AMPHIBIANS
SURVEY & REPORT
at
Land at Grange Moor
off Barnsley Road
Wakefield
West Yorkshire
WF4 4DR

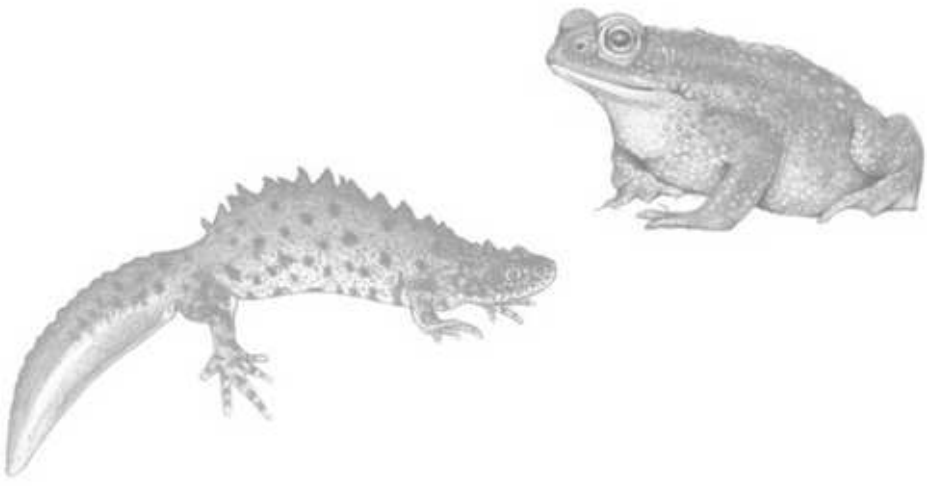
Client:
Acumen Designers & Architects

Client Address:
Old Leeds Road
Huddersfield
HD1 1SG

Client Contact:

JCA Ref:
19649c/JF

Date of Report:
27/07/2023



JCA Limited
Arboricultural & Ecological Consultants

Quality Assurance

JCA ref.	Version	Desktop Survey Completed:		Site Surveyed:		Report Completed:		Checked:	
		Date	Name	Date	Name	Date	Name	Date	Name
19649c/JF	Planning	21/11/22	Amy Donaldson	09/05/23	James Foster	27/07/23	James Foster	01/08/23	Adam West

All ecologists employed by JCA are members of, or are under application for, membership of the Institute of Ecology and Environmental Management (IEEM) and follow the Institute's code of professional conduct when undertaking ecological work.

Risk Assessment Completed	
Bio-security Procedure Completed	
Lone Worker Procedure Completed	

Summary

JCA Limited has been commissioned by **Acumen Designers & Architects** to undertake an environmental DNA (eDNA) survey to determine the presence or likely absence of great crested newt (GCN) on a site located at **Land at Grange Moor, off Barnsley Road, Wakefield, West Yorkshire**. The site is located at Ordnance Survey (OS) National Grid Reference **SE 22216 15226** with nearby postcode **WF4 4DR**.

A desk study and field survey were undertaken in order to assess the potential of the site to support GCN. Recommendations for further survey, avoidance, mitigation and enhancement – where appropriate - have been made and are detailed in full in Chapter 5 of this report.

Contents

1. Introduction and Terms of Reference

1.1 Purpose of the Report

1.1.1 A report is required at **Land at Grange Moor, off Barnsley Road** to assess the site's potential for supporting amphibians, in the form of terrestrial habitat and/or aquatic/breeding habitat. The aim of this report is to investigate the potential impact that the proposed development may have on the local/national great crested newt population.

1.2 Terms of Reference

1.2.1 I am instructed by **Acumen Designers & Architects** to visit the site and prepare my findings in a report. For this purpose, I have been supplied with a site map (drawing: 2753_SK01Indicative Site Layout).

1.3 Scope of the Report

1.3.1 All amphibian surveys and reports are compiled in line with Natural England's (NE) survey guidelines in accordance with the Joint Nature Conservation Committee's (JNCC) Herpetofauna Workers Manual.

1.4 Details of Proposed Development

1.4.1 The scheme is the development of an industrial unit with associated access, parking and soft landscaping.

1.5 Site Description

1.5.1 **Land at Grange Moor, off Barnsley Road** is situated approximately 9km southwest of Wakefield, at grid reference: **SE 22216 15226**.

1.5.2 The site is bordered to the northeast by other industrial buildings and is surrounded predominantly by arable farmland to the north, south and east with small pockets of woodland.

1.6 Previous Studies

1.6.1 In November 2022, JCA Limited was instructed by **PCS Property Solutions Ltd** to undertake an Ecological Impact Assessment (EcIA) scoping of the site (JCA Ref: 19649a/AD). During the EcIA field survey, the pond on site was assessed to determine their suitability to support GCN using the Habitat Suitability Index (HSI). The pond was found to offer good quality breeding habitat.

