
Priory Farm Solar Array Alternative Cable Connection
on behalf of Axis PED

Appendix 2: Water Vole and Otter Survey Report



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Annex 1: Water Vole Habitat Assessment Sheets

1 INTRODUCTION

- 1.1.1 Avian Ecology Ltd. was commissioned by Axis on behalf of AGR Solar 4 Ltd to undertake water vole *Arvicola amphibius* and otter *Lutra lutra* surveys in relation to an alternative cable route for the previously consented Priory Farm Solar Array (Planning ref: 21/03380/FP) located on land within and surrounding, Little Wymondley hereafter referred to as the Proposed Development.
- 1.1.2 This Report details the methodologies and results of a desktop study and field surveys undertaken in April 2024, to determine presence or likely absence of water vole and otters within the Proposed Development.

1.2 Survey Area

- 1.2.1 Watercourses present within and adjacent to the Proposed Development were identified during a desk study, using aerial imagery and OS maps. This was further supplemented by extended habitat surveys, carried out by Avian Ecology in January 2022, then updated in April and July 2024.
- 1.2.2 Whilst only two small sections of the Ash Brook will be within the cable route red line boundary, the majority of the cable route lies adjacent or nearby the brook and as such, the total area of the watercourse surveyed is illustrated on the Field Survey Plan (**Figure 1**).

2 LEGISLATION

Water Vole

- 2.1.1 Water voles are protected in England under the provisions of the Wildlife and Countryside Act 1981 (as amended). The species is listed on Schedule 5 of the Act and is protected under Section 9, which makes it an offence to:
- Intentionally kill, take or injure a water vole;
 - Possess or control any live or dead water vole or any part or derivative;
 - Intentionally or recklessly damage or destroy a water vole's place of shelter or protection;
 - Intentionally or recklessly disturb a water vole while it is occupying a structure or place which it uses for shelter or protection; or,
 - Intentionally or recklessly obstruct access to a water vole's place of shelter or protection.
- 2.1.2 The Act also prohibits the selling, offering of sale, or possessing or transporting for the purposes of sale, any live or dead water vole, or any part or derivative, or advertising any of these for buying or selling, however this is irrelevant in relation to this report.
- 2.1.3 It is generally agreed that a place of shelter or protection used by water voles includes a network of activity burrows and/or any nests that have been constructed within the burrow system or above ground amongst dense vegetation.¹
- 2.1.4 Water voles are also listed under Section 41 of the NERC Act 2006.

¹ Dean, M., Strachan, R., Gow, D. & Andrews, R. (2016) *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series)*. Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

- 2.1.5 Any development which may disturb water vole/s or damage their burrows/resting places will require a licence from Natural England (NE).

Otter

- 2.1.6 Otters are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended); they receive further protection under The Conservation of Habitats and Species Regulations 2017 (as amended) make it an offence to:

- Deliberately capture, injure or kill an otter;
- Damage or destroy a breeding site or resting place;
- Deliberately disturb an otter, particularly in a way which is likely to:
 - a) impair their ability to survive, breed or reproduce, rear or nurture young, and;
 - b) affect significantly the local distribution or abundance of the species.

- 2.1.7 Otter is also listed under Section 41 of the NERC Act 2006.

- 2.1.8 Any development which may result in interference with otters or otter holts/resting places, or disturb otter while using such a place, will require a licence from NE.

3 METHODOLOGY

3.1 Desktop Study

- 3.1.1 A desktop study was undertaken to identify any known records for water vole and otter within a 2km radius of the Proposed Development. Biological records data was requested from Hertfordshire Ecological Records Centre² (HERC).
- 3.1.2 The data search results from HERC however, are sourced from the documents supporting the original solar application (planning reference: 21/03380/FP), dated September 2021. As the Proposed Development is for an underground cable route with limited surface area or impacts, this is not considered to be a significant limitation to desk study.
- 3.1.3 The results of the desktop study are provided in **Section 4.1**.

3.2 Field Survey

- 3.2.1 The combined otter and water vole survey was undertaken on the 16th and 17th April 2024, at the same time as a Modular River Physical Survey (MoRPh survey) being undertaken along the same watercourse. The total survey area is shown on **Figure 1**.
- 3.2.2 All surveys were carried out in good weather conditions and not following any periods of prolonged rainfall resulting in high water levels.
- 3.2.3 The survey was undertaken by A. Hulme *BSc (Hons.)*, who is competent in the identification of field signs of both otter and water voles and the appropriate survey methodologies. They were accompanied by a health and safety second due to working in and near water.

