Great Crested Newt eDNA Survey

Lullings Cottage, West Hill, Balcombe, Haywards Heath, West Sussex, RH17 6QY

Tim Musker

Status	Issue	Name	Date
Final	1	Megan Knapp BSc (Hons), Consultant Ecologist	03/05/2023

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Industry Guidelines and Standards

This report has been written with due consideration to:

- Chartered Institute of Ecology and Environmental Management (2017). Guidelines for Preliminary Ecological Appraisal. 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2017). Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2020). Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK. 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- British Standard 42020 (2013). Biodiversity – Code of Practice for Planning and Development.
- British Standard 8683:2021 (2021). Process for Designing and Implementing Biodiversity Net Gain.

Proportionality

> The work involved in preparing and implementing all ecological surveys, impact assessments and measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development. Consequently, the decision-maker should only request supporting information and conservation measures that are relevant, necessary and material to the application in question. Similarly, the decision-maker and their consultees should ensure that any comments and advice made over an application are also proportionate.
>
> The desk studies and field surveys undertaken to provide a Preliminary Ecological Appraisal (PEA) might in some cases be all that is necessary.
>
> (BS 42020, 2013)

Executive Summary

Arbtech Consulting Limited was instructed by Tim Musker to undertake a great crested newt eDNA survey at Lullings Cottage, West Hill, Balcombe, Haywards Heath, West Sussex, RH17 6QY (hereafter referred to as "the site"). The survey was required to inform a planning application for demolition of the buildings on site and felling of eight trees with the construction of a holiday let/ancillary building and change in site boundary (hereafter referred to as "the proposed development").

The following is work you will need to commission to obtain planning permission and to comply with legislation. Further information, along with opportunities for biodiversity enhancement where appropriate, are outlined in Table 5 of this report.

Survey assessment conclusions (with justification)	Foreseen impacts	Recommendations
It is very likely that GCN will be absent on site. The eDNA results concluded that the P1 (120m north-west) and P2 (180m south-east), have an absence of GCN. The other ponds, as per Magic Database and OS Maps either do not exist any more or currently have no water present. The removal of grass on site will have no impacts on GCN.	No impacts are anticipated on GCN as a result of the proposed development. However, site clearance could result in the death or injury of common amphibians, if present.	A precautionary working method will be implemented for common amphibians during construction, please refer to Table 5.

Contents

1.0 Introduction and Context

1.1 Background

Arbtech Consulting Limited was instructed by Tim Musker to undertake a great crested newt (GCN) eDNA survey at Lullings Cottage, West Hill, Balcombe, Haywards Heath, West Sussex, RH17 6QY (hereafter referred to as "the site"). The survey was required to inform a planning application for demolition of the buildings on site and felling of eight trees with the construction of a holiday let/ancillary building and change in site boundary (hereafter referred to as "the proposed development"). A plan showing the proposed development is provided in Appendix 1.

The GCN eDNA has been informed by a Preliminary Ecological Appraisal and Preliminary Roost Assessment (PEA & PRA) which was completed by Phlorum Ltd on 1st September 2022 (Phlorum, 2022). The report designated the site as unsuitable for breeding GCN as there is no water present on site. However, suitable habitat (restricted to the scattered trees and scrub) allow for GCN to commute between ponds. The improved grassland is sub-optimal as it appears to be regularly mowed. Therefore eDNA of ponds within 250m was recommended.

1.2 Site Context

The site is located at National Grid Reference TQ 32825 30400 and has an area of approximately 0.2ha comprising buildings, which are surrounded by mixed woodland and a modified grass garden. The site is surrounded by agricultural fields in all directions around the site, which form a mosaic with the surrounding parcels of woodland. There is also an adjacent residence to the west of the cottage. According to Magic, a small pond is located within this residency, however, the pond no longer exists.

A site location plan is provided in Appendix 2.

1.3 Scope of the Report

This report describes the suitability of the habitats on the site and any surveyed ponds for GCN and identifies the presence or absence of GCN in these ponds. It identifies possible constraints in relation to GCN as a result of the proposed development and summarises the requirements for further surveys and mitigation measures to inform subsequent mitigation proposals, achieve planning or other statutory consent and to comply with wildlife legislation.