1.7 Legislative Context

1.7.1 The great crested newt is afforded protection under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, which applies to all of its life stages. The great crested newt is also listed on Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended) which makes it an offence to:

- deliberately, intentionally or recklessly kill, injure or take a great crested newt.
- deliberately, intentionally or recklessly take or destroy the eggs.
- possess or control any live or dead specimen or anything derived from a great crested newt.
- deliberately, intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a great crested newt.
- deliberately, intentionally or recklessly disturb a great crested newt while it is occupying a structure or place which it uses for that purpose.

1.7.2 If it is discovered that any proposed development may impact upon this species (thus leading to an offence being committed) a mitigation plan must be devised and a GCN Mitigation Licence applied for from the relevant government department (i.e. Natural England in England). Gaining a licence will depend on many variables.

2. Methodology

2.1 Desktop Study Methodology

2.1.1 A JCA Ltd undertook a full desktop study as part of the Ecological impact assessment for the site, with data of any records of amphibians and designated sites within a 2km radius of the site collected on behalf of JCA Ltd from West Yorkshire Ecology Service (WYES). This report will be used to inform the findings of great crested newts and other amphibians at the site.

2.1.2 The Multi-Agency Geographic Information for the Countryside (MAGIC) website and the data search was used to locate any designated sites, both statutory and non-statutory, such as; Local Nature Reserves (LNR), Ramsar Sites, Special Areas of Conservation (SACs), Special Protection Areas (SPAs) or Sites of Special Scientific Interest (SSSIs) that may be present within 2km of the survey site.

2.2 HSI Methodology

2.2.1 The site was surveyed by James Foster BSc (Hons) NE Level 1 great crested newt survey class licence (registration number **2017-32089-CLS-CLS**), James Robinson and Eve Goodwin for terrestrial and aquatic GCN potential.

2.2.2 The Habitat Suitability Index (HSI) is a system that was developed by Oldham *et al.* (2000) for assessing a water body's potential to support Great Crested Newts (GCN). The HSI is a numerical system that scores a pond between 0 and 1 (**Table 1**) depending on 10 quantifiable factors: geographical location, pond area, permanence, water quality, shade, waterfowl, fish, pond count, terrestrial habitat and macrophytes.

Table 1: The Habitat Suitability Index (HSI.

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

2.2.3 Limitations: The HSI for great crested newts is a measure of habitat suitability and therefore does not substitute great crested newt surveys. The general trend is ponds with high HSI scores are more likely to support great crested newts than those with low scores. However, the system is not accurate enough to conclude that ponds with a high score will support great crested newts, or that any pond with a low score will not support great crested newts.

2.2.4 There is also a positive correlation between HSI scores, and the numbers of great crested newts observed in ponds. As a general rule of thumb, high HSI scores are likely to be linked with greater numbers of great crested newts. However, this general relationship is not adequate to predict the numbers of newts a pond. HSI scoring can be useful in:

- Evaluating the general suitability of a sample of ponds for great crested newts
- Comparing general suitability of ponds across different areas
- Evaluating the suitability of receptor ponds in a proposed mitigation scheme

2.3 eDNA Methodology

2.3.1 Suitable ponds within 500m of the site were surveyed by James Foster NE Level 1 great crested newt survey class licence (registration number **2017-32089-CLS-CLS**) for the presence/absence of GCN eDNA.

2.3.2 Environmental DNA (eDNA) is a survey technique that can help determine the presence or absence of great crested newts in ponds. Great crested newt DNA is released into aquatic ponds through urine, faeces, shed skin cells and saliva. It can persist in water for several weeks and can therefore be collected and tested. This is an effective way to determine presence/absence of great crested newts. Water samples were gathered on 09/05/23. Samples were then sent to a SureScreen Scientifics for analysis.

2.3.3 Is this instance, eDNA sampling has been used as the pond on site is considered to have potential to support great crested newts, but further confirmation is required.

2.3.4 Limitations: For presence/absence surveys, eDNA can only be sampled between 15th April and 30th June. Although samples taken outside this period can show presence, for example if larval newts are in a pond, these samples cannot be used to determine absence. In certain situations, eDNA survey results may not always be conclusive. Since eDNA can be inconsistent depending on where animals have been in a pond, sampling in multiple parts of a pond increases the chance of successfully collecting eDNA. The presence of sediment and algae in samples can inhibit the laboratory test for eDNA. The survey was conducted during the optimum timing (mid-March – end of June) for GCN eDNA surveys.

3 Results

3.1 Statutory Designated Sites

3.1.1 No records of great crested newts *Triturus cristatus* (a UKBAP and Schedule 5 WCA species) or any other protected or notable amphibians were returned from WYES.