² <https://www.hercinfo.org.uk>

Water vole

- 3.2.4 The survey methodology was designed using methods detailed within Dean (2021)³ and Dean *et al* (2016)⁴. Field surveys for water vole in the context of a development have two key elements; a habitat suitability assessment and a search for field signs, indicating presence or possible presence of water vole. In most cases, two surveys are required; one in the first half of the season (mid-April to end of June) and one in the second half of the season (July-September).
- 3.2.5 An initial survey visit was undertaken in mid-April 2024, which was undertaken within the water vole breeding season, generally considered to be between March-September (Dean, 2021 & Dean *et al*, 2016).
- 3.2.6 A second survey was not considered necessary based on the results from the first survey, which are detailed below.

Water Vole Habitat Suitability Assessment

- 3.2.7 A habitat suitability assessment was undertaken along three different sections of the Ash Brook, which coincided with the sections being surveyed for the MoRPh survey. The sections assessed for habitat suitability are shown in **Figure 2**. Note the sections surveyed were targeted to the western half the of the Ash brook within the survey boundary, this is because the eastern half is less natural, subject to canalizing and abundant culverting, surrounded by largely urban, concrete habitat beyond the bank sides
- 3.2.8 The habitat assessment was undertaken to determine whether or not habitats preferred by water voles was present, also distinguishing any variation of habitat suitability for the species within the surveyed sections. Searches for field signs indicating the presence of water voles were also undertaken.
- 3.2.9 The habitat assessment was undertaken with reference to “Habitat survey assessment guidelines” for water vole prepared by Cheshire Wildlife Trust and adapted from ‘A Method for Assessing Water Vole Habitat Suitability’ (Harris et al., 2009). This method assesses the watercourse against ten criteria and scores it based on the number of criteria passed.
- 3.2.10 Table 1.1 provides a summary of the habitat suitability scoring criteria for assessing water vole habitat. Detailed results are presented in **Annex 1**.

Table 1.1: Water Vole Habitat Assessment Scoring Criteria

Habitat score	Habitat Suitability for water Voles	Notes
<3	Unsuitable	Water voles usually absent
3-6	Sub-optimal	Occasional field signs for water vole, particularly in late summer when numbers are higher
7-10	Optimal	Water voles usually present

³ Dean, M. (2021) *Water Vole Field Signs and Habitat Assessment; A Practical Guide to Water Vole Survey*. Pelagic Publishing, Exeter.

⁴ Dean, M., Strachan, R., Gow, D. & Andrews, R. (2016) *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series)*. Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

Water Vole Survey

3.2.11 A search of Ash Brook was undertaken predominantly by wading along the channel and where this was not possible, undertaking spot checks and searches from the bankside to record the location of any water vole field signs. Searches for field signs were undertaken from the toe⁵ of the watercourse bank within each section, up to at least 1m out into the water and at least 1m up the bank, in accordance with guidance (Dean *et al.*, 2016). The surveyed sections of the watercourse are shown on **Figure 1.1**.

3.2.12 Searches for the following field signs of water vole presence as per Strachan *et al.* (2011) were undertaken along each survey section:

- Sightings
- Droppings/Latrines;
- Burrows;
- Footprints;
- Pathways;
- Feeding stations; and,
- Lawns.

Population Density Estimates

3.2.13 The presence of water vole droppings/latrines is the only field sign that can be used reliably on its own to confirm species presence. The number of latrines recorded during a survey is also able to provide an indication of relative population densities and identify the most important parts of a study area for water vole for the purposes of assessing impacts and approach to mitigation.

3.2.14 **Table 1.2** outlines an approach to estimating the relative population densities on the basis of latrine counts in accordance with current guidance (Dean *et al.*, 2016). The guidance notes that count of latrines for each survey section are made until a count of 10/20 (depending on season) or more is reached at which point a high population density can be concluded.

Table 1.2: Relative water vole population densities on the basis of latrine counts.

As adapted from Dean et al. (2016).

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)

⁵ In accordance with Dean *et al.* (2016) the toe of the bank is defined here as the area of the bank at, and immediately above, water level.

Otter

3.2.15 The initial check comprised an assessment of the relative habitat suitability of each watercourse within the survey area. During the survey, notes were taken on any field signs encountered including;

- Spraints;
- footprints;
- feeding remains;
- slides; and,
- potential holts (or other resting or breeding place).

Limitations of Survey

3.2.16 All areas of the watercourse channel and banks were able to be surveyed, with exception of the areas diverted underground and/or culverted due to health and safety restrictions. These areas however are dominated by concrete, with limited suitability for water vole other than potential commuting route and no field signs of either water vole or otter would have been present within these areas to observe.

3.2.17 It is therefore considered that the survey did not have any significant limitations and it would have been sufficient to identify evidence of otter or water vole habitation, were any populations present.

