

Gate Burton Energy Park Environmental Statement

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1. Introduction

1.1 Background

- 1.1.1 Gate Burton Energy Park Limited (hereafter referred to as ‘the Applicant’) commissioned surveys to determine Great Crested Newt *Triturus cristatus* presence / absence for the Gate Burton Energy Park (hereafter referred to as the ‘Scheme’), in order to determine the potential impacts of the Scheme on this species, if present.
- 1.1.2 The Scheme comprises the installation of solar photovoltaic (PV) generating panels and on-site energy storage facilities across a proposed site in Lincolnshire (hereafter referred to as the ‘Solar and Energy Storage Park’) and grid connection infrastructure (hereafter referred to as the ‘Grid Connection Corridor’), which extends into Nottinghamshire. The entire Scheme, including both the Solar and Energy Storage Park and Grid Connection Corridor is referred to as the ‘Site’. Further information on the Scheme is provided in **ES Volume 1, Chapter 2: The Scheme [EN010131/APP/3.1]**.
- 1.1.3 The Site is located approximately 4 kilometres (km) south of Gainsborough with the Solar and Energy Storage Park, and the Grid Connection Corridor presented in **ES Volume 2: Figure 1-1 and Figure 1-2 [EN010131/APP/3.2]**.
- 1.1.4 **ES Volume 2: Figure 1-2 [EN010131/APP/3.2]** presents the expected maximum extent of land included within the Development Consent Order (DCO) application, which includes all land being considered for the purposes of the Scheme. It should also be noted, **ES Volume 2: Figure 1-2 [EN010131/APP/3.2]** represents the maximum extent of the Site boundary based on all the options for Scheme elements that have been the subject of consultation.
- 1.1.5 The Scheme is defined as a Nationally Significant Infrastructure Project (NSIP) under Sections 14(1)(a) and 15(2) of the Planning Act 2008 (Ref 1) as an onshore generating station in England, exceeding 50MW.

1.2 Description of The Scheme

- 1.2.1 The principal infrastructure will be as follows:
- PV tables (mounting structures) and panels;
 - Inverters;
 - Transformers;
 - An on-site Substation;
 - Onsite cabling;
 - A Battery and Energy Storage System (BESS);
 - An underground 7.5km 400kV electrical connection to the National Grid Substation at Cottam Power Station;

- Fencing and security measures;
 - Access tracks; and
 - Landscaping and biodiversity enhancement.
- 1.2.2 During the construction phase, one or more temporary construction compound(s) will be required as well as temporary roadways to facilitate access to all land within the Solar and Energy Storage Park.
- 1.2.3 In areas around the PV arrays and on other land within the Solar and Energy Storage Park, opportunities for landscaping, biodiversity enhancements and habitat management have been included.
- 1.2.4 The Ordnance Survey (OS) central grid reference for the Solar and Energy Storage Park is SK 84904 83646.
- 1.2.5 Further information on the Scheme is provided in **ES Volume 1, Chapter 2: The Scheme [EN010131/APP/3.1]**.

1.3 Site Description

- 1.3.1 The Scheme is located to the east of Gate Burton, Lincolnshire. The location of the Scheme is presented in **ES Volume 2: Figure 1-1 and Figure 1-2 [EN010131/APP/3.2]**. The Site covers an area of approximately 824 hectares (ha).
- 1.3.2 The Solar and Energy Storage Park (as defined in Section 1.2) covers an approximate area of 652ha and is dominated by arable fields with game crop strips and a few *Miscanthus* fields in the east of the Solar and Energy Storage Park. There are numerous mature trees and hedges within the Site, with woodlands and small wooded copses. The Solar and Energy Storage Park is surrounded by mainly arable and improved grassland livestock fields.
- 1.3.3 The Grid Connection Corridor (as defined in Section 1.2) covers an area of approximately 172ha and is dominated by arable fields. There are hedgerows and watercourses within the Grid Connection Corridor and the River Trent is crossed by the Grid Connection Corridor.

1.4 Report Objectives

- 1.4.1 The surveys undertaken included:
- a desk study to identify all water bodies within 500m of the Site (the survey area); a review of Ordnance Survey (OS) mapping to determine whether water bodies outside of the Site (but within the survey area) could be scoped in or scoped out of further assessment, a review of MAGIC (Ref 2) for Great Crested Newt licence applications relevant to the Scheme;
 - a Habitat Suitability Index (HSI) survey; and
 - an eDNA survey on accessible water bodies on the Site, to determine whether Great Crested Newt were present, or absent.

1.4.2 The objective of the surveys for Great Crested Newt, reported in this document, is:

- to identify the presence or absence of Great Crested Newt within the survey area; and
- to determine whether there are any potential impacts from the Scheme on Great Crested Newt.

1.4.3 This report includes the following information:

- relevant legislation and policy;
- methods for desk and field-based assessments undertaken in 2021 and 2022, respectively;
- limitations to the surveys undertaken and any assumptions made as a result of incomplete data;
- survey results; and
- conclusions.

1.4.4 This report is a technical appendix to accompany **ES Volume 1, Chapter 8: Ecology and Nature Conservation [EN010131/APP/3.1]**.

2. Great Crested Newt Ecology

2.1 Introduction

- 2.1.1 Great Crested Newt is one of seven species of amphibian native to Britain and in common with other UK amphibians, they spend the majority of their lives on land, returning to standing water (water bodies and ditches) in the spring in order to breed.

2.2 Effect of temperature on activity

- 2.2.1 Great Crested Newts are ectothermic, meaning that they regulate their temperature through exchange of heat with the external environment. Gaseous exchange (oxygen/carbon dioxide) is achieved largely by absorption through their permeable skins, which must be moist for this purpose. Behaviour and activity are therefore strongly linked to external environmental conditions, especially daily and seasonal cycles. Great Crested Newts are mainly active at night (usually when temperatures exceed 5°C and following recent rainfall). With the onset of winter frosts, Great Crested Newts hibernate. Activity recommences when the frosts subside (which may be as early as January / February), with adults migrating to breeding water bodies. Peak breeding activity is usually between mid-March and mid-May.

2.3 Reproduction

- 2.3.1 Breeding takes place within water bodies with males performing a courtship 'dance' in order to attract and encourage females to take up a spermatophore (a packet containing sperm). Females deposit eggs (up to 200 per season) on the submerged leaves of aquatic broadleaved plants. Each egg is individually sealed for protection from predators within a folded leaf. Adults begin to leave the water bodies around May but may return in order to feed.
- 2.3.2 Larvae hatch after three weeks and feed on small aquatic invertebrates and the larvae/eggs of other amphibians for approximately three months. They metamorphose into land-adapted juveniles called efts and begin to emerge from their water bodies around August.

