



Our Ref 3709,EC/001Ltr/GCN/KL/21-05-19/V1
Your Ref 3709,EC

M Scott Properties Limited
Suite 5, Oyster House
Severalls Lane
Colchester
CO4 9PD

21 May 2019

For the attention of Graham McCormick

By Email
- graham@msscott.co.uk

Dear Graham McCormick

**LAND OFF FIR COVERT ROAD, TAVERHAM, NORFOLK, NR8 6HL – GREAT CRESTED NEWT
eDNA LETTER REPORT**

1. Introduction

Geosphere Environmental Ltd was commissioned by M Scott Properties Limited to undertake eDNA analysis of five ponds near the proposed development site at Fir Covert Road, Taverham, NR8 6HL. The development site covers an area of approximately 14.5 hectares (ha) and is located at National Grid reference (NGR) TG 16005 15465.

An eDNA analysis of the ponds was required to establish whether Great Crested Newts (GCN) are present in the surrounding areas and if confirmed, discuss the likelihood of presence on site in their terrestrial phase.

1.1 Current UK Legislation

Great Crested Newts are protected under the Wildlife and Countryside Act 1981, (as amended), Section 5 and the Conservation of Habitats and Species Regulations 2010. It is illegal to intentionally or deliberately kill, injure or capture Great Crested Newts or intentionally, deliberately or recklessly damage or destroy their breeding and resting places or obstruct access to their place of shelter or protection.

2. FORMER SURVEYS

A Preliminary Ecological Appraisal (PEA) (referenced 3551,EC,AR,DS/PEA/LS,RF,KL/12.12.18/V1) was undertaken by Geosphere Environmental Ltd and reported December 2018. The habitats on site comprise close-grazed improved grassland, with tree-line boundaries.

A desk study was undertaken as part of this report which included a search of biological data. No biological records of Great Crested Newts were returned as part of the desk study.

GEOSPHERE ENVIRONMENTAL LTD

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Registered Office: Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ | Registered in England and Wales | Registered NO, 7107630 | VAT NO, 985 4247 79

The location of ponds within 500m is shown on Drawing Ref. 3709,EC/005/Rev0 attached. The PEA report identified seven ponds (referred to as Ponds 1 to 7) within 500m of the development site. Ponds 3 to 7 were not accessible.

The Habitat Suitability Scores of accessible ponds are shown in Table 1 below:

Table 1 – HSI Scores of Ponds					
Pond	Distance From Site	Connected or Separated from Site	Pond Size (m²)	HSI Score	Pond Suitability for Great Crested Newts
1	27m west	Connected	60	0.75	Good
2	330m east	Pond no longer present			

Ponds 3 to 7 were discounted from further survey due to adequate barriers to dispersal such as the main A1270 road, present between the development site and ponds.

3. EDNA Survey

3.1 Methodology

The purpose of the survey is to take water samples from ponds to test for Environmental DNA (eDNA) which is a method for the determination of GCN presence or absence within a waterbody.

Twenty sampling sites are identified around the perimeter of the pond, where able, which are spaced as evenly as possible. These samples are then mixed together and separated into six sample tubes to be sent off for analysis.

3.1.1 Surveyors

The eDNA survey was undertaken by Richard Fenna (Ecologist, Survey Licence number: 2019-39150- CLS-CLS).

3.1.2 Timing and Weather Conditions

eDNA sampling can only be undertaken between 15 April and 30 June.

The survey was undertaken on 15 April 2019. The weather conditions at the time of the survey were sunny and dry, with an approximate temperature of 12°C.

3.2 Results of the eDNA Survey

Great Crested Newt eDNA was not detected in pond 1.

A copy of the eDNA results are attached.

4. Conclusions

As the eDNA results came back as negative, no further surveys on the ponds are required. It is considered unlikely that GCN will be a material consideration for this development.

Should you have any queries with regards to the above, please do not hesitate to contact the undersigned.

Yours sincerely

Katie Linehan
Technical Director
Geosphere Environmental Ltd
katie@geosphere-environmental.co.uk

Enclosures:

Appendix 1 – Report Limitations and Conditions

Appendix 2 – Drawings

Appendix 3 – Technical Data



APPENDICES

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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 be 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 on site, 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 on visual, verbal or published evidence, this is for guidance only and no liability can be accepted for its accuracy.

