

PAP/2023/0071



## Great Crested Newt Survey and Watercourse Assessment

Land at Nailcote Farm, Fillongley, Coventry, North Warwickshire, CV7 8DW

Enviromena Project Management Ltd

Status	Issue	Name	Date
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## Industry Guidelines and Standards

This report has been written with due consideration to:

- Chartered Institute of Ecology and Environmental Management (2017). Guidelines for Preliminary Ecological Appraisal. 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2017). Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2020). Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK. 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- British Standard 42020 (2013). Biodiversity – Code of Practice for Planning and Development.
- British Standard 8683:2021 (2021). Process for Designing and Implementing Biodiversity Net Gain.

## Proportionality

The work involved in preparing and implementing all ecological surveys, impact assessments and measures for avoidance, mitigation, compensation, and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development. Consequently, the decision-maker should only request supporting information and conservation measures that are relevant, necessary, and material to the application in question. Similarly, the decision-maker and their consultees should ensure that any comments and advice made over an application are also proportionate.

The desk studies and field surveys undertaken to provide a Preliminary Ecological Appraisal (PEA) might in some cases be all that is necessary.

(BS 42020, 2013)

## Executive Summary

Arbtech Consulting Limited was instructed by Enviromena Project Management Ltd to undertake a great crested newt (GCN) survey at Land at Nailcote Farm, Fillongley, Coventry, North Warwickshire, CV7 8DW (hereafter referred to as “the site”). The survey was required to inform a planning application for the construction of a temporary Solar Farm providing 48.1 MW (AC) output, to include the installation of ground-mounted solar panels together with associated works, equipment, and necessary infrastructure (hereafter referred to as “the proposed development”).

The GCN survey has been informed by a Preliminary Ecological Assessment, completed by Arbtech Consulting in December 2022. There are no ponds present on site, but there are six ponds within a 250m buffer of the site and records of GCN within 100m. Due to the proximity to the site, it was requested that eDNA be undertaken on three of the six ponds within 250m of the site. An eDNA survey confirmed the likely presence of great crested newts within Pond 3, located approximately 100m from the site boundary.

The ditches on site were assessed for their suitability for supporting water vole and otter – to which it was concluded there is negligible value for supporting riparian mammals.

**The following is work you will need to commission to comply with planning policy and legislation. Further information is outlined in Table 7 of this report.**

Survey Results Summary	Impact Assessment	Recommendations
Pond 3, over 100m offsite, tested positive for GCN. No evidence of otter or water vole was observed on site.	The removal of a small amount of neutral grassland could impact negatively on GCN and common amphibians, though it is a small area (less than 0.6ha) within the wider site of 65ha.	<b><u>Precautionary methods of working are proposed to negate the impacts to any amphibians during the proposed works.</u></b>  Enhancements for waterbodies on site and the site habitats for supporting amphibians and water vole are listed within Table 7.

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## 1.0 Introduction and Context

### 1.1 Background

Arbtech Consulting Limited was instructed by Enviromena Project Management Ltd to undertake a great crested newt (GCN) survey at Land at Nailcote Farm, Fillongley, Coventry, North Warwickshire, CV7 8DW (hereafter referred to as “the site”). The survey was required to inform a planning application for the construction of a temporary Solar Farm providing 48.1 MW (AC) output, to include the installation of ground-mounted solar panels together with associated works, equipment, and necessary infrastructure (hereafter referred to as “the proposed development”). A plan showing the proposed development is provided in Appendix 1.

The GCN survey has been informed by a Preliminary Ecological Assessment, completed by Arbtech Consulting in December 2022. There are no ponds present on site, but there are six ponds within a 250m buffer of the site and records of GCN within 100m. Due to the proximity to the site, it was requested by the client that eDNA be undertaken on three of the six ponds within 250m of the site, and due to the proximity to the site and potential impact to amphibians within hedgerows, woodlands and other habitats present on site.

