	Lack of disturbance (poaching, grazing and/or recent management)	Nest building opportunities in vegetation above water level	Total score and category
									
Section 9	1	1	1	0	1	0	1	0	**5 – sub-optimal**
Description: This section of the brook flows underneath the A46. The section is characterised by a slow flow and a silty bed, with water depth at the time of survey approximately 50cm. Common reed was present within the channel. The banks were steep and made of stone, and as such unsuitable for water vole. **Section length: 30m.**									
									
Section 10	1	1	1	0	1	0	1	0	**5 – sub-optimal**
Description: The section of the brook meets the outfall from Coombe Pool Fishery and creates a body of water with no apparent flow. The turbidity was high, preventing an observation on the water depth. Vegetation on the shallow banks was bramble dominated with some grass species. Common reed was present within the waterbody. **Section length (diameter): 30m.**									
									
Section 11	0	0	1	1	1	0	1	0	**4 – sub-optimal**
Description: The brook had a slow flow is 40cm deep water and a sandy/silty bed. The banks are steep and dominated by bramble and nettle which leads into woodland. **Section length: 50m.**									

Watercourse Section	>60% presence of bankside and emergent vegetation	Year-round availability of food sources	Suitable refuge areas above extremes in water levels	Steep banks suitable for burrowing	Permanent open water	Presence of berm (ledge at water level)	Lack of disturbance (poaching, grazing and/or recent management)	Nest building opportunities in vegetation above water level	Total score and category
									
Section 12	0	0	0	1	1	0	1	0	**4 – sub-optimal**
Description: This section of the brook was fast flowing from an outfall of Coombe Pool Fishery. The bed was rocky. Shallow areas of approximately 10cm deep were present, with a deeper pool present behind a 50cm waterfall. Banks were composed of earth and their profile was approximately 90 degrees. Banks were mostly bare, however some ivy was present. **Section length: 65m.**									
									
Unnamed Watercourse 1									
Section 1	0	0	1	0	0	0	1	0	**2 – unsuitable**
Description: A ditch which is 5cm deep and 50cm wide. The flow was rippled and the bed silt. Vegetation on the east bank comprised scrub and nettle, whilst the west bank was vegetated by ivy and hawthorn trees. **Section length: 55m.**									
									
Section 2	0	0	1	1	0	0	0	0	**2 – unsuitable**
Description: This section of the ditch was 5-10 cm deep with a slow rippled flow at the northern extent and a silt bed. The ditch section dries out further south. The eastern bank was approximately 50cm high and mostly bare ground with some ivy and hawthorn. The west bank was steep in profile and approximately 3m high, with mostly bare ground and ivy and hawthorn present. **Section length: 145m.**									