4 BASELINE

4.1 Desktop Study Results

- 4.1.1 Records returned from HERC reveal only one record of otter, a 2020 record nearly 2km north of Site.
- 4.1.2 HERC also returned four records of water vole within 2km of the Site from the past decade, three between 2015 and 2017 from the same location 1.8m north of Site and one from 2016 1.45km north.
- 4.1.3 All otter and water vole records were located at least 1.45km away from Site, where Ippollitts Brook and Ash Brook interconnect, close to adjoining the River Purwell.
- 4.1.4 Further historical records exist for water vole along Ippollitts Brook, at least 1.25km north west of Site.
- 4.1.5 No European Protected Species (EPS) licenses have been granted for water vole or otter within 2km of the Proposed Development⁶.
- 4.1.6 Both species are priority species within the Hertfordshire LBAP.

4.2 Water Vole Habitat Assessment Results

- 4.2.1 The three sections of Ash Brook surveyed were all assessed as sub-optimal suitability for water vole.
- 4.2.2 **Table 1.3** provides a summary of the assessment for each survey section. Detailed results are presented in **Annex 1**.

⁶ <https://magic.defra.gov.uk/MagicMap.aspx> (accessed May 2024)

Table 1.3: Water vole habitat assessment results - summary

Watercourse Section	Total Score	Habitat Suitability
Western	6	Sub-optimal
Middle	5	Sub-optimal
Eastern	5	Sub-optimal

- 4.2.3 The watercourse lacked both emergent and marginal vegetation along the entire length surveyed, with exception of a single fool's watercress plant within the central section. Potential aquatic or marginal food sources for the species were negligible along the entire watercourse, with food sources limited to grass and forb species present on the banks and surrounding habitats.
- 4.2.4 Water levels were low across the entire watercourse, and it is unlikely to offer means of escape from predators. Additionally, the presence of a public footpath, popular with dog walkers means that the brook is subject to disturbance.
- 4.2.5 The highly culverted and concrete nature of large sections of the watercourse reduces suitability even further.

4.3 Otter Habitat Assessment Results

- 4.3.1 The Ash brook is considered unsuitable for otter based on its size, slow moving water and lack of food sources. The water level varied but averaged around 5cm in April which is considered too shallow for otters to utilise. Water flow was sluggish, and aquatic and marginal vegetation largely absent. The brook is highly unlikely to support key food sources such as fish or crustaceans, although potential prey such as small mammals and birds would be present in the locality.
- 4.3.2 Opportunities for holt creation and resting were limited, but some potential exist within the bordering woodland parcels. Surrounding open grassland and arable land provides only very limited suitability for otter dispersal, foraging or shelter.
- 4.3.3 The brook located within and adjacent to the Proposed Development only has connectivity to other areas of the brook outside of the survey area. There are networks of watercourses in the wider environment, such as Ippollitts Brook, however the closest area where they interconnect with direct connectivity to Site is over 1.25km away. There is therefore limited connectivity between aquatic corridors in the locality.

4.4 Field Survey Results

Water Vole

- 4.4.1 No field signs of water vole were observed during the survey visit. Footprints were observed within the middle section of the survey area; however, these were considered more likely to belong to rat rather than water vole. Rat droppings were also observed within the middle and eastern sections of the survey area.
- 4.4.2 Considering the sub-optimal habitat along the watercourse area surveyed and lack of any field signs recorded, a second survey was not considered necessary.

Otter

- 4.4.3 The survey found no confirmed or suspected signs of otter.

5 CONCLUSION

- 5.1.1 One otter and water vole survey was undertaken along a section of the Ash Brook. The habitat assessment reveals all sections to be sub-optimal for water vole, with limited food sources and large sections culverted and/or surrounded by concrete.
- 5.1.2 No signs of water vole was recorded and as such, a second survey was not considered necessary.
- 5.1.3 It is considered that the survey area does not support any population of water vole.
- 5.1.4 No confirmed evidence of otter was noted on site during the survey and the watercourse on is considered unsuitable to support the species.
- 5.1.5 Considering the above, neither water vole or otter poses a constraint to the Proposed Development.