Due to the

### 1.2 Site Location and Landscape Context

The site is located at National Grid Reference SP 27639 86057 and has an area of approximately 65ha comprising arable fields, bare earth, hedgerows, scattered trees, woodlands, and drainage ditches. It is surrounded by arable fields to the north, east and west with woodland bordering the south of the site along the M6 embankment. There are a small number of residential and agricultural buildings in the surrounding landscape. A site location plan is provided in Appendix 2.

### 1.3 Scope of the Report

This report describes the suitability of the habitats on the site and any surveyed ponds for GCN and identifies the presence or absence of GCN in these ponds. It identifies possible constraints in relation to GCN as a result of the proposed development and summarises the requirements for further surveys and mitigation measures to inform subsequent mitigation proposals, achieve planning or other statutory consent and to comply with wildlife legislation.

To achieve this, the following steps have been taken:

- A field survey has been undertaken, including an assessment of the suitability of the site and any ponds within influencing distance of the site for GCN.
- An outline of potential impacts on GCN has been provided, based on the proposed development.
- Recommendations for further surveys and mitigation have been made, along with advice on the requirements for a European Protected Species Licence (EPSL) for GCN if appropriate.
- Opportunities for the enhancement of the site for GCN have been set out.

In addition, the ditches and watercourses on site were re-examined within the more optimal summer season for their likelihood for supporting otter and water vole, surveying for burrows, chewed lawns and latrines for water vole and slides, couches, holts and spraints for otter.

## 2.0 Methodology

### 2.1 Field Survey for GCN

A review of OS and aerial imagery identified 6 ponds within 250m of the site. Three of these ponds (Pond 1, Pond 2, and Pond 3) were requested to be subject to an eDNA survey, whilst also taking pictures and undertaking a HSI on them. The remaining ponds were not surveyed due to lack of access as they were sited on third party land.

The survey was undertaken by Katy Perry BSc (Hons), MCIEEM, Senior Ecological Consultant - Natural England GCN Licence Number: 2018-35157-CLS-CLS on 21<sup>st</sup> May 2023.

### Habitat Suitability Index (HSI) Assessment

Ponds were assessed for their suitability to support GCN using the Habitat Suitability Index (HSI) Assessment Methodology (Oldham et al, 2000).

HSI is a standard measure of calculating the suitability of a pond to support breeding great crested newts, based on an assessment of 10 characteristics (indices), including size, shading, depth, and vegetation profile. The assessment generates a number between 0 and 1 for each of the indices which are combined to provide an overall assessment of a pond's suitability to support GCN on a categorical scale (Table 1). The assessment has not been designed for or tested on other waterbodies such as ditches.

Table 1: HSI Suitability Scores

HSI Score	Suitability	Predicted GCN Occupancy of Ponds in each Category
<0.5	Poor	3%
0.5 to 0.59	Below Average	20%
0.6 to 0.69	Average	55%
0.7 to 0.79	Good	79%
>0.8	Excellent	93%

### eDNA Survey

Sample kits and analysis was provided by SureScreen. Sampling followed the relevant sections of the method set out in the DEFRA funded study endorsed by Natural England (Biggs et al 2014). In summary the sampling protocol is as follows:

- 20 samples were taken from around the entire perimeter of the waterbody.
- The surveyor stayed out of the water while taking the samples (extension poles were used in situations where open/sufficiently deep water was at a distance from the dry banks.
- Survey locations were distributed around the pond perimeter, but micro-siting was used to select locations most likely to be used by GCN.
- At each sample location the water column was stirred prior to taking the sample but care was taken to avoid disturbing the sediment on the base of the pond.
- Once all 20 samples were taken, 15ml of the total sample were pipetted into each of the 6 sampling tubes, whilst ensuring that the water in the sample bag was mixed before taking each 15ml sample and that only one sample tube was opened at any one time.

