

Our Ref: 7257,EC,001Ltr,TC,KL,31-07-23,V3

NHS Property Services Ltd
10 South Colonnade
Canary Wharf
E14 4PU

Date: 31 July 2023

For the attention of Anna McComb

By Email:
- anna.mccomb@property.nhs.uk

Dear Anna,

GREAT CRESTED NEWT PRESENCE/ABSENCE EDNA SURVEY – HINCKLEY & DISTRICT HOSPITAL, MOUNT ROAD, HINCKLEY, LE10 1AG

1. Introduction

Geosphere Environmental Ltd. has undertaken a Great Crested Newt (GCN) eDNA survey. The survey was undertaken following the recommendations provided in report reference 7257,EC,AR,PEA,TC,KL,07-06-23.V1 (**Ref. 1**).

Report limitations and exceptions applicable to this report are detailed in Appendix 1 and full details of references are included in Appendix 2.

2. Methodology

The eDNA samples were collected by Tom Cox HND, TechArborA Great Crested Newt class survey licence ref. 2021-19003-CLS-CLS, on 12 June 2023.

A Habitat Suitability Index (HSI) was undertaken at the same time as the eDNA sample collection, following the relevant HSI guidance (**Ref. 2**). The results of the HSI can be found in Appendix 3.

The eDNA sampling kits (one per water body sampled) were received in April 2023, from SureScreen Scientifics. Water samples were collected from the water body on 12 June 2023, following SureScreen Scientifics' instructions for the sampling of Great Crested Newt eDNA. This collection method is in line with the guidance within DEFRA's 'Analytical and methodological development for improved surveillance of the Great Crested Newt – WC1067 Appendix 5' (**Ref. 3**).

One eDNA kit was used for each water body during eDNA sampling. Water samples were collected from 20 sampling points. Sampling points were as evenly distributed as possible considering areas of reduced accessibility such as edges with dense scrub preventing access.

Samples collected did not contain significant suspended sediment or other particular matter, and water clarity was almost entirely clear within the whirly-pak (bag in which all water samples are mixed together during sample collection).

GEOSPHERE ENVIRONMENTAL LTD

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Following the collection of the samples, they were stored in a cool, dark cupboard for no more than 24 hours until dispatched via courier to SureScreen Scientifics on 13 June 2023. Kits were received by the lab on 16 June 2023.

Artificial DNA is placed into the eDNA kits when they are created, to ensure that once samples have been collected and returned to the laboratory for analysis, the DNA within the samples has not suffered degradation to the point that any GCN DNA can't be detected. All laboratory work undertaken on the eDNA samples are in accordance with DEFRA's 'Analytical and methodological development for improved surveillance of the Great Crested Newt - WC1067 Appendix 5' (**Ref. 3**).

Waterbodies sampled within 250m of site are shown on Figure 1, below:



Figure 1. Locations of Ponds within 500m of indicative site boundary. Map source: © Open Streetmap Contributors

Selected photos of the waterbody are shown overleaf:



Photo 1: Pond 1 with wildfowl

3. Limitations

The eDNA sampling was first attempted on 17 May 2023, however at the time of the survey, the pond was undergoing chalking. It is considered that, given the time lapsed from the initial attempt to the second successful attempt on 12 June 2023, any sediment would have settled to enable a clear water sample to be obtained.

4. Results

The detailed results of the eDNA sample laboratory analysis are attached to this report as Appendix 4. Table 1, below, provides an overview of the results:

Table 1 – Overview of the Results						
Date Sample Collected	Pond Ref.	HSI Score	Positive/Negative	No. of positive replicate reactions	Inhibition control	Degradation control
12/06/2023	1	Average	Negative	0	Pass	Pass

Based upon the results tabulated above, Great Crested Newt DNA is absent within pond 1.

5. Evaluation

The samples were taken from twenty locations around the bank and 100% of the bank could be accessed for Pond 1. No inflows or outflows were noted for any of the water bodies. All of the samples collected passed the degradation control.

6. Recommendations

Laboratory analysis of the eDNA samples collected returned a negative result for Great Crested Newt eDNA in the water body, indicating that Great Crested Newt are not present within the local area.

7. Conclusions

GCN has not been confirmed within the pond sampled. As there are no other nearby ponds it is considered likely that GCN are absent from the local area and the risk the GCN within this development is extremely low. As such the development should be allowed to continue without GCN being a material consideration.

Yours sincerely,

[REDACTED]
Tom Cox
Senior Ecological and Arboricultural consultant
Geosphere Environmental Ltd
[REDACTED]

Checked By:

[REDACTED]
Katie Linehan
Technical Director of Ecology
Geosphere Environmental Ltd

Enclosures:

Appendix 1 – Report Limitations and Conclusion
Appendix 2 – References
Appendix 3 – HSI Results
Appendix 4 – eDNA Lab Analysis
Appendix 5 - Drawings



APPENDICES

GEOSPHERE ENVIRONMENTAL LTD

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Appendix 1 – Report Limitations and Conditions

This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of future changes in the condition of the site.

