

Flaxlands Solar Farm

Otter and Water Vole Survey Report

Ampyr Solar Europe

Project number: 60727989

October 2024

Prepared for:

Ampyr Solar Europe

Prepared by:

AECOM Limited
Floor 5
5 Callaghan Square
Cardiff
CF10 5BT

aecom.com

© 2024 AECOM Limited. All Rights Reserved.

This document has been prepared by AECOM Limited ("AECOM") for sole use of our client in accordance with generally accepted consultancy principles, the budget for fees and terms of reference agreed between AECOM and the client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

Table of Contents

1.	Executive Summary	1
2.	Introduction	2
2.1	Location and Description	2
2.2	Survey Area	2
2.3	The Proposed Development	2
2.4	Objectives	2
3.	Legislation and Policy	4
3.1	Otter	4
3.2	Water Vole	4
3.3	Good Practice	5
3.4	Quality Assurance	5
4.	Methodology	6
4.1	Desk-Based Study	6
4.2	Field Surveys	6
4.3	Limitations	7
5.	Results	9
5.1	Desk-Based Study	9
5.2	Field Survey	9
5.3	Site Assessment	10
6.	Impact Assessment	16
6.1	Otter	16
6.2	Water Vole	16
7.	Recommendations for Further Surveys, Mitigation and Enhancement	17
7.1	Further Surveys	17
7.2	Mitigation	17
7.3	Enhancements	17
	Appendix A Figures	18
	Appendix B Photographs	20

Figures

Figure 1. Otter and Water Vole Survey Plan	18
--	----

Tables

Table 5.1: Waterbody/Watercourse Description and Water Vole Field Signs and Habitat Assessment	11
--	----

1. Executive Summary

AECOM Limited (hereafter referred to as 'AECOM') have been instructed by Ampyr Solar Europe to carry out an otter (*Lutra lutra*) and water vole (*Arvicola amphibius*) survey to support the proposed installation of a solar photovoltaic array and Battery Energy Storage System (BESS) (hereafter referred to as the 'Proposed Development') within land north of Royal Wootton Bassett, Wiltshire (hereafter referred to as the 'Ecology Assessment Boundary'). This boundary is shown on Figure 1, Appendix A.

The purpose of the surveys and this report is to:

- determine habitat suitability of watercourses and waterbodies for otter and water vole;
- identify whether otter and/ or water vole are present within watercourse and waterbodies within or directly adjacent to the footprint of the Proposed Development (hereafter referred to as the 'Survey Area'); and,
- assess any ecological constraints associated with these riparian mammal populations in connection with the Proposed Development.

This report presents the methodology, results and recommendations of the otter and water vole survey undertaken by AECOM on 03 July and 24 September 2024.

No signs of otter were recorded within the Survey Area. Due to the lack of field signs observed and the limited suitability of the habitat, otter are concluded to be likely absent from the Ecology Assessment Boundary. There will be no potential impacts on otter as a result of the construction or operation of the Proposed Development and no mitigation is required for the species.

A single dropping with characteristics of water vole dropping was identified at Pond 2 (P2) along with a pile of water vole feeding remains indicative of water vole feeding. The dropping was not subject to DNA analysis, identification was determined using professional judgement. A burrow with characteristics of water vole was recorded within Watercourse 2 directly adjacent to P2. Water voles are considered present within watercourses and waterbodies in the western edge of the Survey Area.

Avoidance of impacts to water vole has been designed into the Proposed Development due to the inclusion of a 10 m no-build buffer from any watercourse or waterbody, a 5 m buffer from any hedgerows and a 30 m buffer from all ancient woodland. Therefore, the potential to kill or injure water vole or directly damage or destroy their habitat is avoided by design.

During construction, without mitigation there is potential for any significant uncontrolled pollution incidents to reach P2 or Watercourse 2 (W2). This could include uncontrolled runoff of silt, oil, fuel or chemicals; however, this is unlikely due to the nature of the Proposed Development and distance from proposed access roads and perimeter tracks.

Pollution prevention measures should be adopted in accordance with existing archived Pollution Prevention Guidelines (PPGs)¹ where they remain relevant, and in respect of Guidelines for Pollution Prevention (GPPs)² where applicable.

There are no opportunities for enhancements proportionate to the Proposed Development due to the relative isolation from watercourses or waterbodies with suitability and recent records of water voles.

Should works to facilitate the Proposed Development be delayed further than 18 months³ after the assessment (i.e. works begin after January 2026), an update survey will be required.

This executive summary is a summary of the report only, refer to the full report for further details.

¹ Environment Agency. Pollution Prevention Advice and Guidance (PPG) Available online: <https://webarchive.nationalarchives.gov.uk/ukgwa/20140328090931/http://www.environment-agency.gov.uk/business/topics/pollution/39083.aspx> [Accessed 21 August 2024]

² NetRegs. Guidance for Pollution Prevention (GPP) documents Available online: <https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/> [Accessed 21 August 2024]

³ CIEEM (2019) – Advice Note on the Lifespan of Ecological Reports and Surveys

2. Introduction

AECOM Limited ('AECOM') was commissioned by Ampyr Solar Europe to undertake an otter (*Lutra lutra*) and water vole (*Arvicola amphibius*) survey to support the proposed installation of a solar photovoltaic array and Battery Energy Storage System (BESS) (hereafter referred to as 'the Proposed Development') within land north of Royal Wootton Bassett, Wiltshire (hereafter referred to as the 'Ecology Assessment Boundary') as shown on Figure 1 in Appendix A.

