

File Note: eDNA survey for great crested newts at The Granary

Recipients: Ms Virginia Gillece

Site name: The Granary, Gibbs Hill, Nettlestead, Maidstone, Kent ME18 5HT

Ref: Updated environmental DNA (eDNA) survey for great crested newt *Triturus cristatus* occupancy in a nearby pond.

Proposed development on site

The file note is prepared to inform a current planning application with Maidstone Borough Council. The proposed development is described as:

The conversion of redundant agricultural buildings into residential dwellings with associated landscaping.

Survey background:

Corylus Ecology conducted a Preliminary Ecological Appraisal Report (PEA) on the site in June 2020. Within the report they recommend environmental DNA (eDNA) surveys to be carried out for great crested newts on nearby ponds which scored good in a habitat suitability index (HSI) assessment.

This survey is to provide the eDNA information.

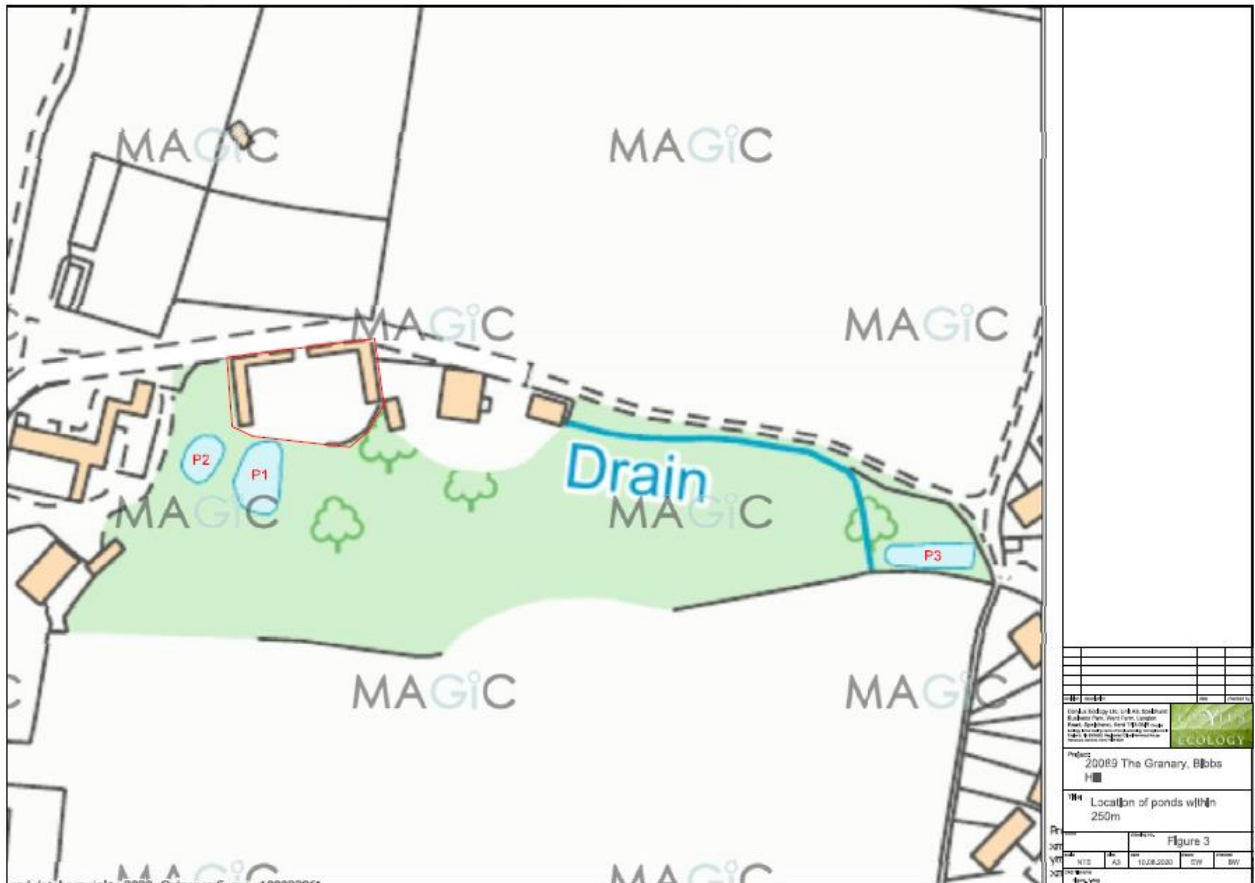


Figure 1: Corylus Ecology Map of the site and surrounding area (2020).

Arbtech Consulting Ltd updated the surveys in April 2021 with eDNA testing on two hydrologically linked ponds, P1/P2 and another visit to the off-site pond, P3.

