Great Crested Newt eDNA Survey

Land at Engine Lane, Grimethorpe, Barnsley, South Yorkshire S72 7BN

Enviromena Project Management UK Ltd

Status	Issue	Name	Date
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Reviewed	1.1	Katy Perry BSc (Hons) MCIEEM, Senior Consultant	18/08/2023
Final	2	Elen Griffin BSc (Hons), MRSB Consultant Ecologist	01/09/2023

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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.
>
> This approach is enshrined in Government planning guidance, for example, paragraph 174 of the National Planning Policy Framework for England.
>
> 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 Enviromena Project Management UK Ltd to undertake a great crested newt eDNA survey at Land at Engine Lane, Grimethorpe, Barnsley, South Yorkshire S72 7BN (hereafter referred to as "the site"). The survey was required to inform a planning application for the construction of construction of a temporary solar farm (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 Results	***Foreseen impacts***	***Recommendations*** *Measures required to adhere to guidance, legislation, and planning policies.*
Pond 3 located approximately 247m to the south of the site returned a positive eDNA result. Ponds 1, 1.2, 4,5 and 6 returned negative eDNA results therefore GCN are considered likely absent from these ponds.	Some vegetation clearance site to take place along the southern boundaries of the site however the exact location and level has not yet been confirmed however it is assumed that the clearance will take place along Ferry moor lane which may result in habitat fragmentation and or injury or death to amphibians present within the vegetation.	Owing to the location of the pond away from the development area and the low potential for impacts to GCN, further surveys and licensing are considered to be disproportionate. However due to a positive eDNA result in pond 3 and the presence of a number of ponds within 500m of the site boundaries a precautionary measures method statement/mitigation plan will be required and implemented during construction and the vegetation clearance.

Contents

1.0 Introduction and Context

1.1 Background

Arbtech Consulting Limited was instructed by Enviromena Project Management UK Ltd to undertake a great crested newt eDNA survey at Land at Engine Lane, Grimethorpe, Barnsley, South Yorkshire S72 7BN (hereafter referred to as "the site"). The survey was required to inform a planning application for the construction of construction of a temporary solar farm (hereafter referred to as "the proposed development"). A plan showing the proposed development is provided in Appendix 1.

A Preliminary Ecological Assessment has been produced for this site by Arbtech Consulting Ltd, in November 2022. An Habitat Suitability Index was not undertaken on the ponds due to their presence outside of the site boundary however due to the proximity of some of the ponds to the site boundary eDNA surveys were recommended in order to determine likely presence or absence of great crested newts. .

1.2 Site Context

The site is located at its centre at National Grid Reference SE 40243 09215 and has an area totalling approximately 132ha split into four parcels of land comprising of worked arable fields, hedgerows, scattered trees, hard standing and scattered buildings. It is surrounded by agricultural and arable fields, scattered trees and residential developments located to the east and west. 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 six ponds within 250m of the site. All ponds were subject to eDNA surveys on two separate visits due to accessibility.

The surveys were undertaken by Elen Griffin BSc (Hons) MRSB, Ecological Consultant (Accredited Agent on Natural England GCN Licence Number: 2015-17400-CLS-CLS) on 30th May 2023 and Katy Perry BSc (Hons) MCIEEM, Senior Consultant (Natural England GCN Licence Number: 2018-35157-CLS-CLS) on 19th June 2023.

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 'snapshot' 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:

- Six ponds were sampled during the surveys however there was limited access to each pond perimeter due to

3.0 Results and Evaluation

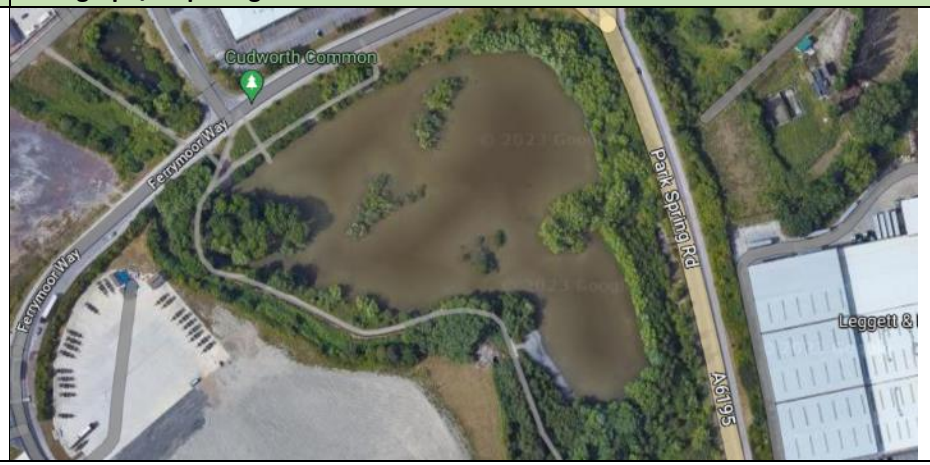
A plan showing the survey results is provided in Appendix 3.

