Cottam Parkway Railway Station

Great Crested Newt Survey Report

B2327FEF-JAC-EBD-00-RP-ENV-006 | P01.2

24/09/2020

Lancashire County Council

.

Cottam Parkway Railway Station

Project No:	B2327FEF
Document Title:	Great Crested Newt Survey Report
Document No.:	B2327FEF-JAC-EBD-00-RP-ENV-006
Revision:	P01.2
Document Status:	Final
Date:	24/09/2020
Client Name:	Lancashire County Council
Project Manager:	Daniel Teasdale
Author:	Mark Blacker

Jacobs U.K. Limited

5 First Street
Manchester M15 4GU
United Kingdom
T +44 (0) 161 235 600

www.jacobs.com

Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
P01.1	24/07/2020	Great Crested Newt Survey Report. First draft – submitted for client comment	Mark Blacker	Jack Kellett	Jack Kellet	Dan Teasdale
P01.2	24/09/2020	Clients comments addressed	Stuart Macpherson	Ryan Knight	Ryan Knight	Dan Teasdale

Contents

Executive Summary

Jacobs UK Ltd (Jacobs) was commissioned by Lancashire County Council (LCC) to undertake a range of ecological surveys to inform the Cottam Parkway Railway Station scheme (hereafter referred to as the 'scheme'). The scheme will serve the North West Preston Strategic Housing Location. It will comprise a new road to the proposed railway station connecting from Cottam Link Road with a bridge over the Lancaster Canal and a car park to serve the railway station.

As part of the ecological support to inform the scheme, Jacobs have completed surveys for great crested newt (GCN) (*Triturus cristatus*). The purpose of the survey was to establish an ecological baseline for GCN to inform the design options appraisal and an Environmental Impact Assessment (EIA) for the scheme. This will be presented for planning within an Environmental Statement (ES) which will be submitted for planning consideration in the summer of 2021.

A desk study exercise was undertaken in March 2020. This included a request to Lancashire Environmental Records Network (LERN) for existing GCN records within a 1km radius of the scheme. One hundred and five desk study records for GCN were received. The closest record was located 25m west of the scheme to the south of the railway line. No non-statutory designated sites where GCN were listed as a notable / qualifying feature were identified within the search area. There were no statutory designated sites relevant to GCN within the search area.

The ES and a preconstruction Update Great Crested Newt Survey report for the adjacent Preston Western Distributor (PWD) / East West Link Road (EWLR), which is currently under construction, was reviewed. These reports revealed low populations of GCN within three ponds (Cottam Parkway ponds P14, 455m south, P15 435m south and P22, 265m north) during surveys undertaken in 2015 and 2018.

The survey area was established to be a 500m buffer around the scheme; however, it was reduced in the western extents due to ongoing PWD / EWLR construction and in the north eastern extents due to housing developments. These developments provided significant barriers to movement of GCN across the landscape.

A Habitat Suitability Index (HSI) assessment was undertaken in March 2020 on 27 ponds (P1 to P27) located within the survey area to assess their suitability to support GCN. Following this assessment 18 ponds out of 27 were classed as having at least average suitability to support GCN.

Of the 27 ponds, Environmental DNA (eDNA) assessments were carried out on 15 ponds to test for the presence of GCN. A further 11 ponds were not subject to eDNA assessments as they had completely dried as a consequence of their ephemeral nature. A further pond in which GCN were confirmed to be present (P22), formed part of an ongoing Natural England mitigation licence and was not available to access.

One pond (P6) returned a positive eDNA result (albeit with a trace amount of eDNA), and two ponds (P19 and P21) returned an inconclusive result, likely due to contaminants in the water. Ponds P19 and P21 were subsequently retested at a later date, P19 returned a negative result, and P21 returned an inconclusive result. P21 was discounted from further survey due to the poor suitability rating for GCN.

A population size class assessment of P6 was undertaken in accordance with good practice guidance and a further three ponds (P1, P2 and P7) located in proximity to P6 were surveyed to gather further baseline information.

No GCN were identified within P6 and the pond was found to be dry during the fourth visit. None of the ponds within the survey area were found to support GCN during the 2020 survey season using traditional survey methods.

In consideration of the desk study and field survey results, alongside the conservation value of GCN (species of principal importance and Lancashire Biodiversity Action Plan species), the GCN population associated with the survey area was therefore considered to be of **Less than Local importance.**

A robust assessment of the potential impacts on GCN associated with the scheme will be detailed within the Ecology Chapter (Chapter 6) of an ES, along with any prescribed mitigation and compensation measures, opportunities for enhancement, requirements for pre and / or post construction monitoring and an assessment of residual impacts (where appropriate).

1. Introduction

1.1 Background

Jacobs UK Ltd. (Jacobs) was commissioned by Lancashire County Council (LCC) to provide ecological services to inform the proposed Cottam Parkway Railway Station scheme (hereafter referred to as the 'scheme').The scheme comprises (but not exhaustively): a road connecting to Cottam Link Road at the Sidgreaves junction roundabout; a bridge over the Lancaster Canal connecting to the railway station; station platforms; buildings and associated structures; a footbridge over the railway; a 250 / 500 space car park; and bridge approach embankments and earthworks. This development is related to the permitted road schemes of Preston Western Distributor (PWD) and the East West Link Road (EWLR) including Cottam Link Road.

The completion of a range of ecological surveys was required in order to inform the scheme design options appraisal and to establish an accurate baseline against which the impacts of the scheme (both temporary and permanent) could be assessed in line with the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines for Ecological Impact Assessment (CIEEM, 2018). This report presents the results of great crested newt (GCN) (*Triturus cristatus*) surveys undertaken by Jacobs' ecologists between March and May (inclusive) 2020.

The surveys were undertaken in consideration of the scheme area provided by LCC (LCC Drawing CLM07-DEV-010-01; Dated 10-01-2020) and the walkover notice area / survey exclusion area drawing provided by LCC (LCC Drawing CLM07-DEV-010-03: Dated 16-12-2019). Further information on the scheme design was not available at the time of survey / writing. The defined survey area for GCN comprised the scheme area and up to a 500m radius from the scheme boundary. This survey area is shown in Figures 1 - 2 in Appendix A.

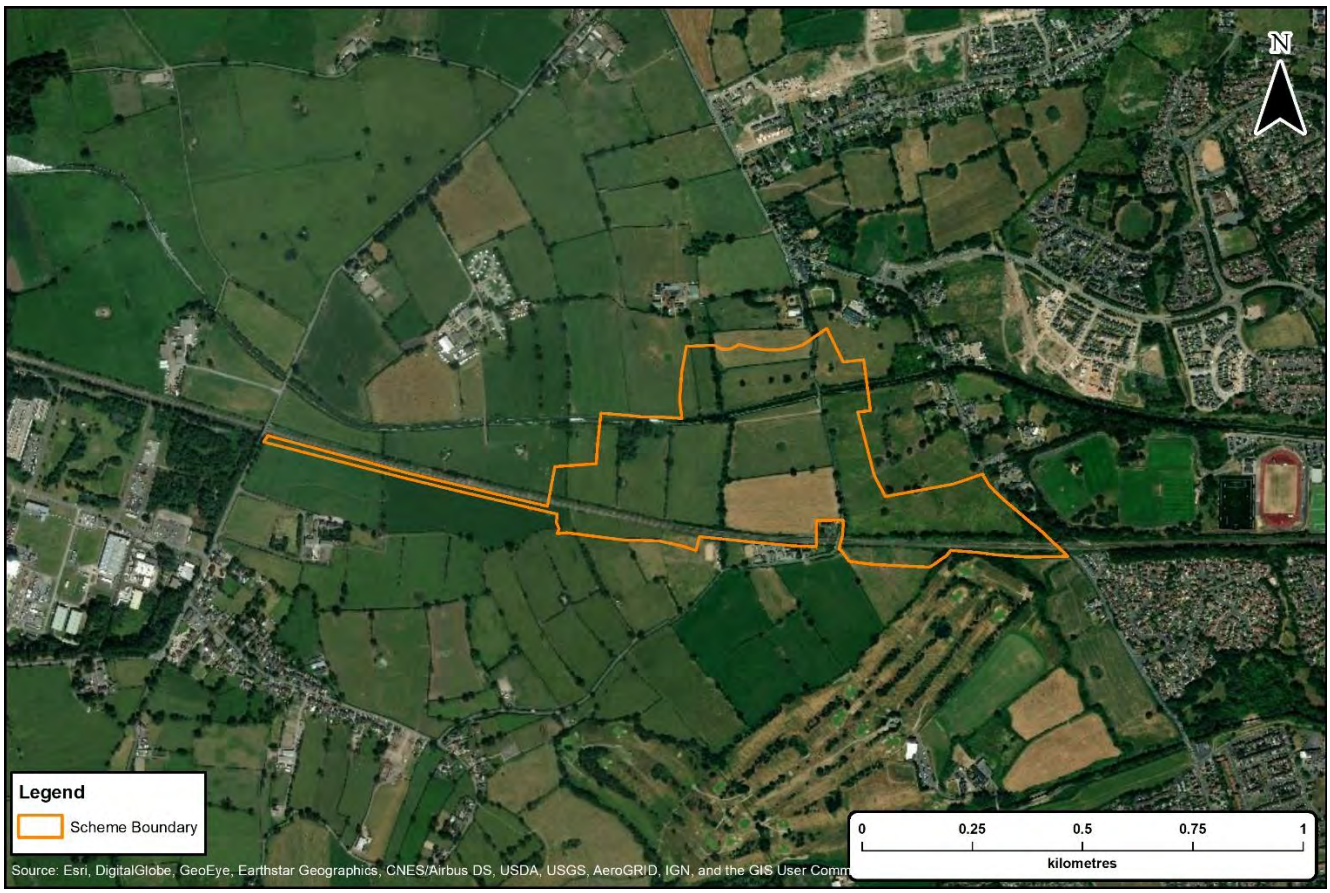
1.2 Site Context

An aerial image of the location of the scheme is provided in Plate 1.1 below. The scheme is located within a semi-rural area approximately 4km north-west of central Preston and to the immediate south-west of the largely residential area of Cottam. The central grid reference for the site is SD 48714 31645[1]. Land use within the scheme and wider survey area largely comprises pasture land used for grazing and / or fodder production. This land is bound by a network of hedgerows and tree lines with occasional woodlands, small watercourses, waterbodies, farmsteads and dwellings. Both the Lancaster Canal and the Preston to Blackpool rail line run east to west through the scheme. Sidgreaves Lane leading to Darkinson Lane runs north to south through the centre of the scheme.