Survey aims

As described in the ‘Survey Background’ section, this 2021 survey updates the 2020 PEA on the only pond with a good HSI score. The results of this survey, in combination with the other work undertaken in the locality would then be assessed to consider whether great crested newt might be breeding in ponds on or close to the site and therefore, whether there was a likelihood of encountering the species in terrestrial phase during construction. A presence of newts would require population assessment, a Conservation Regulations licence from Natural England, and adequate offsetting measures.

Record of activity

Environmental DNA (eDNA) sampling was undertaken on the water body close to the survey site (pond 1/2). This was in order to confirm the current presence, or likely-absence of great crested newts in the pond. This information is required to assess impacts from the proposed development on great crested newts. Great crested newts receive full protection under Schedule 2 of the Habitats Regulations and Schedule 5 of the Wildlife and Countryside Act 1981. The eDNA survey methodology is approved by Natural England for presence/absence surveys.

Methodology

Date of survey:

15th April 2021.

Weather conditions:

15°C, 30% cloud, sunny, light breeze.

Ponds visited:

The subject pond (P1/P2) is located south-west of the development site. Another water body to the east was shallow and almost dry at the time of survey and considered to be a backed-up ditch rather than a permanent pond, without any value for great crested newts (small, shallow, ephemeral, no aquatic plants) and was discounted from further survey including eDNA because of this.

Name	Distance	Direction	eDNA 2021	HSI in 2020
P1	4m	South-west	Yes	Yes - good
P2	6m	South-west	Yes	Yes – below average

Table 1: Ponds subject to the eDNA survey and their basic information

Sampling protocol:

One eDNA sampling kit was received. The eDNA protocol was adhered to at all times. This briefly consists of:

- Gloves put on.
- 20 water samples collected from each water body, spaced evenly around the pond edges. Whilst avoiding the disturbance of sediment, the water column was gently mixed before a water sample was taken using the supplied ladle and placed in a plastic sample bag. Sampling in very shallow water (<10cm deep) was avoided.
- After these 20 samples were taken, the bag was closed and shaken for 10 second to homogenise the pond's water into a single sample body.
- New gloves put on to avoid contamination.
- 15mL of sample water from the bag was pipetted into testing tubes containing 35mL of ethanol, for a total volume of 50mL per tube. This was repeated until all 6 tubes had been filled. These were then each shaken for 10 seconds to mix the tubes, which helps preserve the sample during transit. During this pipetting process, the water in the sample bag was constantly mixed by the pipette to avoid DNA sinking to the bottom.

- Gloves removed.

Once completed, the samples were sent to the laboratory for testing.

Laboratory testing:

The laboratory followed the analysis procedure as outlined within *Appendix 5, Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA* (Biggs J. et al. 2014).

Results

The result of the 2021 eDNA survey is summarised below in table 2:

Pond number	Lab kit number	qPCR replicates	GCN DNA found?
P1/P2	E9500	0/12	No

Table 2: Laboratory results from the eDNA survey. Full results can be found in appendix I.

Plan 1 shows a map of this ponds and all other known ponds within the locality, summarising the newt survey effort.

Figure 3: Map showing all ponds within 250m



Conclusions and Recommendations

Although there are low amounts of suitable terrestrial habitat on and around the development site (gardens, broadleaved woodland) It can be seen from table 2 and figure 3 that the subject pond of this 2021 report tested negative for great crested newt DNA, and that the eastern pond has been scoped out due to quality and distance.

The results have been inputted to the Natural England offence likelihood calculator. This assesses if an offence is likely based on the presumed impacts from the development on GCN ponds, habitat loss and injury or disturbance to newts or their movement. This is shown in table 3:

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)	Notional offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	No effect	0
Land 100-250m from any breeding pond(s)	No effect	0
Land >250m from any breeding pond(s)	No effect	0
Individual great crested newts	No effect	0
	Maximum:	0
Rapid risk assessment result:	GREEN: OFFENCE HIGHLY UNLIKELY	

Table 3: Likelihood of offence calculator from Natural England. The development site is measured at ~0.65ha.

Impacts

No impacts are foreseen on individual great crested newts or their aquatic or terrestrial habitat – there is a likely absence of great crested newts within the local area.

Recommendations for Further Survey

No further surveys or investigation for great crested newts are required. A European protected species licence (EPSL) is not required for the species.

If the surveys become more than 2 years out of date, an update HSI/eDNA should be carried out on the local ponds.

More wildlife ponds dug on the wider site (no fish or fowl provision) would be beneficial for amphibians and biodiversity in general.



Folio No: E9500
Report No: 1
Purchase Order: The Granary ME18 5HT
Client: ARBTECH
Contact: Craig Williams

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: 22/04/2021
Date Reported: 04/05/2021
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1870	Pond 1 + 2, The Granary ME18 5HT	TQ 6822 5263	Pass	Pass	Pass	Negative	0

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

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