To achieve this, the following steps have been taken:

- A field survey has been undertaken, including an assessment of the suitability of the site and any ponds within influencing distance of the site for GCN.
- An outline of potential impacts on GCN has been provided, based on the proposed development.
- Recommendations for further surveys and mitigation have been made, along with advice on the requirements for a European Protected Species Licence (EPSL) for GCN if appropriate.
- Opportunities for the enhancement of the site for GCN have been set out.

2.0 Methodology

2.1 Field Survey

A review of OS and aerial imagery identified four ponds within 250m of the site. These are located 45m south, 80m north-east, 120m north-west and 180m south-east. Two of these ponds were subject to survey, which include P1 (120m north-west) and P2 (180m south-east). The remaining ponds were not surveyed because P3 (80m north-east) was assessed on the survey day to not have enough water to collect eDNA and P4 (45m south) is no longer a pond.

The survey was undertaken by Megan Knapp BSc (Hons), Consultant Ecologist [Natural England GCN licence number 2022-10628-CL08-GCN] on 17th April 2023.

Habitat Suitability Index (HSI) Assessment

Ponds were assessed for their suitability to support GCN using the Habitat Suitability Index (HSI) Assessment Methodology (Oldham et al, 2000).

HSI is a standard measure of calculating the suitability of a pond to support breeding great crested newts, based on an assessment of 10 characteristics (indices), including size, shading, depth and vegetation profile. The assessment generates a number between 0 and 1 for each of the indices which are combined to provide an overall assessment of a pond's suitability to support GCN on a categorical scale (Table 1). The assessment has not been designed for or tested on other waterbodies such as ditches.

Table 1: HSI Suitability Scores

HSI Score	Suitability	Predicted GCN Occupancy of Ponds in each Category
<0.5	Poor	3%
0.5 to 0.59	Below Average	20%
0.6 to 0.69	Average	55%
0.7 to 0.79	Good	79%
>0.8	Excellent	93%

eDNA Survey

Sample kits and analysis was provided by SureScreen. Sampling followed the relevant sections of the method set out in the DEFRA funded study endorsed by Natural England (Biggs et al 2014). In summary the sampling protocol is as follows:

- 20 samples were taken from around the entire perimeter of the waterbody.
- The surveyor stayed out of the water while taking the samples (extension poles were used in situations where open/sufficiently deep water was at a distance from the dry banks.

- Survey locations were distributed around the pond perimeter but micro-siting was used to select locations most likely to be used by GCN.
- At each sample location the water column was stirred prior to taking the sample but care was taken to avoid disturbing the sediment on the base of the pond.
- Once all 20 samples were taken, 15ml of the total sample were pipetted into each of the 6 sampling tubes, whilst ensuring that the water in the sample bag was mixed before taking each 15ml sample and that only one sample tube was opened at any one time.
- At all times the surveyor ensured that the risk of contaminating the sampling equipment was minimised by avoiding the placement of the ladle or pipette on the ground or on any otherwise potentially contaminated surfaces and by changing gloves between the initial sampling stage and the pipetting stages of the method.

Samples were sent to SureScreen for analysis.

2.2 Limitations

This survey provides a 'snap-shot' of the assessed habitat and wildlife value of the site at the time of survey only and may require further survey effort to provide robust, scientifically valid evidence of GCN status.

Specific limitations include:

- The western aspect to P1 could not be accessed due to the pond bordering a hedge line. No safe route was determined.
- P3 could not be eDNA surveyed due to the lack of water present.

3.0 Results and Evaluation

A plan showing the survey results is provided in Appendix 3.

3.1 Pond Descriptions

Table 2: Surveyed Ponds

Pond Ref	Description	Photograph
1	Small pond (~130m^2) located within a neighbours garden, with high habitat surrounding the pond. Including hedgerow, suitable terrestrial and aquatic habitat.	

Pond Ref	Description	Photograph
2	A large pond (~780m^2) located within a woodland offsite. Terrestrial and aquatic habitat was poor.	
3	A dip in the land which collects water occasional. There was currently a small patch of water which was too shallow to be surveyed. The “pond” area also consists of dumped rubbish.	

3.2 HSI Assessment

Table 3: HSI Assessment Results

SI Description	P1	P2
Geographic location	1	1
Pond Area	0.2	1
Pond permanence	0.9	0.9
Water quality	0.67	0.33
Shade	1	0.7
Waterfowl effect	0.67	0.67
Fish presence	1	1
Pond Density	0.8	0.8
Terrestrial habitat	1	0.67
Macrophyte cover	0.9	0.5
HSI score	***0.88***	***0.72***
HSI category	***Excellent***	***Good***

3.3 eDNA Survey

The SureScreen lab results are included in Appendix 4.

