Kronospan North Access Road

on behalf of Axis PED

Environmental Statement

Appendix 7.4: Water Vole and Otter Survey Report

avian ecology

Document Control	
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V1	05/09/2022	Draft for client comment	J. Stevens *BSc (Hons.)*	-
V2	26/09/2022	Final	J. Stevens *BSc (Hons.)*	N. Robinson *MSc BSc (Hons.) ACIEEM*

CONTENTS

ANNEXES

1 INTRODUCTION

1.1.1 This appendix has been prepared to accompany ES Chapter 7.0: Biodiversity and Nature Conservation'

1.1.2 It presents detailed methodologies and results of desk and field studies undertaken to establish baseline conditions relating to water vole *Arvicola amphibius* and otter *Lutra lutra* and inform the design and assessment of the Proposed Development.

1.2 Survey Area

1.2.1 The Afon Bradley runs adjacent to the Proposed Development Site with all areas of this watercourse that lie adjacent to the Proposed Development Site were subject to survey, as shown in **Figure 7.8**. Access was not possible to other areas outside of the Proposed Development Site

1.2.2 No other watercourses or ditches were present within the Proposed Development Site.

2 LEGISLATION

Otter

2.1.1 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 (Amendment) (EU Exit) Regulations 2019. The Act and Regulations 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.

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

2.1.3 Any development which may result in interference with otters or otter holts/resting places will require a licence from Natural England (NE).

Water Vole

2.1.4 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.

2.1.5 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.

2.1.6 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.

3 METHODOLOGY

3.1 Desktop Study

3.1.1 A desktop study was undertaken to identify any known records for otter and water vole within a 2km radius of the Proposed Development Site. Biological records data was requested from Cofnod, the local environmental records centre covering North Wales .

3.1.2 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 8th October 2021 and 24th April 2022, in good weather conditions. All sections of the watercourses/ditches were safely accessible for survey.

3.2.2 The surveys were undertaken by J. Stevens *BSc (Hons)* and Z. Hinchliffe *MRes BSc (Hons.)*, both of whom are competent in the identification of field signs of water voles and otters and the appropriate survey methodologies.

Otter

3.2.3 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).

Water Vole

3.2.4 The water vole survey methodology was designed using methods detailed within Dean (2021)[1] and Dean *et al* (2016)[2]. 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).

Water Vole Habitat Suitability Assessment

3.2.5 A habitat suitability assessment was undertaken along each surveyed sections of the watercourse/ditches (shown on **Figure 7.8**). This was to determine whether or not habitat preferred by water voles was present, also distinguishing any variation of habitat suitability for the species within

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

[2] 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.

the surveyed sections. Searches for field signs indicating the presence of water voles were also undertaken.

3.2.6 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).

3.2.7 **Table 7.4.1** provides a summary of the assessment for each survey section.

Table 7.4.1: 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

3.2.8 Detailed results are presented in **Annex 1**.

Water Vole Field Sign Survey

3.2.9 A search of the watercourse network was undertaken predominantly by wading along ditch channels 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 toe[3] 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/ditches are shown on **Figure 7.8**.

3.2.10 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

3.2.11 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

[3] 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.

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.

3.2.12 **Table 7.4.2** 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 counts of latrines for each survey section are made until a count of 20 or more is reached at which point a high population density can be concluded.

Table 7.4.2: 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 non, but with other confirmatory field signs)	≤5 (or non, but with other confirmatory field signs)

Limitations of Surveys

3.2.13 The October 2021 survey was undertaken outside of the recommended survey window, however it is considered that as it was undertaken close to the end of the optimum survey season field signs would likely still be observed if water vole were present along the watercourse. Given the April 2022 survey was undertaken within the optimum survey window, the first survey being undertaken beyond the end of the optimum survey window is not considered to be a significant constraint to the assessment and it is considered that if present, water vole field signs would have been identified along the watercourse.

3.2.14 The Afon Bradley was only accessible where it runs adjacent to the Proposed Development Site and therefore areas up and downstream of the Proposed Development Site were not able to be surveyed. Dense vegetation and steep bankside also limited access in areas, along these sections spot check were undertaken.

4 BASELINE

4.1 Desktop Study Results

4.1.1 The data search returned four recent records of otter within the 2km search area, located on the Llangollen canal to the west of the Proposed Development Site and River Dee to the north of the Proposed Development Site

4.1.2 The data search returned no recent records of water vole within 2km of the Proposed Development Site

4.2 Otter Habitat Assessment Results

4.2.1 The Afon Bradley was largely unsuitable for otter due to the relatively shallow water levels, often <50cm in depth. Otter could occasionally utilise the watercourse for commuting as it connects the Llangollen canal and River Dee, both of which have previous records of otter. The watercourse is however culverted at each end of the Proposed Development Site, as well as at further locations downstream before the confluence with the River Dee which may act as a barrier to otter movement

4.2.2 A single hollow under a bankside tree was identified along the river within Section 1a (as shown on **Figure 7.8** and identified in the photographs shown in **Annex 2**) which may provide suitable conditions as an otter resting site, if the species are present on the watercourse. This hollow appeared frequently inundated during higher flows which somewhat reduces its suitability for otter.

