

Appendix 8.7: Great Crested Newt Survey

Land at Barkham Square

Land at Barkham
Square: Great
Crested Newt
Survey
FINAL
November 2025

Approval for issue

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Glossary

Term	Meaning
The Applicant	Crest Nicholson Operations Limited (Chiltern Division)
The Project	Land at Barkham Square

Abbreviations

Abbreviation	Meaning
GCN	Great Crested Newt
ES	Environmental Statement
TVERC	Thames Valley Environmental Records Centre.
WCA5	Animal species protected from intentional killing injuring or taking under schedule 5 of the Wildlife and Countryside Act 1981 (as amended).
HSI	Habitat Suitability Index
eDNA	Environmental DNA (Deoxyribonucleic acid)

Units

Unit	Description
km	Kilometres
m	Meters
°C	Degrees Celsius

1 INTRODUCTION

1.1 Overview

- 1.1.1 This Appendix of the Environmental Statement (ES) has been prepared by RPS on behalf of Crest Nicholson Operations Limited (Chiltern Division).
- 1.1.2 The purpose of this technical report is to present the methodology and results of the great crested newt (GCN) *Triturus cristatus* for the Project. The results of this report have been used to inform Chapter 8: Ecology and Nature Conservation of the ES.

1.2 Site Description

- 1.2.1 The site is located at Barkham Square, Arborfield south-east of Reading, Berkshire (the Site). It comprises approximately 61.3 ha of mainly grassland grazed by sheep. There are blocks of ancient woodland found on Site. There is a pond located to the south, adjacent to the Barkham Brook. The Barkham Brook runs through the centre of the Site in a north-south orientation.
- 1.2.2 The wider landscape is generally rural in nature with parcels of woodland, including ancient woodland. Arable fields are found to the east and north of the Site. Waterman's Lake is located approximately 30m south of the Site boundary.

1.3 Legislation

- 1.3.1 GCN are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (and as amended), which affords the species protection under Section 9. The species is also listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). In combination, this makes it an offence to:
 - Intentionally kill, injure or take (capture etc.) a GCN;
 - Possess a GCN; and
 - Intentionally or recklessly damage, destroy, obstruct access to any structure or place used by GCN for shelter or protection, or disturb any animal occupying such a structure or place; and sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative) or advertise for buying or selling such things.
- 1.3.2 Great crested newts are also listed as a species of principal importance for conservation in England under Section 41 of the Natural Environment & Rural Communities Act (2006).

2 METHODOLOGY

2.1 Desk Study

- 2.1.1 Records of GCN from the last 10 years, within 2km of the site, were obtained by CSA as part of the ecology desk study. Records were requested from Thames Valley Environmental Records Centre (TVERC).
- 2.1.2 The desk study results are presented in Volume 3, Appendix 8.1: PEA of the ES. A summary of GCN records is provided in this report

2.2 GCN Field Surveys

Scoping

- 2.2.1.1 A walkover survey of the Project site was undertaken by CSA in February 2023 to identify habitats with the potential to support GCN.
- 2.2.1 Ponds and waterbodies within 500 m of the Project site were identified through a desk study using publicly available ordnance survey Maps. Where necessary, requests for access were then submitted to all landowners where OS maps indicated ponds were present.
- 2.2.2 A figure showing the locations of the ponds is shown in Annex A.
- 2.2.1.2 All accessible waterbodies within the Project site and within 500 m of the Project site boundary were initially subject to a Habitat Suitability Index (HSI) assessment, with CSA conducting these assessments in April 2023.
- 2.2.1.3 All water bodies scoring average or higher on the HSI assessment, which were physically accessible and where access was permitted, were then subject to environmental DNA (eDNA) surveys to confirm the presence or likely absence of GCN.
- 2.2.1 Full methods for each survey technique are provided below.