2.4 Habitat requirements

- 2.4.1 During their terrestrial phase, Great Crested Newts require a complex habitat structure in order to provide both food and shelter. These are most commonly provided by broadleaved woodland, rough or tussocky grassland and scrub habitats. They also require a secure area in which to hibernate. Hibernacula generally need to provide a stable temperature, be free from frost and provide protection from flooding and predation (a hibernaculum is a shelter occupied during the winter by a dormant animal). These requirements are commonly met by log/rubble piles, underground crevices or mammal burrows.

2.4.2 For breeding, Great Crested Newts require water bodies that provide suitable protection and food for their developing larvae. Generally, such water bodies should be of relatively good water quality so as to provide a diverse range of invertebrate prey. Unshaded water bodies tend to provide more of the required broadleaf aquatic vegetation, upon which great crested newt eggs can be laid. Water bodies with large fish populations (which can prey on newts) or heavy grazing pressure from waterfowl (which can prey on newts and reduce water quality and egg laying habitat) tend not to support Great Crested Newt. Connectivity between water bodies and good quality terrestrial habitat tend to favour large, viable, populations of Great Crested Newt. In rural landscapes in Britain, such connectivity is often provided by the hedgerow network.

2.5 Great Crested Newt range

2.5.1 Great Crested Newts are thought to commonly move between water bodies up to a distance of 250m from each other (Ref 3), although there are studies showing Great Crested Newt travelling much further than this (Ref 4). Great Crested Newt may be impacted by a range of factors, including the type and quality of habitat surrounding a breeding water body, the availability of hibernation sites and the presence or absence of barriers to dispersal (e.g. large and busy roads with no features that Great Crested Newt could move through).

3. Legislation and Planning Policy

3.1 Relevant legislative context

3.1.1 All stages of the Great Crested Newt life cycle as well as their habitat are fully protected under Schedule 2 of The Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 5). Great Crested Newt is listed on Schedule 5 of the Wildlife & Countryside Act 1981 (Ref 6), which affords it protection under Section 9, as amended by the Countryside Rights of Way Act (2000) (Ref 7). It is also listed on Annex II and VI of the EC Habitats Directive (Ref 8), is included as a Species of Principal Importance in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (Ref 9) and is a UK Post-2010 Biodiversity Framework (Ref 10) species listed on the UK Biodiversity Action Plan. In combination, this makes it an offence to:

- deliberately capture, injure or kill a Great Crested Newt;
- deliberately take or destroy their eggs;
- deliberately, intentionally or recklessly disturb an individual; or
- damage, destroy or obstruct access to any structure which a Great Crested Newt used for shelter or protection.

3.1.2 The protection includes both the breeding water body itself and the terrestrial habitat used for foraging and hibernation, which may be distant from the waterbody.

3.2 European protected species licencing

3.2.1 Where Great Crested Newt habitat, including their breeding sites and resting places, is present on a site and a development has the potential to cause one or more offences under The Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 5), a European Protected Species Licence (EPSL) is required from Natural England to allow the development to proceed. This licence allows the development to proceed with exemption from offences, provided works are undertaken with strict accordance of the terms of the licence. A licence cannot, however, be obtained to provide protection against offences under the Wildlife and Countryside Act, 1981 (as amended) (Ref 6).

3.2.2 In determining whether to grant a licence, Natural England must apply the requirements of Regulation 55 of the Regulations (Ref 5), these being:

- Regulation 55(2)(e) states: “*subject to the provisions of this regulation, the relevant licensing body may grant a licence for the purposes specified in paragraph 2*”. The relevant section of paragraph 2 being:
 - (e) “*a licence can be granted for the purposes of preserving public health or public safety or other imperative reasons of overriding public interest*”

including those of a social or economic nature and beneficial consequences of primary importance for the environment”.

- Regulation 55(9)(a) states: *“the relevant licensing body must not grant a licence under the regulation unless it is satisfied -*
 - *(a) “that there is no satisfactory alternative”; and*
 - *(b) “that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.”*

3.2.3 These tests must also be applied when determining a planning / DCO application, where a proposed development is likely to cause an offence under The Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 5).

3.2.4 In order for a European Protected Species Licence to be approved by Natural England for works with Great Crested Newt, it must be demonstrated that the proposed scheme will minimise any potential impacts upon Great Crested Newt and will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

3.2.5 Offences can be avoided through the implementation of appropriate mitigation that will minimise the potential for any offences to be committed. Mitigation can include the undertaking of vegetation clearance works at an appropriate time of the year and completing works in accordance with methods that will minimise or avoid potential disturbance or destruction of habitats. In such circumstances it is sensible for works to be completed using Reasonable Avoidance Measures (RAMs).

3.3 Priority species

3.3.1 The NERC list of Species of Principal Importance (Ref 9) is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the NERC Act (2006); under Section 40 every public authority (e.g. a local authority or local planning authority) must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.

3.3.2 In addition, with regard to those species on the list of Species of Principal Importance listed under Section 41, the Secretary of State must:

- *“(a) take such steps as appear to the Secretary of State to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any list published under this section, or*
- *(b) promote the taking by others of such steps.”*

3.3.3 The UK Biodiversity Action Plan (UKBAP) was launched in 1994 and established a framework and criteria for identifying species and habitat types of conservation concern. From this list, action plans for priority species of

conservation concern were published and have subsequently been succeeded by the UK Post-2010 Biodiversity Framework (July 2012) (Ref 10). The UK Post 2010 Development Framework is relevant in the context of Section 40 of the NERC Act 2006, meaning that priority species are material considerations in planning. These species are identified as those of conservation concern due to their rarity or a declining population trend.

- 3.3.4 Great Crested Newt was added to the UK Biodiversity Action Plan (UKBAP) as a priority species in September 2007 and subsequently was included as a Species of Principal Importance in England under Section 41 of the NERC Act (Ref 9) meaning that they are of material consideration in planning.

