

Flaxlands Solar Farm

Great Crested Newt Habitat Suitability Index Assessment and
eDNA Survey Report

Ampyr Solar Europe

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1. Executive Summary

AECOM Limited ('AECOM') was commissioned by Ampyr Solar Europe ('Ampyr') to undertake great crested newt (*Triturus cristatus*) surveys within land proposed for the construction of a solar farm with Battery Energy Storage System (BESS) in Royal Wootton Bassett, Swindon, SN4 8DY (hereafter referred to as 'the Site'). The Site boundary and locations of ponds are provided in Figure 1 in Appendix A.

The surveys are required to provide an assessment of the presence and likely absence, and distribution of great crested newt within the Site proposed for an installation of a solar photovoltaic array (hereafter referred to as 'the Proposed Development'). It is anticipated that all ponds within the Site boundary are to be retained and that any future development plans will seek to retain them within the design. The need for great crested newt presence / likely absence survey was identified in the Preliminary Ecological Appraisal (PEA) Report¹.

This report presents the methodology and results of great crested newt surveys conducted by AECOM, including Habitat Suitability Index (HSI) assessment conducted in May 2024 and environmental DNA (eDNA) analysis of all identified ponds within the Site boundary conducted in June 2024. All assessments and water sample collection followed standard accepted best practice guidance^{2,3,4}.

As great crested newts are confirmed to be present in ponds within the Site boundary, and suitable terrestrial habitat is present throughout the Site, there is potential for the Proposed Development to cause injury, death or disturbance to great crested newt.

Given that works are not currently anticipated within 10 m of the waterbodies, no direct impact to great crested newt breeding habitat is anticipated as a result of the Proposed Development. However, the Site supports suitable terrestrial habitat for active great crested newt within the grasslands and suitable hibernating opportunity within hedgerows, dense scrub and broadleaved woodland. Therefore, there is potential for the Proposed Development to cause loss or degradation of terrestrial habitats in use by great crested newt.

Due to the potential impacts of the Proposed Development on great crested newt, a licence in the form of a traditional European Protected Species Mitigation Licence (EPSML) or District Level Licence (DLL), will be required to enable the Proposed Development to proceed. The latter may be considered suitable as the majority of the habitat loss resulting from the Proposed Development will be temporary, and no breeding ponds are anticipated to be directly impacted by the works. Should a traditional EPSML route be followed, additional surveys to assess the size of the population of great crested newt present in waterbodies within 250 m of the Proposed Development would be required in April-June 2025.

At the time of writing no fixed design is available for the Proposed Development, though it is understood that all ponds are to be retained. If this changes, recommendations for avoidance and mitigation of potential ecological impacts to the ponds will be required and prepared in a separate assessment when details have been made available.

The design of the Proposed Development should also include measures to promote biodiversity where possible. This should ideally include the retainment of the waterbodies and the semi-improved grassland, scrub habitat, and broadleaved semi-natural woodland, in order to maintain long-term benefits for amphibians and other wildlife.

¹ AECOM (2024) Flaxlands Solar Farm- *Preliminary Ecological Appraisal Report* – Version 2

² Oldham, R.S., Keeble, J., Swan, M.J.S., & Jeffcote, M. (2000) Evaluating the suitability of habitat for the great crested newt (*Triturus cristatus*). *Herpetological Journal* 10(4), 143-155.

³ ARG UK (2010). ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index. Amphibian and Reptile Groups of the United Kingdom.

⁴ Biggs, J., Ewald, N., Valentini, A., Gaboriaud, C., Griffiths, R.A., Foster, J., Wilkinson, J., Arnett, A., Williams, P., and Dunn, F. (2014) Analytical and methodological development for improved surveillance of the great crested newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford.

2. Introduction

AECOM Infrastructure & Environment UK Ltd (AECOM) was commissioned by Ampyr Solar Europe ('Ampyr') to undertake great crested newt (*Triturus cristatus*) environmental DNA (eDNA) surveys 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 'Site') as shown by the red line boundary on Figure 1 in [Appendix A](#).

The need for further assessment for great crested newt was identified by an initial Preliminary Ecological Appraisal Report (PEAR) produced by AECOM in 2024¹. This identified nine ponds within the Site boundary with a further 22 identified within 250 m of the Site boundary and ecologically connected to the Site. Nine records of great crested newt were identified during the PEAR desk study within 2 km of the Site.

This report presents the methodology and results of the great crested newt surveys comprising Habitat Suitability Index (HSI) assessments and collection of water samples for great crested newt eDNA analysis at each identified pond, undertaken by AECOM in May-June 2024. This report provides an assessment of the potential implications of the Proposed Development on great crested newt and recommendations regarding further mitigation and/or compensation measures required.

