# Anglian Ecology

# Ecological Surveys

## Protected Species & Habitat Surveys

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Report on eDNA testing of pond in relation to proposed re- development at Kiln Farm, Hoo, Woodbridge, Suffolk.

Report for: Mr. & Mrs. Chris Dearling & Agents

Date of Field Survey: Wednesday June 21st, 2023

Report written by: S. Morgan CEcol, CEnv,

Natural England Survey Class Licence WML-CL08 Registration number 2015-19101-CLS-CLS. (great crested newts).

Checked by FM, date checked: 06/07/2023

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Please note:

Records form a vital part of conservation work and potentially inform decisions within the wider area. In line with good practice, all information with regard to protected species found during this site survey will be given to the relevant county recording service within one week of report issue, unless specific instructions to the contrary are received within this timeframe from the client.
Ecosystems and wildlife species are constantly changing and moving and can be dependent on surrounding impacts and climate conditions. Therefore, any field survey, no matter how
thoroughly undertaken, can only represent a 'snapshot' of conditions at the time of visit.

No ecological survey should be considered current after a period of 2 years has elapsed from site visit, and in many cases, the period is less. If in doubt as to wildlife or protected species issues on this site seek advice from a suitably qualified ecologist, as the legislature will not accept ignorance as a defence.

All site owners and contractors should be aware of their legal obligations with regard to species and habitats. A précis of the current legislation with regard to protected species is included within this report and if in doubt all work on a site should cease until the advice is obtained from a suitably qualified and licenced ecologist.

Natural England is the government's advisor on the natural environment and provides a range of information including regional contact details on their website: https://www.gov.uk/government/organisations/natural-england/services-information
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The information that I have prepared and provided is true and has been prepared in accordance with the guidance of my professional institute.
I therefore confirm that the opinions expressed are my true and professional opinions.

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## Summary

Mr. and Mrs. C. Dearling commissioned Anglian Ecology to undertake eDNA testing for the presence of great crested newts (Triturus cristatus) (GCN) of their pond situated 20 m southeast of a stables block proposed for re-development. There is no major barrier between this waterbody and the proposed site area. As the work will involve breaking ground and heavy plant movement, the client needed to be informed as to the presence/absence of great crested newt to avoid inadvertently committing an offence.

The test results and this accompanying report of the findings are to inform a planning application to East Suffolk District Council concerning the potential ecological impacts on protected species such as GCN which are a material consideration when reviewing the granting of planning permission.

The eDNA presence/absence survey was conducted at the optimum time of year for such work, by a Natural England licensed ecologist trained in the field sampling techniques described in the technical advice note WC1067 for field and laboratory sampling of great crested newt environmental DNA.

For the location of the waterbodies please see Figure 1. Testing took place on Wednesday June 21st, 2023. by Sue Morgan, a qualified and licenced surveyor, in appropriate weather conditions and following best practice guidelines.[1] The result of the testing of the pond was positive.

The client's attention is drawn to the fact that great crested newts and their habitats are protected under both UK and European legislation from disturbance or harm. The great crested newt can travel considerable distances, sometimes 1.3km from breeding sites, but the vast majority will remain in closer vicinity to their breeding ponds. It spends most of its life on land, so protecting terrestrial habitat is just as important as conserving water sources.

The client must ensure that the potential presence of great crested newt on this proposed site is now taken into account prior to any works. Recommendations for potential mitigation and compensation measures are detailed within.

[1]Analytical and methodological development for improved surveillance of the Great Crested Newt WC106 Appendix 5. Technical advice note for field and laboratory sampling of great crested newt *(Triturus cristatus)* environmental DNA. Freshwater habitats trust, Oxford. Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F 2014.

# 1 Introduction

## 1.1 Background

In February 2023 Mr. and Mrs. C. Dearling commissioned Anglian Ecology to conduct a Preliminary Ecological Appraisal (PEA)[2] of land belonging to Kiln Farm, Chimers Lane, Hoo, in relation to proposals which include the conversion and part demolition of an existing 'L' shaped stable block (formerly adjoined) into an eco-friendly residential unit. In addition to the PEA the stable block was subject to a Bat and Bird Scoping Survey. Please consult submitted plans.