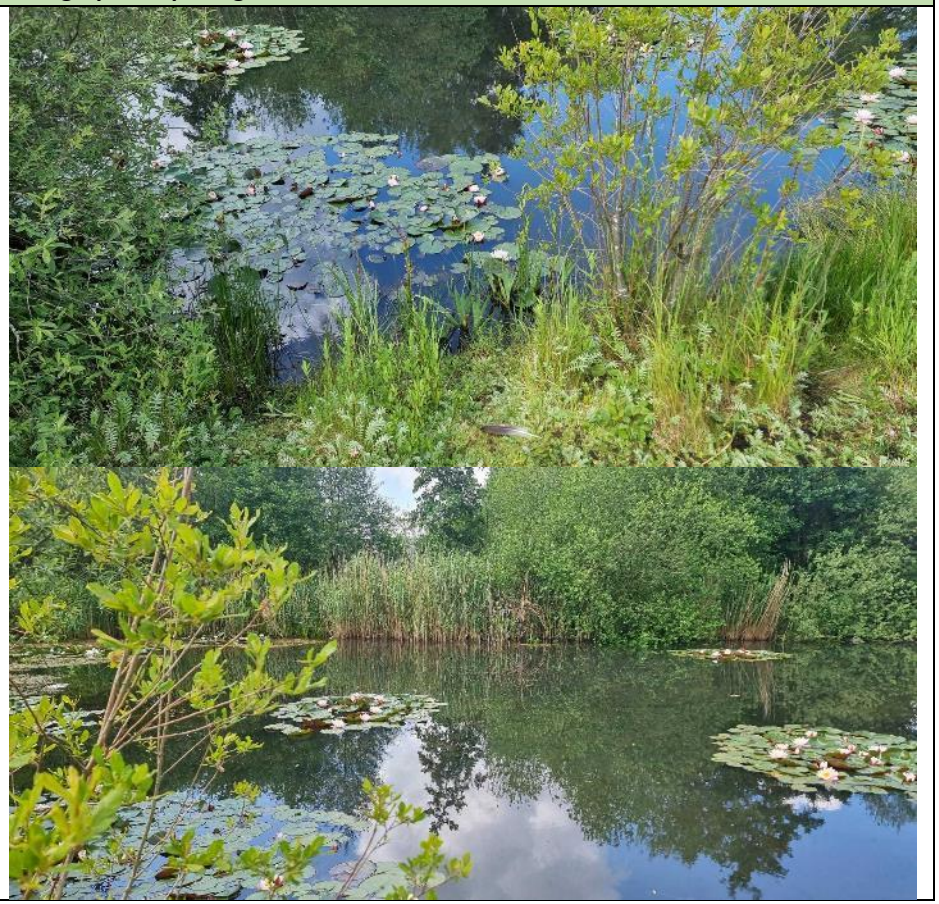
3.1 Pond Descriptions

Table 2: Surveyed Ponds/ Detail on ponds in landscape

Pond Ref	Description	Photograph/map image
1 & 1.2 – SE 39912 08791	Approximately 48m from the southern site boundary. A large pond fed by drainage ditches located to the south of the site just off Ferry moor Lane. Limited shade with the exception of rushes and some immature self set birch and willow trees. Areas subject to seasonally drying due to the flow of the drainage ditches. Some limited submerged vegetation which could be suitable for egg laying. Moderate levels of waterfowl present, predominantly mallard ducks and moor hens.	 

Pond Ref	Description	Photograph/map image
2 - SE 39731 08746	Approximately 37m from the site boundary. Small run off pond fed by 1 and 1.2. Located along the southern boundary of the site. 75 % of the pond surrounded by dense vegetation including rushes, sedges and bramble. The mature nature of the vegetation and presence of submerged vegetation indicates that the pond is likely to be semi permanent likely due to its down hill location from pond 1 & 1.2 causing constant run off into the pond. No waterfowl identified on the pond.	
3 - SE 39916 08529	Approximately 302m from the southern site boundary. Waterlogged shallow ditches to the south of the site near to the wind turbine. Shaded by self set semi mature birch trees . Some submerged vegetation but appeared to be grassy species indicative of waterlogged grassland rather than pond vegetation. Shallow nature may cause the pond to dry out seasonally As no watercourse was noted to be feeding the pond. No waterfowl identified on the pond.	