Figure 1: Ash Brook Survey Plan

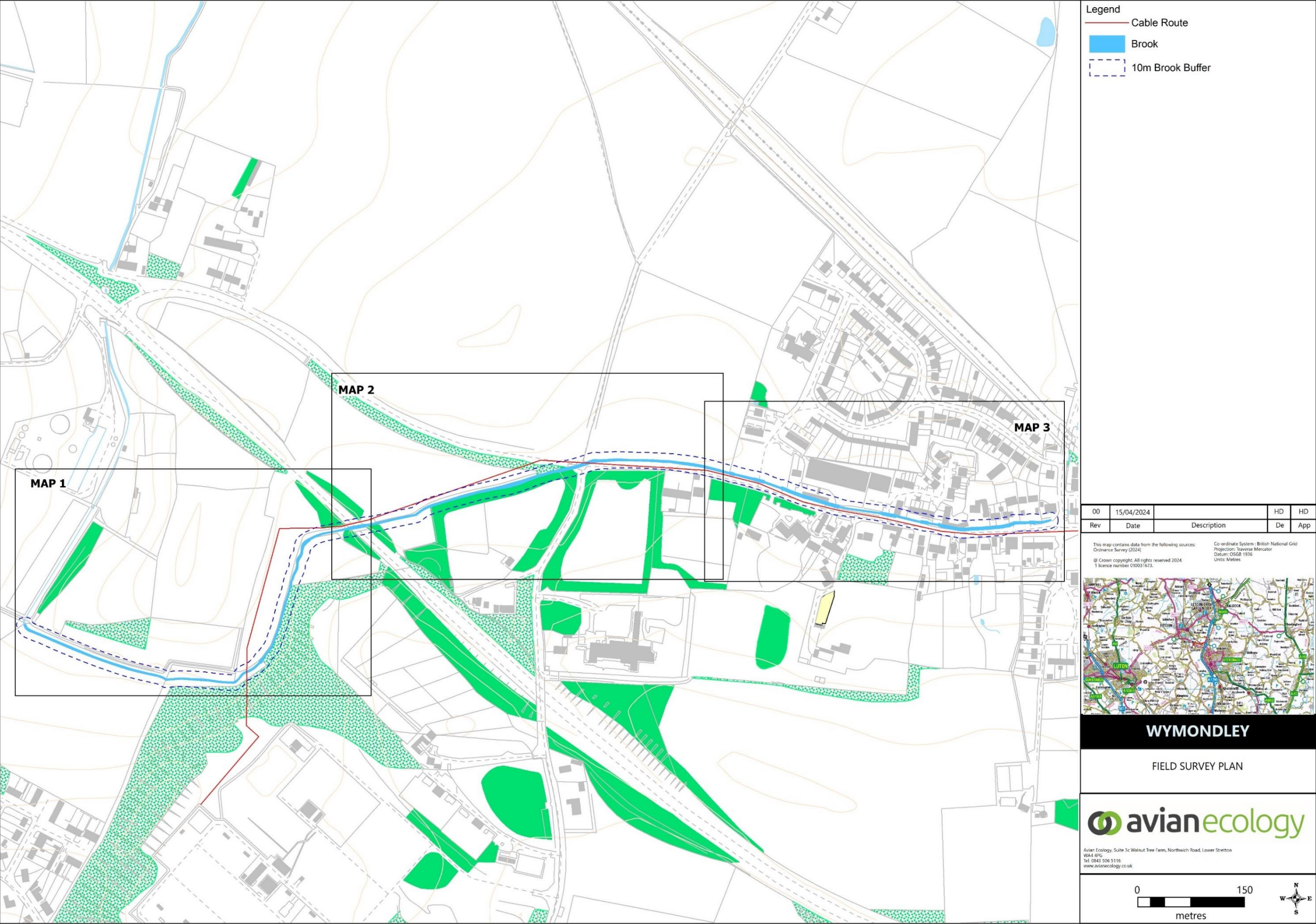


Figure 1: Ash