

Sheffield Road, Hoyland Common

Great Crested Newt Survey Report

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Contents

1. Summary 3

2. Introduction 4

3. Methodology 5

4. Results..... 7

5. Assessment 9

6. References 10

Appendix 1. Legislation Guidance 11

1. Summary

- 1.1.1 A planning application for the extension of a yard area to be used for trailer storage purposes and associated works was submitted by DH Armitage Transport in December 2022. The application was supported by a Preliminary Ecological Appraisal (PEA) which was written by Middleton Bell Ecology.
- 1.1.2 The PEA identified a data search record of the presence of a record of a great crested newt nymph located 190 m to the west of the site (dating from 2013). The six-figure grid reference for the records was located in the middle of a field. The PEA concluded that the grid reference location was likely to be inaccurate.
- 1.1.3 Correspondence from the planning ecologist identified the potential for the proposed development to impact on great crested newts because of the presence of two ponds within the boundary of Hoyland Common School just over 100 m north of the proposed development.
- 1.1.4 A habitat suitability index assessment of the two ponds and subsequent environmental DNA sampling was commissioned by DHA Transport on 15 May 2023. The survey was undertaken to identify the suitability of the two ponds to support GCN, and if suitable to identify whether or not they were likely to use the pond during the breeding season.
- 1.1.5 The habitat suitability index assessment identified that Pond 1 had poor suitability to support great crested newts, and Pond 2 had below average suitability. As a precaution the eDNA sampling and analysis was undertaken and both ponds recorded a negative result indicating no evidence of the presence of great crested newt DNA in these ponds.
- 1.1.6 Because there was no evidence of the presence of great crested newts within the two nearby ponds, and no other nearby ponds were present, it was considered extremely unlikely that they would be present within the proposed development site. Consequently, no further survey or mitigation is recommended for great crested newts.
- 1.1.7 The results of this survey are considered to be valid for a period of 24 months. After this time Middleton Bell Ecology should be contacted to determine the need for update survey.

2. Introduction

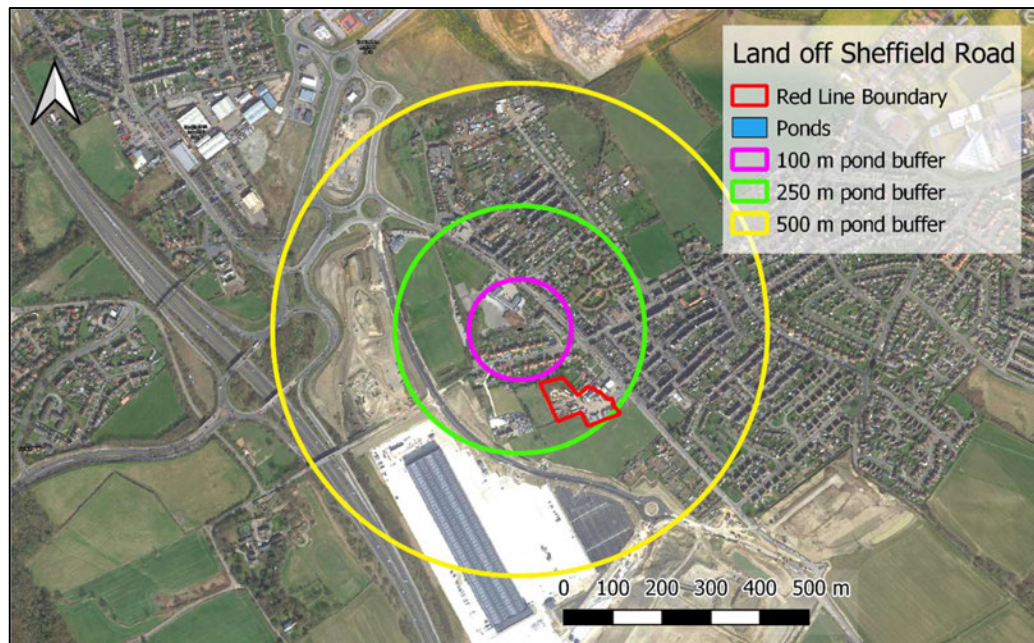
- 2.1.1 A planning application for the extension of a yard area to be used for trailer storage purposes and associated works including new 3m wide bund (Application no: 2022/1317) was submitted by DH Armitage Transport Ltd (DHA Transport) in December 2022. The application was supported by a Preliminary Ecological Appraisal (PEA) which was written by Middleton Bell Ecology (MBE 2021) which identified potential impacts to hedgerows and nesting birds and the presence of the invasive species Japanese knotweed *Fallopia japonica*.
- 2.1.2 The PEA identified a data search record of the presence of a record of a great crested newt *Triturus cristatus* nymph located 190 m to the west of the site (dating from 2013). Re-examination of the data shows there are three records, all of great crested newt (GCN) nymphs, all dating from July 2013, and all in the same location. The six-figure grid reference for the records is not located within a pond, ditch or waterbody, it is located in the middle of a field (aerial imagery shows it to be located immediately adjacent to a building within the field) as shown in Figure 1. The PEA concluded that the grid reference location was likely to be inaccurate as other records for great crested newts were present on the other side of the M1 motorway (the motorway was located 320 m further west).

