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JAMES BLAKE ASSOCIATES

Great Crested Newt eDNA Survey

Of

Phases 2-6, Haverhill,

Suffolk

On behalf of

Persimmons Homes Suffolk

June 2019

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James Blake Associates Ltd have made every effort to meet the client's brief. However, no survey ensures complete and absolute assessment of the changeable natural environment. The findings in this report were based on evidence from thorough survey: It is important to remember that evidence can be limited, hard to detect or concealed by site use and disturbance. When it is stated that no evidence was found or was evident at that point in time, it does not mean that species are not present or could not be present at a later date: The survey was required because habitats are suitable for a given protected species, and such species could colonise areas following completion of the survey.

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EXECUTIVE SUMMARY

Water samples were taken of a single non-ecologically separated pond within 500m of Phases 2-6, Haverhill and tested for environmental DNA (eDNA) to determine the presence or likely absence of great crested newts (*Triturus cristatus*) (GCN).

One pond was surveyed on 15th April 2019, following Natural England guidelines.

Laboratory testing found no evidence of GCN eDNA within the water samples.

Overall it is considered unlikely that GCN are utilising the site. As a result specific mitigation for the species is not considered to be necessary. Therefore, no recommendations for safeguarding GCN are considered necessary. However, enhancement recommendations for improving the site for amphibians have been made within this report.

1 INTRODUCTION

Background to the study

- 1.1 James Blake Associates Ltd was commissioned by Persimmons Homes, Suffolk to undertake environmental DNA (eDNA) great crested newt (GCN) surveys at phases 2-6 Haverhill (Ordnance Survey National Grid Reference: TL 670 468, taken from the centre of the site). The survey and report are required to support a planning application: Residential housing with associated infrastructure is proposed.
- 1.2 A Preliminary Ecological Appraisal (JBA, 2018) of the proposed development site was undertaken on the 12th of December 2018 during which ponds within 500m were scoped for their potential to support breeding GCN.
- 1.3 GCN are classed as a 'European Protected Species' (Conservation of Habitats and Species Regulations, 2017), and also a priority species under Section 41 of The Natural Environment and Rural Communities (NERC) Act (2006) which is a consideration under the National Planning Policy Framework (NPPF) 2019, placing responsibility on Local Planning Authorities to aim to conserve and enhance biodiversity and to encourage biodiversity in and around developments. GCN are afforded full legal protection under Schedule 5 of the Wildlife and Countryside Act, 1981 (as amended) (WCA). GCN are also listed under Schedule 5 of the Habitats Regulations.

Site description

- 1.4 The site is located to the north west of Haverhill Road (A143), north of Haverhill town in Suffolk. Arable fields border the site with residential housing to the south. The wider landscape includes mainly arable fields with scattered woodland. The River Stour lay approximately 1.8km east of the site, and the Stour Brook lay approximately 300m south, along with a series of drainage ditches (see Figure 1 below).

Figure 1: Map of site location.



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Aims and objectives

- 1.5 The aim of the survey was to determine the presence or likely absence of GCN within 500m of the proposed site boundary.

2 METHODS

Great Crested Newt Survey

- 2.1 Survey methodology adhered to standard techniques and designs recommended by Natural England, using kits from ADAS.
- 2.2 The following survey techniques are recommended by Natural England:
- Wearing gloves, twenty 30ml water samples were collected at even intervals (no closer than 2m apart) around the perimeter of each pond and combined in a container. Care was taken not to enter the water at any point to avoid cross-contamination of DNA between ponds.
 - Six 15ml samples were then preserved in alcohol and sent to ADAS for analysis, following Natural England guidelines.
- 2.3 The following analysis techniques outlined by Biggs *et al.* (2014) were followed by ADAS and are approved by Natural England:
- The method detects pond occupancy from GCN using traces of DNA shed into the pond environment (eDNA). The detection of GCN eDNA is carried out using real time Polymerase chain reaction (PCR) to amplify part of the cytochrome 1 gene found in mitochondrial DNA. The method followed is detailed in Biggs J., *et al.*, (2014).
 - The results are defined as follows:
Positive: DNA from the species was detected.
eDNA Score: Number of positive replicates from a series of twelve.
Negative: DNA from the species was not detected; in the case of negative samples the DNA extract is further tested for PCR inhibitors and degradation of the sample.
Inconclusive: Controls indicate degradation or inhibition of the sample, therefore the lack of detection of GCN DNA is not conclusive evidence for determining the absence of the species in the sample.
- 2.4 The survey was undertaken by Sam Rigg BSc (Hons) (Natural England great crested newt class licence WML-CL08) and Alison Collins PhD MCIEEM.

- 2.5 Water samples were collected from the ponds on the 15th of April 2019. Testing kits were received from ADAS on the 12th of April 2019 and sent for analysis on the 23rd of April 2019. Once collected, the samples were stored at 2-4°C before being returned to the laboratory.
- 2.6 Six ponds were identified within 500m of the site on OS survey maps. Pond 1 was sampled for GCN (see Table 1 for pond description). Pond 2 and 3 were filled in. Pond 4 was dry. Ponds 5 and 6 did not grant access and therefore not surveyed. See Figure 2 for pond locations.