Brook Survey Plan

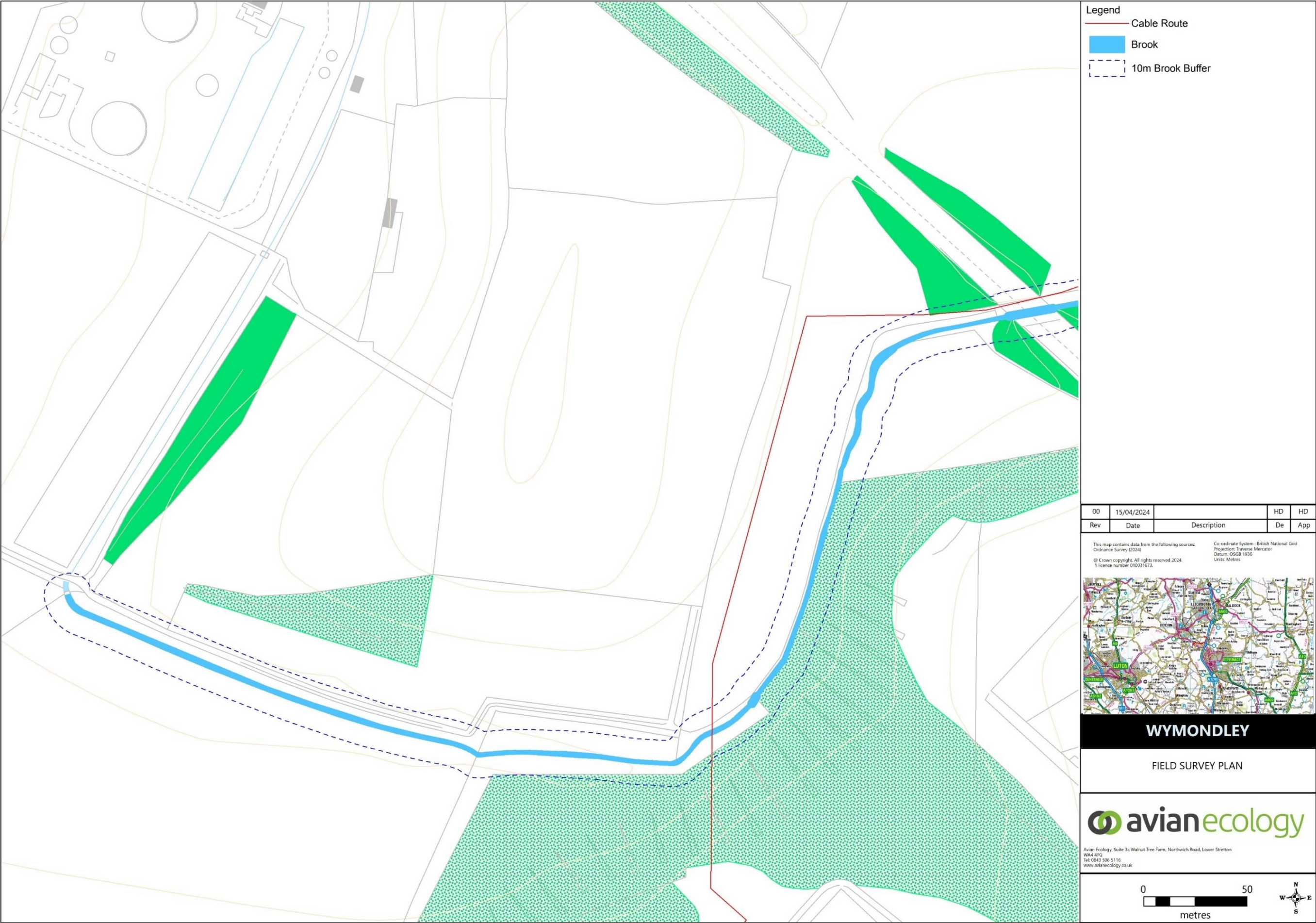


Figure 1: Ash Brook Survey Plan