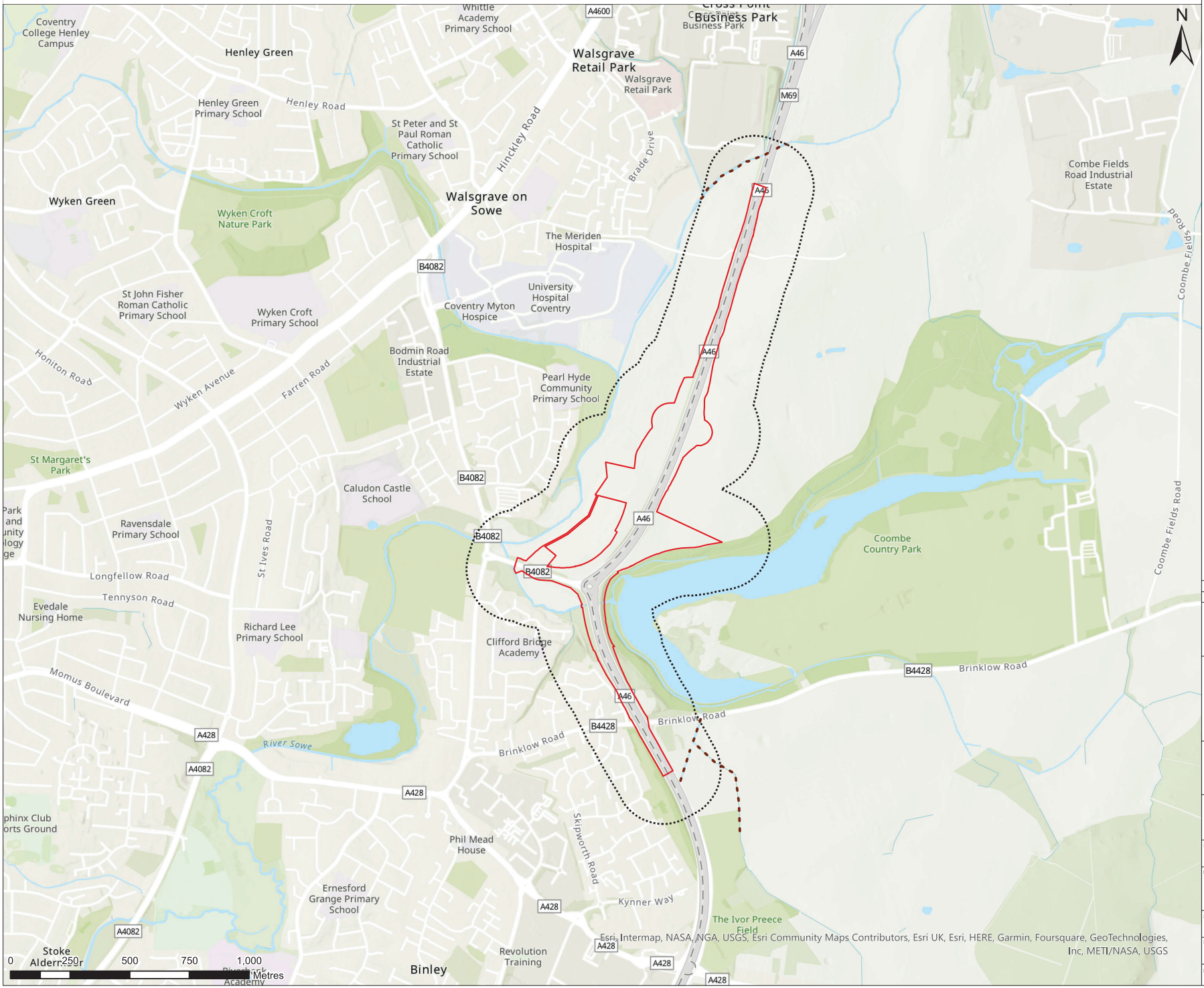
Watercourse Section	>60% presence of bankside and emergent vegetation	Year-round availability of food sources	Suitable refuge areas above extremes in water levels	Steep banks suitable for burrowing	Permanent open water	Presence of berm (ledge at water level)	Lack of disturbance (poaching, grazing and/or recent management)	Nest building opportunities in vegetation above water level	Total score and category
									
Unnamed Watercourse 2									
Section 1	0	1	1	0	1	0	1	0	**4 – sub-optimal**
Description: the water depth was 10cm deep with the bed a mix of rocks and sand. The banks on both sides were shallow and earthen. The water flow was rippled. Grass and scrub vegetated the western bank while some ivy was present on the eastern bank. **Section length: 170m.**									
									
Section 2	0	0	1	1	1	0	0	0	**3 – sub-optimal**
Description: The watercourse was 5-30cm deep water with a silty bed containing cobbles and pebbles and a slow flow and bare banks. The eastern bank was shallow and the western bank vertical. Both banks were composed of earth with a higher amount of organic material. **Section length: 105m.**									

Watercourse Section	>60% presence of bankside and emergent vegetation	Year-round availability of food sources	Suitable refuge areas above extremes in water levels	Steep banks suitable for burrowing	Permanent open water	Presence of berm (ledge at water level)	Lack of disturbance (poaching, grazing and/or recent management)	Nest building opportunities in vegetation above water level	Total score and category
									
Section 3	0	0	0	0	1	0	0	0	**1 – unsuitable**
Description: The watercourse was shallow, had a slow flow, a silty bed containing pebbles and a high amount of organic matter. The eastern bank was composed of gabions with ferns growing between the stones. The western bank was vertical and composed of earth, covered in ferns and moss. **Section length: 220m**									
									
Section 4	0	0	0	1	0	0	0	0	**1 – unsuitable**
Description: The depth of the water was approximately 5cm, with a slow flow and sandy bed. The eastern and western banks were composed of earth. The western bank was steep with beech *Fagus sylvatica* trees and the eastern bank was reinforced with a gabion and covered with nettles. **Section length: 70m**									