The need for further assessment for otter and water vole was identified by an initial Preliminary Ecological Appraisal Report (PEAR) produced by AECOM in 2024⁴. This identified nine ponds within the Ecology Assessment Boundary and a further two directly adjacent to it, as well as running water and drainage ditches throughout the field systems. Three recent records of otter were returned, and two records of water vole were identified within 2 km of the Ecology Assessment Boundary during the PEAR desk study.

This report presents the methodology and results of otter and water vole surveys undertaken within the Ecology Assessment Boundary by AECOM in July and September 2024. This report provides an assessment of the potential implications of the Proposed Development on otter and water vole and recommendations regarding further mitigation and/or compensation measures required.

2.1 Location and Description

The Ecology Assessment Boundary is located approximately 1.7 km north of the town of Royal Wootton Bassett and approximately 250 m north of the M4 within Wiltshire County Council centred at Ordnance Survey national grid reference SU 06910 85466. The Ecology Assessment Boundary is comprised of two land parcels, a western and an eastern land parcel, joined via Flaxlands Lane. Both parcels consist of multiple agricultural fields bounded by hedgerows including those with mature broadleaved trees and existing farm tracks across the Ecology Assessment Boundary. Wet ditches, assumed to be associated with the drainage of fields, are present in several locations, as are standing bodies of water.

The Ecology Assessment Boundary is surrounded by agricultural grassland fields which are common throughout the immediate landscape. There are blocks of broadleaved woodland on the boundaries of the Ecology Assessment Boundary in the east and west. The urban developed area of Royal Wootton Bassett lies to the south which is separated from the Ecology Assessment Boundary by the M4.

2.2 Survey Area

The area surveyed includes all watercourses (1-16) and waterbodies (P1-11) within the Ecology Assessment Boundary and directly adjacent to it (hereafter referred to as the 'Survey Area'), as shown on Figure 1, in Appendix A.

2.3 The Proposed Development

The Proposed Development includes the installation of a solar farm with a capacity up to 49.9 MW and 49.9 MW BESS within the Ecology Assessment Boundary. Solar photovoltaic arrays will be situated in both western and eastern land parcels. The most recent concept design (October 2024) includes the BESS located in the north. It is understood that the Proposed Development will require clearance of vegetation, access tracks for plant/machinery/vehicles to access working areas and widening of gaps within hedgerows for access.

In relation to the watercourses and waterbodies targeted for the otter and water vole survey (Figure 1, Appendix A), a 10 m buffer zone has been agreed for all watercourses and waterbodies within the Ecology Assessment Boundary.

2.4 Objectives

The objectives of this assessment are to:

- carry out a survey to identify the presence or likely absence of otter and water vole within the Survey Area;
- evaluate the data collected during the survey and determine the value of the Ecology Assessment Boundary for otter and water vole;

⁴ AECOM (2024) Flaxlands Solar Farm. Preliminary Ecological Appraisal Report. June 2024. V2.

- identify potential adverse impacts that may constrain or influence the implementation of the Proposed Development; and,
- provide recommendations for avoidance, mitigation and/or compensation for the potential impacts to otter and water vole associated with the Proposed Development and provide recommendations for enhancements.

3. Legislation and Policy

3.1 Otter

The otter receives full protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended)⁵ and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 as amended by the 2019 regulations. This legislation, when taken together, results in a level of protection that prohibits the intentional, deliberate or reckless:

- capture, injury or killing of an otter;
- disturbance to an otter;
- damage, destruction or obstruction of any place used by otters for the purposes of breeding, sheltering or protection (this is an offence whether the act is deliberate or not); and,
- selling and/or advertising for sale an otter or any part thereof.

Disturbance is defined as that which is likely to impair their ability to survive, breed or reproduce, rear or nurture young, hibernate, migrate or significantly affect the local distribution or abundance of the species.

The otter is a Species of Principal Importance for Nature Conservation in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006⁶. Section 40 of the NERC Act requires that local and regional authorities have regard to the conservation of biodiversity in England when carrying out their normal function.

Any operation that may impact otter or their places of rest or shelter may require a European Protected Species Mitigation Licence (EPSML). Although the law provides strict protection to otters, it also allows this protection to be set aside (derogated) under Regulation 53 of the Habitats Regulations through the issuing of EPSMLs for the purpose of preserving public health/safety or other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment. However, in accordance with the requirements of the Habitats Regulations an EPSML can only be issued where:

- there is no satisfactory alternative; and,
- the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

In England, EPSML applications are currently determined by Natural England and take up to five working days to acknowledge receipt and up to 40 working days to determine, depending on the type of licence being sought. Natural England will normally only accept applications for schemes where planning consent has been granted and all ecology relevant conditions have been discharged.

3.2 Water Vole

Water vole receive full protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended)⁵. It is, therefore, illegal to intentionally or recklessly:

- capture, kill, or injure water voles;
- damage, destroy, or block access to their places of shelter or protection; and,
- possess, sell, control or transport live or dead water voles or parts of them.

The water vole is a Species of Principal Importance for Nature Conservation in England under Section 41 of the NERC Act 2006⁶. Section 40 of the NERC Act requires that local and regional authorities have regard to the conservation of biodiversity in England when carrying out their normal function.