3.4 Local biodiversity action plan

- 3.4.1 The Scheme is located within two counties: Lincolnshire and Nottinghamshire. The Lincolnshire Biodiversity Action Plan (3rd edition) (Ref 11) and Nottinghamshire Biodiversity Action Plan (Ref 12) provide the local nature conservation strategy for identifying threats to species within each of the counties and set out the action plans necessary to conserve them. These action plans provide context to inform identification of threatened or uncommon species within the district and, or county. The plans also identify priorities for conservation and enhancement but confers no particular legislative or policy protection to the species identified, however in some cases this is provided through related legislation and local planning policy.
- 3.4.2 Great Crested Newt is listed as Priority Species on the Lincolnshire Biodiversity Action Plan (Ref 11), but not the Nottinghamshire Biodiversity Action Plan (Ref 12).
- 3.4.3 The Lincolnshire Biodiversity Action Plan (Ref 11) identifies the following threats to Great Crested Newt populations in Lincolnshire:
- loss of suitable breeding ponds due to lowered water-tables; infilling for development, farming or waste disposal; neglect; natural succession; shading from surrounding vegetation;
 - degradation, loss and fragmentation of terrestrial habitats;
 - introduction of fish into breeding ponds, which eat young newts and eggs; and
 - chemical pollution, eutrophication and toxic effects of agrochemicals.

4. Methods

4.1 Introduction

4.1.1 This section describes the survey methods used to determine the status of Great Crested Newt within the survey area, which included:

- a desk study;
- a Habitat Suitability Index (HSI) survey; and
- environmental DNA (eDNA) analysis.

4.2 Desk study

4.2.1 A desk study was undertaken as part of the Preliminary Ecological Appraisal (PEA) in October 2021 (see **ES Volume 3: Appendix 8-B [EN010131/APP/3.3]**). This desk study obtained records of Great Crested Newt within the preceding ten years and within a 2km radius of the Site from Greater Lincolnshire Nature Partnership (GLNP) and Nottinghamshire Biological and Geological Records Centre (NBGRC).

4.2.2 Aerial photographs and OS maps were reviewed as part of the PEA to identify water bodies of potential value to Great Crested Newt within 500m of the Site that were not separated by major barriers to Great Crested Newt dispersal (such as main roads and large rivers). The review of aerial photography and mapping included identifying any key routes of potential habitat connectivity to the Site from outside water bodies (e.g. ditches, hedgerows) and significant barriers to Great Crested Newt dispersal (e.g. main roads or rivers).

4.2.3 Furthermore, a review of ‘MAGIC’ (Ref 1) was undertaken to identify any Great Crested Newt mitigation licence applications or surveyor licence returns that may be pertinent to the Scheme.

4.3 Field survey

Habitat Suitability Index (HSI)

4.3.1 The Habitat Suitability Index (HSI) is a measure of habitat suitability, developed by Oldham *et al.* (2000) (Ref 13) for evaluating the suitability of water bodies as habitat for Great Crested Newt. Ten habitat features of the water body are assessed in the field (Table 1).

Table 1 Great Crested Newt suitability indices and description

Suitability Indices	Suitability Indices Title	Suitability Indices Description
(S1)	Geographic location	Different areas of the UK represent different indices scores.
(S2)	Water body area	Calculated based on surface area when water is at its highest level (m ²).

Suitability Indices	Suitability Indices Title	Suitability Indices Description
		N.B. In accordance with the 'ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index' (Ref 14), area should be rounded to the nearest 50m ² . The optimum water body size is between 500 and 750m ² .
(SI3)	Water body permanence	Never dries; Rarely dries (no more than two years in ten or only in drought); Sometimes dries (between three years in ten to most years); or Dries annually. The optimal frequency of drying is one year per decade.
(SI4)	Water quality	The presence of indicator organisms (the same that are used to assess running water) is the water quality indicator. Good = abundant and diverse invertebrate community; Moderate = moderate invertebrate diversity; Poor = low invertebrate diversity, e.g. Mosquito <i>Culicidae</i> larvae, and few submerged plants; or Bad = clearly polluted. Only pollution-tolerant invertebrates, e.g. Rat-tailed maggot <i>Ersitalis tenax</i> , and no submerged plants.
(SI5)	Water body shading	An estimate percentage of the pond perimeter shaded to at least 1m from the shore, not including shading from emergent pond vegetation. Great Crested Newt occurrence is significantly reduced above a threshold of 75% shade.
(SI6)	Impact of waterfowl	Waterfowl impact on water body vegetation and water turbidity is a negative indicator for Great Crested Newt. Absent = no evidence of waterfowl impact (Moorhen <i>Gallinula chloropus</i> may be present); Minor = waterfowl present, but little evidence of impact on pond vegetation; Major = severe impact of waterfowl, little or no submerged plants, water turbid and banks showing patches where vegetation removed.
(SI7)	Occurrence of fish	The effect of fish presence is related to the species. Some species can have negative impacts and Great Crested Newt hardly ever coexist with larger predatory fish species. Other species (depending on conditions) are not detrimental. Absent = no records of fish stocking and no evidence of presence during torching/netting; Possible = no evidence but local conditions suggest they may be present; Minor = small numbers of fish e.g. Crucian Carp <i>Carassius carassius</i> known to be present; Major = dense populations of fish known to be present.
(SI8)	Water body density	Review of OS mapping for the number of ponds occurring within 1km of the survey pond, excluding ponds where major barriers such as main roads exist. Water body densities above four water bodies/km ² are taken as optimal.
(SI9)	Terrestrial habitat	In general, scrub, unimproved grassland, woodland (deciduous and coniferous) and gardens are regarded as being suitable terrestrial habitat, unlike improved pasture, arable and hardstanding. The surrounding habitat is scored according to the extent of high-quality terrestrial newt habitat. Good = habitat that offers good opportunities for foraging/shelter (covers more than 75% of available area); Moderate = habitat that offers opportunities for foraging/shelter but may not be extensive

Suitability Indices	Suitability Indices Title	Suitability Indices Description
		(25-75% of available area); Poor = habitat with poor structure that offers limited opportunities for foraging/shelter (less than 25% of available area); None = no suitable habitat around pond.
(SI10)	Macrophyte content	The highest occurrence of Great Crested Newt is found in water bodies with emergent vegetation cover between 25% and 50% and submerged vegetation between 50% and 75%.

4.3.2 The HSI of a water body is a numerical index which scores water bodies on a scale of between 0 and 1, using a geometric mean of the ten suitability indices (Table 1), with the following suitability categories for the results:

- <0.5: poor likelihood of presence
- 0.5 – 0.59: below average likelihood of presence
- 0.6 – 0.69: average likelihood of presence
- 0.7 – 0.79: good likelihood of presence
- >0.8: excellent likelihood of presence.

4.3.3 Any water body with suitability to support Great Crested Newt and within 250m of the Site, based on an HSI score of below average or greater, was then surveyed using environmental DNA (eDNA) analysis, to determine Great Crested Newt presence or absence.