Table 4: eDNA Survey Results

Pond Ref	eDNA Result
1	Negative (0/12)
2	Negative (0/12)

4.0 Conclusions, Impacts and Recommendations

4.1 Informative Guidelines

The great crested newt receives full protection under Habitats Regulations through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species
- Deliberate disturbance of species in such a way as:
- To impair their ability to survive, breed, or reproduce, or to rear or nurture young;
- To impair their ability to hibernate or migrate
- To affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place

This species are also listed on Schedule 5 of the Wildlife and Countryside Act and they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering or exposing for sale, possession or transporting for purpose of sale.

4.2 Evaluation

Taking the desk-based assessment and site survey results into account, the following evaluation and recommendations for GCN are provided below.

Table 5: Evaluation of survey

Survey assessment conclusions (with justification)	**Foreseen impacts**	**Recommendations**	***Biodiversity Enhancements*** *The Local Planning Authority has a duty to ask for enhancements under the NPPF (2021)*
It is very likely that GCN will be absent on site. The eDNA results concluded that the P1 (120m north-west) and P2 (180m south-east), have an absence of GCN. The other ponds, as per Magic Database and OS Maps either do not exist any more or currently have no water present. The removal of grass on site will have no impacts on GCN.	No impacts are anticipated on GCN as a result of the proposed development. However, site clearance could result in the death or injury of common amphibians, if present.	A precautionary working method will be implemented for common amphibians during construction, including the following measures: • A staged approach will be adopted for vegetation clearance, whereby the vegetation will be strimmed to 15cm and left overnight to allow any amphibians to disperse. The vegetation can then be cleared to ground level and must be maintained at this level for the	The following habitat creation and enhancement opportunities could be incorporated into the proposed development which would be beneficial for amphibians: • Creation of amphibian refugia and hibernacula using debris and brash from site clearance.

		duration of construction to deter amphibians from the working area. • Any rubble piles will be dismantled by hand and debris and brash will be stored on pallets or removed from the site to prevent amphibians from utilising these areas. • Best practice pollution prevention measures will be implemented to minimise impacts to nearby aquatic habitats that amphibians could use. • Any chemicals or pollutants used or created by the development should be stored and disposed of correctly according to COSHH regulations. • If any common amphibians are found in the working area these should be allowed to disperse of their own accord or, if at immediate risk, should be moved by hand to a sheltered, vegetated area away from disturbance. • In the unlikely event that a great crested newt is identified, works must cease and advise must be sought from a suitably qualified ecologist.	