- At all times the surveyor ensured that the risk of contaminating the sampling equipment was minimised by avoiding the placement of the ladle or pipette on the ground or on any otherwise potentially contaminated surfaces and by changing gloves between the initial sampling stage and the pipetting stages of the method.

Samples were sent to SureScreen Scientifics for DNA analysis.

## **2.2 Water Vole Survey**

Surveys for water vole were conducted on two separate visits, one between April and June and one between July and September. This is to allow for variations in habitat suitability across the season and because water voles are increasingly being shown to utilise different areas at different times of year. A detailed visual search of the watercourses within the water vole survey area was undertaken. The survey methodology used was in accordance with the Water Vole Conservation Handbook (Strachan and Moorhouse, 2011). This consisted of identifying the extent and distribution of water vole through searches of both banks (where possible) of watercourses for field signs indicating recent activity (i.e., feeding stations and latrines), as well as signs of past and potentially present activity (i.e., burrows). Where conditions allowed, a surveyor walked in the watercourse channel to check for field signs along the water's edge.

The field signs searched for were as follows:

- Faeces – these are 8 – 12mm long and 4 – 5mm wide, with a smooth 'tic tac' like shape, varying in colour from green to black, and odourless with a putty-like texture.
- Latrines – found throughout the territory, often comprising a pile of flattened droppings, with fresh droppings on top, used to mark range boundaries or favoured spots close to burrows.
- Feeding stations – comprise a neat pile of chewed feeding remains, often comprising lengths of vegetation up to 10cm long, showing the marks of the two large incisors.
- Burrows – these are typically wider than they are high, with a diameter of 4 – 8cm, and are usually located along the water's edge.
- Lawns – around burrows there is often an area of grazed vegetation, surrounded by taller vegetation, these are most often produced when the female is nursing young.
- Nests – these comprise a large ball of shredded material, often woven into the bases of rushes and reeds, and are normally found in areas where the water table is high, such as wetlands.
- Footprints – as with other rodents, the footprints of the fore foot, show four toes in a star arrangement, with the hind foot showing five toes. The size of footprints for the hind foot is 26-34mm.
- Runways – these are low tunnels within the vegetation, often adjacent to the water's edge.
- The presence of water vole can also be confirmed by sightings and from the characteristic 'plop' of the water vole entering the water, which acts as a warning to other voles.

## **2.3 Otter Survey**

A detailed visual search of the watercourses within the site and the surrounding 100m, where accessible, concurrently with the water vole surveys. Searches for otter activity were undertaken following guidance provided in Monitoring the Otter (Chanin and Smith, 2003). The field signs searched for were as follows:

- Holt entrances – holes characteristically in riverbanks or under tree roots at river edges.

## **Great Crested Newt Survey and watercourse assessment**



- Couch – typically an above-ground nest-like structure used as a resting place.
- Footprints – 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 the same 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.
- Spraint – found in prominent locations adjacent or along a river, for example on tree stumps, large rocks, and ledges under bridges. Sometimes otters may build a ‘castle’ of soft mud or sand along a river to spraint on top of. Spraints are made up of clearly visible fish bones and scales, with some other small bones, fur, feather, and insect fragments sometimes present. Fresh spraint is usually black, tarry and sticky. It has a distinctive sweet-musky odour, which is not unpleasant.
- Anal jelly – a jelly-like secretion that smells strongly of otter and can vary in colour from pale brown, greenish to amber.
- Other signs – for example, occasionally remains of dead otters can be seen on roads.

## **2.2 Limitations**

This survey provides a ‘snapshot’ of the assessed habitat and wildlife value of the site at the time of survey only and may require further survey effort to provide robust, scientifically valid evidence of protected species status.

Specific limitations include:

- Ponds 4, 5 and 6 were not able to be accessed due to being on 3<sup>rd</sup> party land.
- Pond 3 was the only pond to have an eDNA sample undertaken and HSI as Ponds 1 and 2 were enclosed by dense impassable scrub and not visible or accessible.
- The waterbodies were assessed within the previous PEA, 2022 and updated photographs were taken during May 2023 site visit.