Pond Ref	Description	Photograph/map image
4 - SE 40537 08822	Approximately 133m from the southern site boundary. Lage duck pond separated from the site by urban infrastructure including main roads and buildings. Sparse shading round the edges due to the presence of small woodland areas, some small islands present in the piddle of the pond providing further shading. Extreme presence of waterfowl with some 50+ gees and ducks noted on the shore of the pond alone and further species noted round thee pond. Pond likely to be permanent by its size and mature nature of the surrounding vegetation.	

Pond Ref	Description	Photograph/map image
5-SE4035108896	Approximately 25m from the southern site boundary. Small pond to the south separated from the site by Ferry Moor Lane. Shaded banks due to the presence of sedges and birch trees. Some submerged vegetation noted however it was not possible to inspect the vegetation due to the presence of steep banks and nesting gees. High levels of waterfowl noted with five active Canda goose nests identified.	

Pond Ref	Description	Photograph/map image
6 - SE 40795 10049	Approximately 310m from the site boundary. Small pond as a result of field drainage located to the north east of the site. Shading along the northern boundary due to an existing tree line. Limited shade along the south other than dense scrub and rushes. High levels of submerged vegetation identified along with high levels of pond weed on top of the water. No waterfowl presence noted.	

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)
3	Positive (4/12)
4	Negative (0/12)
5	Negative (0/12)
6	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

Pond reference	**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)*
Pond 3	Pond 3 returned a positive eNDA result for GCN. No waterfowl were noted during the time of the survey	Some vegetation clearance site to take place along the southern boundaries of the site however the exact location and level has not yet been confirmed however it is assumed that the clearance will take place along Ferry moor lane which may result in habitat fragmentation and or injury or death to amphibians present within the vegetation.	Owing to the location of the pond away from the development area and the low potential for impacts to GCN, further surveys and licensing are considered to be disproportionate. However due to a positive eDNA result in pond 3 and the presence of a number of ponds within 500m of the site boundaries a precautionary measures method statement/mitigation plan will be required and implemented during construction and 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.

			vegetation clearance. The precautionary methods/mitigation GCN plan will include the following measures: • Any site clearance of hedgerows/trees will be undertaken outside of the amphibian hibernation season (November to February) insofar as is possible. • A toolbox talk will be given to contractors regarding the possible presence of amphibians, including great crested newt, at the site. • Heras fencing will be erected around the working area to prevent encroachment into retained habitats where amphibians could be present. • 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 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 retained 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 moved by hand to a vegetated area along the site boundaries or in retained habitats 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.	
Pond 1,1.2, 2,4,5 and 6	Ponds 1,1.2, 2,4,5 and 6 returned negative eDNA results for GCN. All ponds were subject to use by waterfowl during the time of the surveys. With the ponds returning a negative result it is deemed unlikely that GCN are present around these ponds. There is some connectivity between these ponds and the proposed development site in the form of existing hedgerows and lines of trees in addition to some small areas of unmanaged grassland. Due to the pond's close proximity to pond 3, which returned a positive eDNA result GCN may utilize the ponds in the future.	As above.	As above	As above.