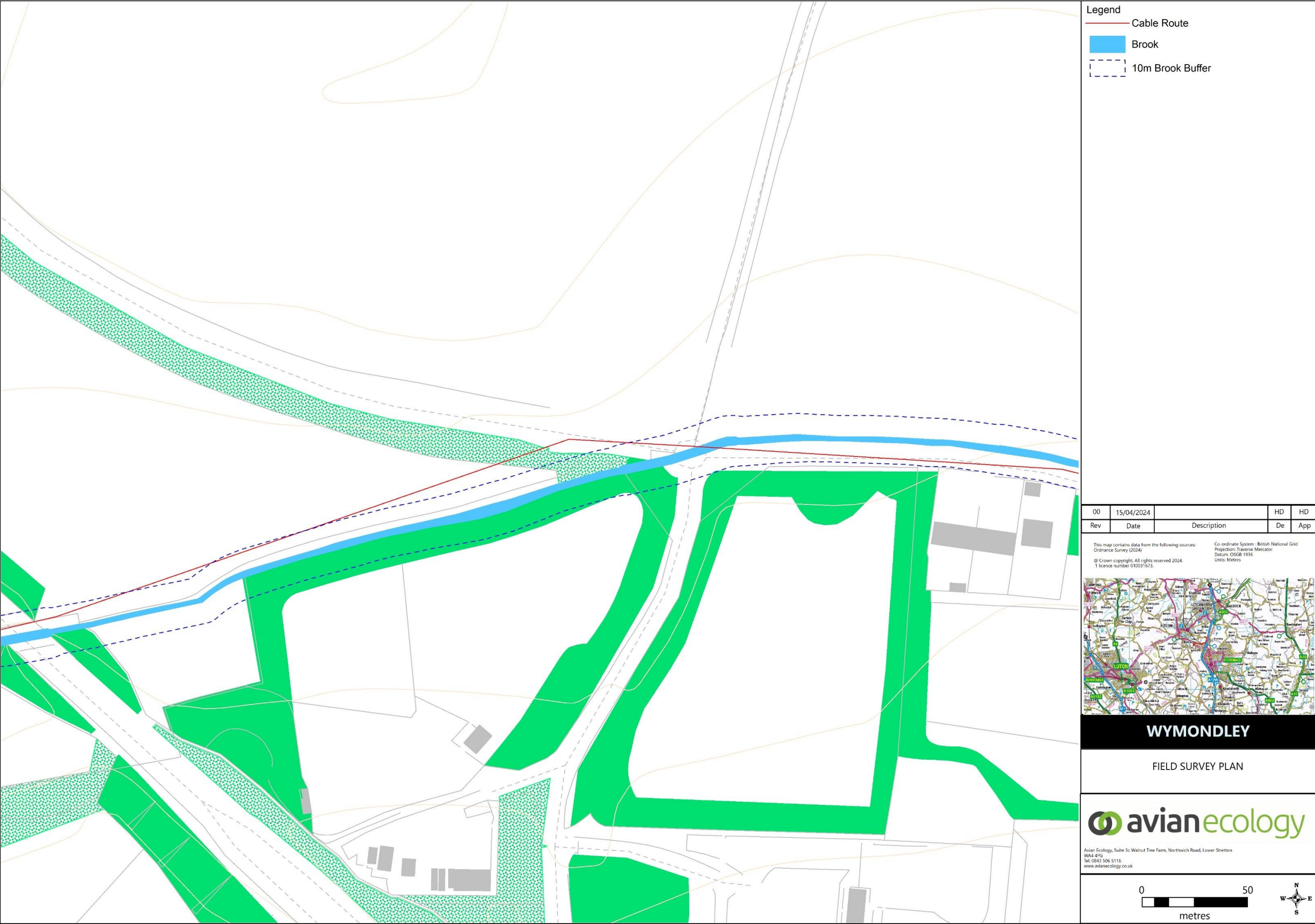
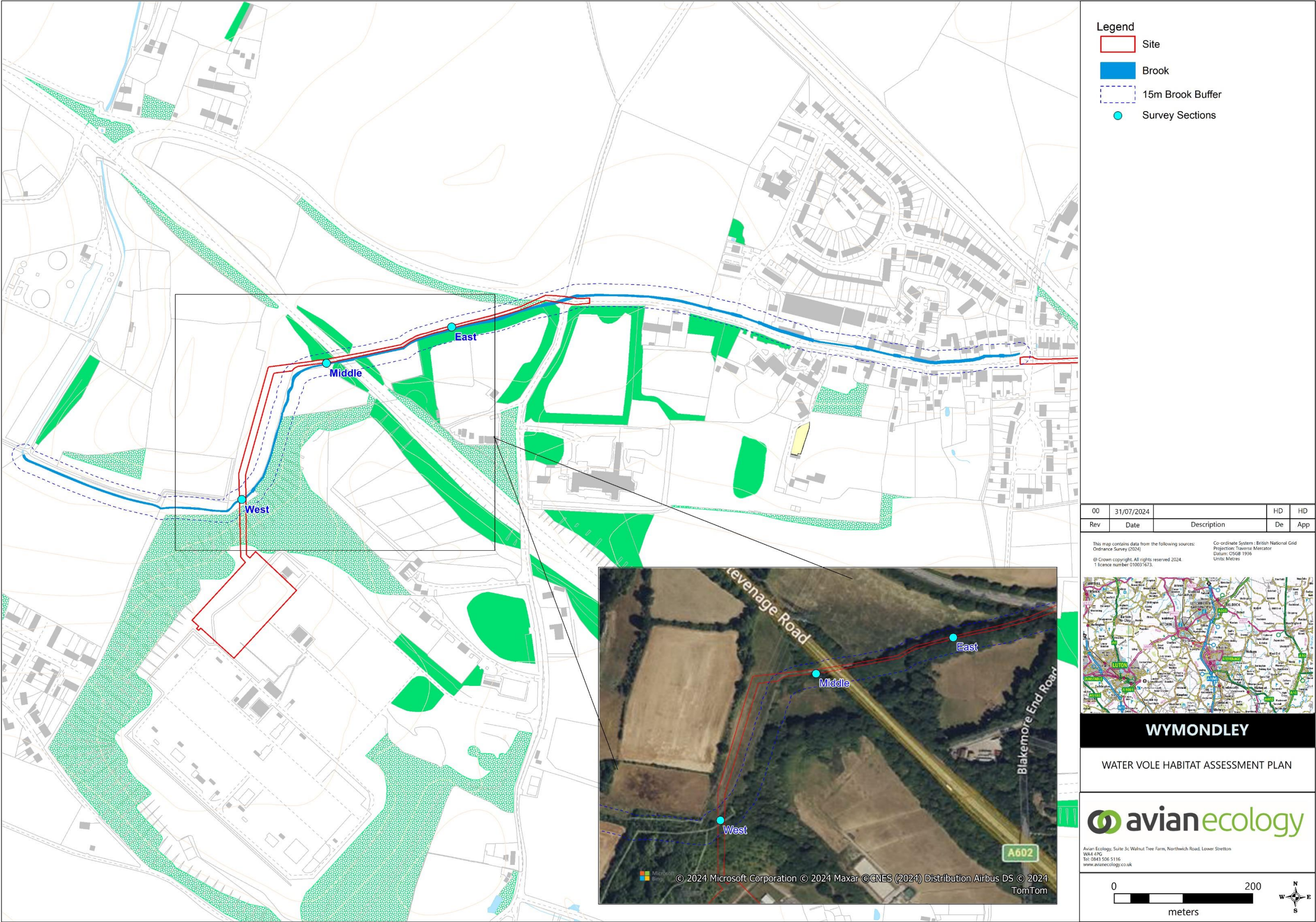


