Our Ref: 2021-05(12)

DATE 22th July 2021

Manor House, Church Street
Burbage, Hinckley
Leicestershire
LE10 2DB

Dear Ms Catherine Bennett,

Re: Manor House, Church Street, Burbage, Hinckley, Leicestershire

Ecolocation were instructed by you to undertake Habitat Suitability Index (HSI) on a single water body within 250m of Manor House, Church street, Burbage (hereafter referred to as the 'Site') to determine the presence or likely absence of great crested newts using Habitat Suitability Index assessment techniques and water samples tested for environmental DNA (eDNA).

Warwickshire Biological Records Centre (WBRC) was contacted for information on protected and notable species as part of the desk study portion of this assessment. The amphibian records returned during this exercise were used in the production of this report, they are as follows:

Amphibian Records:

16 records of amphibians were returned from within a 1km radius of the Site. This included two records of great crested newts (*Triturus cristatus*), one smooth newt *(Lissotriton vulgaris*), eleven common frogs (*Rana temporaria*) and two common toads (*Bufo bufo*). The great crested newt records were recorded 940m from the Site in 2016 and were described as breeding.

The presence of breeding great rested newts within 1km of the Site increases the likely hood of the Sites pond containing great crested newts and lead to the need for a Habitat Suitability Index assessments of the pond, followed by an eDNA sampling of the pond.

Methodology

Habitat Suitability Index Assessment (HSI)

The Habitat Suitability Index (HSI) for great crested newts was developed by Oldham *et al.* in 2000 as a measure of habitat suitability in order to estimate presence/absence. A waterbody is assessed based on a geometric mean of ten features, each given a score relating to the current condition of the ponds characteristics and surroundings. Where the overall result is closer to 0 this indicates a more unsuitable habitat and a score closer to 1 represents more optimal habitats.

HSI can be useful in:

- Evaluating the general suitability of a sample of ponds for Great Crested Newt
- Comparing general suitability of ponds across different areas
- Evaluating the suitability of receptor ponds in a proposed mitigation scheme

HSI is limited by being insufficiently precise to allow one to draw conclusions that a pond with a high score will support Great Crested Newts nor that a pond with a low score will not do so. The results do not allow conclusions

on newt populations to be reached. Therefore a HSI assessment is not a substitute for further great crested newt surveys.

eDNA Sampling

Environmental DNA (eDNA) is nuclear or mitochondrial DNA that is released from an organism into the environment. Sources of eDNA include secreted faeces, mucous, and gametes, shed skin and hair and carcasses. In aquatic environments, eDNA is diluted and distributed in the water where it persists for 7–21 days, according to the detection limits of qPCR approaches and associated fragment sizes, and depending on environmental conditions (Biggs et al., 2014). This can be tested for by taking water samples from the pond and analysing using PCR techniques under laboratory conditions.

Results

The waterbodies and terrestrial habitats were surveyed by suitably qualified ecologist Tamsin Harper, accredited agent under George Burton licence GCN: 2015-18862-CLS-CLS, on the16th June 2021.

A single water body within 250m of the Site was assessed for their HSI scores. The location of the pond can be found in figure 1.

Figure 1: Pond included within the 2021 HSI Survey.

Habitat Suitability Index:

Pond 1 (photo 1) appeared to be a man-made concrete base with sloping mud bank sides to the north-west, south and south-eastern edges, and a concrete wall along the north-eastern corner. Three large trees were noted to be overhanging the body of water providing plenty of shade and the bankside vegetation was noted to be well developed. The HSI assessment of this pond identified 'Good' suitability for great crested newts when assessed in 2021 and this has been summarised in Table 1. The large area of the pond and abundant vegetation was considered to increase the ponds suitability to support great crested newts. However, the presence of fish was unknown and possible.

Table 1: HSI calculation for pond 1

Pond 2		
Factor	**Result**	**Suitability Index**
SI 1	A (optimal)	1
SI 2	>800m^2	1
SI 3	Never	0.9
SI 4	Good	1
SI 5	50%	1
SI 6	Minor	0.67
SI 7	Possible	0.67
SI 8	1	0.32
SI 9	Good	1
SI 10	25%	0.55
SI1 x SI2 x SI3 x SI4 x SI5 x SI6 x SI7 x SI8 x SI9 x SI10 (1 x 1 x 0.9 x 1 x 1 x 0.67 x 0.67 x 0.32 x 1 x 0.55) $^{1/10}$ = 0.71 equates to **"Good"** habitat suitability for great crested newts		

Key:	
SI 1 – Location	SI 6 –Fowl
SI 2 – Pond area	SI 7 – Fish
SI 3 – Pond drying	SI 8 – Ponds
SI 4 – Water quality	SI 9 – Terrestrial
SI 5 – Shade	SI 10 – Macrophytes

Photo 1: Pond from western bank facing south-east

Photo 2: Pond from western bank facing north

Photo 3: Pond from western bank facing east

eDNA Sampling:

Twenty water samples were collected from around the pond. Care was taken to avoid standing in the water and gloves were worn by the surveyor during the survey. Approximately 50% of the pond was accessible to the surveyors, which meant that 50% of the perimeter was accessible for surveying. No great crested newts, efts or eggs were observed during the survey.

The water samples tested by SureScreen Ltd laboratory returned a negative result for presence of great crested newts. This strongly suggested that great crested newts were not using the standing water within the site during the 2021 breeding season. It was therefore considered unlikely that great crested newts would use the terrestrial habitats on site and no impact to this species was expected through Site alterations.

It was considered possible that other common amphibian species such as common toad, common frog and smooth newt may use the pond on the Site and these species may therefore occasionally be found on Site.

The full results from the laboratory test are enclosed with this letter.

Summary

The initial survey of the site during June 2021 found that the site consisted of amenity grassland, introduced shrubs, scrubland, and scattered trees. These habitats offered suitable terrestrial cover and foraging opportunities for amphibians, including great crested newts. The Habitat Suitability Index assessment carried out found that the pond on site had 'Good' suitability to support great crested newts. As a result, further surveys for great crested newts were recommended and undertaken using the environmental DNA test methodology.

The laboratory testing of twenty water samples taken from the pond during the great crested newt breeding season revealed no great crested newt DNA. It was therefore concluded that great crested newts were very unlikely to be present on Site and this species would not be affected by any alterations to the Site. No further survey work for this species was recommended.

The results of this survey can be considered valid for a period of up to two years, after which an updated survey may be recommended.

Please do not hesitate to contact Ecolocation if you have any questions or queries.

Yours sincerely,

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