

*Great Crested Newt (*Triturus cristatus*) eDNA Survey Report 2021*

Southolt Hall Barn, Southolt, Suffolk

Carried out for:

Mark Beckham

1st

Prepared by:

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1 Executive Summary

- 1.1 Abrehart Ecology Ltd was commissioned by Mark Beckham to conduct a great crested newt (GCN) *Triturus cristatus* environmental DNA (eDNA) survey as part of a Protected Species assessment that is required as part of a planning application – for a proposed barn conversion.
- 1.2 The site is approximately 0.07 ha, comprising of barns surrounded by grassland, hardstanding, and trees, within the grounds of Southolt Hall.
- 1.3 An eDNA survey was undertaken by Ana Pino Blanco BSc (Hons) MSc (Natural England Great Crested Newt Class Survey Licence GCN CL08 2020-46807-CLS-CLS) on Monday 19th April 2021.
- 1.4 Preliminary Ecological Appraisal survey results indicated there were three potential breeding ponds. For this study, the ponds within 250m of the site boundary were assessed (those non-ecologically separated from the site) – three ponds.
- 1.5 Survey results indicate the likelihood of GCN presence within one of the three ponds sampled within 250 m of the Site boundary. **Therefore, this report concludes that full great crested newt surveys are required to ascertain a population estimate necessary to complete a licence application (Natural England European Species Mitigation Licence).**

2 Introduction

Background

- 2.1 A great crested newt (GCN) environmental DNA (eDNA) survey of the ponds at Southolt Hall Barn, Southolt was undertaken on behalf of Mark Beckham on the 19th April 2021, following an initial Preliminary Ecological Appraisal (PEA) by Alister Killingsworth (of Abrehart Ecology on the 8th December 2020).
- 2.2 The survey was to form an assessment of the ecological impacts that the proposed work may have on great crested newt populations in the area.
- 2.3 Data provided by Suffolk Biological Information Service concluded there was a single record of GCN from the desk study.
- 2.4 The survey aimed to ascertain the presence or likely absence of great crested newts using the Site, or within 250m, so that appropriate mitigation could be carried out if needed (such as the application for a Natural England (NE) European Protected Species (EPS) Mitigation Licence – informed by population surveys).

Legislative Context

- 2.5 Great crested newts are a European Protected Species and a Species of Principle Importance in England under Section 41 of the NERC Act (2006). They are fully protected under UK and European legislation, making it an offence to intentionally or recklessly:
 - Kill, injure, or take great crested newts (or their eggs);
 - Possess, sell, transport or control alive or dead great crested newt or any part of them;
 - Damage or destroy any breeding or resting place;
 - Obstruct access to a resting or shelter place.
- 2.6 Great crested newts are also listed on the Local Biodiversity Action Plan, as Suffolk is believed to be a stronghold for this species.
- 2.7 If great crested newts are recorded within 500m of the Site, then a licence must be obtained from Natural England prior to undertaking any work which may affect them.

Survey Objectives

2.8 The objectives of this survey were:

- To determine the presence or likely absence of great crested newts within ponds up to 250m from the Site boundary;
- To make recommendations for further survey effort, where necessary.

Site description

2.9 The Site is located at the southern end of an access track leading to Southolt Hall, north of the village of Southolt, Suffolk. It is approximately 0.07 ha in extent and is formed of an agricultural barn and stables, with planted trees, hardstanding yards and access tracks, and grassland surrounding it. The surrounding landscape is dominated by agricultural land, pockets of woodland, and scattered small villages