4.2.3 No signs suggesting the resting up site was and/or had been in use by otters were recorded.

4.3 Water Vole Habitat Assessment Results

4.3.1 The areas surveyed were assessed as providing varying suitability for water vole, ranging from sub-optimal to optimal.

4.3.2 Watercourse sections 1b and 1d were assessed as offering the most favourable habitat for this species.

4.3.3 **Table 7.4.1** provides a summary of the assessment for each survey section. Detailed results are presented in **Annex 7.4.1**.

Table 7.4.3: Water vole habitat assessment results - summary

Watercourse Section	Total Score	Habitat Suitability
1a	4	Sub-optimal
1b	7	Optimal
1c	6	Sub-optimal
1d	9	Optimal

4.4 Field Survey Results

4.4.1 During the otter/water vole survey, no field signs or conclusive evidence of otter or water vole was recorded along the watercourse and associated terrestrial habitat.

ANNEX 1

WATER VOLE HABITAT ASSESSMENT

Date	04.10.2021
Ditch Section	1a

Habitat Information

Habitat		**Shore/bank**		**Bordering land use**		**Vegetation**	
Ditch	x	Boulders		Upland grass		Bankside trees	**D**
Dyke		Sand		Permanent/temporary grass		Bushes (hedges)	**R**
Gravel Pit		Gravel		Mixed broadleaf woodland	x	Herbs	**D**
Lowland Lake		Silt		Conifer wood		Submerged	**-**
Upland Loch Reservoir		Earth	x	Peat bog		Reeds/sedges	**R**
Running Water		Rock cliffs		Arable crop	x	Tall grass	**-**
Marsh/bog		Earth Cliffs		Salt marsh		Short grass	**-**
Canal		Canalized		Urban/industrial	x		
		Poached		Park/garden			
		Reinforced		Heath		**Disturbance:**	
				Fen		n/a	
				Cattle/grazing			
				Bank fenced			

Bank Profile (tick)		**Width (tick)**		**Depth (tick)**		**Current (tick)**	
Flat <10°		1m		<0.5m		Rapid	
Shallow <45°	**X**	1-2m		0.5-1m	x	Fast	
Steep >45°		2-5m	x	1-2m		Slow	
Vertical/undercut		5-10m		>2m		Sluggish	
		10-20m				Static	x
		20-40m					
		>40m					

Water Vole Habitat Suitability Assessment (Score 1 if feature present and 0 if absent)		
(a) Well developed (>60%) bankside **and** emergent vegetation providing food & cover	**0**	***DAFORN**
(b) A good variety of food plants including favoured plants and winter food sources	**0**	**D**ominant 81-100%
(c) Suitable refuge areas above extremes in water levels	**0**	**A**bundant 61-80%
(d) Soft, earth banks suitable for burrowing (30 to 60 degree slope)	**0**	**F**requent 41-60%
(e) Water permanently present (does not dry up)	**1**	**O**ccasional 21-40%
(f) Open water for swimming	**1**	**R**are 1-20%
(g) Ledge or berm present at or close to water level	**1**	**N**one 0%
(h) Lack of damage or erosion to the banks	**0**	
(i) Slow flowing current or static water	**0**	
(j) Non-native invasive plant species absent (Himalayan Balsam, Japanese knotweed)	**1**	
HABITAT ASSESSMENT SCOT (Total score of features present)	**4**	
Comments;		

Date	04.10.2021
Ditch Section	1b

Habitat Information

Habitat		**Shore/bank**		**Bordering land use**		**Vegetation**	
Ditch	**x**	Boulders		Upland grass		Bankside trees	**D**
Dyke		Sand		Permanent/temporary grass		Bushes (hedges)	**F**
Gravel Pit		Gravel		Mixed broadleaf woodland	**x**	Herbs	**D**
Lowland Lake		Silt		Conifer wood		Submerged weed	**-**
Upland Loch Reservoir		Earth	**x**	Peat bog		Reeds/sedges	**-**
Running Water		Rock cliffs		Arable crop	**x**	Tall grass	**-**
Marsh/bog		Earth Cliffs		Salt marsh		Short grass	**-**
Canal		Canalized		Urban/industrial			
		Poached		Park/garden			
		Reinforced		Heath		**Disturbance:**	
				Fen		n/a	
				Cattle/grazing			
				Bank fenced			