The PEA took place on 22-02-2023 and its purpose was to determine any potential impacts on protected species and habitats of the proposed works on this plot, and to identify any constraints, opportunities, and requirements for further survey. The report recommended e DNA testing of the pond on site for the presence/absence of great crested newt to inform the client as to their legal responsibilities during works with regard to these protected species.

Qualified surveyor Sue Morgan conducted eDNA testing of the pond on Wednesday June 21st, 2023, following the appropriate guidelines.[3]

## 1.2 Personnel

Sue Morgan is a Chartered Ecologist and Chartered Environmentalist with 21 years' experience of surveying similar sites, structures and protected species habitats. She works on projects for the Church of England, the National Trust, County and District Councils, the Suffolk Wildlife Trust, multi-national engineering consultancies, and private landowners. She holds Natural England licenses to survey for protected species.
She is a qualified teacher and delivers training courses for adults on ecological surveying, woodland management, and protected species, please visit: www.anglianecology.co.uk for more information.

She is a Chartered Member of the Chartered Institute of Ecology & Environmental Management (MCIEEM) and a past Convener of its East of England Section, and a Chartered member of the Institute of Environmental Management (MIEMA).

NATURAL ENGLAND LICENCES:

Natural England Licence Holder for the Surveying of Barn Owls Number CL29/00106.
Natural England Licence holder Class Licence CL18 Registration number: 2015-11320-CLS-CLS for the surveying & handling of bats in all counties of England.
Natural England Survey Class Licence WML-CL08 Registration number 2015-19101-CLS-CLS. (great crested newts).
Natural England Survey Class Licence holder 2016-21569-CLS-CLS (dormice).

BIOLOGICAL SURVEYING:
Advanced Certificate in Biological Surveying (University of E. Anglia, FSC).

[2] Preliminary Ecological Appraisal of Land and Outbuildings at Kiln Farm, Chimers Lane, Hoo, Woodbridge, Suffolk, Anglian Ecology, February 2023.
[3] Analytical and methodological development for improved surveillance of the Great Crested Newt WC106 Appendix 5. Technical advice note for field and laboratory sampling of great crested newt *(Triturus cristatus)* environmental DNA. Freshwater habitats trust, Oxford. Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F 2014.

# 2. Location

## 2.1 Grid Reference for the pond assessed.

TM 24191 57584

## 2.2 Map

Please see the MAGIC [4] map showing the location of the site and waterbody

Location of waterbody


Photograph of Pond looking northeast.

[4] Multi Agency Geographic Information for the Countryside

# 3 Desktop Survey

## 3.1 Historical Data

According to the previous PEA[5] conducted on this site there are There are eight records of great crested newts (Bern2, FEP7/2, HabRegs2, HSD2p, HSD4, ScotBL, Sect.41, UKBAP, WCA5/9.4b, WCA5/9.4c, WCA5/9.5a) with one Natural England Mitigation Licenses issued for this species, and one positive Natural England license return within a 2 km radius.
The nearest record is from the licence return 700 m to the northwest dated 2017.
The details of the Natural England Mitigation Licensing and survey return are reproduced below.
1. Granted European Protected Species Applications (England)
Case reference of granted application: 2019-40991-EPS-MIT
Species group to which licence relates: Amphibian.
Species on the licence: Great crested newt 1.6 km to the northwest.
Site county of licence: Suffolk
Licence Start Date: 07/08/2019.
Licence End Date: 31/12/2022
Does licence impact on a breeding site: N
Does licence allow damage of breeding site: N
Does licence allow damage of a resting place: Y
Does licence allow destruction of breeding site: N
Does licence allow destruction of a resting place: Y
Does licence impact on a hibernation site: Unknown
NERC agreement reference: Unknown.
2. Positive presence Great Crested Newt Class Survey Licence Return
GCN Present: Y
Survey Date: 18/04/2017
OS Grid Ref: TM236580

There are four records for common toad, (Bern3, ScotBL, Sect.41, UKBAP, WCA5/9.5a), the nearest being 1.7 km to the southeast dated 2018. There is one record each for common frog, (Bern3, HSD5, WCA5/9.5a,) and smooth newt, (Bern3, WCA5/9.5a), within the search radius, at 1.3 km to the southwest and 1.9 km to the southeast respectively, dated 2014 and 2019.