Habitat Suitability Index Assessment

- 2.2.2 The HSI methodology used followed the UK Amphibian and Reptile Group's Advice Note 5 (ARGUK, 2010), which is an updated version of the original HSI methodology described in Oldham et al., (2000).
- 2.2.3 The HSI methodology involved the assessment of the following ten key habitat indices thought to affect the likelihood of great crested newt presence:
 - Geographical Location;
 - Pond area;
 - Permanence;
 - Water quality;
 - Shade;
 - Waterfowl;
 - Fish;
 - Pond count (e.g. other ponds within 1 km);

- Terrestrial habitat; and
- Macrophytes.

2.2.4 Each pond was assigned a score for each index from 0.01 to 1. The final HSI score is calculated as the geometric mean of the ten individual scores. Based on the minimum and maximum possible scores for the individual indices, the total HSI score can range from 0.35 (extremely unsuitable) to 1 (optimally suitable). Within this range, a qualitative descriptor of suitability is applied as follows (ArgUK, 2010):

- <0.5: poor;
- 0.5 – 0.59: below average;
- 0.6 – 0.69: average;
- 0.7 – 0.79: good; and
- >0.8: excellent.

Environmental DNA (eDNA) Sampling

- 2.2.5 The surveys were conducted by suitably licensed ecologists. The surveys followed the eDNA surveying and laboratory analysis techniques as described by Biggs *et al.* (2014).
- 2.2.6 Water samples were collected using sampling kits supplied by Surescreen Scientifics Ltd. Water samples were collected in mid-July 2024, which is outside of the approved survey window between 15th April and 30th June. Due to the suboptimal timing of the water sampling, the eDNA tests were redone this year (2025) within the approved survey window and water samples were taken on the 12th May 2025.
- 2.2.7 Surveyors collected 30 ml water samples from the waterbodies using a sterile ladle. Water surveys were collected from the bank edge without the surveyor entering the water.
- 2.2.8 Where access allowed, the samples were collected from points evenly spaced along the bank to give as much coverage of the bank length and suitable marginal habitat as possible. Samples were spread out as much as possible to ensure a representative sample was collected and to ensure the effectiveness of the survey was not compromised.
- 2.2.9 The surveyors used the ladle to gently agitate the water, mixing the water column, whilst taking care not to disturb or collect any sediment. The samples collected were emptied into a sterile plastic bag and homogenised by gently shaking the bag to ensure eDNA was evenly mixed through the sample.
- 2.2.10 A pipette was used to collect 15 ml subsamples of the homogenised sample into sterile tubes already containing 35 ml of ethanol to preserve the eDNA sample.
- 2.2.11 The samples were then removed from Project site and sent to Surescreen Scientifics Ltd for analysis. The water samples were analysed using the quantitative Polymerase Chain Reaction (qPCR) eDNA test.

Egg Search

- 2.2.1 The egg search involves a direct assessment of emergent and submerged vegetation surrounding ponds for GCN eggs.
- 2.2.2 Egg surveys can only be undertaken during late spring and early summer (April to June).

Torchlight Survey

- 2.2.3 The torchlight survey is an amphibian recording technique undertaken by appropriately licenced ecologists. Torch counts were carried out after dark by slowly once round each

pond, shining a powerful torch (1 million cancel power) into the water and counting the numbers of GCNs and any other Amphibians present.

- 2.2.4 This technique is to be undertaken during spring when males will be displaying and courting females.

Bottle Trapping

- 2.2.5 Bottle traps were placed around the pond edges with the entrances facing into the pond spaced at a distance of 1 trap per 2 m of accessible pond edge. Traps were placed at or just before dusk and checked early the following morning.

2.3 Weather

- 2.3.1 Weather conditions during the nocturnal surveys were recorded and are presented in Table 2.1.

