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Great Crested Newt Surveys

Low Farm, Grange Moor, Wakefield,

West Yorkshire

July 2021

A report by

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Report details

Site name:	Low Farm
Site address:	Low Farm, Wakefield Road, Grange Moor, Wakefield, West Yorkshire, WF4 4BB
Grid reference:	SE 246 161
Survey dates:	25th June 2021
Report date:	15th July 2021
Report author:	James Gilroy BSc (Hons), MSc
Report reviewer:	Colin Hicks BSc (Hons), MCIEEM
Report no:	WOR-2360.2

Declaration of compliance

BS 42020:2013

This study has been undertaken in accordance with British Standard 42020:2013 Biodiversity, Code of Practice for Planning and Development.

Code of Professional Conduct

The information which we have prepared is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Validity of survey data and report

The findings of this report are valid for 24 months from the date of survey. If work has not commenced within this period, an updated survey by a suitably qualified ecologist will be required.

Revisions

Date	Report no:	Approved by:	Comment
23/07/2021	WOR-2360.2	CDH	Original report

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1. Introduction

Western Ecology has been commissioned to complete Great Crested Newt environmental DNA (eDNA) surveys of ponds associated with an area of agricultural land located within the grounds of Low Farm, just to the north of the village of Flockton Green, near Wakefield in Yorkshire. Installation and operation of a Solar Farm together with all associated works, equipment and necessary infrastructure is proposed.

1.1. Survey aims

The survey aim is to determine presence of Great Crested Newt (GCN) within 500 metres of the proposed development. This will allow an assessment of likely impact, and where appropriate, recommendations will be made for impact avoidance, mitigation and post-development enhancement to ensure compliance with wildlife legislation and relevant planning policy.

1.2. Site location

The development footprint concerns agricultural land situated between the villages of Grange Moor and Overton, approximately 9.6km to the south-west of the town of Wakefield in West Yorkshire.

2. Survey Methodology

2.1. Biological records search

The desktop survey from West Yorkshire Ecology Service provided biological records for GCN within 1 km of the site.[1]

2.2. Habitat suitability Index (HSI)

All accessible waterbodies within 500 metres of the site were evaluated for their potential to support Great Crested Newt by calculating a habitat suitability index (HSI) as per ARG UK Advice Note 5.

2.3. eDNA surveys

Water samples were taken from waterbodies that were considered to have sufficient suitability to support GCN, based on HSI score and professional judgement.

Water samples for eDNA analysis to determine presence/absence of Great Crested Newt were collected from 9 waterbodies within the survey area on 25th June 2021. Location of the ponds surveyed are detailed in Map 1. The survey visits were carried out within the optimum period of mid-April to late June and the samples were collected by a suitably experienced and licenced ecologist.

The eDNA sampling kits were supplied by SureScreen Scientifics and the survey methodology followed the Natural England protocol[2].

For each water body, 20 samples of 30 ml each were collected from the edge of the waterbody by a suitably licenced and qualified ecologist. These samples were then mixed after which 15ml was withdrawn and added to each of six tubes containing a preservative. Six tubes from each waterbody were sent for analysis by SureScreen Scientifics.

[1] Please see Preliminary Ecological Appraisal for additional detail

[2] Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F 2014. Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067. Freshwater Habitats Trust: Oxford.

3. Results

3.1. Biological records search

The biological records search returned 12 records for Great Crested Newt within 2km of the Site, of which several relate to Pond A, located imedaitely adjacent to the southern boundary of Area 8 (see Map 1).

Denby Grange Colliery Ponds SSSI/SAC is located approximately 2km to the southeast of the Site (at the closest point) and has been designated for its regionally significant populations of Great Crested Newt.

3.2. Habitat Suitability Index (HSI)

HSI scores were calculated for all of the ponds within 500m and that were accessible. 13 ponds were surveyed, while 2 ponds were not accessible.

There are five ponds located within or immediately adjacent to the Site boundaries (Ponds A-E) and a further 10 ponds located beyond the boundaries of the Site (Ponds 1-10)

Great Crested Newt Habitat Suitability Index (HSI) has been calculated for all ponds based on ARG UK Advice Note 5. Details are contained within Table 1 below.

Table 1. HSI of ponds

Pond Number	HSI score and suitability	Comments
Pond A	0.76 – good	
Pond B	0.52 – below average	Historic fishing lake. Scoped in for further survey due to presence of good terrestrial habitat and other ponds in close vicinity.
Pond C	0.69 – average	
Pond D	0.52 – below average	Historic fishing lake. Scoped in for further survey due to presence of good terrestrial habitat and other ponds in close vicinity
Pond E	0.76 – good	
Pond 1	No access	Scoped out of further surveys
Pond 2	No access	Scoped out of further surveys
Pond 3	0.52 – below average	Scoped in for further survey due to presence of good terrestrial habitat and other ponds in close vicinity.
Pond 4	0.52 – below average	Scoped in for further survey due to presence of good terrestrial habitat and other ponds in close vicinity
Pond 5	<0.4 - poor	Low score due to poor water quality from acid mine drainage (used as settling bed for mine drainage). Scoped out of further surveys.
Pond 6	0.76 - good	Reedbed area for mine drainage
Pond 7	<0.4 - poor	Used as settling tank for mine drainage. Scoped out of further surveys