5.0 Bibliography

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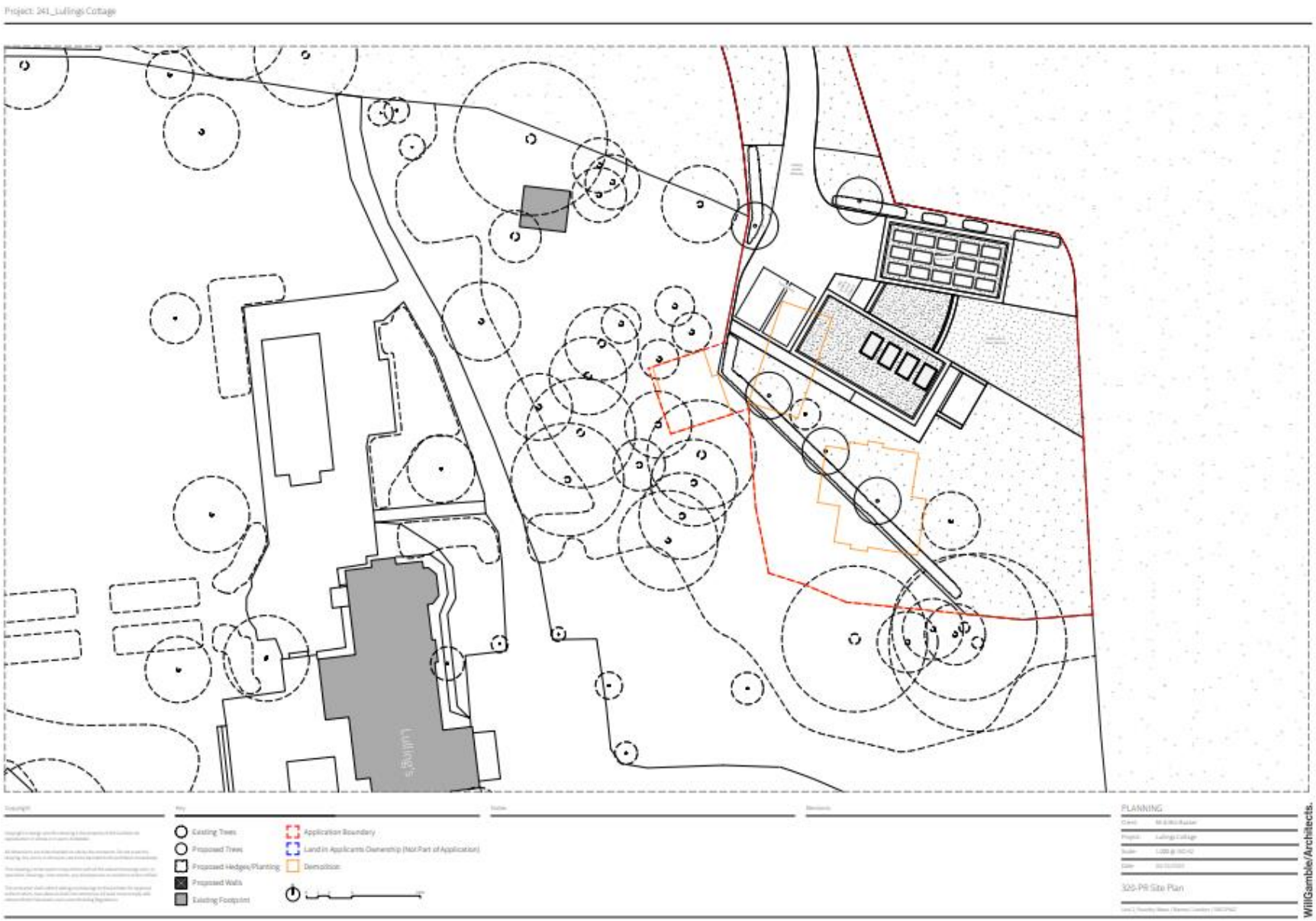
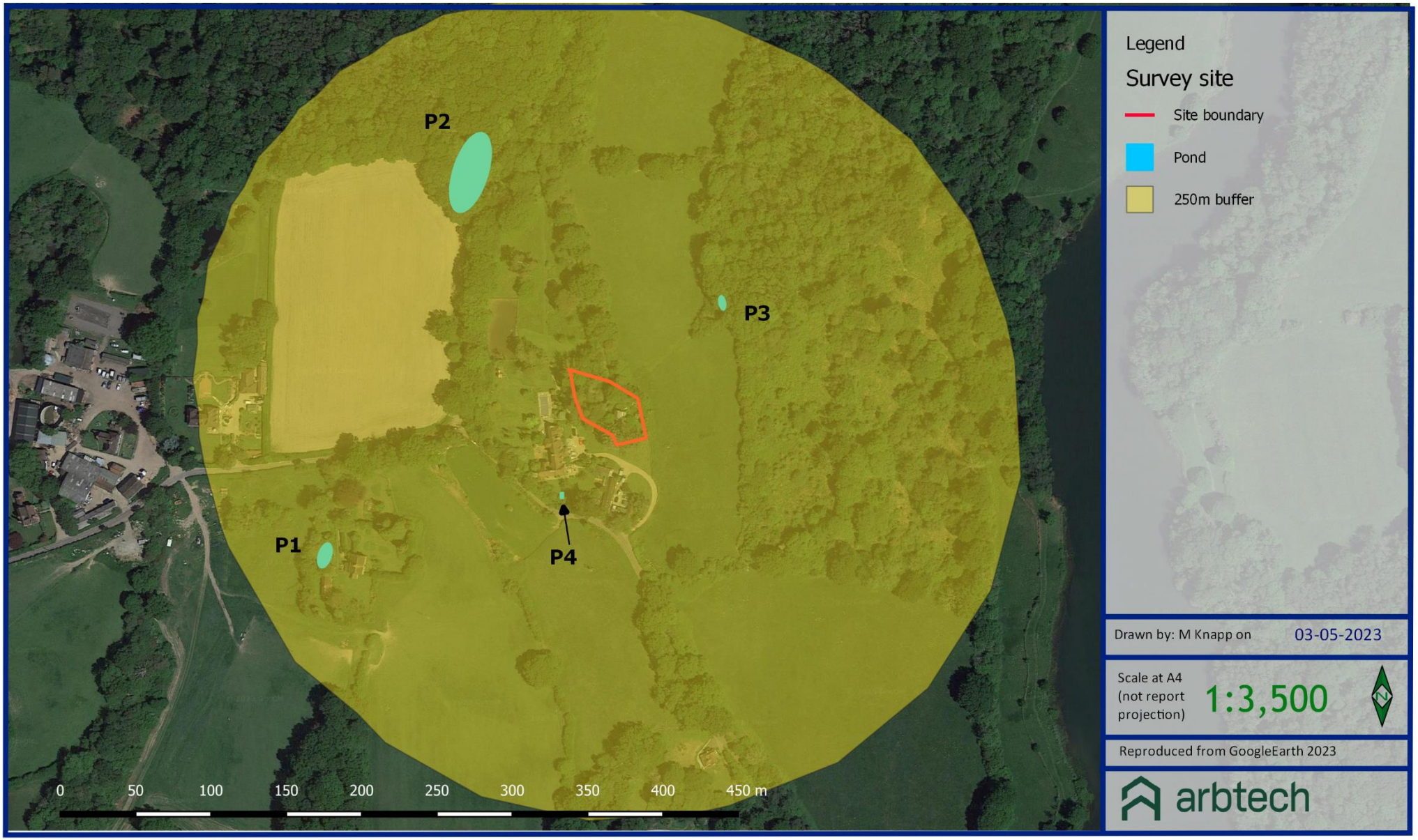
Appendix 1: Proposed Development Plan