Table 2.1: Survey visit dates and weather conditions

Survey Date	Survey Type	Weather
12/05/2025	Egg search	24°C, wind 1, 20% cloud cover
13/05/2025	Torching	22°C, wind 1, 10% cloud cover
15/05/2025	Torching	12°C, wind 3, 100% cloud cover
20/05/2025	Torching	15°C, wind 1, 80% cloud cover
22/05/2025	Torching & bottle trapping	18°C, wind 1-2, 30% cloud cover
26/06/2025	Torching	14°C, wind 2-3, 100% cloud cover
28/05/2025	Torching	12°C, wind 1-2, 30% cloud cover
09/06/2025	Torching and eDNA sample	17°C, wind 1-2, 50% cloud cover

2.4 Limitations

Access Restrictions

- 2.4.1 Access to all ponds within 500 m was not possible due to access to private land being refused or no response from landowners.
- 2.4.2 During the sampling of Pond 1 for eDNA, a GCN egg was found on aquatic vegetation. Therefore, no sample was taken due to confirmed presence. However, bottle trapping was attempted in Pond 1 when sheep were not present in the evening but as they were moved into the field by the morning, the potential presence of sheep grazing around the pond made it impossible to set traps without the risk of interference and associated loss of traps from sheep activity. As such, an additional survey visit was undertaken (for a total of 7) and an additional eDNA sample taken to confirm presence/absence. This is considered sufficient to ensure that the results achieved were valid.

3 RESULTS

3.1 Desk Study

- 3.1.1 The ecology desk study, as reported by CSA (2023), identified 41 records of five amphibian species within the search area, of which four were of GCN. The closest GCN record to the site was approximately 1.18km to the east at The Moors LWS.
- 3.1.2 While the GCN records are relatively distant from the site, the local area contains a network of ponds, ditches, and other suitable habitat that could allow GCN to travel to the site.

3.2 HSI Survey

- 3.2.1 A total of 19 ponds/ waterbodies were identified and accessible, allowing HSI surveys to be undertaken. The results of the HSI surveys are given in Annex A and summarised below.
- 3.2.2 Of the 19 ponds identified, one pond was dry and could not be surveyed but all remaining ponds were successfully surveyed.
- 3.2.3 Of the 18 ponds successfully HSI surveyed:
 - Three were assessed as having 'excellent' suitability;
 - Three were assessed as having 'good' suitability;
 - Four were assessed as having 'average' suitability;
 - Five were assessed as having 'below average' suitability; and
 - Three were assessed as having 'poor' suitability.
- 3.2.4 The results of the HSI survey are shown in Annex A.

3.3 eDNA Analysis

- 3.3.1 Nine ponds were sampled for eDNA, primarily those with HIS scores of average or above.
- 3.3.2 All ponds sampled returned a negative result. However, it should be noted that, due to the sampling being carried out in July 2024, outside of the optimal period for eDNA sampling, the negative result cannot be considered definitive, and resampling was necessary. The resampling was undertaken of all ponds during May 2025 during the optimal period.
- 3.3.3 Two of the ponds were dry (P19, P13) at the time of the 2025 survey.
- 3.3.4 Following the resurvey of the ponds, all of the resurveyed ponds were found negative for GCN eDNA.

3.4 Egg Search

- 3.4.1 During the egg search for P1, a GCN egg was found within the pond. Therefore, it was determined that further survey work should be carried out for P1 to establish population of GCN.
- 3.4.2 No other GCN eggs were found in any other ponds surveyed.

3.5 Torching and Bottle Trap Surveys

- 3.5.1 Throughout the survey visits, GCN presence was not confirmed within P1. No GCN were observed. Incidental records of smooth newts were observed during the survey visits. The full survey results data is presented in Annex C.