Figure 1: Ash Brook Survey Plan



Figure 2: Water Vole Habitat Suitability Assessment- Survey Sections Plan (West, Middle and East)



ANNEX 1

HABITAT ASSESSMENT

Date	16-17/04/2024						
Ditch Section	West						
Habitat Information							
Habitat		Shore/bank		Bordering land use		Vegetation	
Ditch	x	Boulders	X	Upland grass	x	Bankside trees	F
Dyke		Sand		Permanent/temporary grass		Bushes (hedges)	F
Gravel Pit		Gravel		Mixed broadleaf woodland		Herbs	F
Lowland Lake		Silt		Conifer wood		Submerged weed	N
Upland Loch Reservoir		Earth		Peat bog		Reeds/sedges	N
Running Water		Rock cliffs		Arable crop		Tall grass	O
Marsh/bog		Earth Cliffs		Salt marsh		Short grass	R
Canal		Canalized		Urban/industrial		Disturbance: Public footpath crossed over brook in this area, footpath continues east north of the brook and west south of the brook.	
		Poached		Park/garden			
		Reinforced		Heath			
		Fen					
		Cattle/grazing					
		Bank fenced					
Bank Profile (tick)		Width (tick)		Depth (tick)		Current (tick)	
Flat <10°	x	1m	x	<0.5m	x	Rapid	x
Shallow <45°		1-2m		0.5-1m		Fast	
Steep >45°		2-5m		1-2m		Slow	
Vertical/undercut		5-10m		>2m		Sluggish	
		10-20m				Static	
		20-40m					
		>40m					
Water Vole Habitat Suitability Assessment (Score 1 if feature present and 0 if absent)							
(a) Well developed (>60%) bankside <u>and</u> emergent vegetation providing food & cover				0	*DAFORN Dominant 81-100% Abundant 61-80% Frequent 41-60% Occasional 21-40% Rare 1-20% None 0%		
(b) A good variety of food plants including favoured plants and winter food sources				½			
(c) Suitable refuge areas above extremes in water levels				0			
(d) Soft, earth banks suitable for burrowing (30 to 60 degree slope)				1			
(e) Water permanently present (does not dry up)				1			
(f) Open water for swimming				½			
(g) Ledge or berm present at or close to water level				1			
(h) Lack of damage or erosion to the banks				0			
(i) Slow flowing current or static water				1			
(j) Non-native invasive plant species absent (Himalayan Balsam, Japanese knotweed)				1			
HABITAT ASSESSMENT SCORE (Total score of features present)				6			
Comments; No aquatic or marginal vegetation, but bankside vegetation present as scrub to the north. Public footpath with bare earth and modified grassland immediately to the south.							
							