4.3.4 The HSI survey was undertaken between April and June 2022, as access became available.

eDNA laboratory analysis

4.3.5 Water samples were taken between mid-April and late June 2022, from suitable water bodies within the survey area which were then sent off for laboratory analysis for the presence or absence of Great Crested Newt DNA. This survey methodology is approved by Natural England in their standing advice (Ref 15) and it provides evidence of presence or absence of Great Crested Newt to assess development projects (Ref 16).

4.3.6 Field surveys strictly followed the protocol set out in the WC1067 Technical Advice Note (Ref 16) and to prevent contamination of the samples as per the following:

- gloves were worn at all times during the sampling process, and gloves were replaced between sample collection from the water body and pipetting into the sterile sub-sample tubes; and
- samples were collected without entering the water, *i.e.* the surveyor stood only on the water body bank or water body edges. This prevented disturbance of the substrate to limit cross-contamination.

4.3.7 The field sampling protocol consisted of the following steps for each surveyed water body:

- the location of sub-samples were spaced as evenly as possible around the margin of the water body. Sub-samples generally targeted areas with potential egg laying substrate (e.g. vegetation) and open water areas which Great Crested Newts may be using for displaying. Prior to sampling, the water column was mixed by gently using a ladle to stir through the entire water column, whilst avoiding disturbing the sediment on the bed of the waterbody. Sampling of very shallow water (less than 5-10cm deep) was avoided where possible;
- a new pair of gloves was put on to keep the next stage as uncontaminated as possible;
- using a clear plastic pipette, approximately 15mL of water were taken from the bag and pipetted into six sterile tubes containing 35mL of ethanol to preserve the eDNA sample (*i.e.* the tube was filled to the 50mL mark)
- the tube was shaken vigorously for ten seconds to mix the sample and preservative. This is essential to prevent DNA degradation and was also repeated for each of the six conical tubes. Before taking each sample, the water in the bag was shaken to homogenise the sample, as DNA material constantly sinks to the bottom; and
- the box of preserved sub-samples was kept in a fridge and then later returned to ambient temperature in the laboratory for analysis.

4.3.8 Laboratory analysis was consistent with the methods described in Appendix 5 of the WC1067 Technical Advice Note (Ref 16), including control analysis for inhibition and degradation.

4.3.9 eDNA kits were procured from Surescreen Scientifics (hereafter referred to as Surescreen) and on collection of samples, they were then sent back to Surescreen to be analysed in their laboratory.

4.4 Assumptions and limitations

Desk study

4.4.1 The aim of a desk study was to help characterise the baseline context of the Scheme and provide valuable background information that would not be captured by site surveys alone. Information obtained during the course of a desk study was dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for Great Crested Newt does not necessarily mean that this species does not occur in the study area. Likewise, the presence of records of Great Crested Newt does not automatically mean that these still occurred within the area of interest or were relevant in the context of the Scheme.

Field Survey

4.4.2 There is a positive correlation between HSI scores and the numbers of Great Crested Newts observed in water bodies. In general, high HSI scores are likely to be associated with greater numbers of Great Crested Newts. However, the relationship is not sufficiently strong to allow predictions to be made about the numbers of Great Crested Newts in any particular water body. The HSI for

Great Crested Newts is a measure of habitat suitability and is not a substitute for aquatic amphibian surveys. In general, water bodies with high HSI scores are more likely to support Great Crested Newts than those with low HSI scores. However, the system is not sufficiently precise to allow the conclusion that any particular water body with a high suitability score will support Great Crested Newts, or that any waterbody with a low suitability score will not do so.

- 4.4.3 Despite the limitations detailed above, sufficient information was gathered from the surveys to provide an assessment of Great Crested Newt presence within the survey area.

5. Results

5.1 Desk study

- 5.1.1 Several records of Great Crested Newt were returned from the data search, within 2km of the Site and from within the last ten years. Four records were returned from NBGRC, all from 2012-2014 and from water bodies to the east of Cottam Power Station. Three records of Great Crested Newt were returned from GLNP, the most recent being from 2017 and from the Knaith Park / Lea Fields Crematorium area, to the north and north-west of the Site.
- 5.1.2 Furthermore, records of Great Crested Newt presence, from Great Crested Newt licence returns held on MAGIC (Ref 1), indicated a population of this species to the east of Cottam Power Station.
- 5.1.3 From the desk study, using maps and aerial photography, 56 water bodies were identified within the survey area (as presented in Figure 8F-1).
- 5.1.4 The desk study scoped out the need for HSI surveys on 28 water bodies for the following reasons:
- distance (>250m) and/ or barriers to dispersal – water bodies 2, 3, 7, 8, 11, 15, 20, 21, 31, 32, 36, 42, 43, 47, 53, 54, 55, 63, 66, 69, 70, 71, 72 and 73; or
 - barriers to dispersal with limited suitable connecting habitat between these water bodies and the Site – water bodies 14, 37, 51 and 67.

5.2 Field survey

- 5.2.1 A breakdown of the surveys undertaken within the survey area and the rationale for these are presented in Table 3.

Habitat Suitability Index

- 5.2.2 Twenty-eight water bodies identified within the survey area, or where access was permitted within the survey area (see Figure 8F-1) were subject to surveys to initially check that each water body held water and then a HSI survey where required, was undertaken between mid-April and June 2022.
- 5.2.3 Six water bodies (44, 46, 52, 57, 64, 65) are presumed to no longer exist as no evidence of a water body was located during the survey. These water bodies were scoped out of requiring further assessment. Furthermore, pond 58 was confirmed by the landowner as no longer a pond.
- 5.2.4 The HSI scores, following surveys undertaken on the twenty-two water bodies surveyed, are presented in Table 2.

Table 2 HSI Scores

HSI Score	Water body reference (see Figure 8F-1)
Excellent	19, 19A,
Good	4, 16, 19B, 42, 47
Average	6, 45, 62, AA
Below Average	5, 10, 17, AC
Poor	1, 9, 48, 49, 50, 56, 61

5.2.5 The full results of the HSI survey are presented in Annex A, Table B-1.

eDNA surveys

5.2.6 Of the 28 water bodies that were subject to HSI surveys (see Table 2), eDNA surveys were undertaken on 15 water bodies (4, 6, 9, 10, 16, 19, 19A, 19B, 42, 45, 47, 56, 62, AA and AC) between mid-April and late June 2022 that were scoped in for further assessment (see section 5.2.2) and where the HSI score was greater than ‘poor’ (see section 4.3.3).