2.1 Site Location and Description

The Site 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 06584 85463. The Site 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 Site. Wet ditches, assumed to be associated with the drainage of fields, are present in several locations throughout the Site, as are standing bodies of water.

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

2.2 Survey Area

The area surveyed includes ponds within the Site and within 250 m of the Site boundary, as shown in Appendix A, Figure 1.

2.3 Proposed Development

The Proposed Development includes the installation of a 49.9MW solar farm and 49.9MW Battery Energy Storage System (BESS) within the Site. Solar photovoltaic arrays will be situated in both western and eastern land parcels. The concept design includes the BESS located in the north of the Site. 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.

2.4 Objectives

The objectives of this report and associated surveys are to:

- assess the likelihood that great crested newt are present within the Site;
- conduct HSI assessment of each pond within 250 m of the Site and collect water samples for analysis from waterbodies within or directly adjacent to the Site (within 20 m of the boundary) for identification of great crested newt eDNA on all ponds within the Site;
- provide recommendations on mitigation required for the Proposed Development to avoid negative impacts to great crested newt; and,
- provide recommendations on the requirement for further survey and/or European Protected Species Mitigation Licence (EPSML) for the Proposed Development.

3. Legislation and Policy

3.1 The Wildlife and Countryside Act

The great crested newt is given full protection under Section 9 of the Wildlife and Countryside Act 1981 (as amended) through its inclusion on Schedule 5. The legislation makes it an offence to:

- intentionally or recklessly take (capture), injure or kill a great crested newt;
- intentionally or recklessly disturb a great crested newt;
- intentionally or recklessly damage or destroy, or obstruct access to, any structure or place which a great crested newt uses for shelter or protection or intentionally or recklessly disturb a great crested newt while it uses such a place; and,
- possess or advertise/sell/exchange a great crested newt (dead or alive) or any part of a great crested newt.

3.2 Conservation of Habitats and Species Regulations

The great crested newt, at all life stages (adults, sub-adults, larvae and eggs), is protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. This makes it an offence to:

- deliberately take (capture), injure or kill a great crested newt;
- deliberately disturb a great crested newt in a way that would affect its ability to survive, breed or rear young, hibernate or migrate or significantly affect the local distribution or abundance of the species;
- damage or destroy a breeding site or resting place of a great crested newt;
- possess or control any live or dead specimen or anything derived from a great crested newt; and,
- intentionally take or destroy the eggs of a great crested newt.

3.3 The Natural Environment and Rural Communities (NERC) Act

Great crested newt is listed as a species of principal importance on the NERC Act (2006). The NERC Act (2006) puts an obligation on public bodies to have regard, so far as is consistent with the proper exercise of their functions, to the purpose of conserving biodiversity. Under the terms of the Act, conserving biodiversity includes restoring or enhancing populations and/or habitats. The local planning authority (LPA) or other determining authority must therefore consider the effects of planning applications upon biodiversity and how it can be mitigated for or enhanced.

3.4 European Protected Species Mitigation Licensing

Although the law provides strict protection to great crested newt, it also allows this protection to be set aside (derogated) through the issue of an EPSML for the purpose of preserving public health, public 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 legislation, an EPSML can only be issued where the following requirements are satisfied:

- 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 determined by Natural England.

3.5 Good Practice

Current guidance 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 compensate⁵.

⁵ 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.

3.6 Quality Assurance

The 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)⁶ when undertaking ecological work and are members of CIEEM at the appropriate level.

⁶ 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 Site in 2024 comprised a desk-study undertaken in May 2024 to review habitat and protected species records since 2014. The following resources were consulted:

- the online Multi Agency Geographic Information for the Countryside (MAGIC) database to identify statutory designated sites within 2 km of the Site and evidence of granted EPSMLs within 2 km of the Site; and,
- the Wiltshire & Swindon Biological Records Centre (WSBRC) to search for records of protected and priority species, other species of conservation concern, locally important species, invasive & non-native species, locally designated sites and habitats within 2 km of the Site.

Prior to undertaking the surveys, aerial photography and 1:2,500 Ordnance Survey (OS) mapping was examined to attempt to identify all waterbodies within 250 m of the Site. Natural England's online great crested newt risk zone portal⁷ was consulted to categorise the Site based on the likelihood of great crested newt presence to inform potential District Level Licensing (DLL) scheme.

4.2 Field Survey

All ponds assessed are mapped and labelled on Figure 1 in [Appendix A](#). Ponds P12 and P14 - P18 were not accessed during the field survey as land access was not obtained prior and therefore further assessment including HSI assessments and eDNA sampling was not undertaken.