Date	16-17/04/2024						
Ditch Section	Middle						
Habitat Information							
Habitat		Shore/bank		Bordering land use		Vegetation	
Ditch	x	Boulders	x	Upland grass	x	Bankside trees	O
Dyke		Sand		Permanent/temporary grass		Bushes (hedges)	N
Gravel Pit		Gravel		Mixed broadleaf woodland		Herbs	F
Lowland Lake		Silt		Conifer wood		Submerged weed	N
Upland Loch Reservoir		Earth		Peat bog		Reeds/sedges	N
Running Water		Rock cliffs		Arable crop		Tall grass	F
Marsh/bog		Earth Cliffs		Salt marsh		Short grass	O
Canal		Canalized		Urban/industrial		Disturbance: Between sections culverted or canalized. Under road brook canalized into concrete ditch with vertical sides. Public footpath immediately to the north.	
		Poached		Park/garden			
		Reinforced		Heath			
		Fen					
			Cattle/grazing				
			Bank fenced				
Bank Profile (tick)		Width (tick)		Depth (tick)		Current (tick)	
Flat <10°	x	1m	x	<0.5m	x	Rapid	x
Shallow <45°		1-2m		0.5-1m		Fast	
Steep >45°		2-5m		1-2m		Slow	
Vertical/undercut		5-10m		>2m		Sluggish	
		10-20m				Static	
		20-40m					
		>40m					
Water Vole Habitat Suitability Assessment (Score 1 if feature present and 0 if absent)							
(a) Well developed (>60%) bankside <u>and</u> emergent vegetation providing food & cover				½	*DAFORN Dominant 81-100% Abundant 61-80% Frequent 41-60% Occasional 21-40% Rare 1-20% None 0%		
(b) A good variety of food plants including favoured plants and winter food sources				0			
(c) Suitable refuge areas above extremes in water levels				0			
(d) Soft, earth banks suitable for burrowing (30 to 60 degree slope)				1			
(e) Water permanently present (does not dry up)				1			
(f) Open water for swimming				½			
(g) Ledge or berm present at or close to water level				0			
(h) Lack of damage or erosion to the banks				0			
(i) Slow flowing current or static water				1			
(j) Non-native invasive plant species absent (Himalayan Balsam, Japanese knotweed)				1			
HABITAT ASSESSMENT SCORE (Total score of features present)				5			
Comments; No emergent vegetation, vegetated banks typical of disturbed species such as abundant nettle, but then surrounded with public footpath to the north and scrub/woodland to the south. Adjacent to section canalized and surrounded by concrete by underpass.							
							

Date	16-17/04/2024								
Ditch Section	Eastern								
Habitat Information									
Habitat		Shore/bank		Bordering land use		Vegetation			
Ditch	x	Boulders	x	Upland grass	x	Bankside trees	O		
Dyke		Sand		Permanent/temporary grass		Bushes (hedges)	N		
Gravel Pit		Gravel		Mixed broadleaf woodland		Herbs	F		
Lowland Lake		Silt		Conifer wood		Submerged weed	N		
Upland Loch Reservoir		Earth		Peat bog		Reeds/sedges	N		
Running Water		Rock cliffs		Arable crop		Tall grass	F		
Marsh/bog		Earth Cliffs		Salt marsh		Short grass	O		
Canal		Canalized		Urban/industrial		Disturbance: Just before a large section canalized and culverted, with no suitable adjacent habitat, almost the entire eastern half of the survey area surrounded by concrete.			
		Poached		Park/garden					
		Reinforced		Heath					
		Fen							
				Cattle/grazing					
				Bank fenced					
Bank Profile (tick)		Width (tick)		Depth (tick)		Current (tick)			
Flat <10°	x	1m	X	<0.5m	x	Rapid	x		
Shallow <45°		1-2m		0.5-1m		Fast			
Steep >45°		2-5m		1-2m		Slow			
		5-10m		>2m		Sluggish			
		10-20m				Static			
		20-40m							
		>40m							
Water Vole Habitat Suitability Assessment (Score 1 if feature present and 0 if absent)									
(a) Well developed (>60%) bankside <u>and</u> emergent vegetation providing food & cover				½	*DAFORN Dominant 81-100% Abundant 61-80% Frequent 41-60% Occasional 21-40% Rare 1-20% None 0%				
(b) A good variety of food plants including favoured plants and winter food sources				0					
(c) Suitable refuge areas above extremes in water levels				0					
(d) Soft, earth banks suitable for burrowing (30 to 60 degree slope)				½					
(e) Water permanently present (does not dry up)				1					
(f) Open water for swimming				½					
(g) Ledge or berm present at or close to water level				½					
(h) Lack of damage or erosion to the banks				0					
(i) Slow flowing current or static water				1					
(j) Non-native invasive plant species absent (Himalayan Balsam, Japanese knotweed)				1					
HABITAT ASSESSMENT SCORE (Total score of features present)				5					
Comments; No emergent vegetation, vegetated banks typical of disturbed species such as abundant nettle but then surrounded with public footpath to the north and scrub/woodland to the south. Near section where gets culverted under roundabout, then continues east being 50% culverted, remaining canalized through Little Wymondley. No suitable habitat other than vegetated banks- built up, urban residential area, dominated by concrete.									
									