Pasture land dominates much of the wider area, particularly to the west of the scheme. The east boundary of the proposed scheme is bordered by Lea Road with Westleigh Conference Centre and sports pitches further eastwards; to the south is pasture land and Aston and Lea Golf Club further beyond. To the north is pasture land with both existing and new housing developments further northwards. In addition, the construction of the PWD scheme was also underway along the west and north boundaries of the main scheme area at the time of surveys (March – May 2020).

[1] Ordnance Survey National Grid reference system used throughout the report.

Plate 1.1. Overview of scheme location



1.3 Aims and Objectives

The primary aim of this report is to present an accurate baseline of GCN within the survey area and to assess the collected data in conjunction with the relevant good practice survey guidance, planning policies and legislative framework.

The key objectives of the GCN surveys and this report are to:

- Undertake a search for statutory and non-statutory sites designated for GCN within 1km of the scheme;
- Undertake a search for existing GCN records within 1km of the scheme;
- Undertake as assessment of habitat suitability (Habitat Suitability Index) for all waterbodies within the survey area;
- Undertake a combination of Environmental DNA (eDNA) surveys, presence / likely absence surveys and population size class estimate surveys on all ponds within the survey area where applicable;
- Provide an evaluation of the GCN population(s) within the survey area;
- Provide sufficient field data to inform the scheme design options appraisal and facilitate the completion of an impact assessment on any GCN populations associated with the scheme; and,
- Provide sufficient field data to inform any mitigation or licencing requirements (which is to be detailed within Environmental Statement (ES) chapter where required).

1.4 Legislative, Planning Policy, and Biodiversity Framework

A summary of the legislation and policy framework for GCN is provided below. Full details, along with information regarding the biology, habitat requirements and nature conservation status of GCN are provided in Appendix B.

1.4.1 Legislation

GCN and their habitats (terrestrial and aquatic) are fully protected under Schedules 5 and 6 of the Wildlife and Countryside Act 1981 (as amended), and the conservation of Habitats and Species Regulations 2017 (as amended)[2]. In addition, Schedule 12 of the Countryside and Rights of Way (CRoW) Act 2000 amends the species provision of the Wildlife and Countryside Act 1981 by strengthening legal protection for threatened species

The relevant sections of the Wildlife and Countryside Act 1981 (as amended) make it an offence to:

- Intentionally or recklessly damage or destroy any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;
- Intentionally or recklessly disturb any such animal while it is occupying a structure or place which it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any structure or place which any such animal uses for shelter or protection.

The relevant sections of the Conservation of Habitats and Species Regulations 2017 (as amended) make it an offence to:

- Deliberately capture, injure or kill any wild animal of a European protected species:
- Deliberately disturb[3] wild animals of any such species;
- Deliberately take or destroy the eggs of such an animal, or,
- Damage or destroy[4] a breeding site or resting place of such an animal.

In addition, under this legislation there are offences relating to possession, control, sale, and exchange of GCN.

Where it is likely that the scheme would result in contravention of this legislation, a GCN mitigation licence would be required to allow the works to proceed. As part of this process, the application must meet 'three tests' for licencing under the Conservation of Habitats and Species Regulations 2017 (as amended). Planning guidance and recent case law also require the Local Planning Authority (LPA) to address these three tests when deciding whether to grant planning permission[5]. The three tests are as follows:

- Regulation 55 (2) (e) states that a derogation license can only be issued for 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;

[2] Until Implementation Period Completion day (31st December 2020) the Conservation of Habitats and Species Regulations 2017 (as amended) will remain in force without any of the amendments relating to Brexit made by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

[3] The Conservation of Habitats and Species Regulations 2017 (as amended) defines disturbance as an act which would disturb any such species in such a way as to be likely to impair their ability to survive, to breed or to reproduce, or to rear or nurture their young; or in the case of hibernating or migratory species, to hibernate or migrate; or to affect significantly the local distribution or abundance of the species to which they belong.

[4] Damage or destruction of a breeding site or resting place is an absolute offence under the Conservation of Habitats and Species Regulations 2017 (as amended) (i.e. it does not have to be deliberately / intentional)

[5] ODPM Circular 06/2005; *R (Simon Woolley) v Cheshire East Borough Council, 2009; R (Morge) v Hampshire County Council, 2011).*

- Regulation 55 (9) (a): that there is no satisfactory alternative; and,
- Regulation 55 (9) (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.

1.4.2 Biodiversity Framework

a) Species of Principal Importance

Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. There are 56 habitats and 943 species of principal importance which were initially identified as requiring conservation action under the UK Biodiversity Action Plan (BAP) and which continue to be regarded as priorities under the UK Post-2010 Biodiversity Framework. The Section 41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the Natural Environment and Rural Communities Act 2006 "to have regard" to the conservation of biodiversity in England, when carrying out their normal functions. Great crested newts are listed under Section 41 and are therefore a species of principal importance in England.

b) Lancashire Biodiversity Action Plan

The Lancashire BAP contains 11 habitat and 39 species action plans. GCN are a Lancashire BAP species with a targeted Species Action Plan (Lancashire Biodiversity Partnership, undated).

The landscape of lowland western Lancashire contains nationally significant densities of ponds. The majority of these are former marl pits from which base-rich clay was extracted to be spread upon farmland. The high pond density makes this part of the county the most important in Lancashire for this species.

Significant populations occur in the Boroughs / Districts of Preston, South Ribble, Chorley, and West Lancashire. The newts' breeding ponds in these areas form part of the so-called 'Wigan pondway' which links the pond clusters in the Fylde and Cheshire. Populations associated with the pondway are the most frequently affected by development as they occur within the M6 'development corridor' of Lancashire.

2. Methodology

2.1 Desk Study

2.1.1 Statutory and Non-Statutory Designated Sites

A search was carried out using the Multi-Agency Geographic Information for the Countryside (MAGIC) website (https://magic.defra.gov.uk/) (accessed 12th June 2020) to identify the presence of statutory protected nature conservation sites for GCN within 1km of the scheme. In addition, information of Biological Heritage Sites (BHS) within 1km of the scheme were obtained from Lancashire Environmental Records Network (LERN - data received 31st March 2020).

2.1.2 GCN Records

The following data sources were used in order to gather information on GCN:

- Records of GCN within 1km of the scheme were obtained from LERN (data received 31st March 2020). In the interest of relevance and conciseness, records more than 10 years old were considered to be historical and excluded from further analysis unless the record had a potentially significant bearing on the findings and recommendations made within this report (e.g. confirmed GCN breeding pond records within the scheme).

- The Preston Western Distributor and East West Link Road Environmental Statement. Chapter 6, Volume 2 and Appendices (Jacobs, 2017) and the Preston Western Distributor / East West Link Road Update Great Crested Newt Survey Report (Jacobs, 2018) were also reviewed. The ES chapter includes a full suite of ecological surveys of which, GCN surveys were completed in 2015. The Update GCN Survey report includes the results of GCN surveys undertaken in 2018. The PWD / EWLR scheme is located adjacent to and within the Cottam Parkway site; therefore, there was a significant overlap in the survey areas for this scheme and the PWD / EWLR scheme.

- MAGIC was used to search for European Protected Species Mitigation (EPSM) licences which have been granted within 1km of the scheme and the recently uploaded 2017-2019 GCN eDNA within 1km of the scheme. This search was completed on 10th July 2020.

A review was also undertaken of the findings of the Extended Phase 1 Habitat Survey data (Jacobs, 2020) to identify the presence of waterbodies within 500m of the scheme. Ordnance survey and aerial mapping (Google maps, 2019) were also thoroughly analysed to identify any additional ponds for survey.

2.2 Field Survey

All surveys were carried out with reference to current good practice guidance: Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*) (Oldham et al., 2000); the Great Crested Newt Mitigation Guidelines (English Nature, 2001); Great Crested Newt Conservation Handbook (Langton *et al.,* 2001); the Design Manual for Roads and Bridges (Highways England, 2020); and Analytical and methodological development for improved surveillance of the Great Crested Newt; Appendix 5 Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA (Biggs *et al.,* 2014).

2.2.1 Survey Area

The survey extent adopted for the GCN survey considered the potential impacts of the construction and operation of the scheme and as such, a 500m survey buffer was established around the scheme boundary. All areas of inaccessibility within this survey area were marked as exclusion zones by Lancashire County Council (LCC Drawing CLM07-DEV-010-03: Dated 16-12-2019). These areas included the PWD / EWLR construction area, housing development areas (north east of the scheme) and a large chemical plant (Springfield Works - west of the PWD / EWLR scheme). Due to the ongoing construction, all land to the west of the PWD / EWLR construction area was not included within the scope of field based GCN surveys included within this report. This included the narrow linear section of the scheme boundary shown on Plate 1.1. This section of the scheme boundary formed a haul road and construction area for the PWD / EWLR scheme. The PWD / EWLR scheme route is shown in Figures 1 and 2. The link road within the scheme was not under construction at the time of survey; therefore, ponds to the north of the scheme were surveyed. In summary, the survey area was focused on all ponds within 500m where access was permitted and where the ponds were considered to be linked to the scheme by suitable connecting habitat.