5.0 Bibliography

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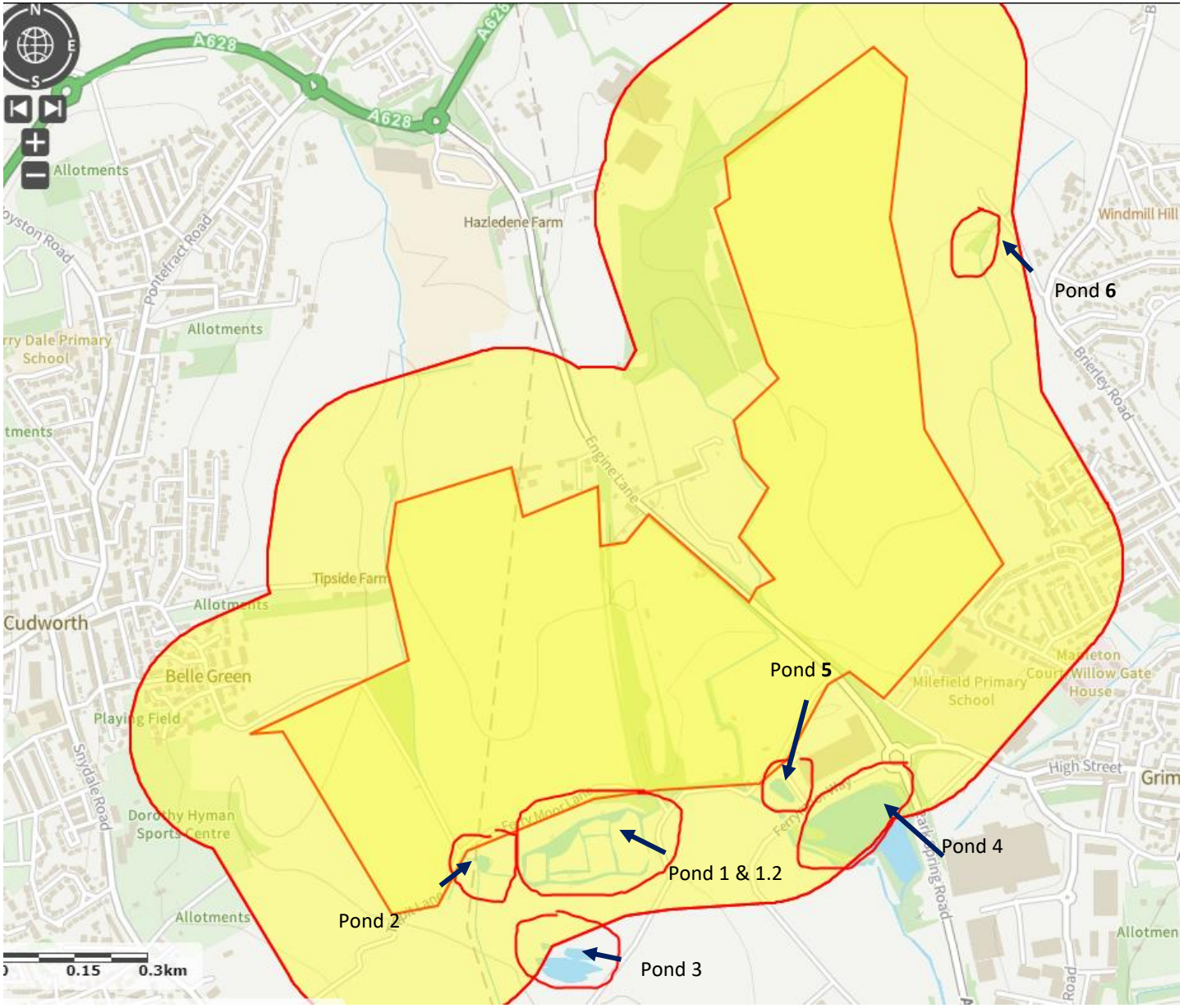
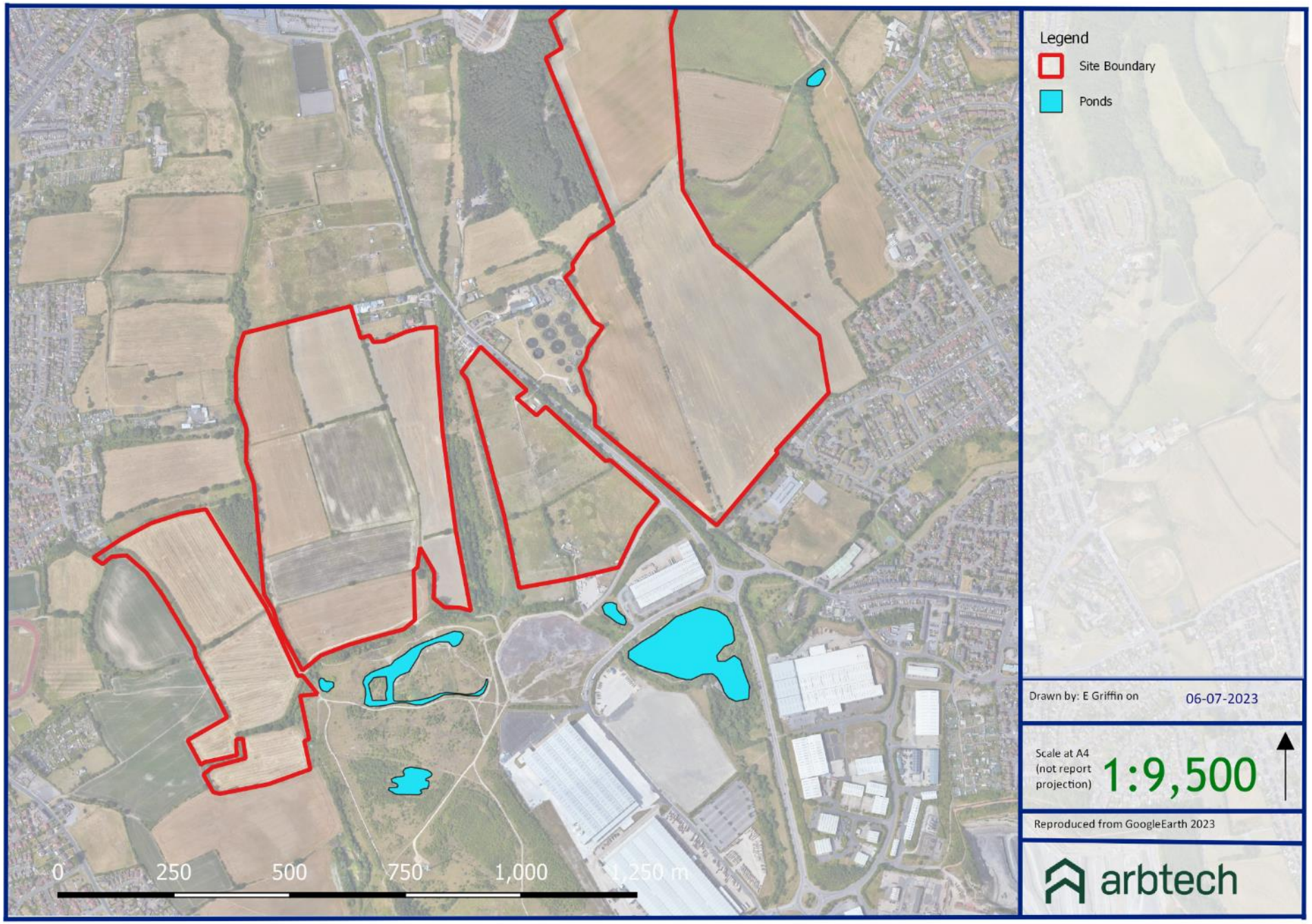
Appendix 1: Proposed Development Plan