2.10 A map showing pond locations can be found in Appendix I.

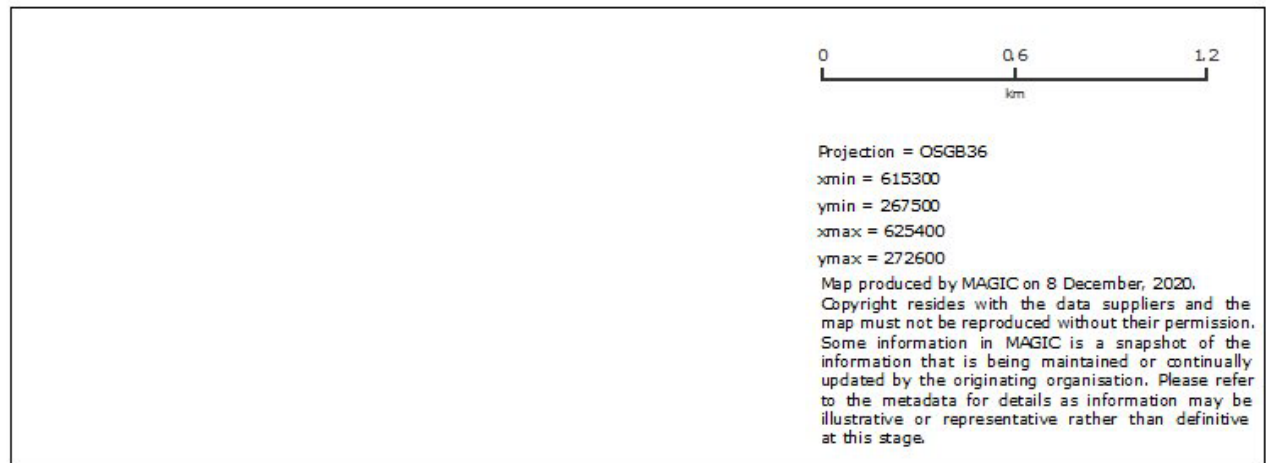


Figure 1. Site location.

Great Crested Newt Ecology

- 2.11 Great crested newts are distributed throughout the UK but are absent from Ireland. Despite a wide distribution, populations have reduced or disappeared from sites across Europe as a result of habitat loss and changes in farming practices (Froglife, 2017).
- 2.12 The great crested newt is the largest newt in the UK, reaching a length of up to 17cm. Male great crested newts develop a jagged crest along their backs during breeding season with a break at the base of the abdomen and a silvery flash along the centre of the tail. Both males and females have dark skin, with a 'warty' appearance, and orange underside with irregular black markings and white speckling. During their terrestrial phase the male loses his crest, however the female retains her orange tail stripe (Froglife, 2017; Inns, 2009).
- 2.13 Like other UK amphibian species, great crested newts use suitable waterbodies for breeding (often between March and June). Large ponds, with egg laying substrate (weeds, aquatic plants, grasses etc.) and no fish are favoured sites (Froglife, 2017). Whilst in their aquatic phase, great crested newts feed on invertebrates and tadpoles, relying on smell and vision to find their prey (Beebee, 2013).
- 2.14 Courtship and mating take place at night and female newts lay eggs individually on plant leaves, which are folded to protect the egg. Adults leave breeding ponds in July, with young newts remaining within ponds until August (Inns, 2009).
- 2.15 During their terrestrial phase (late summer, autumn, and winter) great crested newts feed on invertebrates and spend the majority of winter months sheltering beneath rocks, buried in mud, or within compost heaps (Froglife, 2017). Favoured terrestrial habitats include deciduous woodland, mature hedgerows, and undisturbed grassland (Inns, 2009).

3 Methods

Desk Study

- 3.1 Data obtained from the Suffolk Biodiversity Information Service was used to conduct a standard data search for any information regarding statutory and non-statutory sites and records of protected and priority species (including great crested newts) within a 2km radius of the Site.