4.2.1 Habitat Suitability Index Assessment

During the field survey undertaken between 15 -17 May 2024 all accessible ponds within 250 m of the Site were assessed for their suitability for great crested newt via an HSI assessment following standard accepted best practice guidance^{2,3}. Photographs taken during the Site visit are provided in Appendix B. The HSI incorporates ten suitability indices (SIs), all of which are factors thought to affect the suitability of a water body to support great crested newt:

- location (categorisation according to geographic location);
- pond area;
- pond drying;
- water quality (based on abundance and diversity of invertebrate community);
- shade (estimated perimeter shading May-September);
- presence of waterfowl;
- presence of fish;
- pond count (number of ponds within 1 km of survey pond not separated by major barriers, divided by pi);
- terrestrial habitat; and,
- macrophytes (estimated percentage cover).

Each variable is assessed separately and then mathematically combined to provide a numerical index, between 0 and 1, using the following equation:

$$HSI = (SI1*SI2*SI3*SI4*SI5*SI6*SI7*SI8*SI9*SI10)^{1/10}$$

The categorisation of the final HSI score to pond suitability is outlined in

Table 4.1.

⁷ [GCN Risk Zones \(Swindon and Wiltshire\) | GCN Risk Zones \(Swindon and Wiltshire\) | Natural England Open Data Geoportal \(arcgis.com\)](#)

Table 4.1: Categorisation of HSI Scores

HSI Score	Pond Suitability
<0.5	Poor
0.5-0.59	Below Average
0.6-0.69	Average
0.7-0.79	Good
>0.8	Excellent

Source: Oldham et al., 2000²

4.2.2 eDNA Sampling

All suitable, accessible waterbodies within the Site and directly adjacent (within 20 m) to it were subject to great crested newt eDNA testing by a surveyor holding a Natural England WML-CL08 Class 1 great crested newt license and an assistant on 17 June 2024.

Pond P3 was scoped out of the eDNA sampling by a licensed ecologist due to its 'below average' HSI assessment, and poor water quality resulting in a visible lack of suitable breeding habitat for great crested newt.

eDNA refers to DNA that can be extracted from environmental samples such as water, soil or faeces without first isolating any target organism. All living organisms leave traces of their DNA within the environment, enabling detection through collection and testing. In relation to great crested newt, this comprises the collection of water samples from waterbodies.

Water samples were collected in accordance with published guidance⁴ within the optimum survey window (15 April to 30 June) and instructions given by SureScreen, the provider of the sample equipment and analysis services. The waterbodies were not entered by surveyors during sample collection and new, sterile equipment was used for each waterbody to prevent contamination between samples. Samples were subject to laboratory analysis by SureScreen through a process of Polymerase Chain Reaction (PCR) reactions which detect the presence of great crested newt DNA.

Negative results from eDNA surveys are accepted as evidence of likely absence of great crested newt from the waterbody in question, and further survey is not then required. As all samples were taken within the optimum survey window, a negative result can be relied upon for confirming absence of great crested newt. Positive results indicate that great crested newt DNA is present within a waterbody, though does not give sufficient information to estimate population size.

4.3 Limitations

All surveys were undertaken in accordance with the standard methodology, during appropriate weather conditions and at an appropriate time of year.

At Ponds P5, P6, P7, P9 and P10, the entire edge of the pond was not accessible during the eDNA sampling due to the presence of dense vegetation and steep banks. In these cases, samples were taken from a variety of locations around the waterbody. Sampling coverage was considered sufficient to provide an indication of the presence of great crested newt within these ponds. The analysis returned positive results for these ponds and the sampling coverage is therefore not deemed a limitation to the assessment.

Pond P4 was inaccessible due to the presence of dense bramble (*Rubus fruticosus*) scrub and lack of access obtained via third party land. An HSI assessment was made with the limited view of the pond, however, eDNA samples could not be taken of P4. Ponds P12 and P14-P18 were not subject to HSI assessments and eDNA sampling as land access was not obtained prior to the survey. Though this limits the ability to confirm presence or likely absence of great crested newt within these ponds, it is not deemed a significant limitation to determining presence within the Site due to the number of surveys undertaken across the Site being sufficient for a DLL application.

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 months⁸ 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.

⁸ CIEEM (2019) Advice Note - *on the lifespan of ecological reports & surveys*. Accessed online at: [Advice-Note.pdf \(cieem.net\)](https://www.cieem.net/Advice-Note.pdf)

5. Results

5.1 Desk-Based Study

The desk study identified nine ponds within the Site boundary and a further 22 ponds with ecological connectivity to the Site within 250 m of the Site boundary.

The desk study returned nine records of great crested newt within 2 km of the Site within the last 10 years. These records lack direct connectivity to the Site and are separated by either minor roads or the M4.