Watercourse Section	>60% presence of bankside and emergent vegetation	Year-round availability of food sources	Suitable refuge areas above extremes in water levels	Steep banks suitable for burrowing	Permanent open water	Presence of berm (ledge at water level)	Lack of disturbance (poaching, grazing and/or recent management)	Nest building opportunities in vegetation above water level	Total score and category
									
Coombe Pool									
Section 1	1	1	0	0	1	0	1	1	**5 – Sub-optimal**
Description: The bank was comprised of earth, approximately 20cm high with dense scrub vegetation between steep concrete banks for fishing points. The earth banks were likely not deep enough for burrows and could flood. Nesting habitat was present within the bull rush *Typha* sp. **Section length: 1200m** 									
Section 2	0	0	0	0	1	0	0	0	**1 – unsuitable**
Description: The bank comprised an earth and stone mixture, contained within a gabion which is unsuitable for water voles. **Section length: 15m**									

Watercourse Section	>60% presence of bankside and emergent vegetation	Year-round availability of food sources	Suitable refuge areas above extremes in water levels	Steep banks suitable for burrowing	Permanent open water	Presence of berm (ledge at water level)	Lack of disturbance (poaching, grazing and/or recent management)	Nest building opportunities in vegetation above water level	Total score and category
									
Unnamed Watercourse 3									
Section 1	0	0	1	1	0	0	1	0	**3 – sub-optimal**
Description: The watercourse was approximately 5cm deep with a fast rippled flow. The banks were comprised of earth and were steep, with bramble in parts. **Section length: 55m.**									
									

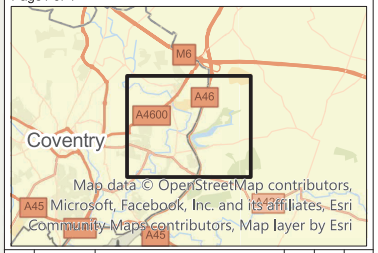
Appendix C. A46 Otter and Water Vole Signs: 2023 Survey



Legend

- Draft Order Limits
- 200m buffer
- Scoped out watercourse

Page1 of 4



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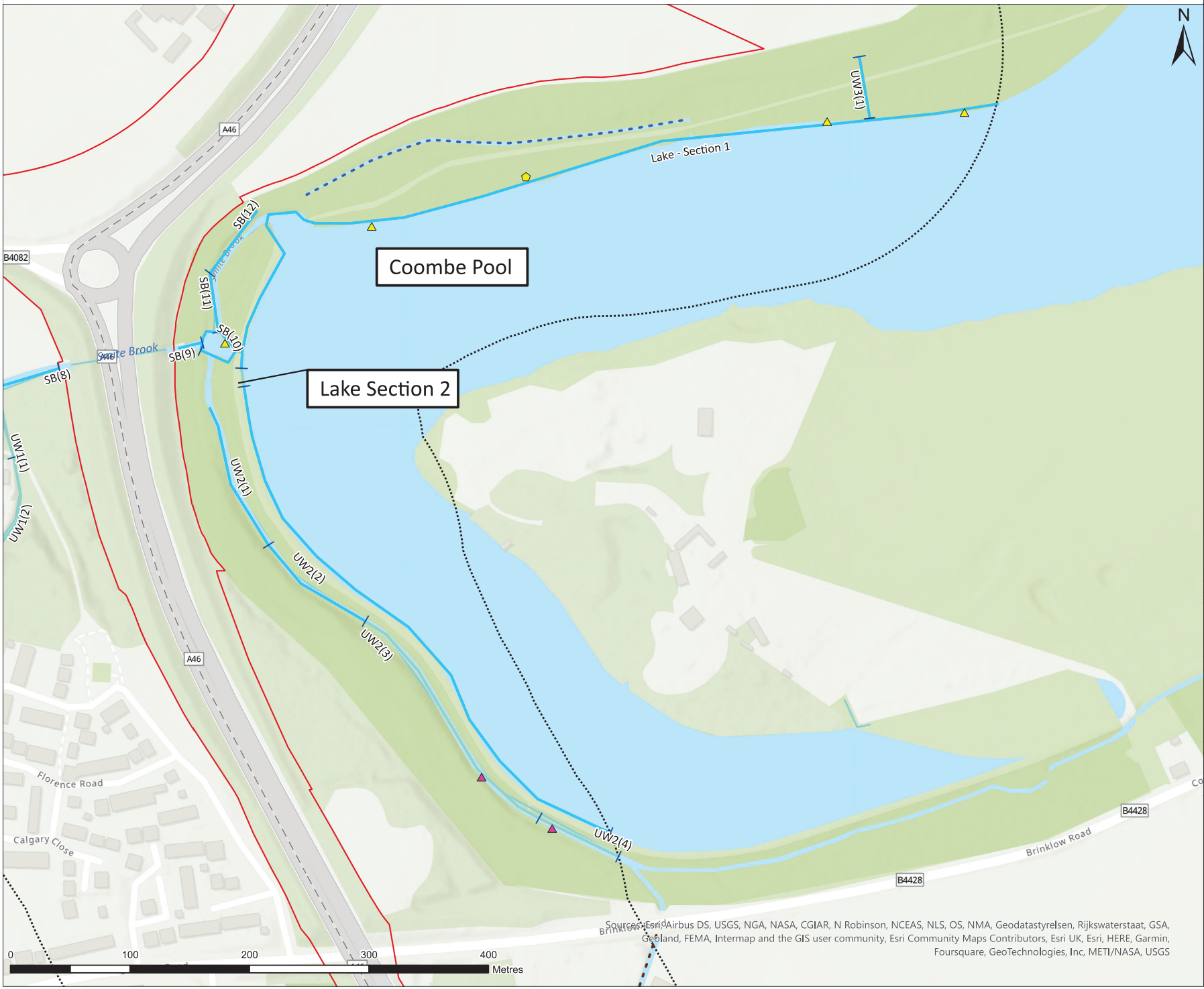