Bank Profile (tick)		**Width (tick)**		**Depth (tick)**		**Current (tick)**	
Flat <10°		1m		<0.5m		Rapid	
Shallow <45°		1-2m		0.5-1m	**x**	Fast	**x**
Steep >45°	**x**	2-5m	x	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 **and** emergent vegetation providing food & cover	**1**	***DAFORN**
(b) A good variety of food plants including favoured plants and winter food sources	**1**	**D**ominant 81-100%
(c) Suitable refuge areas above extremes in water levels	**0**	**A**bundant 61-80%
(d) Soft, earth banks suitable for burrowing (30 to 60 degree slope)	**1**	**F**requent 41-60%
(e) Water permanently present (does not dry up)	**1**	**O**ccasional 21-40%
(f) Open water for swimming	**1**	**R**are 1-20%
(g) Ledge or berm present at or close to water level	**1**	**N**one 0%
(h) Lack of damage or erosion to the banks	**0**	
(i) Slow flowing current or static water	**0**	
(j) Non-native invasive plant species absent (Himalayan Balsam, Japanese knotweed)	**1**	
HABITAT ASSESSMENT SCOT (Total score of features present)	**7**	

Comments;

Date	04.10.2021
Ditch Section	1c

Habitat Information

Habitat		**Shore/bank**		**Bordering land use**		**Vegetation (DAFORN*)**	
Ditch	x	Boulders		Upland grass		Bankside trees	**D**
Dyke		Sand		Permanent/temporary grass		Bushes (hedges)	**A**
Gravel Pit		Gravel		Mixed broadleaf woodland	x	Herbs	**D**
Lowland Lake		Silt		Conifer wood		Submerged weed	**-**
Upland Loch Reservoir		Earth	x	Peat bog		Reeds/sedges	**-**
Running Water		Rock cliffs		Arable crop	x	Tall grass	**R**
Marsh/bog		Earth Cliffs		Salt marsh		Short grass	**-**
Canal		Canalized		Urban/industrial			
		Poached		Park/garden			
		Reinforced		Heath		**Disturbance:**	
				Fen		n/a	
				Cattle/grazing			
				Bank fenced			

Bank Profile (tick)		**Width (tick)**		**Depth (tick)**		**Current (tick)**	
Flat <10°		1m		<0.5m	x	Rapid	
Shallow <45°	x	1-2m		0.5-1m		Fast	x
Steep >45°		2-5m	x	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 **and** emergent vegetation providing food & cover	**0**	***DAFORN**
(b) A good variety of food plants including favoured plants and winter food sources	**1**	**D**ominant 81-100%
(c) Suitable refuge areas above extremes in water levels	**0**	**A**bundant 61-80%
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(e) Water permanently present (does not dry up)	**1**	**O**ccasional 21-40%
(f) Open water for swimming	**1**	**R**are 1-20%
(g) Ledge or berm present at or close to water level	**1**	**N**one 0%
(h) Lack of damage or erosion to the banks	**0**	
(i) Slow flowing current or static water	**0**	
(j) Non-native invasive plant species absent (Himalayan Balsam, Japanese knotweed)	**1**	
HABITAT ASSESSMENT SCOT (Total score of features present)	**6**	

Comments; Limited access.

Date	04.10.2021
Ditch Section	1d

Habitat Information

Habitat		**Shore/bank**		**Bordering land use**		**Vegetation (DAFORN*)**	
Ditch	x	Boulders		Upland grass		Bankside trees	-
Dyke		Sand		Permanent/temporary grass		Bushes (hedges)	**D**
Gravel Pit		Gravel		Mixed broadleaf woodland		Herbs	-
Lowland Lake		Silt		Conifer wood		Submerged weed	-
Upland Loch Reservoir		Earth	x	Peat bog		Reeds/sedges	-
Running Water		Rock cliffs		Arable crop	x	Tall grass	**A**
Marsh/bog		Earth Cliffs		Salt marsh		Short grass	**A**
Canal		Canalized		Urban/industrial			
		Poached		Park/garden			
		Reinforced		Heath		**Disturbance:**	
				Fen		Mown field banks	
				Cattle/grazing			
				Bank fenced			

Bank Profile (tick)		**Width (tick)**		**Depth (tick)**		**Current (tick)**	
Flat <10°		1m		<0.5m	x	Rapid	
Shallow <45°		1-2m	x	0.5-1m		Fast	
Steep >45°	x	2-5m		1-2m		Slow	
Vertical/undercut		5-10m		>2m		Sluggish	x
		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 **and** emergent vegetation providing food & cover	**1**	***DAFORN**
(b) A good variety of food plants including favoured plants and winter food sources	**1**	**D**ominant 81-100%
(c) Suitable refuge areas above extremes in water levels	**1**	**A**bundant 61-80%
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(g) Ledge or berm present at or close to water level	**0**	**N**one 0%
(h) Lack of damage or erosion to the banks	**1**	
(i) Slow flowing current or static water	**1**	
(j) Non-native invasive plant species absent (Himalayan Balsam, Japanese knotweed)	**1**	
HABITAT ASSESSMENT SCOT (Total score of features present)	**9**	

Comments;

ANNEX 2

PHOTOGRAPHS

Photographs

Photograph 1: Hollow under a tree with suitability to be used as an otter resting site

Photograph 2: Upper stretch of the Afon Bradley

Photograph 3: Bankside habitat of the Afon Bradley

Photograph 4: Photograph showing the Afon Bradley

Photograph 5: Culverted section of the Afon Bradley under Afon Bradley Farm track