### 3.0 Results and Evaluation



A plan showing the survey results is provided in Appendix 3. The weather conditions recorded at the time of the survey are shown in Table 2. Pond and watercourse descriptions are provided in Table 3, HSI assessment in Table 4 and eDNA results in Table 5. The SureScreen lab results are included in Appendix 4.

*Table 2: Weather conditions during the survey*

<b>Date:</b>	21/05/2023
<b>Temperature</b>	25°C
<b>Humidity</b>	56%
<b>Cloud Cover</b>	30%
<b>Wind</b>	1mph
<b>Rain</b>	None

*Table 3: Surveyed Ponds and waterbodies*

Ref	Description	Photograph
Pond 3	Pond three is located approximately 100m from the site boundary at SP28148614. It is surrounded by tall neutral grassland, with a border of trees and shrubs around the perimeter of the pond. The pond contained a large amount of water and based on the muddy embankments, it is evident that cattle and dogs enter this pond frequently with a loss of vegetation around the edges. In addition, there was a low level of submergent vegetation within the pond, being concentrated on the south-western embankment and the middle of the waterbody. Willows, oaks, hawthorn, and blackthorn line the edge of the pond creating some level of shade and resulting in a layer of leaf litter within the pond. No amphibians were observed during the survey of the pond.	

Ref	Description	Photograph
Pond 2	<p>Pond 2, south of Pond 1, located at SP28128573, is inaccessible. There is a dense encroachment of bramble, nettles and hedgerow species around the perimeter which prevents access to the water and pond. The brambles were approximately 1.5m tall and 2m wide.</p> <p>From looking over the top of the bramble, it is apparent that the pond is filled with bulrush and rushes and looks to be densely packed with vegetation.</p>	
Pond 1	<p>Pond 1 could not be observed in any way unlike Ponds 2 and 3. There was no access to the perimeter due to wire fencing and dense scrub.</p>	



Ref	Description	Photograph
Waterbody to the east which goes through woodland	<p>The waterbody that runs along the south-east of the site is pictured opposite, with the top image in May 2023 and the bottom image in December 2022.</p> <p>The embankments of the watercourse in this section are overgrown with dense bramble, nettle and willowherb which is suboptimal for water voles as the waterbody will be heavily shaded within. There is also very little flow within the water course as it runs through the woodland where it is almost negligible, and along the field boundaries to the east where it has a shallow gravelly base to the watercourse but a much more shaded embankment due to the presence of the hedgerows and large mature trees, as shown below. The watercourse during both visits was subject to a survey for the presence of water vole and otter. No evidence of either was observed during both surveys. In winter 2022, it was much easier to assess for the presence of any burrows within the embankment of the watercourse, which would indicate the presence of water vole, but none were observed. The exposed mud on any embankments along the water course was searched for prints, but only bird footprints, deer, fox, and rabbit were seen across the entire site.</p>	



Ref	Description	Photograph
<p>Waterbody to the west which goes through fields</p>	<p>The waterbody that runs along the west of the site is pictured opposite, with the top image in May 2023 and the bottom image in December 2022. During the winter survey, it was easy to see that the vegetation had been cleared back as part of routine mowing and maintenance across the site and made the embankment easier to survey for the presence of water vole and otter. The water course itself is shallow and lacks a significant flow. It is unlikely to support large numbers of fish, in particular in this section to the south of the site. To the north-west, there was a kingfisher observed briefly on a section of the watercourse, which is slightly wider and deeper, which forks off further west out of the site boundary, see in the location of the image below. There were no burrows, latrines, footprints, spraints, couches, or any evidence to suggest the presence of otter or water vole.</p> <p>The water courses on site have limited connectivity to the wider landscape, in particular for supporting otter, with no significant watercourse or fisheries that would support foraging otter and with the M6 south of the site.</p> 	