A licence is required from Natural England to intentionally damage or destroy burrows or displace water voles from their burrows for lawful development.

⁵ UK Government (1981) Wildlife and Countryside Act 1981. Available online: <https://www.legislation.gov.uk/ukpga/1981/69> [Accessed 21 August 2024]

⁶ UK Government (2006) Natural Environment and Rural Communities Act 2006. Available online: <https://www.legislation.gov.uk/ukpga/2006/16/contents> [Accessed 21 August 2024]

3.3 Good Practice

Current guidance⁷ stresses the need for developers to maintain protected species within their current range at a favourable status. To achieve this, developers are often required to include mitigation strategies with their applications that describe how the project will identify and remediate potential adverse effects. The hierarchy of mitigation in descending order of preference is to avoid, mitigate and compensate⁷.

3.4 Quality Assurance

This survey and subsequent report were undertaken in line with AECOM's Integrated Management System (IMS). Our IMS places great emphasis on professionalism, technical excellence, quality, environmental and Health and Safety management. All staff members are committed to establishing and maintaining our certification to the international standards BS EN ISO 9001:2015 and 14001:2015 and BS ISO 45001:2018.

All AECOM ecologists who worked on this project follow the code of professional conduct produced by the Chartered Institute of Ecology and Environmental Management (CIEEM)⁸ when undertaking ecological work and are members of CIEEM at the appropriate level.

⁷ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.

⁸ CIEEM (2022) Code of Professional Conduct. Chartered Institute of Ecology and Environmental Management, Hampshire.

4. Methodology

4.1 Desk-Based Study

The PEAR¹ prepared for the Ecology Assessment Boundary in 2024 comprised a desk-study undertaken in May 2024 to review habitat and protected species records since 2014. The following resources were consulted in relation to otter and water vole:

- the online Multi Agency Geographic Information for the Countryside (MAGIC) database to identify statutory designated sites within 2 km of the Ecology Assessment Boundary and evidence of granted EPSMLs within 2 km of the Site boundary; and,
- the Wiltshire & Swindon Biological Records Centre (WSBRC) to obtain records of protected and priority species, locally designated sites and habitats within 2 km of the Ecology Assessment Boundary.

4.2 Field Surveys

The Survey Area comprised all accessible watercourses and waterbodies within and directly adjacent to the Ecology Assessment Boundary. A survey was undertaken to determine the habitat suitability and the presence or likely absence of otter and water vole. The survey was completed on 03 July and 24 September 2024. The surveyed watercourses and waterbodies along with survey results are mapped on Figure 1, Appendix A and photographs taken during the survey are provided in Appendix B.

4.2.1 Otter

Searches for signs indicative of otter activity were undertaken paying due regard to guidance provided in Monitoring the Otter⁹. The survey methodology involved a systematic search of the Survey Area and recording all evidence of otter activity, including:

- Holt/resting place entrances – characteristic holes in river banks or under tree roots at river edges.
- Couches – typically an above-ground nest-like structure used as a resting place.
- Footprint/tracks – five toes which arch around the front of a large pad. In soft ground claw marks and webs between toes may show. Often seen in sand or soft mud deposits along rivers and under river bridges.
- Otter trails through vegetation – otters use established routes within their territory to access rivers, so the paths are usually worn leading down the banks to the river and may have a 'slide' at the end of well-worn mud as they slide into the water.
- Spraints – found in prominent locations adjacent to or along a river, for example on tree stumps, large rocks and ledges under bridges. Sometimes otters may build a mound of soft mud or sand along a river to spraint on top of. Spraints often contain clearly visible fish bones and scales, with other small bones, fur, feather and insect fragments are sometimes present. Fresh spraint is usually black, tarry and sticky. It has a distinctive sweet-musky odour.
- Anal jelly – a jelly-like secretion that smells strongly of otter and can vary in colour from pale brown to greenish and amber.
- Other signs – such as live sightings of individuals or remains associated with roadkill.

A habitat suitability assessment was undertaken paying due regard to the above methodology as well as considerations regarding their food supply, naturalness of aquatic habitats, water flow rate and water quality. Significant man-made changes to watercourses are known to reduce their biodiversity, leading to a reduced food supply and less favourable conditions for otters. Similarly, where water quality is deteriorated this leads to a reduction in food supply and therefore reduces the utilisation of a watercourse by otter. Notes were also made regarding the level of anthropogenic disturbance to the watercourses and connectivity to the wider landscape.

⁹ Chanin, P (2003) Monitoring the Otter *Lutra lutra*. Conserving Nature 2000 Rivers Monitoring Series No 10. English Nature, Peterborough. Available online: <https://publications.naturalengland.org.uk/publication/78009> [Accessed 21 August 2024]

4.2.2 Water Vole

The water vole survey methodology paid due regard to Water Vole Field Signs and Habitat Assessment¹⁰ and the Water Vole Mitigation Handbook¹¹. This consisted of assessing the habitat suitability of each watercourse/ditch within the Survey Area and identifying the presence, extent and distribution of water voles through searches of the riverbank for field signs indicating past or present activity (such as burrows), including:

- Droppings – these are 8 to 12 mm in length and 4 to 5 mm wide. They have a smooth ‘tic tac’ shape, varying colour from green to black, and are odourless with a putty-like texture.
- Latrines – found throughout a water vole territory, often comprising of a pile of flattened droppings, with fresh droppings on top. Latrines are used to mark territory boundaries or favoured spots close to burrows.
- Feeding stations – comprise a pile of chewed feeding remains, often made up by varying lengths of vegetation up to 10 cm long with tooth marks from the two large incisors.
- Burrows – typically wider than they are high, water vole burrows usually have a diameter of 4 to 8 cm and are located along the water’s edge.
- Lawns – around the entrance to burrows there is often an area of grazed vegetation. Lawns at burrow entrances are most often produced when a female is nursing young.
- Nests – large balls of shredded material, often woven into the vases of rushes and reeds. Water vole normally produce nests in areas where the water table is too high for burrows – such as in wetlands.
- Footprints – water vole fore footprints show four toes in a ‘star’ arrangement, as is typical of rodent species, while the hind foot shows five toes. Water vole footprints generally range from 26 to 34 mm in length.
- Runways – these are low tunnels through vegetation often adjacent to the waters edge.

Water vole habitat suitability was determined as per the categories defined in Water Vole Field Signs and Habitat Assessment¹⁰: Optimal; Good; Suitable but Poor; or, Negligible. These categories are assigned based upon the set conditions associated with dry areas for burrows or nests (the bank profile, the bank substrate, and the variation in water level), the availability of herbaceous vegetation, and the presence of permanent water (or water for 2-3 summer months each year).

4.3 Limitations

The aim of a desk study is to help characterise the baseline context of a proposed development and provide valuable background information that would not be captured by a survey alone. Information obtained from a desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular species does not necessarily mean that the species do not occur in the study area. Likewise, the presence of records for particular species does not automatically mean that these still occur within the area of interest or are relevant in the context of the proposed development.

Pond P4 was inaccessible due to the presence of dense bramble (*Rubus fruticosus*) scrub and lack of access obtained via third party land. A habitat assessment was made with the limited view of the pond, however, a thorough search for field signs could not be undertaken at P4. Access to the full bank and water’s edge could not be safely achieved at Ponds P3-P11 and W12 and therefore a full survey for field signs was not undertaken. Although this limits the ability to confirm presence or likely absence of otter and water vole within these ponds and watercourse, it is not deemed a significant limitation to determining presence within the Ecology Assessment Boundary due to the supporting habitat suitability assessments which concluded that all but P7 either had Suitable but Poor, or Negligible suitability for water vole and no suitability for otter due to lack of food source.

The watercourse that flows directly west of the Ecology Assessment Boundary which W2 flows into was not assessed fully due to access constraints. This watercourse is not within the Ecology Assessment Boundary therefore no direct impacts are anticipated. Due to a proposed 25 m buffer zone in which no works will take place due to the presence of ancient woodland, this watercourse will not be subject to impacts resulting from the

¹⁰ Dean, M (2021) Water Vole Field Signs and Habitat Assessment: A Practical Guide to Water Vole Surveys. Pelagic, Exeter.

¹¹ Dean, M et al. (2016) The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

Proposed Development. The woodland beyond the watercourse was also not assessed for its suitability as a resting place for otter.

It should be noted that ecosystems are dynamic and constantly changing, and therefore species may move or new species may be recorded in subsequent years. For this reason, and in accordance with current guidance, the existing survey data has a 'shelf-life', and should only be relied on for a period, of 18 months¹² from the date of survey. After this date, update surveys are likely to be required and advice sought from an appropriately qualified ecologist to determine survey scope and methods.

¹² CIEEM (2019) Advice Note - *on the lifespan of ecological reports & surveys*. Accessed online at: [Advice-Note.pdf \(cieem.net\)](#)

5. Results

5.1 Desk-Based Study

5.1.1 Otter

There are three recent desk study records of otter within 2 km of the Ecology Assessment Boundary. There are two records within 600 m south of the Ecology Assessment Boundary, however these are separated by the M4. The final record is connected to the Ecology Assessment Boundary by grassland and woodland; located approximately 700 m northwest. None of these records are associated with watercourses that have hydrological connectivity to the Ecology Assessment Boundary.

5.1.2 Water Vole

There are two recent records of water vole within 2 km of the Ecology Assessment Boundary associated with waterbodies associated with the Flaxlands Fisheries. The closest record is located approximately 130 m south and the other approximately 390 m south. Neither of these records are associated with watercourses that have hydrological connectivity to the Ecology Assessment Boundary.

5.2 Field Survey

Table 5.1 below summarises all watercourses and waterbodies assessed during the survey as well as the results of the water vole field signs and habitat suitability assessment.

5.2.1 Otter

5.2.1.1 Field Signs

No signs of otter were recorded within the Survey Area.

5.2.1.2 Habitat Suitability

None of the ponds or watercourses within the Survey Area are suitable to provide significant feeding resource for otter. No suitable otter hunting habitat was recorded in the Survey Area. The ditches present across the Ecology Assessment Boundary are man-made and heavily managed as drainage ditches. The flow rate within these watercourses are slow and shallow water within each watercourse are unlikely to support fish populations.

The watercourse directly adjacent to the Ecology Assessment Boundary in the west may act as a potential commuting corridor for exploratory otter, and the woodland beyond a potential place for the species to rest. A full survey of these habitats outside of the Ecology Assessment Boundary were not undertaken and as no direct impacts are anticipated to these habitats they are not considered further.

