## Bolton Upon Dearne STW, Barnsley – Great Crested Newt eDNA Survey

PBA Applied Ecology Ltd was commissioned by Tilbury Douglas on behalf of Yorkshire Water Services (YWS) to undertake a great crested newt (GCN) *Triturus cristatus* environmental DNA (eDNA) survey of 6 ponds at Bolton Upon Dearne STW, Barnsley, South Yorkshire. The proposed works on site include the installation of two new kiosks. A recent desk study within a Preliminary Ecological Appraisal (PEA) (PBA Ecology 2024) identified GCN records within 2 km of the site, the most recent of which dates from March 2018. The site is used as a fisheries pond, with ponds on site being used to stock or fish. Due to the fish within the pond and the abundance of nesting waterfowl on site and within the water, these factors are likely to lower the habitat suitability of these ponds for GCN. However, due to the proximity of the site to the works, and the connectivity to other water bodies, there may be GCN present. Given these findings, it is possible that GCN are utilising the site, and therefore an eDNA survey of the ponds was recommended.


**Figure 1:** *Site layout at Bolton Upon Dearne.*


PBA Applied Ecology Ltd, New Croft, Stackhouse Lane, Giggleswick, Settle, North Yorkshire, BD24 0DL
01729 822063 enquiries@pba-ecology.co.uk www.pba-ecology.co.uk

Great crested newts are a European Protected Species, protected via a combination of Regulation 41 of the Conservation of Habitats and Species Regulations 2010, and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is an offence to:

- Deliberately or recklessly capture, kill, or injure any individual, cause deliberate disturbance to a population, take or destroy the eggs of either species, or damage or destroy a breeding site or place of shelter used by this species.

Methods

The survey was conducted on 24/04/2024 by Assistant Ecologists Rachel Edgar BSc and Rhys Colenutt BSc. This survey date falls within the optimal survey period for GCN eDNA surveys (15th April to 30th June). The weather conditions were partly sunny, with low wind and the temperature was ~7°c. Samples were collected in accordance with the technical advice note WC1067 (Biggs *et al*., 2014) as approved by Natural England. Twenty 30 ml samples were extracted from the ponds and added to a Whirl-Pak provided by the laboratory. Samples were mixed within the bag for 10 seconds, and 15 ml was pipetted into each of the six sample tubes provided by the laboratory. This process was repeated for each pond, with strict biosecurity protocols being followed to ensure no cross contamination between sample ponds. Samples were packaged and sent by 24-hour delivery to the laboratory (SureScreenScientifics) for analysis.

Results

The laboratory analysis concluded a negative result for GCN eDNA in the water samples collected from the waterbodies on site at Bolton Upon Dearne.

The results were as follow:

- Bolton Upon Dearne pond one results are negative.
- Bolton Upon Dearne pond two results are negative.
- Bolton Upon Dearne pond three results are negative.
- Bolton Upon Dearne pond four results are negative.
- Bolton Upon Dearne pond five, and the associated ditch, results are negative.
- Bolton Upon Dearne pond six - negative results are negative.

Conclusion

The absence of GCN eDNA in the pond water samples can be interpreted to conclude that GCN are unlikely to be using the pond as an aquatic habitat. These results, alongside the HSI score showing the site to provide poor suitability for GCN in terrestrial and aquatic habitats, on site, suggest that GCN are highly unlikely to be present on site. Therefore, the proposed works are unlikely to impact GCN. Given the proximity of local and recent records within 2 km, it is recommended that all personnel are made aware of the potential presence of GCN on site.

If GCN, or any newt that cannot confidently be identified as not GCN, is detected on site at any point during the works, the works should be suspended, and a suitably qualified ecologist consulted immediately to provide further advice and recommendations. Please refer to the GCN precautionary method statement for further information on GCN mitigation on site before and upon detection.

## Survey Constraints

Unless stated otherwise, the information provided within this report is valid for a maximum period of 24 months from the date of survey. If works at the site have not progressed by this time, another site visit may be required in order to determine any changes in site composition and ecological constraints.

## References

ARG UK (2010). ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index

Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F. 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.

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.

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| Written by: | Checked by: | Approved by: | Date: |
|---|---|---|---|
| R. Edgar & B. Davies | I. Clements | A. Macaulay | 17/05/2024 |

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SureScreen Scientifics

# GCN eDNA Analysis

## 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 analyzing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

## Results

| Lab ID | Site Name | OS Reference | Degradation Check | Inhibition Check | Result | Positive Replicates |
|---|---|---|---|---|---|---|
| 2583 | Bolton Upon Dearne, Pond 3 | | Pass | Pass | Negative | 0/12 |
| 2584 | Bolton Upon Dearne, Pond 4 | | Pass | Pass | Negative | 0/12 |
| 2585 | Bolton Upon Dearne, Pond 6 | | Pass | Pass | Negative | 0/12 |
| 2586 | Bolton Upon Dearne, Pond 5 + Ditch | | Pass | Pass | Negative | 0/12 |
| 2587 | Bolton Upon Dearne, Pond 1 | | Pass | Pass | Negative | 0/12 |
| 2589 | Bolton Upon Dearne, Pond 2 | | Pass | Pass | Negative | 0/12 |

Matters affecting result: none

Reported by: Daisy Chambers

Approved by: Chelsea Warner

SureScreen Scientifics Ltd, Morley Retreat, Church Lane, Morley, Derbyshire, DE7 6DE, UK
+44 (0)1332 292003 | scientifics@surescreen.com | surescreenscientifics.com