This report has been prepared for the sole use of the Client for the purposes described and no extended duty of care to any third party is implied or offered. Third parties using any information contained within this report do so at their own risk.

This report is prepared and written for the use stated herein; it should not be used for any other purposes without reference to Geosphere Environmental Limited. The report has been prepared in relation to the proposed end-use should another end-use been intended a further re-assessment may be required. It is likely that over time practises will improve and the relevant guidance and legislation be amended or superseded, which may necessitate a re-assessment of the site.

The accuracy of any map extracts cannot be guaranteed. It is possible that different conditions existed onsite, between and subsequent to the various map surveys appended.

Whilst the report may express an opinion on possible configurations of strata between or beyond exploratory holes discussed or on the possible presence of features based upon visual, verbal or published evidence, this is for guidance only and no liability can be accepted for its accuracy.

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Appendix 2 – References

1. Geosphere Environmental Limited (2023) Preliminary Ecological Appraisal. Report reference 7257,EC,AR,PEA,TC,KL,07-06-23.V3
2. Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10 (4), 143-155.
3. Biggs, J. et al (2014) Analytical and methodological development for improved surveillance of the great crested newt. Defra Project WC1067, Freshwater Habitats Trust: Oxford



Appendix 3 – HSI Results

HSI SCORES



Project Number: 7257,EC,AR

Surveyor: TC

Project Name: Hinckley & District Hospital, Mount Road, Hinckley, LE10 1AG

Date: 20/04/2023

Pond Ref:	SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	SI9	SI10	HSI	Suitability
	Location	Pond Area	Pond Drying	Water quality	Shade	Fowl	Fish	Ponds	Terr'l Habitat	Macrophytes		
1	1	1	0.9	0.33	80	0.67	0.67	0.01	0.33	0.3	0.63	Average

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



Appendix 4 – eDNA lab analysis

Folio No: E18106
Report No: 1
Purchase Order: 2529
Client: GEOSPHERE
ENVIRONMENTAL
Contact: Tom Cox

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: 16/06/2023
Date Reported: 27/06/2023
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
5247	Great Billing - 7302/P7	SP 8246 6164	Pass	Pass	Pass	Negative	0

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

Reported by: Chris Troth

Approved by: Jennifer Higginbottom



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 – Drawings

Proposed Site Plan – Drawing Ref. 1782-DBC-22-00-DR-A-0100 P06

Site Address

Hinckley and District Hospital
Mount Road
Hinckley
LE10 1AG

N

North

Produced on 27 February 2023 from the Ordnance Survey National Geographic Database and incorporating surveyed revision area data as of this date.
This map shows the area bounded by 40357 791020 44080 719420 44070 44080 39707 442387 216420.
Copyright and database rights 2023 OS 100064135. Supplied by mapbox ltd reading in UK Planning Maps.com a licensed Ordnance Survey partner GSI 100064135.
Data to revision request 27 February 2024. Unique plan reference: ncl/161617/234327

Key

Application Site Area:
4042.89 sq m
0.404 ha

Land owned/controlled by the
trust

Notes:

This drawing is to be read in conjunction with all other consultants engineers and specialist sub contractors drawings
All items are to be cross referenced throughout design, tender & construction

Any discrepancies whatsoever discovered must be reported to the Main Contractor or Contract Administrator (CA) as soon as they become apparent

The Main Contractor is responsible for checking all dimensions prior to commencement of work

All specified manufacturers are OSA (or similar approved) OEA (or equal approved) whether stated or not. Any equivalent product or manufacturer must be approved in writing by the CA before use

All structure shown on these drawings is based on structural philosophy & is to be fully designed, detailed & dimensioned by 'Others'. Refer to Structural Engineers plans for current structural design

All drawings are to be read in conjunction with project specific NBS (national building specification)

P06	12/07/2023	Building layout updated in line with latest plans	BCP
P05	16/05/2023	Updated building shape to reflect current proposal	BCP
P04	12/04/2023	Car park layout updated to factor in refuse lorry swept path analysis	BCP
Rev	Date	Revision Details	Author
Status	Purpose For Issue		
S0	Initial Issue		

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Client		NHS Property Services	
Job		Hinckley CDC & Endoscopy	
Title		Proposed Site Plan	
Drawn BCP	Date Feb 2023	Checked MH	Date Feb 2023
Scale:Size		1:500 @	A2
Drawing Number			Revision
1782 DBC ZZ 00 DR A 0100			P06

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