No habitats within the Survey Area had suitability for otter breeding or resting sites.

5.2.2 Water Vole

5.2.2.1 Field Signs

A single dropping with characteristics of water vole (see Photograph 1, Appendix B) was identified during the September survey observed within vegetation at P2 along with a pile of feeding remains which due to their proximity to the dropping are likely water vole. The dropping was not subject to DNA analysis, identification was determined using professional judgement.

A small mammal burrow with characteristics of water vole, being the correct shape and size, was recorded during the July survey along W2 which drains into P2 (See Photograph 2, Appendix B). The burrow was not observed during the September survey due to the presence of debris caused by recent flailing of a nearby hedgerow impairing the surveyors view of W2.

Water voles are considered present within W2 and P2 in the western edge of the Ecology Assessment Boundary.

5.2.2.2 Habitat Suitability

W2, where the burrow was observed, provides suitable burrowing and foraging habitat for water vole and as such it was categorised as Good.

P2 was assessed as Suitable but Poor due to the shallow nature of its banks being unsuitable for burrowing and the potential temporary nature of its water due to the inflow from W2 only during high water levels.

P7 offers Good suitability habitat due to the bank substrate, profile, herbaceous vegetation and presence of a permanent body of water with cover from predation. There is negligible connectivity between P7 and P2/W2.

All other watercourse and waterbodies were assessed as either being Suitable but Poor or Negligible.

5.3 Site Assessment

5.3.1 Otter

The habitat within the Ecology Assessment Boundary has negligible suitability for otter, though the stream and ditches do provide the structure of potential commuting routes, there is no significant foraging resource or habitat suitable for holt construction that would warrant frequent use of these by an otter. The Ecology Assessment Boundary may be visited infrequently and opportunistically by dispersing otter for example but is unlikely to be important to the survival of any local otter populations. The suitability of the Ecology Assessment Boundary is considered negligible, no obvious features likely to be used, but a small element of uncertainty remains to account for non-standard behaviour.

Otter are considered likely absent from the Ecology Assessment Boundary and therefore do not pose a constraint to the Proposed Development.

5.3.2 Water Vole

Water vole are considered present at P2 and W2. P2 has been valued Suitable but Poor despite having recorded water vole field signs at this waterbody, due to its connectivity to W2 with Good suitability for water vole. The other waterbodies within the Ecology Assessment Boundary that have been assigned the same habitat suitability score are not considered likely to support water voles due to their distance from recent records of water vole and distance from P2.

The Ecology Assessment Boundary as a whole has suboptimal suitability in supporting a population of water vole. The network of wet ditches, watercourses and ponds have limited connectivity to each other and are isolated from larger waterbodies or networks of watercourses that may host a water vole population. The watercourse and waterbodies are not hydrologically connected to any recent records of water vole as returned in the desk study.

Table 5.1: Waterbody/Watercourse Description and Water Vole Field Signs and Habitat Assessment

Watercourse/ Water body Reference*	Location	Description and Survey Results	Bank Profile	Bank Substrate	Variation in Water Level	Herbaceous Vegetation	Water	Water Vole Habitat Suitability Assessment
W1	In the west of the Ecology Assessment Boundary	Channel of rushes and vegetation indicative of wet environments. Water mint (<i>Mentha aquatica</i>) is present within channel. W1 flows south of P2 during periods of high water levels. Small mammal feeding remains (not considered likely water vole) (see Photograph 3, Appendix B) observed as well as small mammal droppings, not indicative of water voles due to their size (see Photograph 4, Appendix B). Sheep grazing pasture directly adjacent.	Flat, <10°	Earth	Considerable variation in water level	90% of channel is vegetated with tall tussocky grasses and dense stands of rushes present	Routinely wet area adjacent to P2 however appears to dry during summer months	Suitable but Poor
W2	In the west of the Ecology Assessment Boundary	Watercourse appears to flow consistently throughout the year and during periods of high water levels, drains into P2 via a plastic pipe. Recent management reduced in-channel vegetation considerably and reduced the suitability for water vole. Burrow with characteristics of water vole observed during July survey but not during September visit (See Photograph 2, Appendix B). Sheep grazing pasture directly adjacent.	Shallow <45°	Earth	No noticeable variation during summer	Ditch running parallel to dense hedge/ woodland area, marginal vegetation present within western portion of ditch	Permanent running water	Good
W3	In the west of the Ecology Assessment Boundary	Directly adjacent to hedgerow which provides shading to one bank of the watercourse. Within close proximity to P1 and further connectivity to nearby watercourse which flows west of the Ecology Assessment Boundary. Seasonally dries with limited marginal vegetation present. Sheep grazing pasture directly adjacent.	Shallow <45°	Earth	Considerable variation in water level	In channel vegetation limited, with encroachment of grass from adjacent agricultural field and limited rush vegetation	Routinely wet area adjacent to P1 however appears to dry during summer months	Negligible
W4	In the southwest of the Ecology Assessment Boundary	Appears to flow all year round indicated by aquatic plants including foals water-cress (<i>Helosciadium nodiflorum</i>) and runs directly beneath a hedgerow that separates two grassland fields. Sheep grazing pasture directly adjacent.	Steep >45°	Earth	No noticeable variation during summer	Heavily shaded from hedgerow, with suitable in-channel vegetation present	Permanent running water	Suitable but Poor
W5	In the southwest of the Ecology Assessment Boundary	Directly adjacent to hedgerow which provides shading to one bank of the watercourse. Ditch appeared to be damp but filled with willowherb species (<i>Epilobium</i> sp.) and other terrestrial vegetation during time of survey. Sheep grazing pasture directly adjacent.	Steep >45°	Earth	Considerable variation in water level	Dominated by ruderal vegetation including common nettle (<i>Urtica dioica</i>) and willowherb	Routinely wet ditch, appears to dry during summer months	Negligible