Great Crested Newt Survey

Habitat Assessment

- 3.2 The habitats recorded throughout Site were suitable to support amphibians, including great crested newts (GCN), during their terrestrial phase – as both commuting habitat and shelter and hibernating opportunities. Within the barns were damaged brickwork, voids, and damaged flooring that could support and conceal sheltering newts.
- 3.3 In addition to this, there were potential breeding opportunities surrounding the Site. The large moat/pond, and smaller ponds had shallow areas and potential displaying and egg-laying habitats for great crested newts. Although the larger pond regularly supported ducks and geese and contains fish, the smaller ponds were more suitable and denser reed growth within the moat provided shelter from these species.
- 3.4 Three ponds within 250m of the Site boundary were sampled for eDNA as part of this report. A brief description of each pond can be seen below.
- 3.5 Pond 1: A pond “L” shaped adjacent to Southolt Hall, that ended on a brick wall footbridge. This was partially shaded by bankside trees bamboo growth, scrub, and adjacent buildings. Aquatic macrophytes included celery-leaved buttercup (*Ranunculus sceleratus*), water mint (*Menta aquatica*) and yellow iris (*Iris pseudacorus*). A moorhen was seen using the pond, but no ducks were recorded.
- 3.6 Pond 2: A very large pond (or moat) in the grounds of Southolt Hall. There were two areas of reed (*Phragmites australis*) growth, providing potential cover for sheltering amphibians and nesting birds, mallards and a reed bunting was seen using the reedbed south of Southolt Hall. The banks and margins supported smaller areas of emergent vegetation (hard rush (*Juncus inflexus*) and branched bur-reed (*Sparganium erectum*)). Marginal areas were shallow, providing potential display habitat for breeding GCN; however, the dominant vegetation recorded was filamentous algae. Anecdotal evidence suggested that the pond contained good numbers of fish and is regularly used by wildfowl.
- 3.7 Pond 3: Located between two fields, this pond was surrounded by, and shaded by, scrub and broadleaf trees. It presented some blanket weed on the surface but also contained emergent vegetation such as water mint (*Menta aquatica*) typically used by female GCN for egg laying. It was connected to a ditch on its western margin, although this was dry at the time of survey

Field Sampling

- 3.8 The sampling visit was undertaken by ecologists Ana Pino-Blanco MSC (Hons) MSc (Natural England GCN Class Survey License GCN CL08 2020-46807-CLS-CLS) on the 19th April 2021. Ana Pino-Blanco is certified as a surveyor and trained in the methodology necessary to reliably undertake this sampling. The survey was conducted following methods described by Biggs *et al* (2014), as approved by Natural England. Samples were refrigerated immediately after collection and returned to the laboratory for processing within four days – samples can be stored in a refrigerator for four weeks.

Laboratory Testing

- 3.9 Laboratory testing was undertaken by Surescreen Scientifics Ltd. Surescreen are listed as a quality provider of this service and strictly adhere to methods described by Biggs *et al* (2014).

4 Results

Desk Study

- 4.1 The data search returned one record of great crested newts within 2km of the Site; from approximately 700m north-east of the Site.

eDNA Survey

- 4.2 Of the three ponds targeted during the survey, none were dry. Therefore, three ponds were sampled and tested for GCN presence.
- 4.3 Laboratory testing detected evidence of GCN eDNA from Pond 3, and no GCN eDNA in Ponds 1 and 2. Sample integrity, degradation, and inhibition checks all passed (see Appendix III).
- 4.4 Results indicate that GCN are likely present in ponds within 250m of the Site boundary.

Survey Limitations

- 4.5 None - all ponds were accessible and contained water.

5 Conclusions and Recommendations

- 5.1 To determine the presence or likely absence of great crested newts in and around the Site, an eDNA survey was undertaken on the 19th April 2021 by an experienced, licensed surveyor of ponds within 250m of the Site.
- 5.2 No ponds were found to be dry; therefore, three ponds were surveyed for GCN presence according to methods described by Biggs *et al* (2014).
- 5.3 GCN eDNA was detected within one of the ponds sampled. Although this does not confirm that the animals are within the water, it is very likely that GCN are using the pond. Therefore, **full great crested newt surveys are required prior to the start of construction works. These will be necessary to produce a population estimate that will inform a Natural England Mitigation Licence application.** Full population surveys include six survey visits that can be **undertaken from mid-March to mid-June, with half of the surveys conducted from mid-April to mid-May.**
- 5.4 It should be noted that the eDNA results may show a positive or negative result for GCN eDNA in the waterbody; however, this is an indicator only and not 100% positive or negative to the animals use of the water body.

6 References

Literature

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HSI Calculator ©Owen Crawshaw, 2015.