5.2.7 Positive eDNA samples were returned from water bodies 62 and AA. The remaining 13 water bodies returned negative samples for Great Crested Newt eDNA.

5.2.8 The results of the eDNA laboratory analysis are presented in Table 3 and included in Annex B.

Table 3 Summary of Great Crested Newt assessment undertaken for all water bodies

Water body number (see Figure 8F-1 for location)	Distance from Site (metres)	HSI Assessment undertaken? (HSI score: excellent, good, average, below average, poor)	eDNA analysis undertaken? (Great Crested Newt - P = present; A = absent)	Supporting comments
1	10	Yes – Poor	No	Scoped out of requiring eDNA survey due to poor HSI score, including poor water quality and little to no aquatic macrophytes (see Table B-1 in Annex A).
2	253	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to the distance between this water body and the Scheme (>250m from the Scheme). Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
3	271	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to the distance between this water body and the Scheme (>250m from the Scheme). Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
4	Within Site	Yes - Good	Yes – (A)	Great Crested Newt confirmed as absent by eDNA analysis.
5	4	Yes – Below Average	No	Whilst the HSI scored 'below average' in April 2022, the water body was dry in June 2022 (and noted to be dry during other ecological surveys in May 2022, with greater shading from bankside vegetation (up to 90%), fewer macrophytes (<10%) and no open water. Therefore, due to the change in conditions, the HSI of this pond was recalculated to be 'poor' and this water body is unlikely to support Great Crested Newt.
6	221	Yes – Average	Yes – (A)	Great Crested Newt confirmed as absent by eDNA analysis.
7	385	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to the distance between this water body and the Scheme (>250m from the Scheme). Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.

Water body number (see Figure 8F-1 for location)	Distance from Site (metres)	HSI Assessment undertaken? (HSI score: excellent, good, average, below average, poor)	eDNA analysis undertaken? (Great Crested Newt - P = present; A = absent)	Supporting comments
8	421	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to the distance between this water body and the Scheme (>250m from the Scheme). Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur. However, the landowner reported that this water body supports both Smooth and Great Crested Newt.
9	13	Yes - Poor	Yes – (A)	HSI 'poor', but eDNA sample taken as a precaution as due to access constraints, the HSI survey was undertaken on the same day as the eDNA surveys. Great Crested Newt was confirmed as absent by eDNA analysis.
10	96	Yes – Below Average	Yes – (A)	Great Crested Newt was confirmed as absent by eDNA analysis.
11	370	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to the distance between this water body and the Scheme (>250m from the Scheme). Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
14	114	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to the barriers between this water body and the Scheme as this water body is surrounded by residential properties and roads. Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
15	411	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to the distance between this water body and the Scheme (>250m from the Scheme). Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
16	20	Yes – Good	Yes – (A)	Great Crested Newt confirmed as absent by eDNA analysis.
17	Within Site	Yes – Below Average	No	This pond was dry at time of HSI and eDNA survey in early June 2022 and was also noted to be dry in July 2022. However, a HSI was undertaken based on indices from

Water body number (see Figure 8F-1 for location)	Distance from Site (metres)	HSI Assessment undertaken? (HSI score: excellent, good, average, below average, poor)	eDNA analysis undertaken? (Great Crested Newt - P = present; A = absent)	Supporting comments
				similar ponds and this pond scored 'below average'. However, it is unlikely that this pond ever holds water outside of winter months and therefore the likelihood of Great Crested Newt being present is low. Furthermore, there are no records of Great Crested Newt in nearby water bodies.
19	92m	Yes – Excellent	Yes – (A)	Great Crested Newt confirmed as absent by eDNA analysis.
19A	149m	Yes – Excellent	Yes – (A)	Great Crested Newt confirmed as absent by eDNA analysis.
19B	85m	Yes - Good	Yes – (A)	Great Crested Newt confirmed as absent by eDNA analysis.
20	348	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to the distance between this water body and the Scheme (>250m from the Scheme). Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
21	298	No	No	No water body located during field survey / no longer a water body.
31	356	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to the distance between this water body and the Scheme (>250m from the Scheme). Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
32	453	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to the distance between this water body and the Scheme (>250m from the Scheme). Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
36	394	No	No	Scoped out during desk study due to barriers for GCN dispersal (Cottam Power Station and roads) between Scheme and this water body. Furthermore, water body over 250m from the Scheme. Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.

Water body number (see Figure 8F-1 for location)	Distance from Site (metres)	HSI Assessment undertaken? (HSI score: excellent, good, average, below average, poor)	eDNA analysis undertaken? (Great Crested Newt - P = present; A = absent)	Supporting comments
37	233	No	No	Scoped out during desk study due to barriers for GCN dispersal (Cottam Power Station, buildings) between Scheme and this water body. Furthermore, water body nearly 250m from the Scheme. Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
42	443	Yes - Good	Yes – (A)	Whilst this water body can now be scoped out on distance (>250m from the Scheme), a HSI and eDNA survey was undertaken to determine presence or absence as, at the time of surveys, this water body was close to or within the red-line boundary (as presented in the Preliminary Environmental Information Report (PEIR) for the Scheme.
43	436	No	No	Scoped out during desk study due to barriers for GCN dispersal (main road (A156)) between Scheme and this water body. Furthermore, water body greater than 250m from the Scheme. Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
44	158	No	No	No water body located during field survey / no longer a water body.
45	3	Yes - Average	Yes – (A)	Great Crested Newt confirmed as absent by eDNA analysis.
46	9	No	No	No water body located during field survey / no longer a water body.
47	276	Yes – Good	Yes – (A)	Great Crested Newt confirmed as absent by eDNA analysis.
48	Within Site	Yes – Poor	No	HSI 'poor' (no water present and poor water quality, see Table B-1 in Annex A) and scoped out of further survey as this is a water treatment plant, filled with 1m depth of gravel and no standing water.
49	126	Yes - Poor	No	HSI 'poor' (pond dry at the time of survey, heavily shaded and little to no macrophytes (see Table B-1 in Annex A) and scoped out of further survey as Great Crested Newt is unlikely to be present.