Watercourse/ Water body Reference*	Location	Description and Survey Results	Bank Profile	Bank Substrate	Variation in Water Level	Herbaceous Vegetation	Water	Water Vole Habitat Suitability Assessment
W6	In the southwest of the Ecology Assessment Boundary	Directly adjacent to hedgerow which provides shading to one bank of the watercourse. Heavily shaded and likely seasonally dry. Recent flailing of the hedgerows observed and barbed wire fence present. Sheep grazing pasture directly adjacent.	Shallow <45°	Earth	Considerable variation in water level	Ruderal vegetation including common nettle and willowherb species dominated	Routinely wet ditch, appears to dry during summer months	Negligible
W7	In the west of the Ecology Assessment Boundary	Hedgerow ditch that is heavily shaded and bounds two sheep grazed fields. Drainage ditch present appears to be seasonally dry and dry during both surveys. Sheep grazing pasture directly adjacent.	Shallow <45°	Earth	Considerable variation in water level	Scrub encroachment from hedge with limited in-channel vegetation present.	Dry at time of survey. Seasonally wet	Negligible
W8	In the west of the Ecology Assessment Boundary	Directly adjacent to hedgerow which provides shading to one bank of the watercourse. Hedgerow present on southern side of ditch.	Shallow <45°	Earth	Considerable variation in water level	No in-channel vegetation and no suitable marginal vegetation present	Sluggish flow of water. Likely to dry occasionally.	Negligible
W9	In the west of the Ecology Assessment Boundary	Directly adjacent to hedgerow which causes shading to one bank of the watercourse. Hedgerow present on southern side of ditch. Visible discharge into watercourse from small diameter drainage pipes observed. Sheep grazing pasture directly adjacent.	Shallow <45°	Earth	Considerable variation in water level	No in-channel vegetation and no suitable marginal vegetation present	Sluggish flow of water. Likely to dry occasionally.	Negligible
W10	In the northwest of the Ecology Assessment Boundary	Directly adjacent to hedgerow which provides shading to one bank of the watercourse. Sheep grazing pasture directly adjacent.	Steep >45°	Earth	Considerable variation in water level	No in-channel vegetation and no suitable marginal vegetation present	Sluggish flow of water. Likely to dry occasionally.	Negligible
W11	In the northwest of the Ecology Assessment Boundary	Directly adjacent to hedgerow which provides shading to one bank of the watercourse. Sheep grazing pasture directly adjacent.	Steep >45°	Earth	Considerable variation in water level	No in-channel vegetation and no suitable marginal vegetation present	Sluggish flow of water. Likely to dry occasionally.	Negligible
W12	In the north of the Ecology Assessment Boundary	A running watercourse present at the north of the Ecology Assessment Boundary in the western land parcel. Watercourse not fully assessed as directly below dense hedgerow. Watercourse flows east to west and is present within woodland habitat. Sheep grazing pasture directly adjacent.	Steep >45°	Earth	Some variation of water level, unlikely overtopped regularly	No in-channel vegetation and no suitable marginal vegetation present	Permanent water along hedgerow, the area within the woodland is considered likely to seasonally dry	Not fully assessed
W13	In the east of the Ecology	Ditch at boundary of woodland which borders the Ecology Assessment Boundary and field shaded by	Flat, <10°	Earth	Considerable variation in water level	75-80% shaded by woodland and dense scrub.	Routinely wet ditch, appears to dry seasonally	Negligible