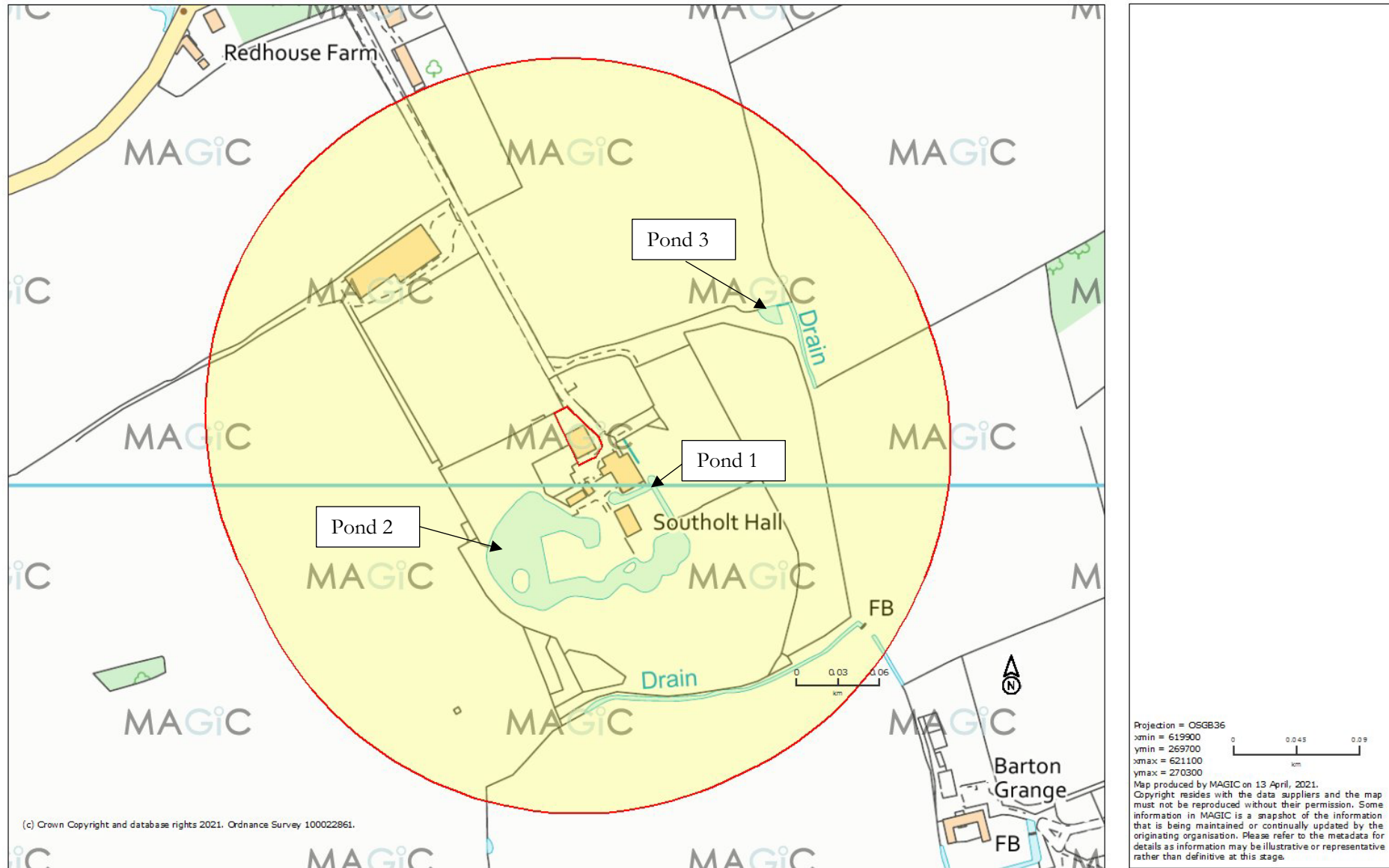
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Websites

<http://natureonthemap.naturalengland.org.uk/MagicMap.aspx>

Appendix I – Site Maps



Appendix II – Survey Images

Pond 1



Pond 2



Pond 3



Appendix III –eDNA Results from SureScreen

Folio No: E9828
Report No: 1
Purchase Order: Southolt
Client: ABREHART ECOLOGY LTD
Contact: Lindsey, Ana Pino Blanco

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: 29/04/2021
Date Reported: 12/05/2021
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
2174	Pond 1	TM 20502 700032	Pass	Pass	Pass	Negative	0
2172	Pond 2	TM 20502 700032	Pass	Pass	Pass	Negative	0
3171	Pond 3	TM 20502 700032	Pass	Pass	Pass	Positive	3

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

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