Habitat Suitability Index (HSI)

Following a review of the Extended Phase 1 Habitat Survey data collected in February and March 2020 (Jacobs, 2020)), along with an examination of online aerial and OS mapping, a total of 27 ponds were identified to be potentially viable for use by GCN. These ponds were subject to a Habitat Suitability Index (HSI) assessment in March 2020. Ponds were numbered P1 – P27 (refer to Figure 1 in Appendix A).

The HSI assessment was undertaken to assess each pond in respect of their suitability to support GCN. A thorough description and photograph of each pond was recorded, along with information on associated terrestrial habitats.

The HSI assessment is a means of evaluating habitat quality and quantity. It is a numerical index between 0 and 1, where 0 indicates unsuitable habitat and 1 represents optimal habitat. Surveys were conducted following standard methodology for HSI assessments (Oldham *et al.,* 2000). The HSI incorporates ten suitability indices, all of which are factors that can affect GCN as listed below:

- SI_1 Geographic location
- SI_2 Pond area
- SI_3 Pond drying
- SI_4 Water quality
- SI_5 Shade
- SI_6 Presence of water fowl
- SI_7 Presence of fish
- SI_8 Pond density in area
- SI_9 Terrestrial habitat quality
- SI_{10} Macrophyte cover in pond.

Using the calculation below an index between 0 and 1 can be determined:

$$(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \times SI_9 \times SI_{10})^{1/10}$$

A scale has been published (ARG UK, 2010) for categorising HSI scores into the suitability of a pond for GCN (refer to Table 2.1 below).

Table 2.1. HSI scores and their GCN suitability categories

HSI Score	GCN Suitability
<0.5	Poor
0.5 – 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

It is recognised that the HSI assessment is not a substitute for presence / absence surveys but can be useful for evaluating the general suitability of waterbodies for GCN (ARG UK, 2010) together with an assessment of the terrestrial habitats surrounding the ponds.

2.2.2 Environmental DNA (eDNA) Assessment

Environmental DNA (eDNA) is nuclear or mitochondrial DNA that is released from an organism into the environment. Sources of eDNA included secreted faeces; mucous and gametes; shed skin and hair; and carcasses. In aquatic environments eDNA is diluted and distributed in the water where it persists for 7-21 days. Research has shown that the DNA from a range of aquatic organisms can be detected in water samples at very low concentrations using qPCR (quantitative Polymerase Chain Reaction) methods (Biggs *et al.,* 2014). It is a useful method for waterbodies that restrict the effectiveness of traditional survey techniques e.g. limited access to the waterbodies margins, high turbidity, dense vegetation cover etc.

An eDNA survey was completed on all potentially relevant ponds for GCN within the survey area (15 ponds in total) on the 23rd and 24th April 2020, as shown in Table 2.2 below. It was not possible to carry out an eDNA survey on 12 ponds within the survey area (see Section 2.3 Limitations below for further details). Two ponds (P19 and P21) were also subject to a second eDNA survey as an inconclusive result was returned after the first survey.

Table 2.2. eDNA survey dates

Pond Reference	eDNA survey status	Distance from the scheme
P1	Surveyed 23/04/2020	250m north east
P2	Surveyed 24/04/2020	330m east
P6	Surveyed 24/04/2020	180m east
P7	Surveyed 24/04/2020	165m east
P11	Surveyed 23/04/2020	10m east
P12	Surveyed 23/04/2020	Within scheme
P13	Surveyed 24/04/2020	560m south
P17	Surveyed 24/04/2020	160m south
P19	Surveyed 23/04/2020 and 14/05/2020	330m north
P20	Surveyed 23/04/2020	240m north

Pond Reference	eDNA survey status	Distance from the scheme
P21	Surveyed 23/04/2020 and 14/05/2020	20m west
P23	Surveyed 23/04/2020	Within scheme
P24	Surveyed 23/04/2020	Within scheme
P25	Surveyed 23/04/2020	190m south
P26	Surveyed 24/04/2020	490m east

Water samples were taken from each waterbody at 20 evenly spaced points around the pond. These water samples were then combined into a single container, with six samples being extracted from this and placed into tubes containing a DNA preservative. These tubes were then sent to the NatureMetrics laboratory for analysis in accordance with the Natural England guidelines (Biggs *et al.,* 2014).

2.2.3 GCN Presence / Likely Absence Survey and Population Size Class Assessments

Surveys to determine the presence or likely absence of GCN were carried out on one pond (P21) as the first eDNA assessment returned an inconclusive result. These surveys were undertaken as a precaution in the event that the second eDNA assessment returned a positive result for GCN or a further inconclusive result. A further pond (P19) which returned an inconclusive result was not viable for survey (refer to Section 2.3 Limitations).

The pond was subject to four survey visits in accordance with the methods specified in the *Great Crested Newt Mitigation Guidelines* (English Nature, 2001). Each survey visit incorporated three separate methods where possible from the following options: bottle trapping, egg searching, torchlight searches, and netting. On some occasions terrestrial searches were also carried out if one of the survey methods listed below was not deemed appropriate due to pond conditions. A brief overview of the survey methods used is outlined as follows.

a) **Bottle Trapping** – Amphibian traps made from 2-litre plastic bottles were set around the margins of waterbodies in the early evening and then retrieved the following morning. Traps were set at approximately 2m intervals along all accessible margins. All amphibians and other fauna were released back into the pond they were captured from.

b) **Torch Surveys** – For torch counts, surveyors walked around the perimeter of each waterbody at least an hour after sunset using one million candlepower torches (Clulite CB2) to search the margins for amphibians.

c) **Egg Searching** – Egg searching involved a visual survey of marginal and submerged vegetation to identify the presence of newt eggs, which were laid on leaves folded over by a female newt. GCN eggs were identified in the field by their size (approximately 5mm in diameter) and colour (light yellow).

d) **Netting** – Netting involved using a sturdy dip-net with a 2mm mesh size to sweep the perimeter of the pond. Netting was undertaken for 15 minutes per 50m of pond.

e) **Terrestrial Search** – When it was not possible to carry out some of the other survey techniques described above, terrestrial refuge searching was carried out as an additional survey method. This involved searching under likely places that GCN may use such as logs, bark, rocks, and debris around the pond.

In addition to the presence / likely absence survey, one pond (P6) returned a positive result for GCN. Therefore, this pond was subject to a population size class assessment using the egg searching, bottle trapping and torch survey techniques outlined above. Population size class assessments require six separate visits to a pond between mid-March to mid-June, with at least three of these visits during mid-April to mid-May (English Nature, 2001) Thereafter, the maximum GCN adult count can be recorded through torch survey or bottle-trapping methods. The populations are then classed as: 'small' for maximum counts up to 10, 'medium' for maximum counts between 11 and 100 and, 'large' for maximum counts over 100.

Three ponds (P1, P2 and P7) which returned negative eDNA results for GCN, were also subject to surveys using three of the above listed survey methods over the course of four visits. Whilst surveys of these ponds were not a

strict requirement, it was deemed appropriate to gather additional background data on amphibian populations and potential crossover of GCN from P6 (particularly if a medium to large population was recorded) as these ponds were located within 250m of P6 with direct habitat connectivity.

2.2.4 Evaluation

Ecological Impact Assessment (EcIA) uses a hierarchical geographic framework to assign importance to ecological features. This is based on an understanding of how the ecological feature may contribute to the conservation status or distribution of the species or habitat at a particular geographic scale. It involves an assessment of the biodiversity importance of ecological features and also involves consideration of other factors that can be attached to ecological features including ecosystem services and natural capital (CIEEM, 2018).

The new Design Manual for Roads and Bridges (DMRB) LA 108 Biodiversity (formerly Volume 11, Section 3, Part 4 Ecology and Nature Conservation and IAN 130/10) guidance (Highways England, 2020) and the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland; Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018) recommends that the value / importance of a biodiversity resource / ecological feature be considered within a defined geographical context. The geographic categories stated in the two sets of guidance differ slightly but are largely comparable (see below). Therefore, the value / importance of biodiversity resources within the survey area was assessed according to the following defined geographical framework as per current CIEEM (2018) and Highways England (2020) guidance[6].

- International and European (International or European).
- National (UK or National).
- Regional (Regional) e.g. North-West England.
- Metropolitan, County, Vice County or other local authority-wide area (County or equivalent authority) e.g. Lancashire.
- River Basin District (CIEEM only). District is used herein as a geographic frame of reference e.g. Preston.
- Estuary System / Coastal cell (CIEEM only).
- Local (Local) (e.g. within 2km of the scheme).
- Less than local.

2.3 Limitations

Eleven ponds initially identified during the HSI assessment were dry at the time of the eDNA assessment in April 2020. These ponds comprised P3, P4, P5, P8, P9, P10, P14, P15, P16, P18, and P27. The HSI assessment was undertaken following a period of wet weather in February and March 2020 which resulted in several temporary field waterbodies and the identification of several ponds which are likely to hold water only periodically. However, the weather in late March and April was also noticeably warmer and drier than average which will also have resulted in the drying out of temporary water features and ephemeral ponds. Ponds which are only present during / after high rainfall events and / or frequently dry out during the key GCN breeding season are not conducive to the presence of viable GCN populations; however, it should also be noted that GCN cannot be fully discounted from such ponds particularly where more permanent ponds are present in the vicinity. Previous survey works have been reviewed in order to gather further field data for GCN in relation to these ponds (see Section 3.1.1 Results).