Watercourse/ Water body Reference*	Location	Description and Survey Results	Bank Profile	Bank Substrate	Variation in Water Level	Herbaceous Vegetation	Water	Water Vole Habitat Suitability Assessment
	Assessment Boundary	trees with limited suitable herbaceous vegetation and shallow banks.				Rush species present at southern end of ditch		
W14	In the north of the Ecology Assessment Boundary	Ditch present at the northern Ecology Assessment Boundary, directly adjacent to a hedgerow and a hardstanding road. Small mammal paths observed as well as feeding remains not characteristic of water vole.	Steep >45°	Earth	Considerable variation in water level	30% in-channel vegetation, with over 50% of the ditch shaded by hedgerow	Sluggish flow of water. Likely to dry occasionally.	Suitable but Poor
W15	In the southeast of the Ecology Assessment Boundary	Observed dry during the July survey however, running during the September survey due to recent heavy rain. No in-channel vegetation and bankside vegetation dominated by scrub. Culverted beneath field access gate. Sheep grazing pasture directly adjacent.	Shallow <45°	Earth	Considerable variation in water level	90% shaded from large trees and dense scrub. No in-channel vegetation and no suitable marginal vegetation present	Routinely wet ditch, appears to dry seasonally	Negligible
W16	In the southeast of the Ecology Assessment Boundary	Observed dry during the July survey however, running during the September survey due to recent heavy rain. No in-channel vegetation and bankside vegetation was dominated by perennial rye-grass (<i>Lolium perenne</i>). Some soft rush (<i>Juncus effusus</i>) and willowherb species present. Sheep grazing pasture directly adjacent.	Shallow <45°	Earth	Considerable variation in water level	90% shaded from large trees and dense scrub. No in-channel vegetation and no suitable marginal vegetation present	Routinely wet ditch, appears to dry seasonally	Negligible
P1	In the southwest of the Ecology Assessment Boundary	Visible evidence of sheep poaching of waterbody. Bulrush (<i>Typha latifolia</i>), hard rush (<i>Juncus inflexus</i>), soft rush (<i>J. effusus</i>) and one other undetermined rush species (<i>Juncus</i> sp.) was identified within the marginal vegetation as well as floating and submerged macrophytes within, including broad-leaved pondweed (<i>Potamogeton natans</i>) and a stonewort species (<i>Chara</i> sp.).	Shallow <45°	Earth	No noticeable variation during summer, unlikely overtopped regularly	80-90% vegetated banks, with no shading from nearby trees. Macrophytes and marginal vegetation present	Permanent standing water	Suitable but Poor
P2	In the west of the Ecology Assessment Boundary	Pond within grassland field in close proximity to Ecology Assessment Boundary. Filled by overflow from W2 fed by plastic pipe. Pond appears to drain into W1 when water levels are high. A single dropping with characteristics of water vole (see Photograph 1) was observed along the northern bank with some feeding remains, characteristic of water vole. The dropping was not subject to DNA analysis, identification was determined using professional judgement.	Flat, <10°	Earth	Considerable variation in water level	60-70% density of short grasses and low density of rushes, with no shading by trees	Permanent standing water	Suitable but Poor

Watercourse/ Water body Reference*	Location	Description and Survey Results	Bank Profile	Bank Substrate	Variation in Water Level	Herbaceous Vegetation	Water	Water Vole Habitat Suitability Assessment
P3	In the north of the Ecology Assessment Boundary	Stagnant area of standing water associated with adjacent flowing stream. It is considered likely that this waterbody will dry up in the summer.	Flat, <10°	Earth	Considerable variation in water level	50% vegetated banks with grasses and woodland plant species. 50% bare earth with bankside vegetation visible. Within woodland, completely shaded by trees	Stagnant water observed during survey	Negligible
P4	In the centre of the Ecology Assessment Boundary	This pond is surrounded by mature willow (<i>Salix</i> sp.), hawthorn (<i>Crataegus monogyna</i>) and pedunculate oak (<i>Quercus robur</i>) with some debris present in the form of leaf litter within and at the pond edge. Minimal macrophyte cover was recorded. This pond is directly adjacent to a metal shipping container.	Shallow <45°	Earth	No noticeable variation during summer	Bankside is entirely vegetated, the pond is adjacent to a hedgerow and surrounded by dense scrub and overhanging trees	Stagnant water observed during survey	Negligible
P5	In the centre of the Ecology Assessment Boundary	This is surrounded by grassland fields and connected to other waterbodies via a drainage ditch with a hedge with trees running parallel.	Shallow <45°	Earth	No noticeable variation during summer, unlikely overtopped regularly	90% of the bank is vegetated, including soft rush and branched bur-reed (<i>Sparganium erectum</i>)	Permanent standing water	Suitable but Poor
P6	In the south of the Ecology Assessment Boundary	This pond is heavily shaded by mature trees including willow, hawthorn and pedunculate oak and stagnant. Lots of bramble and yellow flag iris (<i>Iris pseudacorus</i>) were recorded around this pond.	Flat, <10°	Earth	Some variation of water level, unlikely to be overtopped regularly	90% of the bank is vegetated, including tall grasses, and plants associated with aquatic habitats	Permanent standing water	Suitable but Poor
P7	In the north of the Ecology Assessment Boundary	This pond is near to a road, separated by a hedgerow which provides some connectivity to a nearby woodland. This waterbody is surrounded by encroaching scrub habitat on the eastern side, with open grassland to the west. The northern bank appears steep in places, however the eastern end of the pond which is filled with bulrush was not fully assessed due to lack of visibility (see Photograph 6, Appendix B).	Shallow <45°	Earth	No noticeable variation during summer, unlikely to be overtopped regularly	100% bankside vegetation. Pond is 50% shaded from nearby trees. Macrophyte cover exceeds 50% of pond total area.	Permanent standing water	Good
P8	In the east of the Ecology Assessment Boundary	This pond is surrounded by scrub, the boundary is visible however water may not fill to this extent.	Flat, <10°	Earth	Considerable variation in water level	Dense bramble scrub surrounding wet area, approximately 75% shaded	Seasonally wet area	Negligible
P9	In the east of the Ecology	This pond is within a grassland field and surrounded by mixed scrub.	Steep >45°	Earth	No noticeable variation during summer, unlikely to	90% surrounded by dense scrub habitat with 10%	Permanent standing water	Negligible