A former EPSML (EPSM2009-1556) was granted for great crested newt in 2010 located approximately 1.7 km east of the Site as shown on Magic.gov.uk.

The Site is located within a Green/Amber Risk Zone for DLL.

5.2 Field Survey

5.2.1 Habitat Suitability Index Assessment

The HSI assessment undertaken on 17 May 2024 concluded that Ponds P1, P7, P9 and P10 have Excellent suitability for great crested newt. Ponds 5 and 6 were assessed as having Good suitability for great crested newt. Ponds P2, P8 and P12 have Average suitability and the remaining ponds have Below average suitability (P3 and P4) or Poor suitability (P13) for great crested newt. The results of the HSI assessments are summarised in Table 5.1 and full calculations are provided in Appendix C.

5.2.2 eDNA

The results of the HSI assessments are summarised in Table 5.1. eDNA samples were collected at all accessible ponds within the Site boundary and directly adjacent to it, with the exception of P3 which was scoped out. P4 within the Site boundary was inaccessible due to dense vegetation and the remaining ponds (P12-18) The great crested newt eDNA results provided by SureScreen confirmed the presence of great crested newt DNA in seven of the nine ponds sampled. Pond P2, and Ponds P6-P11 all returned a positive result and ponds P1 and P5 returned negative results. The analysis report provided by SureScreen is provided in Appendix D. As no inhibition or degradation was detected within the sample, and all controls performed as expected, this result is considered to be conclusive.

Table 5.1: HSI Assessment and eDNA Results Summary

Pond Reference *	Photograph (Appendix B)	Location	Description	HSI Score	Pond Suitability Category	eDNA Result
P1	1	Within the southwest of the Site.	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 rush species (<i>Juncus sp.</i>) was identified within the marginal vegetation as well as floating and submerged macrophytes present within, including broad-leaved pondweed (<i>Potamogeton natans</i>) and a stonewort species (<i>Chara sp.</i>).	0.80	Excellent	Negative
P2	2	Located within the west of the Site	Wet area with plastic pipe feeding the pond, assumed drainage for neighbouring agricultural and pasture fields. Seems to be fed by spring/stream to the south.	0.68	Average	Positive – GCN Present
P3	3	Within the north of the Site	Stagnant area of standing water associated with adjacent flowing stream. It is considered likely that this waterbody will dry up in the summer.	0.57	Below average	Not sampled

Pond Reference *	Photograph (Appendix B)	Location	Description	HSI Score	Pond Suitability Category	eDNA Result
P4	4	Located centrally within the western land parcel.	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 within and at the pond edge. Minimal macrophyte cover was recorded. This pond is directly adjacent to a metal shipping container.	0.52	Below average	Not sampled
P5	5	Located centrally within the eastern land parcel	This is surrounded by grassland fields and connected to other waterbodies via a drainage ditch with line of trees/hedge line running parallel.	0.72	Good	Negative
P6	6	Within the south of the eastern land parcel	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.	0.76	Good	Positive – GCN Present
P7	7	Within north of the eastern land parcel	This pond is adjacent to a road, separated by a hedgerow with some connectivity to woodland. This waterbody is surrounded by encroaching scrub habitat on the eastern side, with open grassland to the west. Macrophyte cover exceeds 50% of pond total area.	0.82	Excellent	Positive – GCN Present
P8	8	Within the east of the eastern land parcel	This pond is completely surrounded by scrub, the boundary is visible however water may not fill to this extent.	0.64	Average	Positive – GCN Present
P9	9	Within the east of the eastern land parcel	This pond is within a grassland field and surrounded by mixed scrub.	0.83	Excellent	Positive – GCN Present
P10	10 + 11	Directly adjacent to the Site, 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, however is shaded by overhanging trees. The southern section is dominated by bulrush.	0.83	Excellent	Positive – GCN Present
P11	12	Directly adjacent to the Site, 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.	0.61	Average	Positive – GCN Present
P12	-	Approximately 85 m west of the Site	Pond not surveyed due to lack of access obtained via third party land	Not assessed	Not assessed	Not sampled
P13	13	Approximately 250 m south of the Site	Large, socked fishing lake within Flaxlands Fisheries. Active fishing lake with wildfowl present. Not suitable for great crested newts and scoped out of further surveys.	0.45	Poor	Not sampled
P14	-	Approximately 90 m north of the Site within active farm	Pond located within active farm, surrounded by hardstanding and subject to poor water quality due to farmyard run-off. Not suitable for great crested newts and scoped out of further surveys.	Not assessed	Not assessed	Not sampled
P15	-	Approximately 80 m north of the Site within active farm	Pond located within active farm, surrounded by hardstanding and subject to poor water quality due to farmyard run-off. Not suitable for	Not assessed	Not assessed	Not sampled