Pond 8	<0.4 - poor	Used as settling tank for mine drainage. Scoped out of further surveys
Pond 9	0.56 – below average	Scoped in to further surveys
Pond 10	N/A – pond has been filled in and no longer in existence	Scoped out of further surveys

The HSI provides an indication of the likelihood of a pond supporting Great Crested Newt:

- Only 3% of ponds with 'poor' HSI scores are likely to be occupied by Great Crested Newt.
- Twenty percent of ponds with 'below average' scores are likely to be occupied by Great Crested Newt.
- More than half of ponds (55%) with 'average' scores are likely to be occupied by Great Crested Newt.
- Seventy-nine percent of ponds with 'good' scores are likely to be occupied by Great Crested Newt.

3.3. eDNA surveys

eDNA surveys were completed on Ponds A, B, C, D, E, 3, 4, 6 & 9 on 25th June 2021. Subsequent samples were received at the laboratory on 30th June and results reported on 13th July (Appendix 1).

Analysis was successfully completed on all of the samples from the ponds surveyed. All ponds returned a Negative result for GCN eDNA.

3.4. Survey constraints

The surveys were completed in the period within which Natural England will accept DNA evidence to support a European Protected Species licence application.

All ponds where access had been granted were accessible and a full assessment was made. There are no significant constraints to the survey results at this site.

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Legend

Lines-report

- Site boundary
- 500m buffer

Pond location and survey result

- Dried out/filled in
- Low HSI
- Negative
- No access

Title: Map 1. Waterbodies surveyed for Great Crested Newt HSI and eDNA

Project: Low Farm, Wakefield, West Yorkshire

Checked by: CDH Version: 01
Date: 23 July 2021

4. Legislation

Great Crested Newt and their breeding sites and resting places (during all parts of their lifecycle), are fully protected under the Wildlife and Countryside Act 1981 (as amended), and The Conservation of Habitats and Species Regulations 2017. They are identified as European Protected Species. Under these laws it is an offence to:

- capture, kill, disturb or injure Great Crested Newts (on purpose or by not taking enough care);
- damage or destroy a breeding or resting place (even accidentally);
- obstruct access to their resting or sheltering places (on purpose or by not taking enough care);
- possess, sell, control or transport live or dead newts, or parts of them; or
- take Great Crested Newt eggs.

Great Crested Newt are listed as a species of Principal Importance for the conservation of biodiversity.

Any development activities which could result in the accidental killing, injury or disturbance of GCN may constitute an offence under the Habitats Regulations.

Natural England may issue a licence to permit activities that would otherwise give rise to an offence under the Regulations. A European Protected Species Licence (EPSL) can be issued for a number of purposes, including “imperative reasons of overriding public interest” (known as IROPI), which covers development activities affecting GCN. Licences can only be issued where there is (a) no satisfactory alternative and (b) the action authorised will not adversely affect the favourable conservation status of the species.

5. Assessment of potential impacts associated with the development.

Negative eDNA results from all 9 ponds surveyed suggest a likely absence of Great Crested Newt populations from these waterbodies. It can be reasoned from the lack of eDNA in the ponds associated with this site, as well as the dominance of suboptimal terrestrial habitat in the surrounding area, that there are no local Great Crested Newt populations associated with these waterbodies. It is also reasonable to conclude that Great Crest Newt are very unlikely to active within the terrestrial habitat associated with the Site.

The proposed development is therefore highly unlikely to impact individual Great Crested Newts and/or local populations in a way that may constitute as an offence.

6. Recommendations

The proposed development is very unlikely to impact Great Crest Newt in a way that may constitute as an offence. The development can proceed with negligible risk to GCN and does not require a method statement for GCN or a European Protected Species licence.

No further actions are required for this development relating to Great Crested Newt.

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7. Appendix 1

Folio No: E11333
Report No: 1
Purchase Order: LOW FARM
Client: WESTERN ECOLOGY
Contact: James Gilroy

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: 30/06/2021
Date Reported: 13/07/2021
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
7079	Low Farm Pond 10	SE 248 162	Pass	Pass	Pass	Negative	0
7080	Low Farm Pond 8	SE 244 170	Pass	Pass	Pass	Negative	0
7083	Low Farm Pond 7	SE 241 166	Pass	Pass	Pass	Negative	0
7344	Low Farm Pond 13	SE 250 154	Pass	Pass	Pass	Negative	0
7345	Low Farm Pond 6	SE 238 160	Pass	Pass	Pass	Negative	0
7346	Low Farm Pond 4	SE 239 159	Pass	Pass	Pass	Negative	0
7347	Low Farm Pond 3	SE 239 158	Pass	Pass	Pass	Negative	0

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7348	Low Farm Pond 5	SE 239 160	Pass	Pass	Pass	Negative	0
7349	Low Farm, Reed Bed Settling Pond	SE 251 163	Pass	Pass	Pass	Negative	0

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

Reported by: Chris Troth **Approved by:** Chris Troth

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

SIC: **Sample Integrity Check** [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.

DC: **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.

IC: **Inhibition Check** [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.

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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 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.

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