4 SUMMARY

- 4.1.1 Surveys identified 19 accessible ponds within the Project site boundary or 500 m of the Project site.
- 4.1.2 GCN surveys were undertaken on accessible ponds in 2024 comprising HSI assessments and eDNA surveys of any ponds with an HSI suitability of average or higher.
- 4.1.3 The eDNA sampling returned negative results on all ponds. However, due to the eDNA sampling being undertaken in July, outside of the optimal period, these negative results cannot be considered reliable, and resampling was completed during the approved survey period of mid-April to the end of June, in May 2025.
- 4.1.4 Of these eDNA results all ponds were found negative for GCN eDNA. Due to the presence of a GCN egg during the water sampling collection for P1, this pond was assessed for GCN presence via torching surveys. The surveys did not indicate any presence of GCN and no GCN were observed. Therefore, it is assumed that this species is present within the pond, but at very low population levels.

5 REFERENCES

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

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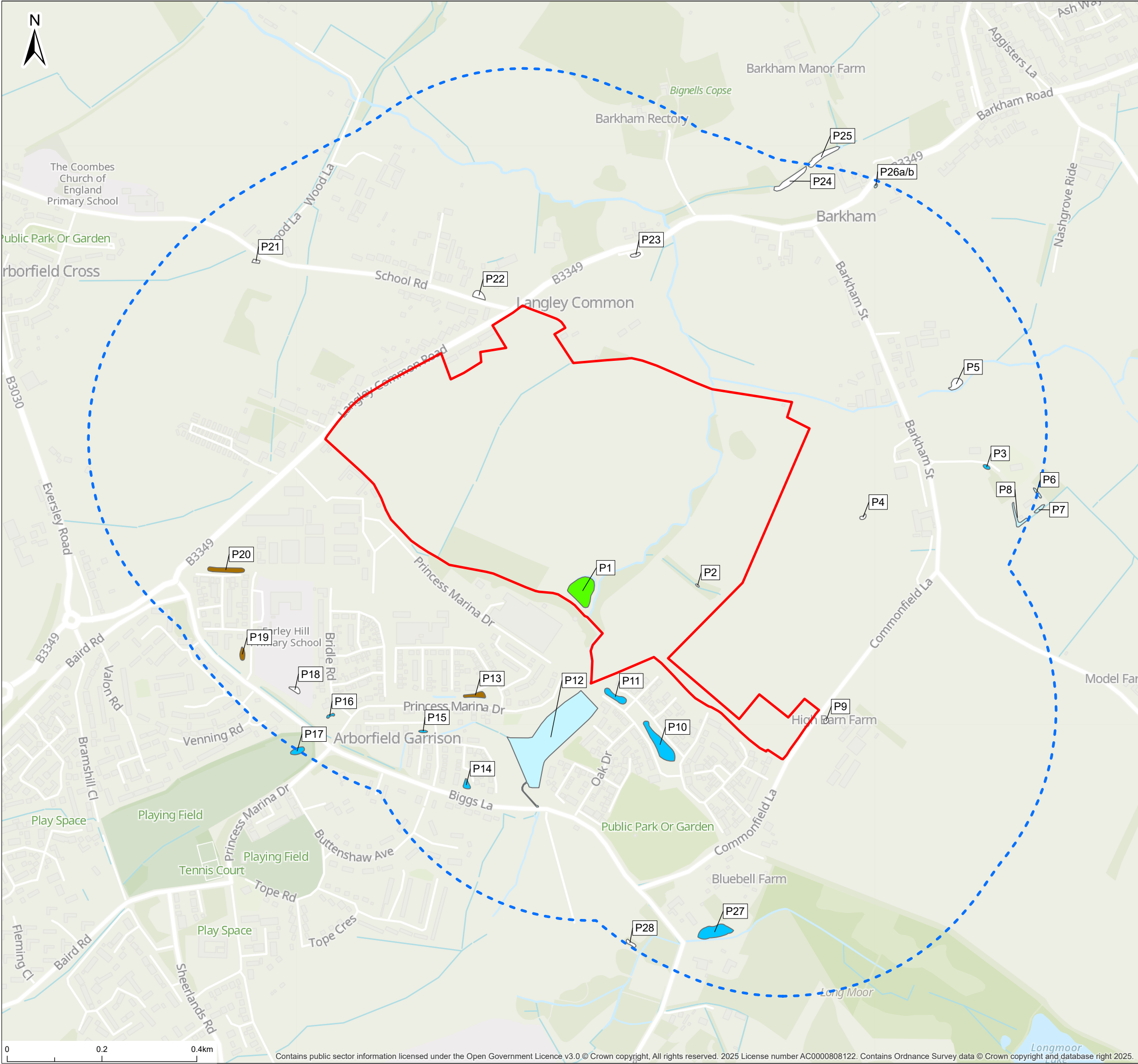
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Annex A Ponds within 500m of the Project site.