Legend

- Draft Order Limits
- 200m buffer

Otter Sign
- Couches
- Feeding remains

Water Vole Sign
- Potential burrow
- Scoped out watercourse

Water vole habitat suitability
- Sub-optimal
- Unsuitable
- Dry watercourse

River reference denotes river name and section e.g. RS(1) shows River Sowe section 1

RS - River Sowe
SB - Smite Brook
UW- Unnamed watercourse

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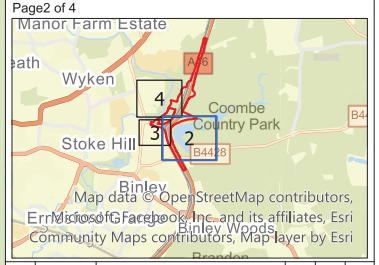

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- Draft Order Limits
- 200m buffer

Water vole habitat suitability

- Optimal
- Sub-optimal
- Unsuitable

**River reference denotes river name and section e.g. RS(1) shows River Sowe section 1*

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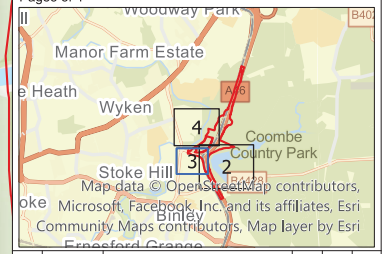

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- Draft Order Limits
- 200m buffer

Otter Sign
- Potential couch

Water Vole Sign
- Potential burrow

Water vole habitat suitability
- Optimal
- Sub-optimal
- Unsuitable
- Dry watercourse

River reference denotes river name and section e.g. RS(1) shows River Sowe section 1

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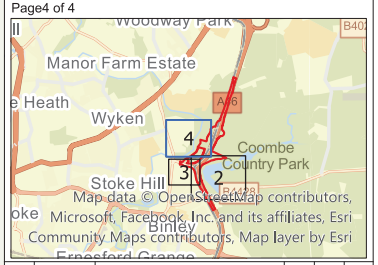
SB - Smite Brook
UW- Unnamed watercourse



REV	DATE	REVISION NOTE	ORG	CHK'D	APP
P02	04.07.2023	UPDATED LAYERS	RM	ER	BM

Designer

Contractor

Client: national highways

Project Title: A46 COVENTRY JUNCTIONS (WALSGRAVE)

Project Stage: DCO SUBMISSION

Drawing Title: A46 OTTER & WATER VOLE SIGNS 2023 SURVEY

Suitability: FOR INFORMATION

Sheet Size	Scale	Status	Revision
A3	1:2,500	S3	P01

Drawing Number: HE604820-OIL-EVD-00-DR-LB-30037