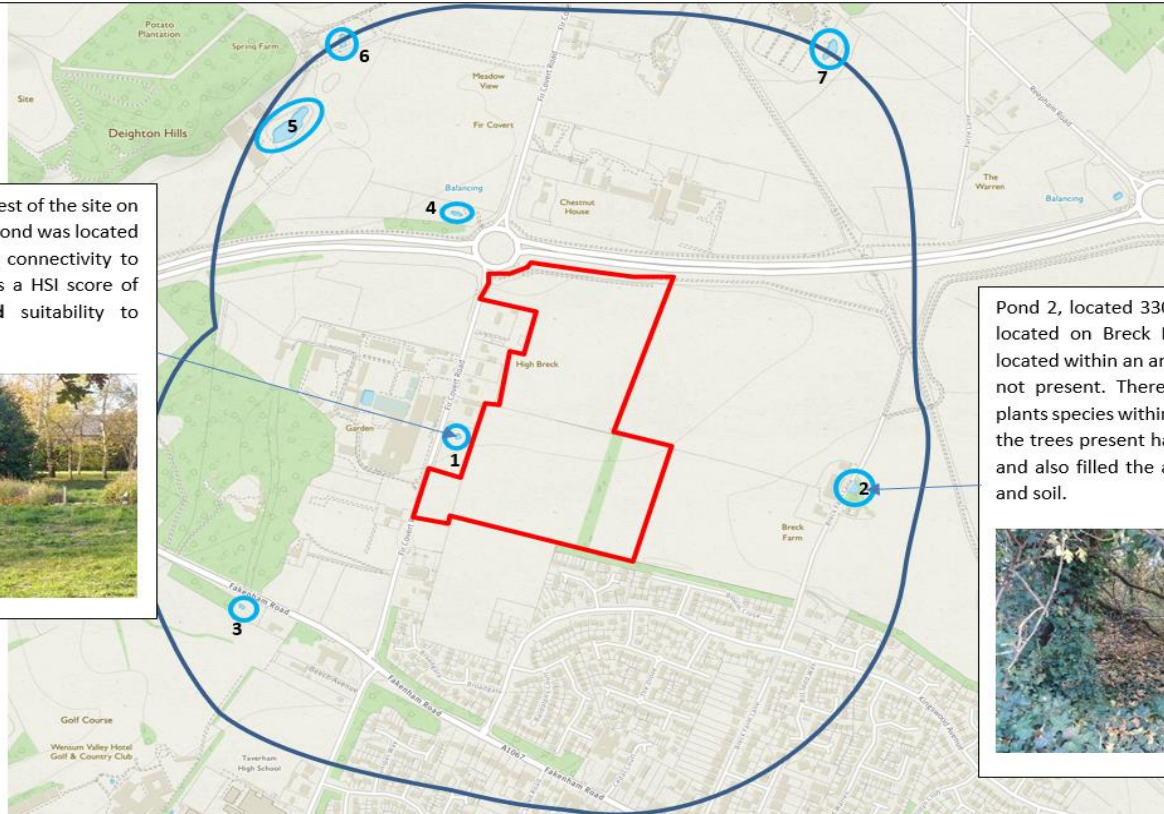


Appendix 2 – Drawings

Pond Location Plan – Drawing ref. 3709,EC/005/Rev0

LEGEND

-  Pond
-  Site Boundary
-  500m Buffer



Pond 1, located 27m west of the site on private property. The pond was located within grassland, with connectivity to the site. The pond has a HSI score of 0.75, which is **Good** suitability to support GCN.



Pond 2, located 330 east of the site is located on Breck Farm. The pond is located within an area of trees and was not present. There were no wetland plants species within the area. It is likely the trees present have dried the pond, and also filled the area with leaf litter and soil.