Watercourse/ Water body Reference*	Location	Description and Survey Results	Bank Profile	Bank Substrate	Variation in Water Level	Herbaceous Vegetation	Water	Water Vole Habitat Suitability Assessment
	Assessment Boundary				be overtopped regularly	grasses and minimal in channel vegetation		
P10	Directly adjacent to the Ecology Assessment Boundary, east of the eastern land parcel	This pond extends in a southeastern direction, surrounded by scrub and grassland habitat. The northern end of the pond is open water and the southern section is dominated by bulrush. The pond is subject to disturbance from nearby construction works.	Steep >45°	Earth	No noticeable variation during summer, unlikely overtopped regularly	50% shaded with 80% bankside vegetation coverage	Permanent standing water	Suitable but Poor
P11	Directly adjacent to the Ecology Assessment Boundary, east of the western land parcel	Pond located within woodland and completely shaded by a large oak (<i>Quercus</i> sp.) canopy. There is some scrub encroachment and deadwood present within the pond.	Shallow <45°	Earth	No noticeable variation during summer, unlikely overtopped regularly	100% shaded as within woodland habitat. Limited suitable in-channel vegetation	Permanent standing water	Negligible

*As illustrated on Figure 1, Appendix A

6. Impact Assessment

6.1 Otter

Otter are concluded to be likely absent from the Ecology Assessment Boundary due to the lack of suitable habitat and field signs recorded. No in-water or bankside works are required to facilitate the Proposed Development, and there will be no loss of habitat with suitability for otter. No impacts to otter are anticipated in association with the Proposed Development.

6.2 Water Vole

Water vole are likely present in small numbers within small areas of the Ecology Assessment Boundary where pockets of suitable habitat occur. There is limited potential for regular self-sustaining populations to be present however as most of the habitat is unsuitable to support water vole throughout its life cycle.

No in-water or bankside works are required, and there will be no loss of habitat suitable for water vole as a result of the Proposed Development.

Avoidance of habitat loss, and avoidance of killing and injury has been designed into the project with a 10 m no-build buffer from any watercourse or waterbody, a 5 m buffer from any hedgerows and a 30 m buffer from all ancient woodland. As per best practice guidance¹¹ a minimum buffer zone of approximately 3-5 m from the water line is generally considered adequate to avoid impacts to water vole, depending on the nature of the works. This will not only avoid the impact of the Proposed Development on potential water vole populations but preserves habitats that support future opportunities for otter and water vole and a wide range of other species including reptiles and amphibians that may utilise these riparian habitats for sheltering, foraging or breeding.

During construction, without mitigation there is potential for any significant uncontrolled pollution incidents to reach P2 or W2. This could include uncontrolled runoff of silt, oil, fuel or chemicals. This could impact the water quality and potentially injure water voles or impact food resources. The likelihood of a pollution incident or silt run off in proximity to P2 and W2 is unlikely due to the nature of the Proposed Development at that location (solar panels only, no access tracks and no infrastructure) and distance from proposed access roads and perimeter tracks.

7. Recommendations for Further Surveys, Mitigation and Enhancement

7.1 Further Surveys

No further surveys for otter or water vole are required and the Proposed Development is not anticipated to impact otter or water vole, therefore no EPSML for otter or species licence for water vole is required.

Should works to facilitate the Proposed Development be delayed further than 18 months³ after the assessment was undertaken (i.e. works begin after January 2026), an update survey will be required.

7.2 Mitigation

Standard construction pollution prevention measures must be in place for the duration of the works to prevent any run-off of construction material or fuel into the watercourses. Pollution prevention measures should be adopted in accordance with existing archived Pollution Prevention Guidelines (PPGs)¹³ where they remain relevant, and in respect of Guidelines for Pollution Prevention (GPPs)¹⁴ where applicable.

7.3 Enhancements

There are no opportunities proportionate to the Proposed Development for enhancements within the Ecology Assessment Boundary or the Survey Area for otter or water vole. An improvement measure on P2 could be to restructure the banks to increase opportunity for burrowing, however this is deemed too destructive and therefore not appropriate as a form of enhancement.

¹³ Environment Agency. Pollution Prevention Advice and Guidance (PPG) Available online: <https://webarchive.nationalarchives.gov.uk/ukgwa/20140328090931/http://www.environment-agency.gov.uk/business/topics/pollution/39083.aspx> [Accessed 21 August 2024]

¹⁴ NetRegs. Guidance for Pollution Prevention (GPP) documents Available online: <https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/> [Accessed 21 August 2024]

Appendix A Figures

Figure 1. Otter and Water Vole Survey Plan





PROJECT
Flaxlands Solar Farm

CLIENT
Ampyr Solar Europe

CONSULTANT
AECOM Limited
3rd Floor Portwall Place
Portwall Lane
BS1 6NA
www.aecom.com

LEGEND

-  Ecology Assessment Boundary
-  Surveyed Watercourses
-  Pond

Water Vole Field Signs

-  FS1 - Feeding Remains
-  FS3 - Dropping
-  FS2 - Burrow

NOTES

ISSUE PURPOSE
FINAL

PROJECT NUMBER
60727989

FIGURE TITLE
Otter and Water Vole Survey Map

FIGURE NUMBER
Figure 1

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.

Appendix B Photographs

	
Photograph 1 – Dropping with characteristics of water vole observed on bank of P2.	Photograph 2 – Burrow with characteristics of water vole observed within bank of W2.
	
Photograph 3 –Feeding remains with characteristics of water vole. Observed within W1.	Photograph 4 – Small mammal feeding remains present along W1, uncharacteristic of water vole due to their size.
	
Photograph 5 – View facing north at P2.	Photograph 6 – View facing east at P7. Pond offers Good suitability for water vole.