Figure 1. Location of 2013 great crested newt record



- 2.1.3 Correspondence from the planning ecologist identified the potential for the proposed development to impact on GCN because of the presence of two ponds within the boundary of Hoyland Common School. The presence of these ponds was not shown on OS mapping for the area, and trees surrounding the ponds meant that they were not visible on aerial imagery for the area and had not been included in the original PEA.
- 2.1.4 The two ponds were located just over 100 m north of the proposed development. The location of the proposed development site and the two ponds is shown on Figure 2 below.

Figure 2. Site and pond location



- 2.1.5 A Habitat Suitability Index (HSI) Assessment of the two ponds and subsequent environmental DNA (eDNA) sampling was commissioned by DHA Transport on 15 May 2023. The survey was undertaken to identify the suitability of the two ponds to support GCN, and if suitable to identify whether or not they were likely to use the pond during the breeding season.
- 2.1.6 Information on the site and other proposed impacts should be taken from the PEA (MBE 2021). The legislative context to the survey and assessment reported here is included in Appendix 1.

3. Methodology

- 3.1.1 A habitat suitability index assessment to identify the suitability of the two ponds to support great crested newts, and an eDNA survey to determine the presence/absence of great crested newts within the two ponds was undertaken on 23rd May 2023 by Greg Slack (MCIEEM, GCN Survey Licence: 2015-18073-CLS-CLS)

3.2 Habitat Suitability Index Assessment

- 3.2.1 The suitability of the ponds to support great crested newts was assessed based on the methodology in Oldham et. al. (2000). This required a value to be assigned to the following ten criteria: pond location; pond area; regularity of pond drying; water quality; shade; waterfowl presence; fish presence; number of ponds within 1 km; terrestrial habitat quality; and macrophyte cover.
- 3.2.2 The index value was then used to identify each pond as either: poor, below average, average, good, or excellent quality in terms of its suitability to support great crested newts.

3.3 Environmental DNA sampling

3.3.1 Water samples for the eDNA test were taken in accordance with methodology approved by Natural England (Biggs *et al.*, 2015). A total of 20 water samples were taken from each pond. The surveyor was careful to stir the water but not disturb the sediment whilst collecting each sample. The twenty samples were mixed together to give one combined water sample for each waterbody. Six samples were then taken from each combined liquid and added to laboratory sample pots/vials (per pond). All samples were taken using in-date sterile kits provided by the laboratory at SureScreen Scientifics. The samples were then sent to SureScreen Scientifics for laboratory analysis.

3.4 Survey Limitations

3.4.1 No limitations were encountered.

4. Results

4.1 Habitat Suitability Index Assessment

- 4.1.1 Pond 1 was kidney shaped; Pond 2 was rectangular. Both ponds were located in a little-used corner of the school, near the school's boundary with adjacent gardens. The two ponds were lined and surrounded by a gravel border. The ponds were located approximately 1 m apart.

Plate 1. Pond 1



Plate 2. Pond 2



4.1.2 The Habitat Suitability Index scores for the two ponds, and the figures identified for each category are shown in Table 1 below.