[6] The CIEEM (2018) value is given first with the corresponding Highways England (2019b) value given in brackets where applicable.

Pond 6 was subject to three surveys as part of the population size class assessment. No GCN were identified within these three surveys and this pond had dried up completely before the fourth survey visit could be completed. Therefore, no further surveys were carried out at this pond and surveys of P1, P2 and P7 were discontinued after four visits as these surveys were undertaken for background purposes only in relation to P6 (also see Section 2.2.3).

An eDNA assessment of P21 was undertaken on two occasions. Both tests returned an inconclusive result for GCN; therefore, this pond was earmarked for presence / likely absence survey. However, on the initial visit it became apparent that this pond was very heavily used by cattle (both on the banks and within the water itself). As a consequence, the banksides were heavily poached and the water was extremely turbid. In addition, it was apparent that the water level was also too shallow to use either bottle trapping or netting methods. Therefore, no survey methods were undertaken and the pond was discounted from further survey. This pond was classed as poor in its suitability for GCN during the HSI assessment. The pond was also previously scoped out of survey for the update surveys relating to the PWD / EWLR scheme and GCN have not been recorded within 250m of this pond (Jacob, 2018). Therefore, it is considered highly likely that GCN are absent from this pond.

Pond P22 situated within an area associated with both the Homes England / Rowland Homes development and the PWD / EWLR scheme. This pond has a confirmed GCN population and was to form part of an area covered under a Natural England European Protected Species Mitigation (EPSM) licence. As part of the mitigation associated with the licencing, amphibian fencing was to be installed in the summer of 2020 that will prevent GCN from migrating towards the scheme. This pond is located 305m north of the scheme and no further surveys were deemed to be required on this pond. Overall, no limitations were encountered which were a significant constraint to meeting the objectives of the survey.

No ponds to the west of the PWD / EWLR scheme were including in the scope of survey due to the ongoing construction works. The narrow, linear length of the survey boundary which runs westwards of the PWD / EWLR scheme (as shown in Plate 1.1 and Figures 1 and 2) formed a haul road and construction area for the PWD / EWLR scheme at the time of survey. This section did not form part of the scope for field based surveys due to the ongoing inaccessibly and barrier effects from the construction route.

Data presented in this report reflects the status of ponds at the time of survey. Good practice guidance (English Nature, 2001) states that '*Even if GCN are indicated to be absent from a given pond in one year, it is feasible that in future years they may colonise, depending on the surrounding populations and connectivity*'. In addition, '*presence / absence surveys may determine presence but in fact it is virtually impossible to demonstrate absence*'. Full consideration is given to these factors during interpretation of the survey results.

The findings of this report represent the professional opinion of qualified ecologists and do not constitute professional legal advice. The client may wish to seek professional legal interpretation of the relevant wildlife legislation cited in this document.

3. Results

3.1 Desk Study

There are no statutory designated sites within 2km of the scheme that list GCN amongst the reasons for their designation.

There is one non-statutory designated site (Biological Heritage Site – BHS) within 1km of the scheme: **BNFL Springfields Works Ponds BHS.** This BHS is located 25m west of the westernmost linear section of the scheme boundary (also see Section 2.3 Limitations). The site comprises an area of undeveloped land, the main feature is a narrow 'L-shaped' water-filled trench that supports a large number of common frogs (*Rana temporaria)*, toads (*Bufo bufo)*, smooth newts (*Lissotriton vulgaris)* and GCN. The site is also of botanical interest.

Table 3.1 Desk study records for GCN.

Details	Distance from the scheme
105 recent (post 2009) records for GCN were provided by LERN.	Nearest record 20m (or up to 100m) to the south of the railway line (SD482314). Approximately 25m west of the scheme boundary. This pond was not surveyed due to its location west of the PWD scheme currently under construction.

A search of MAGIC produced 21 EPSM licence returns for GCN between 2014 and 2018 within 1km of the scheme boundary. The majority are located in and around the residential land east of Lea Lane, predominately beyond the 500m buffer zone. This area has been subject to large residential developments within this time which have resulted in the need for EPSM licencing. Four of the records fall within / on the 250m buffer of the scheme, three within the southern extent west of PWD and one adjacent to Sidgreaves Lane between ponds 20 and 22.

A single eDNA result was returned through the MAGIC search and related to a negative result approximately 850m north of the scheme boundary in 2018.

3.1.1 Previous Surveys

Ten ponds within the scheme survey area were also present within the Preston Western Distributor (PWD) and East / West Link Road (EWLR) survey area. These ponds were originally surveyed in 2015, with update surveys also carried out in 2018.

One of these ponds was found to support GCN in 2015, this was P14 (PWD pond 97, located 455m south of the scheme). P14 previously had a peak count of one adult GCN in 2015, with no signs of breeding recorded. This pond also returned a peak count of one adult GCN in 2018; however, the pond was dry for two survey visits.

P15 (PWD pond 96, 435m south of the scheme) was found to support two immature GCN on one occasion in 2018. This species being recorded absent from the pond in 2015.

Both P14 and P15 were recorded as dry in April and May 2020 and not subject to an eDNA assessment.

P22 (PWD pond 72, located 305m north of the scheme), was found to support a peak count of one adult GCN in 2015. This pond was subsequently found to support a peak count of two adult GCN in 2018, with evidence of breeding also recorded (also see Section 2.3 Limitations).

3.2 Field Survey

3.2.1 HSI Assessments

a) Pond Habitat Descriptions

Ponds identified within the survey included those that had formed in marl pits or along the edges of fields. Others included ornamental ponds within a golf course. A large proportion of the ponds were found within field boundaries associated with improved grassland used for the grazing of livestock such as sheep and cattle. Fringe vegetation around many of the permanent, unmanaged ponds was dominated by rushes (*Juncus* sp.), with abundant reedmace (*Typha latifolia*).

Full descriptions and photographs of each pond subject to HSI assessment are provided in Appendix C.

b) Terrestrial Habitat

The majority of terrestrial habitat in the survey area comprised improved grassland with scattered residential housing. This habitat type was identified as sub-optimal for GCN due to the lack of cover and refugia. Smaller areas of optimal terrestrial habitat (woodland, hedgerows, scrub, and long grassland) were present within the survey area, although GCN will use all terrestrial habitats (including those that appear to be unsuitable) for dispersal across the landscape.

c) HSI Assessment

The results of the HSI assessments undertaken on 27 ponds within the survey area is summarised in Table 3.2 below.

Table 3.2: HSI assessment results for ponds identified for survey.

HSI Score	Pond Reference	Number of ponds
Poor (<0.50)	P5, P10, P20, P21, P24	5
Below average (0.50 – 0.59)	P8, P18, P19, P26	4
Average (0.60 – 0.69)	P1, P3, P4, P12, P13, P14, P16	7
Good (0.70 -0.79)	P2, P6, P7, P9, P11, P15, P17, P22, P23, P25	10
Excellent (>0.80)	P27	1
Total		27

Approximately two thirds of the ponds assessed (18 ponds) were assessed as offering average, good, or excellent habitat suitability for GCN. Many of the ponds were in close proximity to other ponds with good terrestrial habitat connectivity between them, primarily through hedgerows.

Those ponds assessed as supporting below average or poor habitat for GCN were classified as such due to:

- Their high frequency of drying out;
- The presence of heavy shading;
- Their poor water quality; or

- Disturbance by fish and / or waterfowl.

The full HSI assessment results are presented in Appendix D and pond locations are shown in Figure 1 in Appendix A.

3.2.2 eDNA Assessment

A total of 15 ponds were subject to eDNA assessment, with the results summarised in Table 3.3 below. All samples were analysed by NatureMetrics.

It was not possible to carry out eDNA assessments on 12 ponds out of the original 27 identified during HSI assessments. For further details see Section 2.3 Limitations.

Only one pond, P6, was confirmed as a positive result for GCN. This had a score of two (i.e., out of the 12 laboratory samples taken from the extract for this pond only two were recorded as positive, the other 10 were negative indicating only a trace of eDNA). Two ponds, P19 and P21 returned 'inconclusive' eDNA results and therefore the eDNA assessment at these ponds was repeated. P19 returned a negative on the second survey, and P21 remained as 'inconclusive'. This is likely due to the regular use of the pond by cows and associated contamination issues, making the pond unsuitable for GCN (also see Section 2.3 Limitations). The results are summarised in Table 3.3 below.

Table 3.3: eDNA assessment results from 15 ponds subject to eDNA survey.

Pond Reference	GCN Status	eDNA Score (/12)	Inhibition	Degradation	Distance from the scheme
P1	Negative	0	No	No	250m north east
P2	Negative	0	No	No	330m east
P6	Positive	2	N/A	No	180m east
P7	Negative	0	No	No	165m east
P11	Negative	0	No	No	10m east
P12	Negative	0	No	No	Within scheme
P13	Negative	0	No	No	560m south
P17	Negative	0	No	No	160m south
P19 (1st survey)	Inconclusive	0	Yes	No	330m north
P19 (2nd survey)	Negative	0	No	No	330m north
P20	Negative	0	No	No	240m north
P21 (1st survey)	Inconclusive	0	Yes	No	20m west

Pond Reference	GCN Status	eDNA Score (/12)	Inhibition	Degradation	Distance from the scheme
P21 (2nd survey)	Inconclusive	0	Yes	No	20m west
P23	Negative	0	No	No	Within scheme
P24	Negative after dilution	0	No	No	Within scheme
P25	Negative	0	No	No	190m south
P26	Negative	0	No	No	490m east

3.3 Presence / Likely Absence Surveys and Population Size Class Assessments

Ponds which returned a negative eDNA result or were dry during the eDNA assessment were not selected for further survey and were regarded as likely absent for GCN. Exceptions to this were P1, P2 and P7 as despite the negative eDNA results, these ponds were subject to survey due to their proximity to P6.