Appendix 2: Site Location Plan

Appendix 3: GCN Survey Plan



Appendix 4: eDNA Results

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: 21/04/2023
Date Reported: 03/05/2023
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
0532	RH17 6QY POND 2	TQ 32726 3058	Pass	Pass	Pass	Negative	0
0533	RH17 6QY POND 1	TQ 32360 30321	Pass	Pass	Pass	Negative	0

Appendix 5: Legislation and Planning Policy

LEGAL PROTECTION

The great crested newt receives full protection under Habitats Regulations through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species
- Deliberate disturbance of species in such a way as:
- To impair their ability to survive, breed, or reproduce, or to rear or nurture young;
- To impair their ability to hibernate or migrate
- To affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place

This species are also listed on Schedule 5 of the Wildlife and Countryside Act and they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering or exposing for sale, possession or transporting for purpose of sale.

Effect on development works:

Effects on development works:

A European Protected Species Licence (EPSL) issued by the relevant countryside agency (i.e. Natural England, Natural Resources Wales, Scottish Natural Heritage) will be required for works likely to affect the breeding sites or resting places of great crested newts protected. A licence will also be required for operations liable to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licences are to allow derogation from the relevant legislation, but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

NATIONAL PLANNING POLICY (ENGLAND)

National Planning Policy Framework 2021

The National Planning Policy Framework promotes sustainable development. The Framework specifies the need for protection of designated sites and priority habitats and species. An emphasis is also made on the need for ecological infrastructure through protection, restoration and re-creation. The protection and recovery of priority species (considered likely to be those listed as UK Biodiversity Action Plan priority species) is also listed as a requirement of planning policy.

In determining a planning application, planning authorities should aim to conserve and enhance biodiversity by ensuring that: designated sites are protected from harm; there is appropriate mitigation or compensation where significant harm cannot be avoided; opportunities to incorporate biodiversity in and around developments are encouraged; and planning permission is refused for development resulting in the loss or deterioration of irreplaceable habitats including aged or veteran trees and also ancient woodland.

The Natural Environment and Rural Communities Act 2006 and the Biodiversity Duty

Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006, requires all public bodies to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the 'biodiversity duty'.

Section 41 of the Act requires the Secretary of State to publish a list of habitats and species which are of 'principal importance for the conservation of biodiversity'. This list is intended to assist decision makers such as public bodies in implementing their duty under Section 40 of the Act. Under the Act these habitats and species are regarded as a material consideration in determining planning applications. A developer must show that their protection has been adequately addressed within a development proposal.