# 4 Objectives of surveys

To identify if great crested newt were present at the time of survey by testing the water using eDNA sampling.
To assess the need for further surveys to determine the potential impact of works on the local great crested newt population.

To advise the client and/or the client's agent on the legislation with regard to development and protected species.

[5] Preliminary Ecological Appraisal of Land and Outbuildings at Kiln Farm, Chimers Lane, Hoo, Woodbridge, Suffolk, Anglian Ecology, February 2023.

## 4.1 Methodology

eDNA testing

Environmental DNA (eDNA) analysis is a new method for species monitoring in water bodies. Natural England (NE) has approved this method for the determination of Great Crested Newt (GCN) presence or absence following Defra funded research into the application of this technique. eDNA analysis gives a quick GCN presence/absence result from a water sample which is collected following a specific protocol; samples can only be taken by trained and licenced personnel.

On 28th March 2014, DEFRA published a report into the effectiveness of Environmental DNA testing to detect GCN presence from samples of pond water. Shortly after, Natural England European protected species (EPS) licensing department confirmed that they would accept quantitative Polymerase Chain Reaction (qPCR) analysis of eDNA from water samples as proof of presence or absence of GCN in a pond.

eDNA is nuclear or mitochondrial DNA that is released from an organism into the environment. Sources of eDNA include faeces, mucous, gametes, shed skin and hair, and carcasses. eDNA can become suspended in water where it may persist for two to four weeks (Dejean et al., 2011; Thomsen et al., 2012). Thus, the detection of species-specific DNA sequences can indicate the presence or very recent presence of organisms.

In practice for GCNs, a bulk water sample is collected from different sites around a pond. This water sample is preserved in alcohol and sent to a laboratory for analysis to see if a GCN specific DNA sequence can be detected.

This eDNA technique can confirm presence/absence of GCN in a waterbody but does not provide a population estimate. If GCN are present in a waterbody and site proposals necessitate that a population estimate is required for Natural England licensing purposes, then six visits using traditional survey methods are required to follow.

# 5 Legislation

Great crested newts are a European protected species. The animals and their eggs, breeding sites and resting places are protected by law. You may be able to get a licence from Natural England if you're planning an activity and can't avoid disturbing them or damaging their habitats (ponds and the land around ponds).

Things that would cause you to break the law include:

capturing, killing, disturbing or injuring great crested newts deliberately
damaging or destroying a breeding or resting place
obstructing access to their resting or sheltering places (deliberately or by not taking enough care)
possessing, selling, controlling or transporting live or dead newts, or parts of them
taking great crested newt eggs.

You could get an unlimited fine and up to 6 months in prison for each offence if you're found guilty.

Great crested newts are UK protected species under:

- The Wildlife and Countryside Act 1981 (as amended) through their inclusion on Schedule 5.
- The Conservation of Habitats and Species Regulations 2017 (as amended).
  The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.
- Natural Environment and Rural Communities (NERC) Act 2006. Great crested newt is a priority species under Section 41 of the NERC Act (2006) which is a consideration under the National Planning Policy Framework (NPPF) revised 2021, which places responsibility on Local Planning Authorities to aim to conserve and enhance biodiversity and to encourage biodiversity in and around development.

# 6 Survey

## 6.1 Weather conditions and timing of surveys

The pond was surveyed on Wednesday June 21st, 2023, within the correct survey window for eDNA testing. The weather conditions were suitable: Temperature: 23°C, Wind: S, 6 mph, Humidity: 66%.

## 6.2 Survey methodology.

The samples were processed in accordance with the protocol set out in Appendix 5 of Biggs et al. (2014)[6]. eDNA was precipitated via centrifugation at 14,000 x g and then extracted using Qiagen DNeasy Blood and Tissue extraction kits.

qPCR amplification was carried out in 12 replicates per sample, using GCN specific primers and probe (developed by Thomsen et al. (2012) and adopted by Biggs et al. (2014)), in the presence of extraction negative controls, qPCR positive controls, and qPCR negative controls.

A score is given for the number of positive replicates out of 12. The qPCR method follows the recommendations set out by NatureMetrics for Natural England in the qPCR validation project and helps improve the reliability of the interpretation of the data.

[6] 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. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA. Freshwater Habitats Trust, Oxford.