Due to the first inconclusive eDNA assessment result, one pond (P19) was selected for presence / likely absence surveys between the first and second eDNA assessments and one pond (P21) was deemed to be unsuitable for presence / likely absence surveys (see Section 2.3 Limitations). No GCN were identified during the surveys of P21 before the negative eDNA assessment result was received. Common frog was recorded during the surveys.

P6 was subject to a population size class assessment as this was the only pond within the survey area which returned a positive result for GCN. No GCN were identified in three survey visits. This pond was recorded as dry during the fourth visit and did not hold any water upon further inspections within May 2020. Based on the result, the use of the pond by breeding GCN or a population size could not be confirmed. It has been assumed that P6 supports very low numbers of GCN. The pond did however record healthy populations of a mix of smooth newts and palmate newts (*Lissotriton helveticus)* with both adults, juveniles and efts recorded.

The surveys of P1, P2, and P7 recorded frogs (adults and tadpoles) along with palmate and smooth newts. No GCN were identified (as per the eDNA assessment results).

A summary of the GCN survey results is shown below in Table 3.4 and presented in full in Appendix E.

Table 3.4. Presence / likely absence survey and population size class assessment results for ponds subject to survey

Pond Ref.	Peak GCN count per visit (adults)				Eggs present	Other amphibians	Distance from the scheme
	1	2	3	4			
P1	0	0	0	0	No	Adult common frog	250m north east
P2	0	0	0	0	No	Smooth newt juvenile. Common frog tadpoles	330m east

P6	0	0	0	Pond Dry	No	Smooth and Palmate newts present, including approx. 80 juvenile newts and efts.	180m east
P7	0	0	0	0	No	Adult smooth and palmate newts	165m east
P19	0	0	0	0	No	Adult common frog	330m north

4. Evaluation

The results for the GCN surveys largely concur with the results of the previous surveys undertaken in 2015 and 2018 in relation to the PWD / EWLR scheme. However, the 2015 / 2018 surveys did record low populations of GCN in P14 and P15 and these ponds were dry in 2020. Due to the intervening distance between the scheme and these ponds (455m and 435m respectively) and barriers to movement (the Preston to Blackpool trainline), it is considered highly unlikely that GCN populations associated with these ponds would be present within the scheme. Two other ponds within 500m of the scheme boundary (and east of the PWD / EWLR scheme) have confirmed presence of GCN:

- P22 holds a known (low) population of GCN and is to form part of an EPSM licence relating to the PWD / EWLR scheme. This pond is located 305m north of the scheme and the PWD / EWLR scheme is to be constructed between this pond and the Cottam Parkway scheme.
- P6 was the only pond in which GCN were confirmed as present during the 2020 surveys. However, a population size class assessment carried out on P6 did not record any GCN. This pond is located on approximately 180m east of the scheme boundary.

The GCN is a species of principal importance in England under Section 41 of the NERC Act (2006) and are listed as a Lancashire BAP priority species. A large number of GCN populations occur in the county due to the high pond density and the north west of England is a stronghold for this species in Britain. An audit of 487 ponds carried out in the north west in 1995 / 1996 found the species in 26% of ponds. However, it is acknowledged that this audit is dated and the number of ponds in Lancashire and England is gradually decreasing (Lancashire Biodiversity Partnership, undated).

In consideration of the desk study and field survey results, alongside the conservation value of GCN (species of principal importance and Lancashire Biodiversity Action Plan species), the GCN population associated with the survey area was therefore considered to be of Less than Local importance.

5. Conclusions and Recommendations

A data search and surveys for GCN, including HSI assessments, eDNA surveys and traditional survey methods, were undertaken during the 2020 survey season.

The desk study revealed no records for GCN within the scheme itself. The desk study did reveal the presence of GCN within the wider area with the closest record being 25m from scheme boundary. This record relates to BNFL Springfields Works Ponds BHS. This BHS is located 25m west of the linear section of the scheme (west of the PWD / EWLR scheme). This area of the scheme formed a haul road and construction area for the PWD / EWLR scheme. The requirements for development of this area for the Cottam Parkway scheme in relation to the PWD / EWLR scheme will need to be confirmed to determine if any further survey or mitigation works are required above and beyond which has been already implemented.

HSI assessments identified that over half of the ponds surveyed scored above average for GCN suitability. Fifteen ponds were subject to eDNA surveys with a single pond (P6) returning a positive result. Traditional survey methods of this pond and nearby ponds did not confirm the presence of GCN. A further pond (P22) identified as supporting GCN during the desk study formed part of an ongoing Natural England mitigation licence and was not available to access.

A robust assessment of the potential effects on GCN associated with the scheme is to be detailed within the Ecology Chapter (Chapter 6) of the ES, along with any prescribed avoidance, mitigation and compensation measures, opportunities for enhancement, requirements for pre and / or post construction monitoring and an assessment of residual impacts (where appropriate).

Given the possibility of future changes in GCN distribution within the survey area (including presence at locations where GCN have not been recorded to date), due consideration will be given to their potential presence across the survey area, both prior to construction and in the longer term.

6. References

Amphibian and Reptile Groups (ARG) UK (2010). Great Crested Newt Habitat Suitability Index. ARG UK Advice Note 5. Amphibian and Reptile Groups UK.

Biggs, J., Ewald, N., Valentini, A., Gaboriaud, C., Griffiths, R.A., Foster, J., Wilkinson, J., Arnett, A., Williams, P., and Dunn, F. (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA. Freshwater Habitats Trust, Oxford.

CIEEM. 2018. Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland: Terrestrial, Freshwater Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.

English Nature (2001). *Great-crested Newt Mitigation Guidelines*, English Nature.

Highways England. 2020. LA108 Biodiversity: (formerly Volume 11, Section 3, Part 4 Ecology and Nature Conservation and IAN 130/10)

Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001). Great Crested Newt Conservation Handbook, Froglife, Halesworth.

Jacobs (2017) Preston Western Distributor and East West Link Road Environmental Statement. Chapter 6, Volume 2 and Appendices. For Lancashire County Council.

Jacobs (2018). Preston Western Distributor / East West Link Road Update Great Crested Newt Survey Report, Manchester. Prepared for Lancashire County Council.

Jacobs (2019) Preston Western Distributor / East West Link Road Bat and Barn Owl Baseline Monitoring Report. For Lancashire County Council.

Jacobs (2020) Cottam Parkway Railway Station Extended Phase 1 Habitat Survey Report. For Lancashire County Council.

Lancashire Biodiversity Partnership (undated). Lancashire Biodiversity Action Plan. Available on request from Lancashire Environmental Records Network https://www.lancashire.gov.uk/lern/services/

Oldham, R.S., Keeble, J., Swan, M.J.S and Jeffcote, M. (2000). Evaluating the suitability if habitat for the Great Crested Newt (Triturus cristatus). Herpetological Journal 10 (4), 143-155.

Websites

Google Maps, 2019 (https://www.google.com/maps). [10th July 2020]

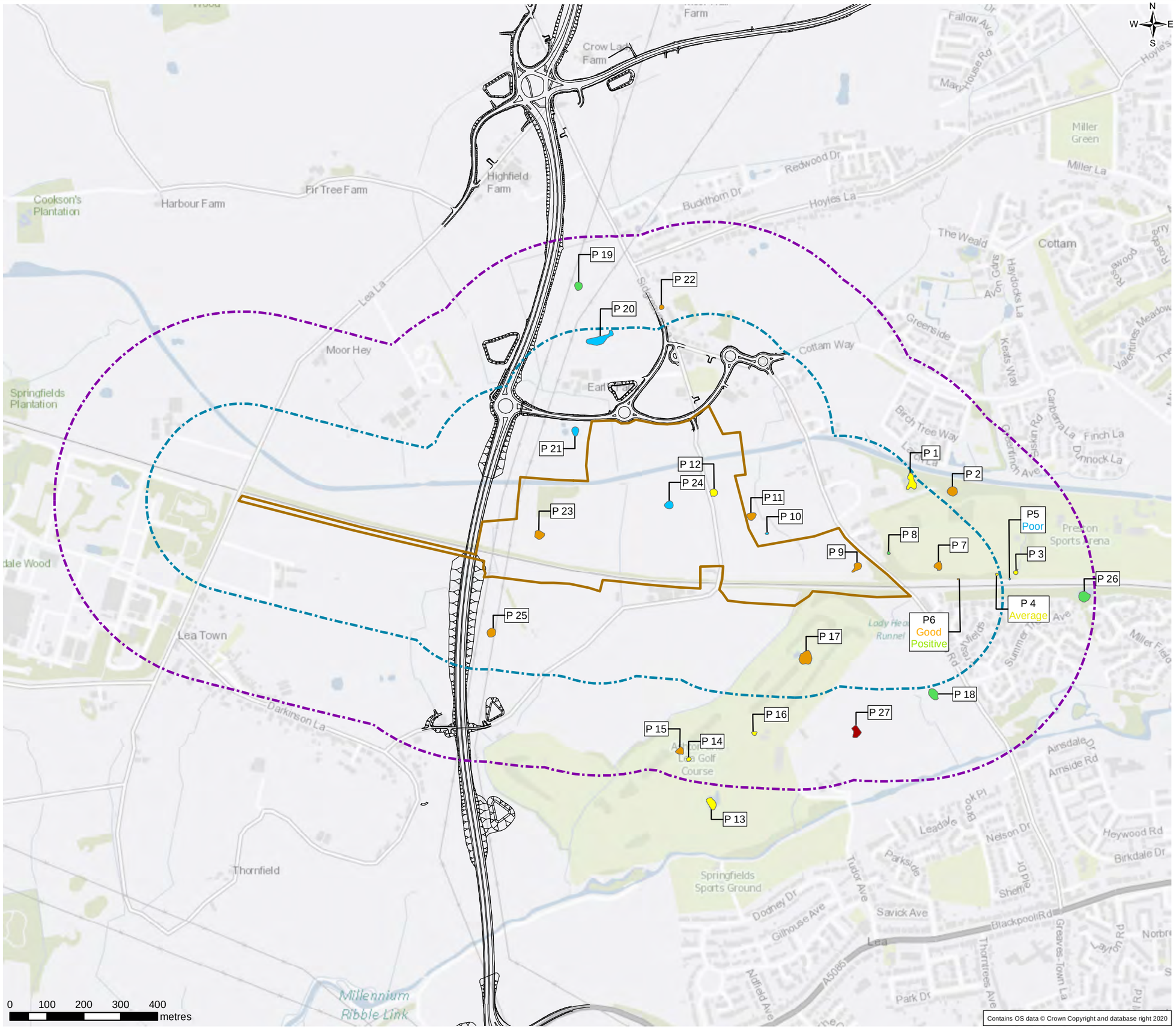
MAGIC, 2019. https://magic.defra.gov.uk/) [10th July 2020]