Table 4: HSI Assessment Results

SI Description	P3
Geographic location	1
Pond Area	0.6
Pond permanence	1
Water quality	0.33
Shade	1
Waterfowl effect	0.67
Fish presence	1
Pond Density	1
Terrestrial habitat	0.67
Macrophyte cover	0.6
HSI score	0.74
<b>HSI category</b>	<b>Good</b>

Table 5: eDNA Survey Results

Pond Ref	eDNA Result
3	Positive

Table 6: Watercourse Survey Results

Watercourse ref	Watercourse description	Evidence of water vole and otter
Watercourse to the east of site	The watercourse varies along its length with it being shallow and gravelly, but heavily shaded to the north-east, then almost entirely absent and 100% shaded within the woodland, to an exposed section covered with dense scrub at the south-east of the length.	Surveyed within winter and summer of consecutive years, there was no evidence of otter or water vole present.
Watercourse to the west of site	With the watercourse being wider and deeper to the north-west of the site, the waterbody then forks and branches off west outside of the site boundary. It was here a kingfisher was observed. This is a shaded section of the waterbody with trees and hedgerows along the embankment. With exposed embankments in the winter months. As the watercourse travels south, it gets narrower and shallower and is exposed between two arable fields with vegetation present within the channel in the summer months, cut back in winter.	There was no evidence of otter or water vole during either survey on the site.

#### 4.0 Conclusions, Impacts and Recommendations

Taking the field survey results into account, Table 7 presents an evaluation of the value of the site for great crested newts and other amphibians, and riparian mammals in relation to the proposed development which will comprise for the construction of a temporary Solar Farm providing 48.1 MW (AC) output, to include the installation of ground-mounted solar panels together with associated works, equipment, and necessary infrastructure.

Table 7: Evaluation of site for GCN, Otter and Water vole

Survey Results Summary	Impact Assessment	Recommendations
<p>Pond 3, located 100m west of the site, has a good HSI score and a positive eDNA result for supporting GCN. In addition, BRD from the PEA, 2022, identified that GCN were present within 100m of the site with previous records, but no EPSLs or licence return data.</p>	<p>The majority of the proposed works to install the solar panels will be undertaken on arable fields, which are of suboptimal value for great crested newts due to the levels of constant disturbance and the exposure when harvested.</p> <p>The tree lines, woodland, and hedgerows within the site and around the site perimeter are to be retained as part of the proposals. These are habitats which offer some suitability for supporting sheltering or overwintering amphibians and therefore impacts to these habitats have the opportunity to negatively impact upon GCN.</p> <p>A small section of neutral grass (0.6ha within the 65ha space) will need to be removed around the woodland for the installation of the panels. This assumption is for the removal of all of that space, however, in reality, the works will only require some removal for the stands of the panels. In addition, during surveys, this area of grass adjacent to the woodland has been kept relatively short in length and is absent of flowers and therefore invertebrates for any foraging amphibians. This area of grass to be impacted is over 175m from the pond which tested positive for GCN, and with the GCN Rapid Risk Assessment (Natural England Tool), the assumption of full removal of 0.6ha of habitat within 250m of a breeding pond could cause an “amber” offence – with an impact on GCN likely. However, the area of removal is likely to be significantly reduced with only posts installed within the grass and the habitats between the site and the pond are predominantly suboptimal with the vast areas on site being arable fields.</p> <p><u>With between 0.1 and 0.5ha suitable habitat impacted on site, there is no offence likely at all to GCN or amphibians and the proposed works is deemed “green” rather than amber. This is the most likely case with the proposed works as the full 0.6ha of grass is not needed to be removed to accommodate the solar panels.</u></p>	<p>As the grass on site is not due to be removed in its entirety for the installation of the panels, and therefore the area of habitat removal will be less than 0.6ha within the wider 65ha site, and this area is over 175m from the pond with suboptimal habitats between (bare arable fields), it is assumed that the risks to GCN can be fully mitigated by precautionary methods of working and post-development enhancements and mitigation.</p> <p><b><u>Precautionary methods of working are to include:</u></b></p> <ul style="list-style-type: none"> <li>• Best practice pollution prevention measures will be implemented to minimise impacts to retained habitats that amphibians could use.</li> <li>• Any chemicals or pollutants used or created by the development should be stored and disposed of correctly according to COSHH regulations.</li> <li>• If any common amphibians are found in the working area these should be moved by hand to a vegetated area along the site boundaries or in retained habitats away from disturbance.</li> <li>• The grass should be maintained to a short sward length on site prior to works commencing and during construction to retain it as a suboptimal habitat for amphibians.</li> <li>• Materials should be stored off the ground or on areas of hard standing where available to prevent animals seeking refuge underneath.</li> <li>• Heras fencing will be erected around the working area to prevent encroachment towards the lines of trees where amphibians could be present.</li> <li>• Site clearance will be undertaken outside of the amphibian hibernation season (November to February) insofar as is possible. Works when amphibians are likely to be in ponds will minimise the impact on any that could commute through the site, though very unlikely.</li> <li>• A staged approach will be adopted for vegetation clearance, whereby the vegetation will be strimmed to 15cm and left overnight to allow</li> </ul>



