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Our ref: P21-611 Oxford Technology Park eDNA Survey Report

Your ref:

14 July 2021

Matthew Sobic
Savills (UK) Ltd

Dear Matthew

Re: Oxford Technology Park, Kidlington – eDNA Survey Report

Background

Planning consent for Building 4a and 4b at Oxford Technology Park (the Site) (refer to drawing 2612-02, Rev PL1B, April 2021) has lapsed, and despite the Site having been cleared and prepared for development, in order to minimise risks to the development, an eDNA survey has been undertaken of two ponds located approximately 200 m from the Site, in order to determine the presence / likely absence of great crested newt.

Pond 1 (OSGR SP 4787 1447) and Pond 2 (OSGR SP 4787 1441) at The Piggery) are located to the east of Oxford Technology Park.

These ponds had been subject to traditional presence/absence surveys for great crested newt in 2014 by Grontmij[1] (July 2014). No great crested newt was detected in either pond as part of this survey work.

HSI Survey Methodology

Each water body was assessed for the potential to support great crested newt using the Habitat Suitability Index (HSI) scoring method (Oldham et al., 2000). The ponds were assessed on 26 June 2021.

HSI assessment is a quantitative means of evaluating habitat quality for great crested newt and is measured using ten indices:

- UK location
- Pond surface area
- Desiccation rate
- Water quality
- Percentage shade
- Waterfowl presence/absence
- Fish presence/absence
- No. of ponds within 1 km

[1] Grontmij, July 2014. Reptile and Great Crested Newt Survey – Immigrant Removal Centre Extension Kidlington. P114263/NW. Revision 1.

- Suitability of terrestrial habitat
- Percentage of macrophyte cover.

The HSI provides an overall numerical index between 0 and 1 where scores closer to 0 indicate poor habitat with low probability of great crested newt occurrence, and scores closer to 1 represent suitable habitat with a higher probability of occurrence (ARG UK, 2010).

eDNA Survey Methodology

Senior Ecologist Rachel Bamford MCIEEM, who holds a Natural England great crested newt scientific survey licence (ref: 2016-25210-CLS-CLS) and Assistant Ecologist Matthew Simmons who have received training in the collection of eDNA samples, undertook the eDNA sample collection on 26 June 2021. The sample collection followed SureScreen Scientifics eDNA sample protocol, were collected within the specified survey window for eDNA analysis and in accordance with the published methodology (Biggs *et al*, 2014).

The water sample kit was returned to the laboratory on 29 June 2021 and the analysis was undertaken on 01 July 2021.

HSI Survey Results

The HSI survey indicated that Pond 1 (See Appendix 1; Photographs 1 and 2) had Below Average suitability (HSI score: 0.53) to support great crested newts, and that Pond 2 (See Appendix 1; Photograph 3) had Average suitability to support great crested newt (HSI score: 0.64). The results of the HSI survey are summarised in Table 1 below.

Table 1: HSI Survey results

	Pond 1		**Pond 2**	
HSI criteria	HSI Score		HSI Score	
Location	Zone A	1	Zone A	1
Pond area	157 m^2	0.3	353 m^2	0.70
Pond drying	Sometimes	0.5	Sometimes	0.5
Water quality	Moderate	0.67	Moderate	0.67
Shade	100%	0.2	90%	0.4
Waterfowl	Absent	1	Absent	1
Fish	Absent	1	Absent	1
Pond density	1	0.45	1	0.45
Terrestrial habitat	Moderate	0.67	Moderate	0.67
Macrophyte	0%	0.31	10%	0.41
Overall HSI score	**0.53**		**0.64**	
GCN suitability	**Below average**		**Average**	

eDNA Survey Results

The results of the eDNA analysis provided a negative result for the presence of great crested newt within Pond 1 and Pond 2. A copy of the Technical Report from the analysis laboratory is attached in Appendix 2.

Recommendations

No further survey work is recommended for either pond. The proposed development of the Site is not anticipated to result in an impact on great crested newt. No mitigation measures are recommended.

I hope that this letter is useful. If you have any queries, please do not hesitate to contact me.

Yours sincerely

[redacted]

Gemma Watkinson ACIEEM

Ecologist

For and on behalf of BSG Ecology

References

ARG UK (2010). ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index. Amphibian and Reptile Groups of the United Kingdom.

Biggs, J. et al (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.

Appendix 1: Photographs

Photograph 1: Representative view of Pond 1

Photograph 2: Further view of pond 1

Photograph 3: Representative view of pond 2

Appendix 2: SureScreen eDNA survey technical report

SureScreen Scientifics

Folio No: E11313
Report No: 1
Purchase Order: P21-611
Client: BSG ECOLOGY LTD
Contact: Rachel Bamford

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: 29/06/2021
Date Reported: 01/07/2021
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
7321	Oxford Technology Park, P2	SP478 144	Pass	Pass	Pass	Negative	0
7322	Oxford Technology Park, P1	SP478 144	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.

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.