Appendix A. Figures

Figure 1 – Habitat Suitability Index Pond Locations and Results

Figure 2 – eDNA Pond Locations and Results

FIGURE 1

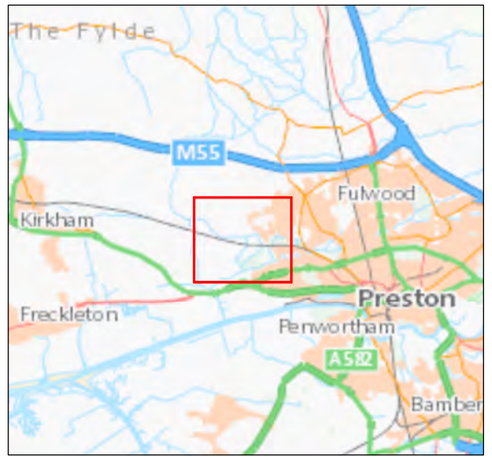


Legend

- PWD Route
- Site Area
- Site Area 250m Buffer
- Site Area 500m Buffer

Ponds Locations and Great Crested Newt Habitat Suitability Index

- Excellent
- Good
- Average
- Below average
- Poor



Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	01/10/2020	Reissued to client	PSz	MB	JK	DT
0	21/09/2020	Initial Issue	PSz	RK	JK	TBA

Jacobs
5 First Street, Manchester, M15 4GU, UK
Tel: +44(0)161 235 6000 Fax: +44(0)161 235 6001
www.jacobs.com

Client: Lancashire County Council

Project: Cottam Parkway Railway Station

Drawing Title: POND LOCATIONS AND HABITAT SUITABILITY INDEX RESULTS

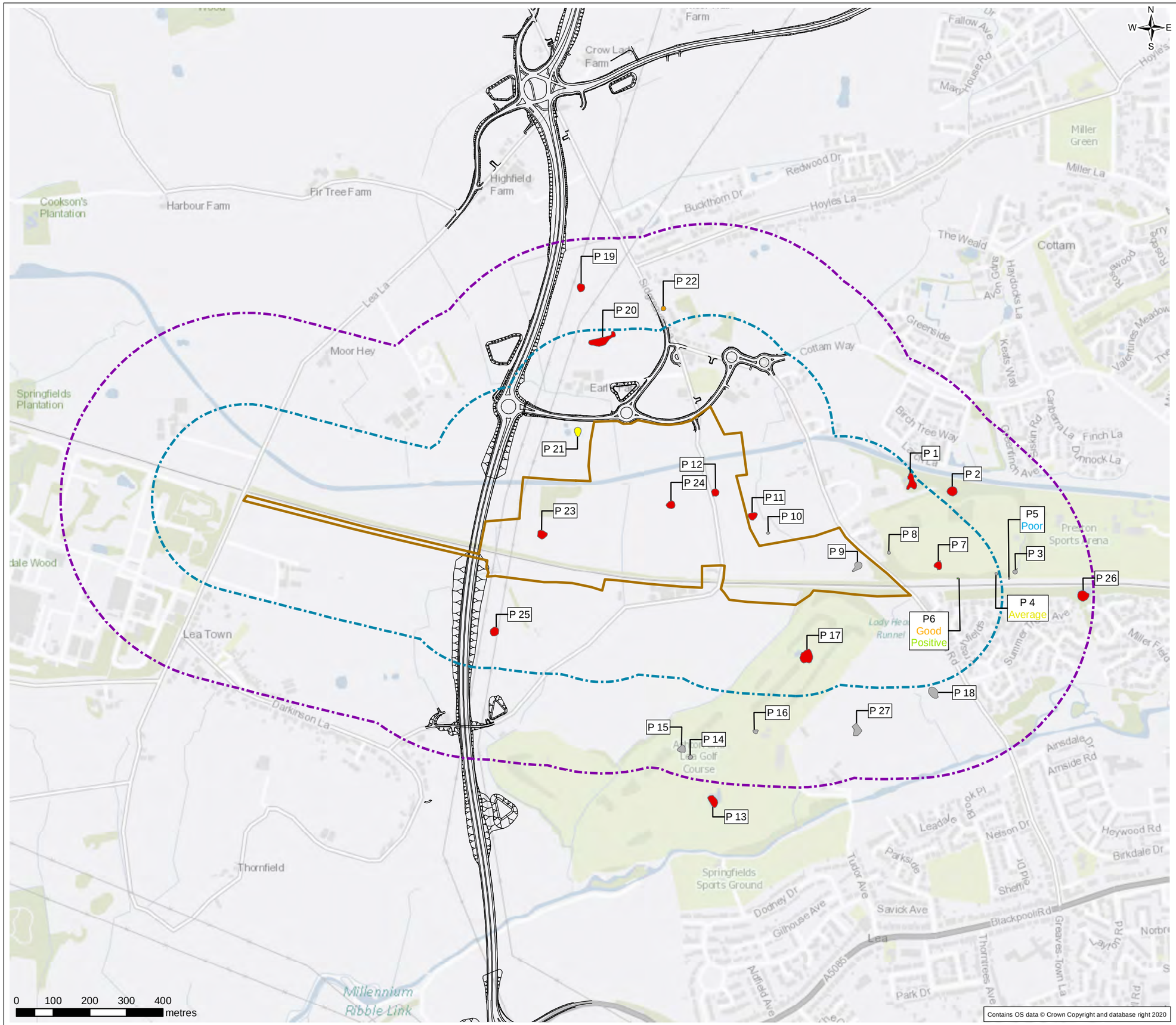
FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	B2327FEF	

B2327FEF-JAC-EBD-00-DR-ENV-0017

\\GBMNC0VS01\gis\B2327FEA_LCC_Cottam_Parkway\ArcGIS\GCN\B2327FEF_EC_01_HSI_PondLocations.mxd

FIGURE 2

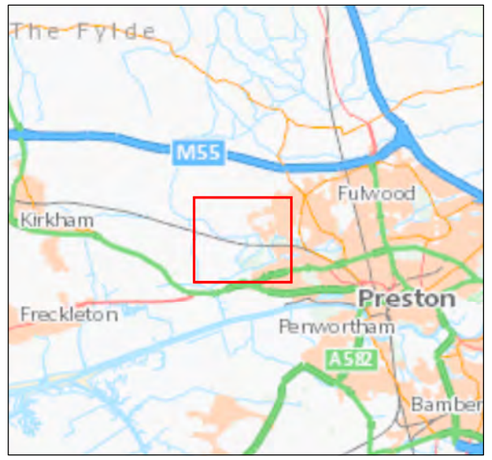


Legend

- PWD Route
- Site Area
- Site Area 250m
- Site Area 500m

Pond Locations and eDNA Results

- Not surveyed
- Pond Dry
- eDNA inconclusive
- eDNA negative
- eDNA positive



Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
1	01/10/2020	Reissued to client	PSz	MB	JK	DT
0	21/09/2020	Initial Issue	PSz	RK	JK	TBA

Jacobs
5 First Street, Manchester, M15 4GU, UK
Tel: +44(0)161 235 6000 Fax: +44(0)161 235 6001
www.jacobs.com

Client: Lancashire County Council

Project: Cottam Parkway Railway Station

Drawing Title: POND LOCATIONS AND EDNA RESULTS

FINAL

Scale @ A3	1:10,000	DO NOT SCALE
Jacobs No.	B2327FEF	

B2327FEF-JAC-EBD-00-DR-ENV-0018

\\GBMNC0VS01\gis\B2327FEA_LCC_Cottam_Parkway\ArcGIS\GCN\B2327FEF_EC_02_eDNA_PondLocations.mxd

Appendix B. Additional Information

Great crested newt (GCN) (*Triturus cristatus*) is the largest of the three British native newt species, reaching a maximum length of 15cm for males and 17cm for females. GCN spend much of the year on land where they need a variety of different conditions to provide food, shelter and places to spend the winter. Like all amphibians, GCN rely on water for breeding and for the development of their larvae and so return to ponds in the spring to breed. Eggs are laid singly on underwater leaves near the water margin between late February and early August, but usually between April and June, with each female laying several hundred eggs. The larvae (also known as 'efts') normally take three months to develop into juvenile newts before leaving the water, but some may over-winter as larvae. Juvenile newts disperse up to 0.6 miles (1km), only returning to ponds to breed when sexually mature after one to three years (JNCC, 1998). Adult newts leave the ponds from July onwards, generally staying within 200 – 500m of the ponds. From October or November, they hibernate in damp, frost-free environments, sometimes underground. Adult newts return to their breeding ponds in February or March dependent on temperature. Most adult newts return to the same breeding pond although occasionally adults will disperse to find new breeding sites.