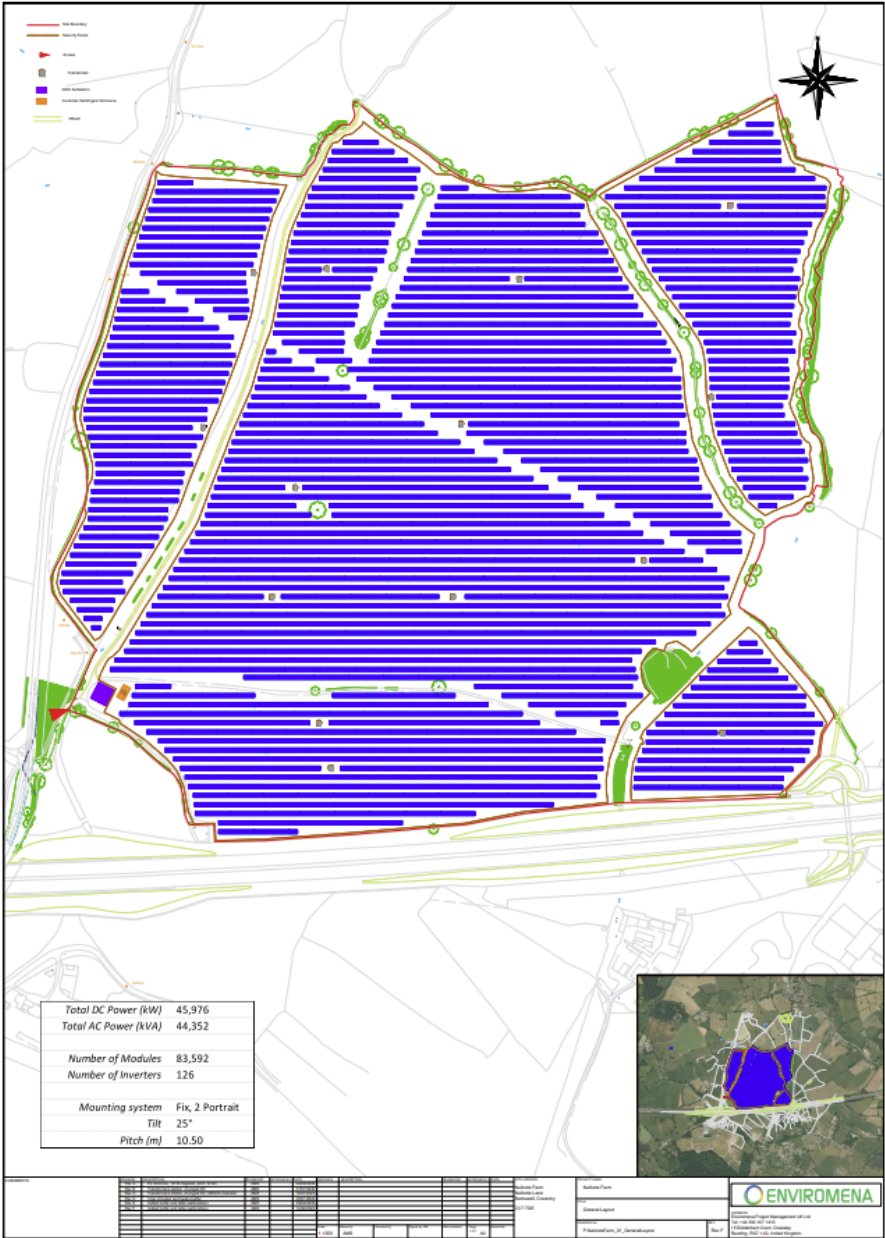
		<p>any amphibians to disperse. The vegetation can then be cleared to ground level and must be maintained at this level for the duration of construction to deter amphibians from the working area.</p> <ul style="list-style-type: none"> <li>Hedgerows and scrub along the eastern boundary will remain intact and not disturbed by the proposed works.</li> </ul> <p>The following habitat creation and enhancement opportunities could be incorporated into the proposed development which would be beneficial for amphibians:</p> <ul style="list-style-type: none"> <li>Creation of amphibian refugia and hibernacula using debris and brash from site clearance.</li> <li>Planting of native scrub and grassland to increase foraging opportunities.</li> <li>Creation of wildflower grassland across site in between the solar panels.</li> </ul>
<p>No evidence of otter or water vole was observed on site on either of the watercourses during the Winter 2022 and Summer 2023 surveys. There are records of water voles within 3km of the site, with records from 2002-2007 identified at Breach Brook, over 2km from the site. There is no connectivity between Breach Brook and the site. There were no records of otter returned within 3km of the site and there is an absence of large waterbodies which could support foraging otter within the landscape.</p>	<p>Both otter and water vole are assumed to be absent from the site and unlikely to be impacted by the proposed works.</p>	<p>Although no impacts are anticipated on otter or water vole, the watercourses are likely to support other widespread species and therefore precautionary measures are recommended to prevent negative impacts on any notable species or the water quality.</p> <ul style="list-style-type: none"> <li>Heras fencing will be erected around the working area to prevent encroachment within 5m of the watercourse.</li> <li>The use of night-time lighting will be avoided, or sensitive lighting design will be implemented to avoid light spill on to the watercourse and any retained habitats which water voles could use.</li> <li>Best practice pollution prevention measures will be implemented to minimise impacts to the watercourse and any retained habitats that water vole could use, which include keeping machines and refuelling stations on hard standing and over 10m from water courses and ensuring spill kits and plant nappies are present on-site during construction.</li> <li>Any chemicals or pollutants used or created by the development should be stored and disposed of correctly according to COSHH regulations.</li> </ul> <p>The site is unsuitable for otter, but the site could be improved and enhanced to support water vole. The following habitat creation and enhancement opportunities could be incorporated into the proposed development which would be beneficial for water vole:</p> <ul style="list-style-type: none"> <li>Planting species rich grassland close to the watercourse to increase foraging opportunities.</li> </ul>