Table 1: Pond description

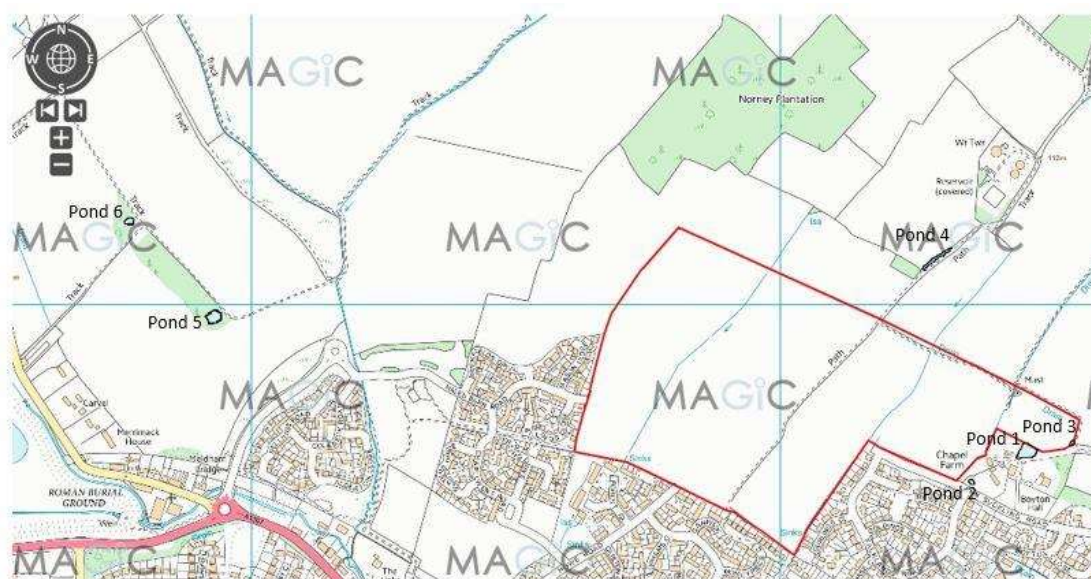
Pond	Distance from site (m)	Size (m ²)	Aquatic Characteristics	Surrounding Vegetation	Other Observations
Pond 1	70	102	A pond that sometimes dries with less than 20% shade. No fish present. Ducks present with a moderate water quality.	A 60% vegetation cover in a private mown garden.	

3 RESULTS

Existing records

3.1 An ecological survey report was undertaken in 2009 by RPS recording smooth newt, common frog and tadpoles in Pond 2. However, no GCN were recorded. Pond 2 has now been filled in.

Figure 2: Approximate location of ponds



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Habitat Suitability Index (HSI)

3.2 A HSI value was calculated for Pond 1 (see Appendix A for full results).

Summary of survey results

3.3 Table 2 shows a summary of eDNA analysis from the Pond 1. No evidence of GCN eDNA was found within the samples.

Table 2: eDNA analysis from the ponds.

Pond Number	HSI Score	GCN Detection	Degradation
1	0.56 (Below average)	Negative	No

Constraints

- 3.4 Access to Ponds 5 and 6 was not granted and therefore it cannot be said if GCN currently reside in these ponds.
- 3.5 Ponds 2, 3 and 4 were dry and/or filled in thus were unsuitable.

4 EVALUATION AND CONCLUSIONS

- 4.1 The samples were taken during the optimal survey season on the 15th April 2019 and during optimal weather conditions. The pond samples all tested negative for GCN eDNA.
- 4.2 Therefore, it was considered unlikely that GCN are currently using the surveyed pond within 500m of the site boundary.
- 4.3 Although GCN are considered unlikely to be currently using the pond and are considered likely to be absent from the site, it is recommended that the site could be enhanced post-development for amphibians by improving terrestrial and aquatic habitats. This could include pond creation within open spaces, ditch improvement for commuting newts, the creation of habitat corridors seeded with wildflower and grassland mixes and the incorporation of hibernacula.

5 REFERENCES

Biggs J et al. (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.

English Nature (2001) Great Crested Newt Mitigation Guidelines. English Nature, Peterborough.

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James Blake Associates. 2019. Preliminary Ecological Appraisal of Haverhill Phases (2-6), Suffolk.

6 APPENDICES

Appendix A: Pond HSI scores

Pond 1

	Field Score	SI
Location	A	1
Pond area m ²	60	0.1
Pond permanence	Sometimes dries	0.5
Water quality	Poor	0.33
Shade %	60	1
Fowl	Absent	1
Fish	Absent	1
Pond density	2	0.6
Terrestrial Habitat	Moderate	0.67
Macrophyte cover %	10	0.45
HSI value	0.56	
Pond Suitability	Below Average	