# 7 Results

## 7.1 Table of results

### GCN Detection Results

| Pond ID | Inhibition | Degradation | GCN Score | Result |
|---|---|---|---|---|
| Kiln Farm | No | No | 5 | Positive |

### Sample Information

| Pond ID | Kit ID | Sampling Date | Received Date |
|---|---|---|---|
| Kiln Farm | GCN-23-01824 | 2023/06/21 | 2023/06/23 |

Results indicate positive GCN presence in the pond.

Results from the GCN assay are considered to have a high confidence rating according to our Validation Scale (Harper et al. 2021). The quality control methods exceed the requirements outlined in Appendix 5 of Biggs et al. (2014). These consist of the use of kit blanks, additional extraction negative controls and qPCR negative controls, and qPCR positive controls.

The qPCR positive controls are standards of known concentration amplified in triplicate to generate limit of detection and give confidence to any weak and late amplifications.
The extraction and qPCR negative controls analysed alongside your samples showed no target. Amplification and the triplicate positive controls performed as expected.

Results are based on the samples as supplied by the client to the laboratory. Incorrect sampling methodology may affect the results.

## 7.2 Understanding eDNA results:

Positive: GCN DNA has been detected in this sample, meaning that at least one of the 12 replicates has amplified. Remember that this is not a quantitative test, so you should not interpret a high eDNA score (e.g., 12/12) as necessarily indicating a larger population of GCN than a low eDNA score (e.g., 1/12).

Negative: No GCN DNA has been detected in this sample, and the internal and external controls worked as expected. This tells us that if there had been GCN DNA in the sample, we would have detected it, so we can be confident in its absence from the sample provided.

Inconclusive: An inconclusive result can be caused by degradation of the DNA (when the DNA marker contained in the ethanol in the kits fails to amplify) or by inhibition of the reaction (when the marker added in the lab fails to amplify) caused by certain chemicals or organic compounds that may be present in the water sample.

# 8 Conclusion and requirements

eDNA survey results confirm positive (presence) of GCN in the pond on site.

As it is possible that GCN may be present, a more detailed set of surveys will be required to conduct a Population Class Assessment to provide the appropriate mitigation and compensation. It is only generally possible to undertake GCN surveys in waterbodies between mid-March and early June and for a Population Class Assessment six visits will be required during that time.

If following the Population Class Assessment GCN are found to be present and are considered likely to be affected by the proposals, it may be necessary to obtain a protected species licence of derogation from Natural England, in advance of works taking place. As part of the licence, a mitigation strategy will be required which will detail how impacts on newts and their habitats will be avoided or minimised wherever possible.

Alternative approach: In August 2015, Natural England launched a pilot project in Surrey to bring more flexibility to the licensing system. The project aims to take a more strategic approach, ensuring that resources are focused on newt populations and habitat that will bring the greatest benefits, and making the licensing process more straightforward.

In February 2020, Natural England rolled out a 'strategic approach' to great crested newt licensing across 37 local authorities to better protect the amphibian. The 'District Level Licensing' scheme works at a landscape rather than at site-by-site scale and uses conservation payments from developers to create new habitats in locations that will benefit the species. Ref https://www.gov.uk/government/news/innovative-scheme-to-conserve-newts-and-promote-sustainable-development-is-rolled-out-across-england

This scheme has now been updated and is available in the East Suffolk District. For more information please see: https://www.gov.uk/government/publications/great-crested-newts-district-level-licensing-schemes-for-developers

NB. Irrespective of the option for mitigation chosen, the client must be made aware that GCN is known to be widespread in the East Anglian region[7] and irrespective of the outcome of these surveys the client is advised to make all contractors aware of this, and to be prepared for works to stop immediately of this species is detected on or close to the site during works.

[7] https://naturalengland.blog.gov.uk/2019/12/17/natural-englands-geoportal-england-wide-data-for-great-crested-newts-now-available/

# 9 References


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Gent, A.H and Gibson, S.D. (1998) Herpetofauna Workers Manual. Joint Nature Conservation Committee, Peterborough.

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NatureMetrics Laboratory report: Order number: SO02210
Prepared for: Anglian Ecology
Report ID: GCN-YVF098
Date of test results issued: 2023-07-04.
Contact: team@naturemetrics.co.uk NatureMetrics Ltd, CABI site, Bakeham Lane, Egham, Surrey, May 2023

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