SOURCE

[© OpenStreetMap contributors](#)

PROJECT

Land off Fir Covert Road, Taverham, Norfolk, NR8 6HL

TITLE

Pond Location Plan

DRAWING NUMBER

3709,EC/005/Rev0

SCALE

As marked

DATE

21/05/2019

DRAWN BY

KML

CHECKED BY

RF





Appendix 3 – Technical Data

SureScreen Scientifics eDNA Technical Report – ref. E4457

Folio No: E4457
Report No: 1
Order No: 1521
Client: GEOSPHERE
ENVIRONMENTAL
Contact: Richard Fenna
Contact Details: richard@geosphere-
environmental.co.uk,
richard@geosphere-
environmental.co.uk
Date: 24/04/2019

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS

Date sample received at Laboratory: 17/04/2019
Date Reported: 24/04/2019
Matters Affecting Results: None

RESULTS

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1341	Fircovert Rd	TG 158 153	Pass	Pass	Pass	Negative	0

SUMMARY

When Great Crested Newts (GCN); *Triturus cristatus* inhabit a pond, they deposit traces of their DNA in the water as evidence of their presence. By sampling the water, we can analyse these small environmental DNA (eDNA) traces to confirm GCN habitation, or establish GCN absence.

The water samples detailed below were submitted for eDNA analysis to the protocol stated in DEFRA WC1067 (Latest Amendments). Details on the sample submission form were used as the unique sample identity.

RESULTS INTERPRETATION

Lab Sample No.- When a kit is made it is given a unique sample number. When the pond samples have been taken and the kit has been received back in to the laboratory, this sample number is tracked throughout the laboratory.

Site Name- Information on the pond.

O/S Reference - Location/co-ordinates of pond.

SIC- Sample Integrity Check. Refers to quality of packaging, absence of tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to results errors. Inspection upon receipt of sample at the laboratory. To check if the Sample is of adequate integrity when received. Pass or Fail.

DC- Degradation Check. Analysis of the spiked DNA marker to see if there has been degradation of the kit since made in the laboratory to sampling to analysis. Pass or Fail.

IC- Inhibition Check- PCR inhibitors can cause false results. Inhibitors are analysed to check the quality of the result. Every effort is made to clean the sample pre-analysis however some inhibitors cannot be extracted. An unacceptable inhibition check will cause an indeterminate sample and must be sampled again.

Result- NEGATIVE means that GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as no evidence of GCN presence. POSITIVE means that GCN eDNA was found at or above the threshold level and the presence of GCN at this location at the time of sampling or in the recent past is confirmed. Positive or Negative.

Positive Replicates- To generate the results all of the tubes from each pond are combined to produce one eDNA extract. Then twelve separate analyses are undertaken. If one or more of these analyses are positive the pond is declared positive for the presence of GCN. 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.

METHODOLOGY

The laboratory testing adheres to strict guidelines laid down in WC1067 Analytical and Methodological Development for Improved Surveillance of The Great Crested Newt, Version 1.1

The analysis is conducted in two phases. The sample first goes through an extraction process where all six tubes are pooled together to acquire as much eDNA as possible. The pooled sample is then tested via real time PCR (also called q-PCR). This process amplifies select part of DNA allowing it to be detected and measured in 'real time' as the analytical process develops. qPCR combines PCR amplification and detection into a single step. This eliminates the need to detect products using gel electrophoresis. With qPCR, fluorescent dyes specific to the target sequence are used to label PCR products during thermal cycling. The accumulation of fluorescent signals during the exponential phase of the reaction is measured for fast and objective data analysis. The point at which amplification begins (the Ct value) is an indicator of the quality of the sample. True positive

controls, negatives and blanks as well as spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared so they act as additional quality control measures.

The primers used in this process are specific to a part of mitochondrial DNA only found in GCN ensuring no DNA from other species present in the water is amplified. The unique sequence appropriate for GCN analysis is quoted in DEFRA WC 1067 and means there should be no detection of closely related species. We have tested our system exhaustively to ensure this is the case in our laboratory. We can offer eDNA analysis for most other species including other newts.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. Kits are manufactured by SureScreen Scientifics to strict quality procedures in a separate building and with separate staff, adopting best practice from WC1067 and WC1067 Appendix 5. Kits contain a 'spiked' DNA marker used as a quality control tracer (SureScreen patent pending) to ensure any DNA contained in the sampled water has not deteriorated in transit. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd also participate in Natural England's proficiency testing scheme and we also carry out inter-laboratory checks on accuracy of results as part of our quality procedures.

Reported by: Troy Whyte

Approved by: Derry Hickman

End Of Report