Table 1. Habitat Suitability Index Assessment Scores

Pond	Location	Surface Area (m ²)	Desiccation Rate	Water Quality	Shade (%)	Waterfowl	Fish Population	No. of ponds within 1 km	Terrestrial Habitat	Macrophyte Cover (%)	HSI Score	Suitability Category
1	A	6	never	poor	80	minor	absent	5	moderate	50	0.47	Poor
2	A	28	never	moderate	70	minor	absent	5	moderate	80	0.57	Below average

4.1.3 Guidance on habitat suitability index assessment excludes duckweed *Lemna* sp. from macrophytes when considering macrophyte cover. Although neither pond had any other macrophyte cover, the cover of duckweed was estimated to be 50 % for Pond 1 and 80 % for Pond 2. It is known that smooth newts *Lissotriton vulgaris* and palmate newts *Lissotriton helveticus* will lay eggs within duckweed and although this is not known to be the case for great crested newts, if the duckweed was included as macrophyte cover on a precautionary basis the HSI scores would have been 0.43 for Pond 1 (Poor suitability), and 0.61 for Pond 2 (Average suitability).

4.2 eDNA Sampling

- 4.2.1 Because both ponds were located in such close proximity it was decided to undertake eDNA sampling of both ponds despite the poor suitability of Pond 1.
- 4.2.2 The eDNA analysis showed an absence of positive replicates of GCN DNA in both samples meaning that no evidence of GCN use of the two ponds was recorded.
- 4.2.3 The Technical Report from SureScreen Scientifics is included in Appendix 2.

5. Assessment

- 5.1.1 No signs of the presence of great crested newts were recorded from either of the two ponds. The location of the 2013 GCN nymph record in the middle of the nearby field was considered to be inaccurate and because no evidence of GCN use of the two nearby ponds was recorded, and no other nearby ponds were present, it was considered extremely unlikely that they would be present within the proposed development site. Consequently, no further survey or mitigation is recommended for great crested newts.
- 5.1.2 The results of this survey are considered to be valid for a period of 24 months. After this time Middleton Bell Ecology should be contacted to determine the need for update survey.

6. References

Biggs, J *et al.* (2015) Using eDNA to develop a national citizen science-based monitoring programme for the great crested newt *Triturus cristatus*. Biological Conservation. 183. 19-28.

Middleton Bell Ecology (2021) Sheffield Road, Hoyland Common. Preliminary Ecological Appraisal.

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.

Appendix 1. Legislation Guidance

Species	Legal Status
European protection	
European Protected Species (EPS) (including bats, great crested newts)	These animal species and their breeding sites or resting places are protected under Schedule 2 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, which makes it illegal to: • Intentionally or deliberately capture, injure or kill any such animal or to deliberately take or destroy their eggs. • Deliberately disturb such an animal. • Damage or destroy a breeding site or resting place of such an animal. European Protected Species (EPS) licences can be granted by Natural England in respect of development to permit activities that would otherwise be unlawful under the Conservation Regulations, providing that the following 3 tests (set out in the EC Habitats Directive) are passed: • The development is for reasons of overriding public interest. • There is no satisfactory alternative; and • The favourable conservation status of the species concerned will be maintained and/or enhanced. Under Regulation 9(5) of the Conservation Regulations, Planning Authorities have a legal duty to 'have regard to the requirements of the EC Habitats Directive in the exercise of their functions'. This means that they must consider the above 3 tests when determining whether Planning Permission should be granted for developments likely to cause an offence under the Conservation Regulations. As a consequence, Planning Applications for such developments must demonstrate that the 3 tests will be passed. Natural England also allow sites to be registered on the Bat Low Impact Class Licence to permit activities that would otherwise be unlawful under the Conservation Regulations where the 3 tests can be passed and the bat roosts to be impacted are of low conservation status.

Appendix 2. SureScreen Scientifics Technical Report

The Technical Report from the laboratory analysis of the water samples from Pond 1 and Pond 2 is included overleaf.



Folio No: E17605
Report No: 1
Purchase Order: MBE20230523 GS1
Client: MIDDLETON BELL ECOLOGY

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: 24/05/2023
Date Reported: 31/05/2023
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
4125	Hoyland Common Primary School - MBE2023 03 P1	SE 35426 00192	Pass	Pass	Pass	Negative	0
4126	Hoyland Common Primary School MBE 2023 03 P2	SE 35437 00184	Pass	Pass	Pass	Negative	0





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.