Pond Reference *	Photograph (Appendix B)	Location	Description	HSI Score	Pond Suitability Category	eDNA Result
			great crested newts and scoped out of further surveys.			
P16	-	Approximately 50 m north of the Site, within active farm	Pond located within active farm, surrounded by hardstanding and subject to poor water quality due to farmyard run-off. Not suitable for great crested newts and scoped out of further surveys.	Not assessed	Not assessed	Not sampled
P17	14	Approximately 250 m east of the Site within woodland	Pond appears to have been completely dry for multiple years. Located within Friths Copse woodland with direct connectivity to the Site. Not suitable for great crested newts and scoped out of further surveys.	Not assessed	Not assessed	Not sampled
P18	-	Approximately 140 m east of the Site	Pond appeared completely dry for multiple years – surveyed from footpath with no direct access obtained via third party land. Not suitable for great crested newts and scoped out of further surveys.	Not assessed	Not assessed	Not sampled

*As illustrated on Figure 1, Appendix A

6. Potential Impacts, Recommendations and Enhancements

6.1 Potential Impacts

As great crested newt presence has been confirmed within the Site, the Proposed Development has the potential to disturb, injure or kill a great crested newt and may result in the permanent loss of habitat with suitability for great crested newt. At the time of writing, it has been confirmed that no works will be required within 10 m of any waterbody within or directly adjacent to the Site boundary. As such, no direct impacts on great crested newt breeding habitat are anticipated during the construction of the Proposed Development. However, given that the Site supports suitable terrestrial habitat for both active and hibernating great crested newt, there is potential for the Proposed Development to cause disturbance, injury or death to an individual and lead to the destruction or degradation of terrestrial habitat in use by great crested newt.

Vegetation clearance required to facilitate the Proposed Development may cause disturbance to habitats great crested newt rely on for foraging, sheltering and hibernation. Furthermore, the construction and future operation of the Proposed Development may impact the functionality of the surrounding land and affect its suitability for the species through increased shading from the solar array, construction of the substation and BESS and installation of the perimeter fencing. At the time of writing, it has been confirmed that no works will be required within 15 m of any tree or hedgerow and 30 m of any ancient woodland edge.

Further mitigation is required to avoid and reduce the potential impacts to great crested newts.

6.2 Recommendations

To avoid committing an offence, the Proposed Development must be undertaken under either an EPSML or DLL both of which can be provided by Natural England. Both licensing approaches will ensure the Proposed Development will proceed in compliance with legal requirements whilst safeguarding great crested newt. In both cases, methodology must be agreed in advance and followed during works to reduce any negative impact to great crested newt. Further information regarding each approach is outlined below.

6.2.1 District Level License

As the majority of the habitat loss resulting from the Proposed Development will be temporary, and no breeding ponds are anticipated to be directly impacted by the works, a DLL may be appropriate for the Proposed Development. A DLL in Swindon and Wiltshire can be applied for through, and provided by, Natural England. In the first instance, it is recommended that this option is explored further through the submission of an enquiry form to Natural England, as detailed below.

The DLL scheme offers a streamlined alternative to traditional licensing, aiming to balance development needs with the conservation of great crested newt. To join, developers must first check if their project is eligible by completing an enquiry form and paying an initial enquiry fee of £684. This initial step involves providing details about the Proposed Development and its location in relation to ponds. A suitably qualified ecologist should complete this form to provide information regarding the Proposed Development to Natural England. This should include details of the surveys conducted and figures to illustrate the Site boundary, location of ponds, UK Habitat Classification habitat survey data, designated and protected sites on or adjacent to the Site and an impact assessment. The impact assessment, showing exactly which habitats are to be retained and lost as a result of the Proposed Development, must not change following application for a licence. This information should be submitted to Natural England ahead of any planning application. Following this, Natural England would provide the fee quote of the implementation of compensation required for the Proposed Development and conditions which must be met for the licence, including precautionary working methods, which must be followed for the duration of the works. The licensing process is complete once this second fee is paid and commitment to the licence protocols is made.

6.2.2 Traditional EPSML

If a DLL is considered not suitable for the Proposed Development, following receipt of further information from Natural England, a traditional licence route may be followed. Additional surveys to assess the size of the population of great crested newt present in all waterbodies within 250 m of the Site will be required. This should include six visits in April-June, inclusive, by a great crested newt licensed ecologist to survey the waterbodies and identify the size of the population present to inform a licence application. The information obtained during these surveys would then be submitted to Natural England, along with details of the Proposed Development and construction methodologies.

Timing of works to minimise impacts on great crested newt and measures to avoid killing and injury, such as translocation, would be detailed within the EPSML as well as mitigation and site enhancements for great crested newt and all measures agreed with NE.