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LEGEND

- Site Boundary
- GCN survey area - Buffer 500m
- GCN survey undertaken (2025) - no GCN population recorded
- eDNA result negative - GCN absent
- Pond not surveyed - no access
- Pond not surveyed - unsuitable for GCN
- Pond not surveyed - dry

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Project	Land at Barkham Square		
Project No.	794-ENV-ECO-03176		
Title	GCN Survey Results		
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Annex B HSI Results

Anx Table 1 HSI Results of accessible ponds within 500m of the Project site.

Pond ref	28	3	6,7,8	26a	26b	23	21	20	19-DRY	17	16	14	12	10	15	13	11
SI1 - Location 1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SI2 - Pond area	1	0.6	0.2	0.2	0.2	0.2	0.4	0.45		0.5	0.3	0.2	0.8	0.7	0.1	0.5	0.8
SI3 - Pond drying	0.5	1	0.1	0.5	0.1	0.1	0.1	0.1		1	1	1	0.9	1	0.1	0.5	0.5
SI4 - Water quality	0.67	1	0.67	0.67	1	1	0.67	0.67		0.67	0.33	1	0.67	0.67	0.33	0.67	0.33
SI4 - Shade	1	1	0.8	1	0.2	1	0.2	1		1	1	1	1	1	1	1	1
SI6 - Fowl	1	1	1	1	1	0.67	1	1		1	1	0.67	0.01	1	1	1	0.67
SI7 - Fish	1	1	1	1	1	1	1	1		1	1	1	0.67	1	1	1	1
SI8 - Ponds	1	1	1	0.95	0.95	0.95	0.72	1		1	1	1	1	1	1	1	1
SI9 - Terr'l habitat	1	0.33	0.33	0.67	0.67	0.33	0.33	0.33		0.67	0.33	0.33	0.67	0.33	0.33	0.33	0.33
SI10 - Macrophytes	0.7	0.8	0.4	0.3	0.6	0.8	0.3	0.9		0.4	0.55	0.9	0.35	0.9	0.8	0.9	0.9
HSI	0.86	0.83	0.52	0.65	0.52	0.57	0.46	0.62	1.00	0.79	0.67	0.72	0.49	0.82	0.49	0.74	0.69

Anx Table 2 P1 Survey Results

Date	Survey Type	Weather	GCN	Others
12/05/2025	Egg search during eDNA	24oC, cloud 20%, wind 1	GCN egg	
13/05/2025	Torch	22oC, cloud 10%, wind 1		Smooth newt, frog, tadpoles
15/05/2025	Torch	12oC, cloud 100%, wind 3		Smooth newt, frog, tadpoles
20/05/2025	Torch	15oC, cloud 80%, wind 1		Smooth newt, frog, tadpoles
22/05/2025	Torch & Bottle Trapping	18oC, cloud 30%, wind 1-2		Smooth newt, tadpoles
26/05/2025	Torch	14oC, cloud 100%, wind 2-3		Smooth newt, frog, tadpoles
28/05/2025	Torch	18oC, cloud 30%, wind 1-2		Smooth newt, frog, tadpoles
09/06/2025	Torch	17oC, cloud 50%, wind 1-2		Smooth newt, frog, toad, tadpoles, fish