## 5.0 Bibliography

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Appendix 1: Proposed Development Plan



Appendix 2: Site Location Plan





Appendix 3: GCN Survey Plan



Appendix 4: eDNA Results



Folio No: E17581  
Report No: 1  
Purchase Order: Nailcore - CV7 8DW  
Client: ARBTECH  
Contact: Katy Perry

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

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 analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 23/05/2023  
Date Reported: 30/05/2023  
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
0687	Nailcore - Pond 3	SP 28135 86150	Pass	Pass	Pass	Positive	4

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

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### **METHODOLOGY**

The samples detailed above have been analysed 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 which then undergoes DNA extraction. The extracted sample is then analysed 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 scrupulous attention to detail to prevent 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 security.

SureScreen Scientifics Ltd is ISO9001 accredited and participate in Natural England's proficiency testing scheme for GCN eDNA testing. We also carry out regular inter-laboratory checks on accuracy of results as part of our quality control procedures.

### **INTERPRETATION OF RESULTS**

<b>SIC:</b>	<b>Sample Integrity Check</b> [Pass/Fail] 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.
<b>DC:</b>	<b>Degradation Check</b> [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.
<b>IC:</b>	<b>Inhibition Check</b> [Pass/Fail] The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.
<b>Result:</b>	<b>Presence of GCN eDNA</b> [Positive/Negative/Inconclusive] <b>Positive:</b> 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. <b>Positive Replicates:</b> 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 Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence. <b>Negative:</b> 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.



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## Appendix 5: Legislation and Planning Policy

### LEGAL PROTECTION

#### ***Great crested newts***

The great crested newt receives full protection under Habitats Regulations through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring, or capturing of Schedule 2 species.
- Deliberate disturbance of species in such a way as:
  - To impair their ability to survive, breed, or reproduce, or to rear or nurture young;
  - To impair their ability to hibernate or migrate.
- To affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place

This species is also listed on Schedule 5 of the Wildlife and Countryside Act, and they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering, or exposing for sale, possession or transporting for purpose of sale.

#### ***Water Voles***

The water vole *Arvicola terrestris* is fully protected under Schedule 5 of the WCA. This makes it an offence to:

- Intentionally kill, injure, or take (capture) water voles.
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection.
- Intentionally or recklessly disturb water voles while they are occupying a structure or place used for shelter or protection.

#### ***Otters***

Otters *Lutra lutra* are fully protected under the Conservation Regulations through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring, or capturing of Schedule 2 species.
- Deliberate disturbance of species in such a way as:
  - To impair their ability to survive, breed, or reproduce, or to rear or nurture young;

- To impair their ability to hibernate or migrate.
- To affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place

Otters are also currently protected under the WCA through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection

## **NATIONAL PLANNING POLICY**

### ***National Planning Policy Framework 2021***

The National Planning Policy Framework promotes sustainable development. The Framework specifies the need for protection of designated sites and priority habitats and species. An emphasis is also made on the need for ecological infrastructure through protection, restoration, and re-creation. The protection and recovery of priority species (considered likely to be those listed as UK Biodiversity Action Plan priority species) is also listed as a requirement of planning policy.

In determining a planning application, planning authorities should aim to conserve and enhance biodiversity by ensuring that: designated sites are protected from harm; there is appropriate mitigation or compensation where significant harm cannot be avoided; opportunities to incorporate biodiversity in and around developments are encouraged; and planning permission is refused for development resulting in the loss or deterioration of irreplaceable habitats including aged or veteran trees and also ancient woodland.

### ***The Natural Environment and Rural Communities Act 2006 and the Biodiversity Duty***

Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006, requires all public bodies to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the 'biodiversity duty'.

Section 41 of the Act requires the Secretary of State to publish a list of habitats and species which are of 'principal importance for the conservation of biodiversity'. This list is intended to assist decision makers such as public bodies in implementing their duty under Section 40 of the Act. Under the Act these habitats and species are regarded as a material consideration in determining planning applications. A developer must show that their protection has been adequately addressed within a development proposal.



#### **EFFECT OF LEGISLATION AND POLICY ON DEVELOPMENT WORKS**

A European Protected Species Licence (EPSL) issued by the relevant countryside agency (i.e., Natural England, Natural Resources Wales, Scottish Natural Heritage) will be required for works likely to affect the breeding sites or resting places of great crested newts protected. A licence will also be required for operations liable to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g., survive, breed, rear young and hibernate). The licences are to allow derogation from the relevant legislation, but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.