6.2.3 Mitigation

As per the current best practice guidelines the hierarchy of mitigation should be followed in descending order of preference to avoid, mitigate and compensate for losses to biodiversity.

All mitigation requirements will be outlined within a DLL or EPSML following completion of an assessment conducted by Natural England.

At the time of writing no fixed design for the Proposed Development has been made available though it is understood that all ponds will be retained. As such, recommendations for the mitigation of pond destruction or degradation are not provided.

Avoidance has already been designed into the project with a 10 m no-build off set from any pond and the Site boundary, and a 15 m off set from any trees or hedgerows and 30 m from ancient woodland. These buffers will help to avoid and reduce the impacts on breeding habitat, terrestrial habitat, connectivity and injury and killing.

Perimeter fencing will be included within the Proposed Development. This should incorporate a minimum mesh size of approximately 5 cm x 5 cm to allow great crested newt to move freely into, out of, and within the Site. Other species present on Site may inform the design of the fencing and therefore this should seek to include all design parameters for each species where possible. By maintaining connectivity between different habitats and ponds, these passageways help to reduce the functional loss of habitats within the Site.

6.3 Site Enhancements

The design of the Proposed Development should include measures to promote biodiversity. This will include retention of waterbodies, and should ideally include retention of semi-improved grassland, scrub habitat, marsh/marshy grassland and broadleaved semi-natural woodland within the Site to maintain long-term benefits for great crested newt.

Additional pond creation should be considered in the landscaping design of the Proposed Development. These would ideally be located within 250 m from existing ponds within the Site and within areas currently without waterbodies (north-west of the Site). Pond creation should be undertaken within the autumn or winter months to allow rainwater to fill naturally within newly created pond habitats. For full details please refer to Froglife's 'Just Add Water' guide to pond creation⁹.

Where possible, all ponds should be subject to appropriate management to improve their suitability for amphibians, this may require an EPSML depending on the nature of the works. Details regarding the management of trees in proximity to ponds has been provided by the Freshwater Habitats Trust and should be consulted prior to the commencement of management works¹⁰. The low scoring HSI for Ponds P2, P3, P4, P8 and P11 is mainly due to overshadowing at the ponds. Where appropriate, management of vegetation at ponds margins should be considered and at P4, this may include the removal of trees to reduce the percentage shading. Where trees are to be removed, this should only take place following consultation with a suitably experienced ecologist and arborist.

Ponds are known to support a variety of species, and should be managed to support wildlife where possible. Measures that may be utilised to manage ponds as a resource for wildlife may include the management of an extended buffer surrounding pond edges and the creation of shallow areas on the edge of ponds with steep banks¹¹. This will result in improved habitat availability for several species, including birds, invertebrates and amphibians. Where multiple ponds are present, as within this Site, it would be of greatest benefit to manage the ponds to provide heterogenous habitats, each at a different stage of succession with a variety of maximum depths¹².

⁹ Froglife (2013) *Just Add Water* – How to build a wildlife pond (6th Edition) Access online at: [JAW2014-for-printing-HLF1.pdf](https://freshwaterhabitats.b-cdn.net/app/uploads/2023/07/Managing-Trees-around-ponds-NEW.pdf) (froglife.org)

¹⁰ Freshwater Habitats Trust (no date) Managing Trees Around Ponds. Available online: <https://freshwaterhabitats.b-cdn.net/app/uploads/2023/07/Managing-Trees-around-ponds-NEW.pdf> [last accessed 12/06/2024]

¹¹ Freshwater Habitats Trust (no date) What Makes a Good Wildlife Pond? Available online: <https://freshwaterhabitats.b-cdn.net/app/uploads/2023/07/What-makes-a-good-wildlife-pond-NEW.pdf> [last accessed 12/06/2024]

¹² Freshwater Habitats Trust (no date) Pond Management Overview. Available online: <https://freshwaterhabitats.b-cdn.net/app/uploads/2023/07/Pond-Management-Overview-NEWNEW.pdf> [last accessed 12/06/2024]

Appendix A Figures

Figure 1. Great Crested Newt Survey Plan



AECOM

PROJECT
Flaxlands Solar Farm

CLIENT
Ampyr Solar Europe

CONSULTANT
AECOM Limited
3rd Floor, Portwall Place
Portwall Ln
Bristol BS1 6NA
www.aecom.com

- LEGEND**
- Site Boundary
 - 250m Study Area
 - eDNA Analysis Result
 - Negative
 - Positive
 - No Access
 - Scoped Out
 - Inaccessible
 - HSI Category
 - Excellent
 - Good
 - Average
 - Below Average
 - Poor

NOTES
1: Reproduced from Ordnance Survey digital map data © Crown copyright [2024]. All rights reserved. Licence number 0100031673.