Water body number (see Figure 8F-1 for location)	Distance from Site (metres)	HSI Assessment undertaken? (HSI score: excellent, good, average, below average, poor)	eDNA analysis undertaken? (Great Crested Newt - P = present; A = absent)	Supporting comments
50	141	Yes - Poor	No	HSI 'poor' (pond dry at the time of survey, with likely poor water quality (based on similar ponds) and poor terrestrial habitat, see Table B-1 in Annex A) and scoped out of further survey as Great Crested Newt is unlikely to be present.
51	238	No	No	Scoped out during desk study due to barriers for GCN dispersal (roads and farmland) between Scheme and this water body. Furthermore, water body nearly 250m from the Scheme. Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
52	Within Site	No	No	No pond located within this area, no longer a pond.
53	461	No	No	Scoped out during desk study due to barriers for GCN dispersal (main road) between Scheme and this water body. Furthermore, water body greater than 250m from the Scheme. Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
54	475	No	No	Scoped out during desk study due to barriers for GCN dispersal (main road) between Scheme and this water body. Furthermore, water body greater than 250m from the Scheme. Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
55	366	No	No	Scoped out during desk study due to barriers for GCN dispersal (main road) between Scheme and this water body. Furthermore, water body greater than 250m from the Scheme. Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
56	24	Yes – Poor	Yes – (A)	HSI score was poor, although a precautionary eDNA sample was collected due to the proximity of the Scheme and potential surrounding development. Great Crested Newt confirmed as absent by eDNA analysis.
57	Within Site	No	No	No pond located within this area, no longer a pond.

Water body number (see Figure 8F-1 for location)	Distance from Site (metres)	HSI Assessment undertaken? (HSI score: excellent, good, average, below average, poor)	eDNA analysis undertaken? (Great Crested Newt - P = present; A = absent)	Supporting comments
58	144	No	No	Pond area not accessed, but on speaking to the landowner and tenant there is no longer a pond in this location as it was back-filled a number of years ago.
61	183	Yes – Poor	No	Scoped out of requiring further survey due to poor HSI score, with poor water quality that dries annually (see Table B-1 in Annex A).
62	116	Yes - Average	Yes – (P)	Great Crested Newt confirmed as present by eDNA analysis.
63	491	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to the distance between this water body and the Scheme (nearly 500m from the Scheme). Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
64	143	No	No	No pond located within this area and presumed to no longer be a pond. Therefore, scoped out of requiring any further assessment or survey.
65	77	No	No	No pond located within this area and presumed to no longer be a pond. Therefore, scoped out of requiring any further assessment or survey.
66	438	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to the distance between this water body and the Scheme (nearly 500m from the Scheme). Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
67	203	No	No	There was no access to this water body in 2022. However, the desk study scoped out the need for further assessment or survey on this water body (if present) as the Scheme is separated from this water body by intensively managed arable farmland which would restrict dispersal, if Great Crested Newt is present. Furthermore, the water body is >200m from the Site and therefore no impacts to Great Crested Newt (if present) will occur.
69	322	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to the distance between this water body and the Scheme (> 250m from the Scheme).

Water body number (see Figure 8F-1 for location)	Distance from Site (metres)	HSI Assessment undertaken? (HSI score: excellent, good, average, below average, poor)	eDNA analysis undertaken? (Great Crested Newt - P = present; A = absent)	Supporting comments
				Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
70	393	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to barriers for GCN dispersal (main road) between Scheme and this water body. Furthermore, the water body is greater than 250m from the Scheme. Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
71	475	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to barriers for GCN dispersal (main road) between Scheme and this water body. Furthermore, the water body is greater than 250m from the Scheme. Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
72	437	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to barriers for GCN dispersal (main road) between Scheme and this water body. Furthermore, the water body is greater than 250m from the Scheme. Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
73	473	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to barriers for GCN dispersal (main road) between Scheme and this water body. Furthermore, the water body is greater than 250m from the Scheme. Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur.
AA	100	Yes – Average	Yes – (P)	Great Crested Newt confirmed as present by eDNA analysis.
AB	478	No	No	Scoped out during desk study, of requiring any further assessment or survey, due to the distance between this water body and the Scheme (nearly 500m from the Scheme). Therefore, any impacts from the Scheme on Great Crested Newt, if present, will not occur. This pond is apparently a Great Crested Newt mitigation pond for West Lindsey Crematorium as the landowner reports that Great Crested Newt have previously been on site. However, pond dry during survey and landowner also reports this pond rarely (if ever) retains water.

Water body number (see Figure 8F-1 for location)	Distance from Site (metres)	HSI Assessment undertaken? (HSI score: excellent, good, average, below average, poor)	eDNA analysis undertaken? (Great Crested Newt - P = present; A = absent)	Supporting comments
AC	Within Site	Yes – Below Average	Yes – (A)	Great Crested Newt confirmed as absent by eDNA analysis.

6. Conclusions

- 6.1.1 Records of Great Crested Newt were received from GLNP in the Knaith Park / Lea Fields Crematorium area, the most recent of which was from 2017. The closest water bodies within the survey area (see section 1.4.1) to this area are water bodies 8, 64, 66, 69 and AB (see Figure 8F-1). The landowner reported that water body 8 has Great Crested Newt present, but this waterbody is >400m from the Scheme and therefore no impacts to this water body (or Great Crested Newt) will occur due to the distance between this water body and the Scheme. Water body 64 could not be located and is assumed to no longer be a pond. Water bodies 66, 69 and AB are >250m from the Scheme and therefore no impacts to these water bodies (and Great Crested Newt, if present) would occur as a result of the Scheme.
- 6.1.2 The data search through NBGRC returned three records from Cottam, which is to the east of the Site. Furthermore, a review of MAGIC identified records from the area to the east of Cottam. There are two waterbodies within 250m of the Site within this area (22 and 38, see Figure 8F-1), with the next closest water bodies, 31 and 32 (see Figure 8F-1) being almost 500m from the Scheme. Whilst the Scheme is within 250m of water bodies 22 and 38, the area to the east of Cottam will be utilised for access only, using an existing road and there will be no vegetation clearance required. Furthermore, there are barriers to dispersal between these water bodies and the Scheme. Therefore, no impacts to these water bodies (or Great Crested Newt) will occur due to barriers for Great Crested Newt dispersal and/ or distance between these water bodies and the Scheme. Water bodies 36 and 37 are within Cottam Power Station (see Figure 8F-1), although both are surrounded by infrastructure, which would restrict Great Crested Newt movement to the Site and are >200m from the Site. Therefore, no impacts to these water bodies (or Great Crested Newt) will occur due to the distance between these water bodies and the Scheme and the barriers to dispersal.
- 6.1.3 No Great Crested Newt were recorded within any of the water bodies subject to eDNA analysis within the Site.
- 6.1.4 However, positive Great Crested Newt eDNA samples were recorded from water bodies 62 and AA (see Figure 8F-1). Water body 62 is 116m from the Solar and Energy Storage Park and water body AA is 100m from the Grid Connection Corridor.