GCN occupy a range of habitats. Their populations often rely on the presence of several ponds close together linked by suitable terrestrial habitat (English Nature, 2001). On land, GCN are found in cool, moist conditions under debris or in dense vegetation. They feed on both land and in water, eating small aquatic animals such as water fleas and insect larvae and terrestrial invertebrates, especially worms. GCN often exist as meta-populations i.e. the GCN in one area form a series of sub-populations that are linked as newts move between water bodies (English Nature, 2001). The distribution of ponds and the importance of meta-populations are therefore often key to the survival of the species within geographical areas. Loss of habitat, such as through destruction of ponds for example, can result in meta-populations becoming isolated and more vulnerable to localised extinction.

Nature Conservation Status

GCN have suffered a significant decline in recent years largely due to habitat loss (English Nature, 2001). This decline can be attributed to loss of suitable breeding ponds caused by water table reduction, in-filling for development, changing farming practices, waste disposal, pond neglect or fish stocking, and the degradation, loss and fragmentation of terrestrial habitats. Despite the decline of this species in recent years, GCN are still quite widespread in Great Britain and are numerous locally in parts of lowland England. Studies in the 1980s indicated a national rate of colony loss of approximately 2% over five years. The British population remains amongst the largest in Europe, and Britain therefore has an international responsibility for the species (DETR, 1995).

Legislation and Policy Framework

Conservation of Habitats and Species Regulations 2017 (as amended) and Wildlife and Countryside Act 1981 (as amended) (WCA)

Great crested newts (GCNs) are fully protected under the Wildlife and Countryside Act 1981 (WCA) and The Conservation of Habitats and Species Regulations 2017 (as amended). The 2017 regulations transpose Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into UK law. The Regulations provide for the designation and protection of 'European Sites', the protection of 'European Protected Species' (EPS), and the adaptation of planning and other controls for the protection of European Sites. EPS are listed on Schedule 2 of the Conservation Regulations.

Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to:

- Intentionally kill, injure or take certain animals listed in Schedule 5 (including GCN)

- Intentionally or recklessly damage or destroy any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;
- Intentionally or recklessly disturb any such animal while it is occupying a structure or place which it uses for shelter or protection; or
- intentionally or recklessly obstruct access to any structure or place which any such animal uses for shelter or protection.

In addition, under this legislation there are offences relating to sale, possession and control of wild animals listed in Schedule 5.

Under the Conservation of Habitats and Species Regulations 2017 (as amended) it is an offence to:

- Deliberately capture, injure or kill any wild animal listed as a European Protected Species;
- Deliberately disturb wild animals of any such species in such a way as to be likely:
  - to impair their ability:
    i) to survive, to breed or reproduce, or to rear or nurture their young, or;
    ii) in the case of animals of a hibernating or migratory species (including GCN), to hibernate or migrate, or;
  - to affect significantly the local distribution or abundance of the species to which they belong.
- Deliberately take or destroy the eggs of such an animal; and
- Damage or destroy a breeding site or resting place of such an animal.

In addition, under this legislation there are offences relating to possession, control sale and exchange of an EPS.

The above legislation applies to all life stages of a GCN, including eggs, juveniles and adults. Impacts upon each individual GCN as the result of an illegal act constitute a separate offence under the above legislation.

Natural Environment and Rural Communities (NERC) Act 2006

Section 40 of the Act concerns biodiversity and states: "every public 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."

Section 41 of the NERC Act sates that: "the Secretary of State must, as respects England, publish a list of the living organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity". Common toad, Natterjack toad, pool frog and GCN have been listed as 'Species of Principal Importance' under the NERC Act.

The list of species can be downloaded from the Natural England website at http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx

The Act stresses "*it is important that public authorities seek not only to protect important habitats and species, but actively seek opportunities to enhance biodiversity through development proposals, where appropriate. Incorporating enhancement opportunities into projects may help applicants to achieve planning permission*."

Local Biodiversity Action Plan (Lancashire LBAP)

The Local BAP for Lancashire contains 11 habitat and 39 species action plans. GCN have a plan relating to the species that includes objectives and targets for the conservation of the species across the region.

The great crested newt is the largest British newt and, in the breeding season, the male is recognisable by his jagged crest and silvery-blue stripe down the centre of the tail. Both sexes have a dark brown warty body and yellowish-orange belly with black blotches.

This species is widespread in Europe but is threatened in many countries. Britain has probably Europe's largest population and is, therefore, very important to the continuing survival of the great crested newt.

Newts need waterbodies for breeding but, for most of the year, they live on dry land.

A typical breeding site contains a number of medium to large ponds that have some areas of clear, base-rich water, deeper than 30 cm and with few fish predators. Such pools are usually surrounded by terrestrial habitat with plentiful ground cover (e.g. scrub, trees, long grass) with moist refuges in which newts spend the daytime (e.g. log piles, rocks or other debris).

Main Habitat(s): Farm ponds; mineral workings; temporary pools; ditches; scrub; hedgerows; arable field and pasture; marsh; gardens; sand dunes.

National Status

The great crested newt is widespread in South East and North West England but rarer in the South West, Scotland and Wales. It is absent from Ireland.

Numbers are believed to have declined since the 1940s. Studies in the 1980s estimated the current national rate of colony loss at 2% every five years. Approximately 3.000 colonies have been identified but it is estimated that there are still about 18.000 colonies in the whole of Britain.

The great crested newt is a European Protected Species by virtue of being listed under Annex IVa to the EU Habitats and Species Directive 1992. It is protected under UK law by the Conservation (Natural Habitats &c.) Regulations, which translates the Habitats Directive into UK legislation, and also under the Wildlife and Countryside Act 1981 (as amended). It is also a UK BAP Priority Species.

Regional Status

The North West of England is a stronghold for this species in Britain as a whole. An audit of 487 ponds carried out in the North West in 1995 / 6 found the species in 26% of ponds.

There are healthy populations in the Greater Manchester area, the outskirts of Liverpool and the coastal plain of Lancashire, including the Fylde, though there has been a notable loss of sites adjacent to urban areas. There are also numerous breeding sites in Cheshire and scattered populations in Cumbria.

The great crested newt is promoted by English Nature as a 'Regional Biodiversity Indicator' for sustainable development in the North West.

Local Status

The landscape of lowland western Lancashire contains nationally significant densities of ponds. The majority of these are former marl pits from which base-rich clay was extracted to be spread upon farmland. The high pond density makes this part of the county the most important in Lancashire for this species.

Significant populations occur in the Boroughs / Districts of Preston, South Ribble, Chorley and West Lancashire. The newts' breeding ponds in these areas form part of the so-called 'Wigan pondway' which links the pond clusters in the Fylde and Cheshire. Populations associated with the pondway are the most frequently affected by development as they occur within the M6 'development corridor' of Lancashire.

References for Appendix B

English Nature (2001). Great-crested Newt Mitigation Guidelines, English Nature.

DETR (1995). Biodiversity: The UK Steering Group Report Volume 2: Action Plans (Great crested newt pages 112-113) HMSO London ISBN 0117532282

GENT, T. & GIBSON, S. (Eds) (1998). The Herpetofauna Workers' Manual. JNCC, Peterborough.

Lancashire Biodiversity Action Plan (2001). Available on request from LERN.

Appendix C. Pond Descriptions and Photographs

Pond Reference	Description P3, P4, P5, P8, P9, P10, P14, P15, P16, P18, and P27.	Photograph
P1	Large pond in small woodland in the grounds of Westleigh Conference Centre. Heavily shaded and difficult to access the whole perimeter of the pond, banks are surrounded by dense bramble and hawthorn. Excellent terrestrial habitat. Mallard and moorhen present on the pond.	
P2	Medium sized pond in small woodland adjacent to playing fields and the Lancaster Canal. Heavily shaded with dense bankside vegetation making access to pond difficult. Excellent terrestrial habitat.	
P3	Small pond within small woodland copse. Located adjacent to playing fields. Immediate terrestrial habitat is good and pond is located 10m from dense vegetation along the railway embankment. Pond had dense vegetation around the banks and was fenced off making access difficult. Pond dry in April 2020.	
P4	Small pond located within woodland strip adjacent to the railway and playing fields. Excellent terrestrial habitat with good connectivity to other ponds within the woodland strip. Pond is fenced off making access to water difficult. Pond dry in April 2020.	

P5	Small, shallow drainage ditch running from pond 3 towards railway. Very slow flow where water enters the ditch from the pond and standing water at the railway end of the ditch where it's blocked off. Water was very shallow and likely to dry out during prolonged warm weather. Pond dry in April 2020.	
P6	Flooded depression within woodland strip adjacent to railway and playing fields. Looks to have been a smaller pond originally which has flooded the surrounding immediate area. Pond was deep and looks to hold a good amount of water throughout the year. Single mallard present on the pond. eDNA confirmed as positive for GCN. However, pond dried up in May 2020.	
P7	Medium sized round pond within small woodland copse. Located adjacent to playing fields and close to railway. Difficult to access all around pond due to vegetation. Excellent terrestrial habitat and located close to woodland strip in which several ponds are located.	
P8	Small pond within woodland next to playing fields. Water quality is poor and pond is completely shaded by surrounding trees. Pond dry in April 2020.	