ISSUE PURPOSE
Great Crested Newt Survey Report

PROJECT NUMBER
60727989

FIGURE TITLE
Great Crested Newt HSI and eDNA Results 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 Illustrative Site Photographs



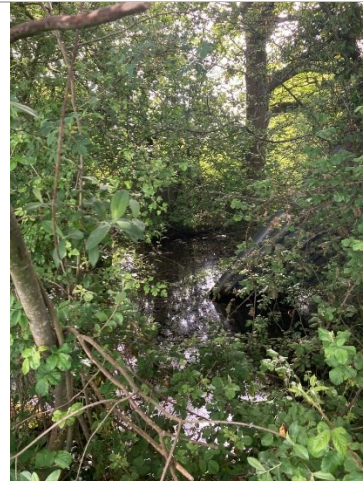
Photograph 1: P1 located in the southwest of the western portion of the Site. View facing north. This pond was subject to eDNA analysis which returned negative.



Photograph 2: View of P2 facing north. P17 located in the west of the western portion of the Site. This pond was subject to eDNA analysis which returned positive.



Photograph 3: Image showing poor water quality within P3 within the northern portion of the Site. This pond was scoped out of eDNA analysis due to the low water quality and conclusion that it does not provide suitable habitat for great crested newt.



Photograph 4: Image showing P4 through dense scrub. Located centrally within the western land parcel. This pond was not accessible for collection of water samples for eDNA analysis.



Photograph 5: View facing south showing the eastern section of P5 within the eastern land parcel. This pond was subject to eDNA analysis which returned negative.



Photograph 6: View facing north showing P6 in the south of the eastern land parcel. This pond was subject to eDNA analysis which returned positive.



Photograph 7: View facing east across P7 within the eastern land parcel. This pond was subject to eDNA analysis which returned positive.



Photograph 8: View showing P8 within the eastern portion of the Site. Low water levels visible. This pond was subject to eDNA analysis which returned positive.



Photograph 9: View facing west across P9 within the east of the Site. Image shows scrub surrounding pond. This pond was subject to eDNA analysis which returned positive.



Photograph 10: View facing south at the northern end of P10. Pond extends southeast. This pond was subject to eDNA analysis which returned positive.



Photograph 11: View facing north at the southeastern corner of P10. View shows dense vegetation within waterbody which extends northwards.



Photograph 12: View facing south at P11, within woodland directly adjacent to the east of the Site. This pond was subject to eDNA analysis which returned positive.



Photograph 13: P13 located south of the Site at the Flaxlands Fisheries. View facing south. This pond was considered not suitable for great crested newt.



Photograph 14: Image shows P17 within woodland. Pond not visible and appears completely dry.

Appendix C HSI Results

Suitability Index (SI)	Pond 1		Pond 2		Pond 3		Pond 4		Pond 5		Pond 6	
	Resulting Criteria	SI Score	Resulting Criteria	SI Score	Resulting Criteria	SI Score	Resulting Criteria	SI Score	Resulting Criteria	SI Score	Resulting Criteria	SI Score
Location (categorisation according to geographic location)	A	1	A	1	A	1	A	1	A	1	A	1
Pond area (m ²)	300	0.60	100	0.20	<50	0.10	50	0.10	700	1.00	150	0.30
Pond drying	Never dries	0.90	Sometimes dries	0.50	Sometimes dries	0.50	Never dries	1.00	Never dries	0.90	Rarely dries	1.00
Water quality (based on abundance and diversity of invertebrate community)	Moderate	0.67	Moderate	0.67	Poor	0.33	Poor	0.33	Poor	0.33	Moderate	0.67
Shade (estimated perimeter shading May-September)	0-60%	1.00	0-60%	1.00	95%	0.30	100	0.20	90%	0.40	80%	0.60
Waterfowl	Minor	0.67	Minor	0.67	Absent	1.00	Absent	1.00	Minor	0.67	Minor	0.67
Fish	Possible	0.67	Possible	0.67	Absent	1.00	Absent	1.00	Possible	0.67	Absent	1.00
Pond count (number of ponds within 1 km of survey pond not separated by major barriers, divided by pi)	22	1.00	22	1.00	15	1.00	20	1.00	20	1.00	17	1.00
Terrestrial Habitat	Moderate	0.67	Moderate	0.67	Good	1.00	Moderate	0.67	Moderate	0.67	Good	1.00
Macrophytes (estimated percentage cover)	70%	1.00	70%	1.00	40%	0.70	5%	0.35	70%	1.00	45%	0.75
Resulting HSI Indices Score	0.80		0.68		0.57		0.52		0.72		0.76	
Resulting HSI Category	Excellent		Average		Below Average		Below Average		Good		Good	