- 6.1.5 The Scheme will not directly impact (e.g. through loss of ponds) on either water body, used by Great Crested Newt, as both are situated outside of the Site boundary.
- 6.1.6 Whilst water body 62 is approximately 116m from the Site, the developable areas of the Scheme, within the Solar and Energy Storage Park, are over 150m from the water body. Connectivity between the Site and the water body is limited with connecting habitats comprising grazed improved grassland. This sub-optimal habitat is likely to limit the movements of commuting and dispersing Great Crested Newts. Therefore, the meta-population of Great Crested Newt in waterbody 62 is isolated with limited dispersal routes into the Site. The areas of the Scheme closest to water body 62, will consist of an access track using an existing hard-standing track. Therefore, whilst impacts to Great Crested Newt within 250m of water body 62 are unlikely to occur, a precautionary method of working (using Reasonable Avoidance Measures (RAMs) will be adopted during construction of the Scheme within 250m of this water body, formalised into a Construction and Environmental Management Plan (CEMP), secured through the DCO.
- 6.1.7 Water body AA is 36m outside of the Grid Connection Corridor. The connecting habitat is sub-optimal for Great Crested Newt, comprising improved grassland and arable farmland. However, suitable habitat (semi-improved grassland and scrub) does exist within 250m of this water body (and therefore within the Grid Connection Corridor). Where intrusive methods for cable laying are proposed during construction and are within 250m of this water body, then appropriate mitigation for Great Crested Newt will be required formalised into a CEMP, secured through the DCO.
- 6.1.8 Construction of the Grid Connection Corridor, within 250 m of Pond AA (see Figure 8F-1) will predominantly be constructed in low value habitats (arable farmland) for this species and will avoid all habitat within 100 m of this pond. However, semi-improved grassland and scrub habitat (between 100 m and 250 m from the pond) is of potentially greater value to transient (dispersing / commuting) Great Crested Newt and therefore mitigation is required to avoid potential impacts to this species.
- 6.1.9 Given the proximity of Pond AA to habitat of potential value to Great Crested Newt, Natural England's Rapid Risk Assessment tool was used to assess the potential for impacts to occur to Great Crested Newt. The results of this rapid risk assessment indicated that an offence was likely ('Amber: Offence Likely') and Natural England's approach is to consider options for re-designing the development (location, layout, methods, duration or timing) so that the effects are minimised. It also recommends that the exact location of development in

relation to resting places, dispersal areas and barriers to movement is critically examined prior to determining whether a derogation licence under the Habitats Regulations (Ref 5) is required.

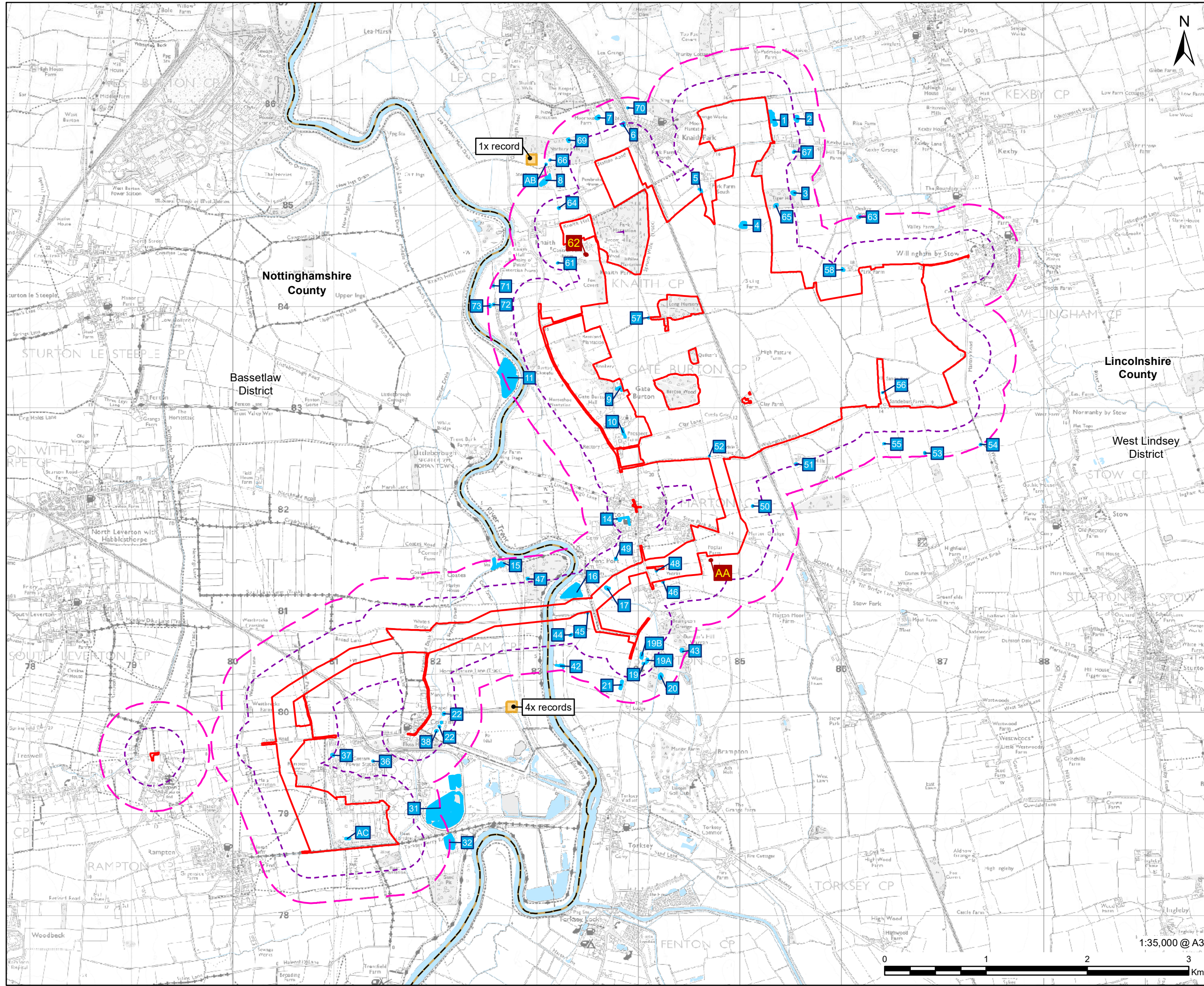
- 6.1.10 On evaluation, the habitats of potential value to Great Crested Newt within the Grid Connection Corridor are separated from the pond through an existing access track (tarmac), agricultural buildings /a residential property and are beyond 100 m from the pond. There are no hibernacula present within the semi-improved grassland and refugia surveys for reptiles, undertaken in September to October 2022 did not record any Great Crested Newt. Therefore, whilst there is a small risk of encountering Great Crested Newts during construction of the Grid Connection Corridor, mitigation measures will be required to reduce or eliminate this risk and ensure that UK and European legislation relating to this species is adhered to. Therefore, works will be undertaken under Reasonable Avoidance Measures (RAMs) and these measures will be formalised into the Framework CEMP, secured through the DCO.