P9	Small pond within shallow depression in improved grassland field. Pond was shallow with no aquatic or semi-aquatic vegetation and may dry out during prolonged warm weather. Pond dry in April 2020.	
P10	Flooded depression in improved grassland field. Likely formed as a result of recent wet weather. Likely to dry out in the summer, though good amount of water was present. Pond dry in April 2020.	
P11	Small pond within improved grassland field. Pond edges are poached and reedmace and rushes make up roughly 50% of the pond.	
P12	Small pond on edge of improved grassland field, adjacent to road. Mature overhanging ash tree covers majority of the pond.	

P13	Large square shaped pond within golf course. Steep banks around majority of pond with small stands of scrub and trees scattered around. Moorhen, coot and mallard present on pond.	
P14	Very shallow, heavily vegetated pond in golf course depression. Lies adjacent to pond 15. Pond had plentiful egg laying material but is very shallow and may dry out during prolonged warm weather. Immediate surrounding habitat is good with bramble and tall ruderals present, but wider landscape was primarily amenity grassland associated with the golf course. Pond dry in April 2020.	
P15	Small pond in golf course depression adjacent to pond 14. Immediate surrounding habitat was good with bramble and tall ruderals present, but wider landscape was primarily made up of amenity grassland associated with golf course. Pond dry in April 2020.	
P16	Small triangular shaped pond within golf course. Banks were mostly made up of short grass. Water quality appeared poor, likely as a result of run off from chemicals used to treat gold course. Pond dry in April 2020.	

P17	Large pond within golf course with juncus around the edges. Pond was made up of one large pond that is connected to a smaller pond separated by a bridge. Scattered trees were located around the banks, but access around the pond was good. Mallard, coot and moorhen present on the pond.	
P18	Shallow pond located within improved grassland field surrounded by dense scrub. Pond likely dries annually, particularly during prolonged warm weather. Immediate surrounding terrestrial habitat is good, but wider area is made up of improved grassland. Pond dry in April 2020.	
P19	Circular pond on field boundary surrounded by oak and alder. Dense leaf litter substrate	
P20	Large field pond bordered by crack willow, poached banks	

P21	Large field pond, little veg, very turbid when surveyed.	
P22	Private garden pond. Confirmed GCN pond and not subject to survey (see main report).	
P23	Field pond, otter spraint present and several macrophyte species.	
P24	Large field pond very turbid at time of survey.	

P25	Large field pond connected to wet ditch.	
P26	Fishing pond. Heron, cormorant seen. Turbid but with more aquatic veg, reedmace and iris present.	
P27	Well vegetated field pond adjacent to golf course. Pond dry in April 2020	

Appendix D. Habitat Suitability Index Assessment Results

HSI Categories
<0.50 = Poor; 0.50 – 0.59 = Below average; 0.60 – 0.69 = Average; 0.70 – 0.79 = Good; >0.80 = Excellent

Pond reference	SI_1	SI_2	SI_3	SI_4	SI_5	SI_6	SI_7	SI_8	SI_9	SI_{10}	Result
P1	1.00	0.95	0.90	0.67	0.25	0.67	0.67	1.00	1.00	0.30	**0.67**
P2	1.00	1.00	0.90	0.67	0.60	0.67	0.67	1.00	1.00	0.30	**0.74**
P3	1.00	0.20	0.90	0.67	0.80	1.00	0.67	1.00	1.00	0.30	**0.67**
P4	1.00	0.05	1.00	0.67	1.00	1.00	1.00	1.00	1.00	0.35	**0.64**
P5	1.00	0.05	0.10	0.33	1.00	1.00	1.00	1.00	1.00	0.30	**0.47**
P6	1.00	0.60	0.90	0.33	1.00	0.67	1.00	1.00	1.00	0.30	**0.72**
P7	1.00	0.60	0.90	0.67	0.60	0.67	0.67	1.00	1.00	0.40	**0.72**
P 8	1.00	0.05	1.00	0.33	0.20	1.00	1.00	1.00	1.00	0.30	**0.50**
P9	1.00	0.20	0.50	1.00	1.00	1.00	1.00	1.00	1.00	0.30	**0.70**
P10	1.00	0.10	0.10	0.67	1.00	1.00	1.00	1.00	0.33	0.30	**0.48**
P11	1.00	0.40	0.50	0.67	1.00	1.00	1.00	1.00	0.33	0.90	**0.72**
P12	1.00	0.20	0.50	0.67	1.00	1.00	1.00	1.00	0.33	0.30	**0.61**
P13	1.00	0.80	0.90	0.67	1.00	0.67	0.67	1.00	0.33	0.30	**0.68**
P14	1.00	0.05	0.50	1.00	1.00	1.00	1.00	1.00	0.67	1.00	**0.66**
P15	1.00	0.20	0.50	0.67	1.00	1.00	1.00	1.00	0.67	0.80	**0.72**
P16	1.00	0.20	1.00	0.33	1.00	1.00	1.00	1.00	0.33	0.70	**0.66**
P17	1.00	1.00	0.90	0.67	1.00	1.00	1.00	1.00	0.33	0.35	**0.77**
P18	1.00	0.10	0.10	0.33	1.00	1.00	1.00	1.00	0.67	0.80	**0.53**
P19	1.00	1.00	1.00	0.33	0.20	0.67	1.00	1.00	0.33	0.35	**0.59**
P20	1.00	1.00	1.00	0.33	0.80	0.01	0.70	1.00	0.33	0.35	**0.43**
P21	1.00	0.97	0.90	0.33	1.00	0.01	0.70	1.00	0.33	0.35	**0.43**
P22	1.00	0.20	0.90	0.67	1.00	1.00	0.70	1.00	0.67	0.60	**0.71**
P23	1.00	0.45	0.90	0.67	1.00	0.67	0.70	0.60	0.67	0.60	**0.71**
P24	1.00	0.80	0.90	0.33	1.00	0.01	0.70	0.60	0.33	0.45	**0.41**
P25	1.00	1.00	0.90	0.67	1.00	0.67	0.70	1.00	0.67	0.45	**0.78**
P26	1.00	0.88	0.90	0.67	1.00	0.67	0.01	1.00	0.67	0.50	**0.51**
P27	1.00	0.80	1.00	0.67	1.00	0.67	1.00	1.00	0.67	1.00	**0.87**

Appendix E. GCN Survey Results

Table E.1 2020 GCN Survey Results Visit One 14/05/2020 Ryan Knight and Katy Duff

Pond	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad	Common frog	Other species	Turbidity	Vegetation cover	Temp when torching	Min overnight temp	Notes
	Bottle trap	Torch	Egg search	Netting	Terrestrial search										
P1	0	0	0	-	-	0	0	0	0	None	4	2	9	6	Dense scrub surrounding pond, access difficult
P2	0	0	0	-	-	0	0	0	0	None	3	2	9	6	Dense scrub surrounding pond, access difficult
P6	0	0	-	-	0	52	10	0	0	None	3	0	9	6	None
P7	0	0	0	-	-	4	0	0	0	None	3	2	9	6	None
P19	0	0	0	0	-	0	0	0	0	None	2	1	9	6	None

Table E.2 2020 GCN Survey Results Visit 2 18/05/2020 Jessica Lea and Joel Giordano

Pond	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad	Common frog	Other species	Turbidity	Vegetation cover	Temp when torching	Min overnight temp	Notes
	Bottle trap	Torch	Egg search	Netting	Terrestrial search										
P1	-	0	-	-	-	0	0	0	1 Adult	Stickleback	2	2	15	12	Dense scrub surrounding pond, access difficult
P2	-	0	-	-	-	1 Juvenile	0	0	0	None	2	1	15	12	Dense scrub surrounding pond, access difficult
P6	0	0	-	-	0	2	100	0	0	None	4	0	15	12	None
P7	0	0	-	-	0	2	2	0	0	Stickleback	1	2	15	12	None
P19	0	0	0	-	0	0	0	0	2 Adults	None	4	1	15	12	None

Table E.3 2020 GCN Survey Results Visit 3 22/05/2020 Jessica Lea and Joel Giordano

Pond	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad	Common frog	Other species	Turbidity	Vegetation cover	Temp when torching	Min overnight temp	Notes
	Bottle trap	Torch	Egg search	Netting	Terrestrial search										
P1	-	0	-	-	-	0	0	0	1 Adult	Stickleback	2	2	16	12	Dense scrub surrounding pond, access difficult
P2	-	0	-	-	-	0	0	0	20+ tadpoles	None	2	1	16	12	Dense scrub surrounding pond, access difficult
P6	0	0	-	-	0	0	9 Adults, 60+ Juveniles	0	0	None	4	0	16	12	Pond starting to dry out
P7	0	0	0	-	0	0	8 Adults	0	0	Stickleback	1	2	16	12	None
P19	0	0	-	0	0	0	0	0	0	None	3	1	16	12	None

Table E.4 2020 GCN Survey Results Visit 4 26/05/2020 Jack Kellet and Joel Giordano

Pond	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad	Common frog	Other species	Turbidity	Vegetation cover	Temp when torching	Min overnight temp	Notes
	Bottle trap	Torch	Egg search	Netting	Terrestrial search										
P1	-	0	-	-	-	0	0	0	0	Stickleback	2	2	18	8	Dense scrub surrounding pond, access difficult
P2	-	0	-	-	-	0	0	0	30+ tadpoles	None	2	1	18	8	Dense scrub surrounding pond, access difficult
P6	POND DRY														
P7	0	0	0	-	0	2 Adults	6 Adults	0	0	Stickleback	1	2	18	8	None
P19	0	0	-	0	0	0	0	0	0	Great diving beetle	2	1	18	8	None
P21	SCOPED OUT OF FURTHER SURVEY														