Finalised plan altered at the time of this report.

Appendix 2: Site Location Plan

Appendix 3: GCN survey plan




Legend
Site Boundary
Ponds
Drawn by: E Griffin on
06-07-2023
Scale at A4
(not report
projection)
1:9,500
Reproduced from GoogleEarth 2023
arbtech
0
250
500
750
1,000
1,250 m

Appendix 4a: eDNA Results pond 1,2,3,4 and 6

SureScreen Scientifics

Folio No: E17729
Report No: 1
Purchase Order: Engine lane - S72 7BN
Client: ARBTECH
Contact: Elen Griffin

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: 01/06/2023
Date Reported: 09/06/2023
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
3795	Engine lane - Pond 4	-	Pass	Pass	Pass	Negative	0
3796	Engine lane - Pond 2	-	Pass	Pass	Pass	Negative	0
3797	Engine lane - Pond 6 North East Field	-	Pass	Pass	Pass	Negative	0
3798	Engine lane - Pond 3 Near Turbine	-	Pass	Pass	Pass	Positive	4
3799	Engine lane - Pond 1.2	-	Pass	Pass	Pass	Negative	0
3800	Engine lane - Pond 1	-	Pass	Pass	Pass	Negative	0

Forensic Scientists and Consultant Engineers
SureScreen Scientifics Ltd, Morley Retreat, Church Lane, Morley, Derbyshire, DE7 6DE
UK Tel: +44 (0)1332 292003 Email: scientifics@surescreen.com
Company Registration No. 08950940

Appendix 4b: eDNA Results 5

SureScreen Scientifics

Folio No: E18219
Report No: 1
Purchase Order: Land At Engine Lane - S72 7BN
Client: ARBTECH
Contact: Katy Perry

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: 22/06/2023
Date Reported: 30/06/2023
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
5860	Grimethorpe, S72 7BN - Land At Engine Lane - Pond 1	SE 40351 08896	Pass	Pass	Pass	Negative	0

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

Reported by: Jennifer Higginbottom **Approved by:** Chelsea Warner

Forensic Scientists and Consultant Engineers
SureScreen Scientifics Ltd, Morley Retreat, Church Lane, Morley, Derbyshire, DE7 6DE
UK Tel: +44 (0)1332 292003 Email: scientifics@surescreen.com
Company Registration No. 08950940

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.