3.1.2 The MAGIC website revealed no internationally designated sites within 2km of the site.

3.1.3 The MAGIC website revealed no nationally designated sites within 2km of the site.

3.2 Non-statutory Designated Sites

3.2.1 Records received from WYES revealed no non-statutory designated sites within 2km of the site.

3.3 HSI Results

3.3.1 1 pond was identified within the survey area (see **Appendix 1 & Appendix 3,** photo 1) and a HSI survey was carried out. The results of the HSI surveys are presented in **Table 2** below.

Table 2. The Habitat Suitability Index (HSI) results for ponds surveyed within 500m of **Land at Grange Moor**.

Pond Ref	Grid Ref	HSI Score	GCN Suitability
Pond 1	SE 22388 15111	0.90	Excellent

3.4 eDNA Results

3.4.1 The site was surveyed on the 09/05/23 by lead surveyor James Foster NE Level 1 great crested newt survey class licence (registration number **2017-32089-CLS-CLS**) and assisted by James Robinson, and Eve Goodwin.

3.4.2 The report from SureScreen Scientifics indicated that **no** great crested newts (*Triturus cristatus*) are present in the ponds (**Appendix 4**).

4 Analysis of Results

4.1 eDNA Survey

3.1.1 **No** GCN eDNA was identified in the pond on site. Although their absence can't be proven, it is unlikely that GCN are using the pond on site.

5 Conclusions and Recommendations

5.1 After conducting a desk study, HSI and eDNA survey, it is considered that GCN are likely absent from the pond on site and waterbodies within 500m of **Land at Grange Moor, off Barnsley Road, Wakefield.**

5.2 As ponds within 500m of the site have been considered to have a low potential for supporting breeding GCN, we recommend that the proposed development at **Land at Grange Moor, off Barnsley Road, Wakefield** should go ahead, and that no **GCN Mitigation Licence** is required. However, the work should be carried out with care and vigilance.

5.3 Should any GCN be found during any stage of the development, all work must stop immediately, and Natural England must be contacted. Natural England will provide advice on the best course of action. It must be stated that this is a legal requirement, and that GCN may only be handled by an experienced ecologist holding an appropriate licence.

6 References

Ecological Impact Assessment (EcIA) (JCA Ref: 19649a/AD)

Amphibian Habitat Management Handbook. 2011. Baker J., *et al*.

Great Crested Newt Conservation Handbook. 2001. Langton T., Beckett C. & Foster J. FROGlife.

Great Crested Newt Mitigation Guidelines. 2001. Whitehurst J. English Nature (Natural England).

Herpetofauna workers handbook. 2003. Gent T. & Gibson S. Joint Nature Conservation Committee.

Websites:

Amphibian and Reptile Conservation (ARC). <http://www.arc-trust.org/>.

Google Maps. **<**http://maps.google.co.uk/**>**

Herpetofauna Conservation Turst (HCT). < http://www.herpconstrust.org.uk/index.php >.

Multiple-Agency Geographic Information for the Countryside (MAGIC). <http://www.magic.gov.uk/>

Natural England. < http://www.naturalengland.org.uk/>

Nature on the Map. Natural England. <www.natureonthemap.org.uk>

Reptiles and Amphibians of the UK. <http://www.herpetofauna.co.uk/ >

Relevant Legislation:

Wildlife and Countryside Act 1981 <http://jncc.defra.gov.uk/page-3614>

The Conservation of Habitats and Species Regulations 2017
<https://www.legislation.gov.uk/uksi/2017/1012/contents/made>

Countryside and Rights of Way Act 2000
<http://www.legislation.gov.uk/ukpga/2000/37/pdfs/ukpga_20000037_en.pdf?view=interweave>

Appendices

Appendix 1: Site Plan and Map of Surveyed Ponds within 500m of the Site

Site Plan and Map of Surved Pond within 500m of the Site, Land at Grange Moor, off Barnsley Road, Wakefield.

Legend

- Red Line Boundary
- Pond 1

N
W E
S

0 100 200 m

Appendix 2: Proposed Development Plan

Only figured dimensions should be used.

Scaled dimensions should be checked with the Architect.

DO NOT SCALE OFF THIS DRAWING

rev	description	drwn	auth	date

ACUMEN
DESIGNERS & ARCHITECTS
acumenarchitects.co.uk 01484 546 000
Headrow House, Old Leeds Road, Huddersfield, HD1 1SG

Client
ACUMEN

Project
NEW PROPOSED UNIT

Project No	Drawing No	Rev
2753	SK01	/

Description
INDICATIVE SITE LAYOUT

Scale	Date Drawn	Drawn By	Authorised By
1:1250@ A3	MAY'22	JC	JC

File loc: C:\Users\Sam\Desktop\Grange Moor Printed By: James

Purpose of Issue
Planning○ Building Regs○ Tender○ Construction○ Comment● Info○

Appendix 3: Photographic Evidence

Photo 1: A view of the pond on site from the north.