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[REDACTED]
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Figures

Figure 8F-1: Waterbodies within 500m of the Proposed Scheme



LEGEND

- Order Limits
- County Boundary
- District Boundary
- Study Area**
- 250m Buffer
- 500m Buffer
- Waterbodies Surveyed for GCN Presence**
- Present
- No Presence
- Data Search GCN Records

NOTES
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Ordnance Survey 0100031673.

ISSUE PURPOSE
Environmental Statement

PROJECT NUMBER
60664324

FIGURE TITLE
Waterbodies within 500m of the
Proposed Scheme

FIGURE NUMBER
Figure 8F-1

1:35,000 @ A3



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Annexes

Annex A HSI scores

Table B-1: Habitat Suitability Index scores for water bodies assessed

Water body Reference (see Figure 2)	Pond Area (m ²)	Pond Drying	Quality	Shade (%)	Fowl	Fish	Ponds	Terrestrial Habitat	Macrophytes (%)	HSI Score
1	3,997	Never	Poor	0-60%	Major	Major	1	Poor	<10%	<0.50
4	3,039	Never	Moderate	0-60%	Minor	Absent	4	Moderate	16-20%	0.77
5	100	Annually	Moderate	0-60%	Absent	Absent	1	Poor	46-50%	0.52
6	828	Never	Moderate	0-60%	Minor	Minor	2	Moderate	16-20%	0.69
9	878	Rarely	Good	0-60%	Minor	Major	0	Moderate	0-10%	<0.50
10	831	Never	Good	0-60%	Major	Possible	1	Good	16-20%	0.51
16	13225	Sometimes	Moderate	0-60%	Minor	Absent	1	Good	16-20%	0.73
17	900	Annually	Moderate	0-60%	Minor	Possible	1	Moderate	<20%	0.56
19	1,462	Rarely	Good	70%	Minor	Absent	4	Good	30%	0.85
19A	622	Rarely	Good	70%	Minor	Absent	4	Good	30%	0.86
19B	840	Rarely	Good	90%	Minor	Absent	4	Good	20%	0.79
42	653	Rarely	Moderate	0-60%	Absent	Possible	3	Poor	6-10%	0.72
45	143	Sometimes	Moderate	0-60%	Absent	Possible	8	Poor	16-20%	0.63
47	209	Rarely	Good	0-60%	Absent	Absent	1	Moderate	16-20%	0.78
48	39	Annually	Poor	0-60%	Absent	Absent	3	Poor	46-50%	<0.50
49	185	Annually	Moderate	86-90%	Absent	Absent	1	Moderate	<10%	<0.50
50	65	Annually	Poor	0-60%	Absent	Absent	0	Poor	<10%	<0.50
56	96	Annually	Poor	0-60%	Absent	Absent	2	Moderate	<10%	<0.50

Water body Reference (see Figure 2)	Pond Area (m ²)	Pond Drying	Quality	Shade (%)	Fowl	Fish	Ponds	Terrestrial Habitat	Macrophytes (%)	HSI Score
61	49	Annually	Poor	0-60%	Minor	Absent	1	Good	36-40%	<0.50
62	445	Never	Moderate	0-60%	Minor	Possible	1	Poor	36-40%	0.69
AA	51	Never	Moderate	0-60%	Absent	Possible	2	Moderate	30%	0.63
AC	390	Never	Good	0	Absent	Absent	0	Moderate	0	0.51

HSI Score colour coding – Dark green: Excellent likelihood of Great Crested Newt present; Light green – Good likelihood of Great Crested Newt present; Yellow – Average likelihood of Great Crested Newt present; Orange – Below average likelihood of Great Crested Newt present; and Red – Poor likelihood of Great Crested Newt present.

Annex B eDNA Survey 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: 28/04/2022
Date Reported: 01/05/2022
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1470	45 Gate Burton	SK 83500 80982	Pass	Pass	Pass	Negative	0
1472	AA Gate Burton	SK 84717 81495	Pass	Pass	Pass	Positive	8

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

Reported by: Chris Troth

Approved by: Chris Troth

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: 28/04/2022

Date Reported: 08/05/2022

Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1469	19B Gate Burton	SK 84089 80511	Pass	Pass	Pass	Negative	0
1463	19 Gate Burton	SK 84033 80555	Pass	Pass	Pass	Negative	0
1464	19A Gate burton	SK 84065 80484	Pass	Pass	Pass	Negative	0
1473	4 Gate Burton	SK 85038 84803	Pass	Pass	Pass	Negative	0
1474	42 Gate Burton	SK 83242 80460	Pass	Pass	Pass	Negative	0

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

Reported by: Chris Troth

Approved by: Gabriela Danickova



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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: 16/05/2022
Date Reported: 24/05/2022
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1467	56 GATE BURTON	SK 863 831	Pass	Pass	Pass	Negative	0
1471	10 GATE BURTON	SK 838 827	Pass	Pass	Pass	Negative	0

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

Reported by: Esther Strafford

Approved by: Jennifer Higginbottom

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: 28/06/2022

Date Reported: 30/06/2022

Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
5124	16 GATE BURTON	SK 833 811	Pass	Pass	Pass	Negative	0
5128	AC GATE BURTON	SK 811 787	Pass	Pass	Pass	Negative	0

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

Reported by: Chris Troth

Approved by: Chris Troth

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: 29/06/2022
Date Reported: 08/07/2022
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1452	9 Gate Burton	SK 838 831	Pass	Pass	Pass	Negative	0
5123	47 Gate Burton	SK 829 813	Pass	Pass	Pass	Negative	0
5125	6 Gate Burton	SK 838 857	Pass	Pass	Pass	Negative	0
5131	62 Gate Burton	SK 834 845	Pass	Pass	Pass	Positive	10

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

Reported by: Chris Troth

Approved by: Jennifer Higginbottom