Suitability Index (SI)	Pond 7		Pond 8		Pond 9		Pond 10		Pond 11		Pond 13	
	Resulting Criteria	SI Score	Resulting Criteria	SI Score	Resulting Criteria	SI Score	Resulting Criteria	SI Score	Resulting Criteria	SI Score	Resulting Criteria	SI Score
Location (categorisation according to geographic location)	A	1	A	1	A	1	A	1	A	1	A	1
Pond area (m ²)	400	0.80	<50	0.10	200	0.40	700	1.00	100	0.20	>2000	0.80
Pond drying	Never dries	0.90	Sometimes dries	0.50	Never dries	0.90	Never dries	0.90	Rarely dries	1.00	Never dries	0.90
Water quality (based on abundance and diversity of invertebrate community)	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67	Poor	0.33	Poor	0.33
Shade (estimated perimeter shading May-September)	0-60%	1.00	90%	0.40	0-60%	1.00	0-60%	1.00	95%	0.30	0-60%	1.00
Waterfowl	Minor	0.67	Absent	1.00	Minor	0.67	Minor	0.67	Absent	1.00	Minor	0.67
Fish	Possible	0.67	Absent	1.00	Absent	1.00	Possible	0.67	Absent	1.00	Major	0.01
Pond count (number of ponds within 1 km of survey pond not separated by major barriers, divided by pi)	21	1.00	18	1.00	15	1.00	16	1.00	17	1.00	17	1.00
Terrestrial Habitat	Moderate	0.67	Good	1.00	Good	1.00	Moderate	0.67	Good	1.00	Moderate	0.67
Macrophytes (estimated percentage cover)	60%	0.90	50%	0.80	70%	1.00	70%	1.00	5%	0.35	0%	0.30
Resulting HSI Indices Score	0.82		0.64		0.83		0.83		0.61		0.45	
Resulting HSI Category	Excellent		Average		Excellent		Excellent		Average		Poor	

Appendix D Great Crested Newt eDNA Analysis Reports

Folio No: 2221-2024
Purchase Order: 1657036
Contact: Aecom Infrastructure &
Environment Uk Ltd
Issue Date: 01.07.2024
Received Date: 20.06.2024

GCN Report

Technical Report



SureScreen Scientifics

GCN eDNA Analysis

Summary

When great crested newts (GCN), *Triturus cristatus* , inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analyzing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

Results

Lab ID	Site Name	OS Reference	Degradation Check	Inhibition Check	Result	Positive Replicates
4018	Flaxlands, Pond 15	SU0607685009	Pass	Pass	Negative	0/12
4019	Flaxlands, Pond 17	SU0596285256	Pass	Pass	Positive	6/12
4020	Flaxlands, Pond 23	SU0745785216	Pass	Pass	Positive	11/12
4023	Flaxlands, Pond 24	SU0740784927	Pass	Pass	Positive	9/12
4024	Flaxlands, Pond 30	SU0715485020	Pass	Pass	Negative	0/12
4025	Flaxlands, Pond 20	SU0714985558	Pass	Pass	Positive	12/12
6375	Flaxlands, Pond 31	SU0711784842	Pass	Pass	Positive	6/12
6376	Flaxlands, Pond 7	SU0759784979	Pass	Pass	Positive	10/12
6377	Flaxlands, Pond 25	SU0754384847	Pass	Pass	Positive	3/12

Matters affecting result: none



Folio No: 2221-2024
Purchase Order: 1657036
Contact: Aecom Infrastructure & Environment Uk Ltd
Issue Date: 01.07.2024
Received Date: 20.06.2024



Reported by: Daisy Chambers

Approved by: Lauryn Jewkes



Methodology

The samples detailed above have been analyzed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample tube which then undergoes DNA extraction. The extracted sample is then analyzed using real-time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded. Analysis of eDNA requires attention to detail to prevent the risk of contamination. True positive controls, negative controls, and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added analytical security.

SureScreen Scientifics Ltd is ISO9001 accredited and participates in Natural England's proficiency testing scheme for GCN eDNA testing.

Interpretation of Results

- Sample Integrity Check:** When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results. Any samples which fail this test are rejected and eliminated before analysis.
- Degradation Check:** **Pass/Fail.** Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.
- Inhibition Check:** **Pass/Fail.** The presence of inhibitors within a sample is assessed using a DNA marker. If inhibition is detected, samples are purified and re-analyzed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.
- Result:** **Presence of GCN eDNA (Positive/Negative/Inconclusive)**
Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with the WC1067 Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.
Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.
Inconclusive: Controls indicate inhibition or degradation of the sample, resulting in the inability to provide conclusive evidence for GCN presence or absence.