Appendix 4: eDNA Result Technical Report

SureScreen Scientifics

Folio No: E17373
Report No: 1
Purchase Order: 19649C
Client: JCA LTD
Contact: James Foster

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: 12/05/2023
Date Reported: 19/05/2023
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
2898	GMC - 19649C	SE 22388 15111	Pass	Pass	Pass	Negative	0

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

Reported by: Chris Troth **Approved by:** Jackson Young

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.

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.

Appendix 5: Glossary

Metamorphosis- The process by which an organism physically develops after birth, an example of this is from tadpole to frog.

Terrestrial- On or of the Earth, with the opposite being aquatic or marine.

Water body- An accumulation of water in a specific area covering the Earth. It is often a result of precipitation such as rainfall or channelization of a water course.

Hibernation- The process by which a living organism passes through the winter in an inactive or dormant state.

Ectothermic- The process by which some organisms generate heat from their surroundings in order to raise or lower their body temperature. In short, their body temperature fluctuates with the surrounding environment.

Cohort- A collective name of all offspring hatched in a calendar year.

Metapopulation- A group of spatially separated population which interact with each other via immigration and emigration of individuals.

Refugia- Areas that provide shelter for amphibian species. They are generally natural but can also be man-made. They are typically constructed from fallen branches and a range of other organic material. Artificial refugia can be made from intertwined branches and ferns and/or corrugated iron strips.

Hibernaculum- Similar to a refuge, but specifically where organisms shelter during hibernation.

Appendix 7: Author Qualifications

Adam West, Principal Ecologist
BSc (Hons) Animal and Wildlife Management.
Adam joined JCA to lead the expanding ecology department. Having returned to education as a mature student, Adam studied Countryside Management for two years before undertaking a Batchelor's degree in Animal and Wildlife Management, for which he was awarded First Class Honours. Adam has many years' experience in ecological consultancy, working on projects ranging from individual planning applications to national infrastructure projects. Adam holds a Natural England Level 1 great crested newt survey class licence and a Natural England Level 2 bat survey class licence.

James Foster, Assistant Ecologist
BSc (Hons) Biology.
James gained his undergraduate degree in biology in 2012 from University of Leeds. James has plenty of experience in ecology, having worked countless projects of different scales all over the north and midlands. James has 9 years of experience surveying anything from reptiles to hedgerows and holds a Great crested newt licence level 1 and is working towards his bat licence and barn owl licence.

The information and advice which we have prepared and provided is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that the opinions expressed are our true and bona fide opinions.

Signed

.....
James Foster *BSc (Hons)*
27/07/2023

Reviewed by

.....
Adam West *ACIEEM*
01/08/2023

For and on behalf of ***JCA Ltd***

Registered Office:

Unit 80
Bowers Mill
Branch Road
Barkisland
Halifax
HX4 OAD

ECOLOGICAL SERVICES

Ecological Pre-Planning Services

- Phase 1 Habitat Surveys
- Great Crested Newt eDNA Sampling
- Protected species: Bat, Wintering and Nesting Bird, Badger, Amphibian, Otter, Water Vole, White-Clawed Crayfish, Dormice and Reptile Surveys.
- Preparation for Environmental Impact Assessment (EIA)
- Invasive Species Surveys
- Code for Sustainable Homes
- Butterfly & Insect Surveys

Ecological Post-Planning Services

- Biodiversity Enhancement Plans
- Protected Species Mitigation
- Ecological Management (Bat and Bird box installation and inspection)
- Planting Schemes
- Monitoring of bird or bat boxes.

ARBORICULTURAL SERVICES

Guidance for Architects & Developers

- British Standard 5837 Surveys
- Arboricultural Implications Assessments (AIA)
- Arboricultural Method Statements (AMS)

Advice for Engineers, Loss Adjusters and Insurers

- Tree Surveys for Subsidence
- Heave Assessment
- Tree Root Identification

Advice for Local Authorities and Social Housing

- Tree Safety Surveys
- Specialist Decay Detection
- Landscape and Orchard Design

Tree Advice for the Legal Profession

- Subsidence Litigation
- Personal Injury and Accident Investigation
- Expert Witness, Planning Inquiries and Appeals

Veteran Tree Management

- Ancient Woodland Management
- Veteran Tree Management

Tree Health and Pest and Disease Management

- Pest and Disease Surveys
- Tree Health Checks
- Disease Mitigation and Control

JCA Limited

Arboricultural & Ecological Consultants

HEAD QUARTERS

Unit 80 Bowers Mill,
Branch Road,
Barkisland
Halifax, HX4 0AD

Company Reg No: 05005041
VAT No: 686 4674 78