A1 Birtley to Coal House

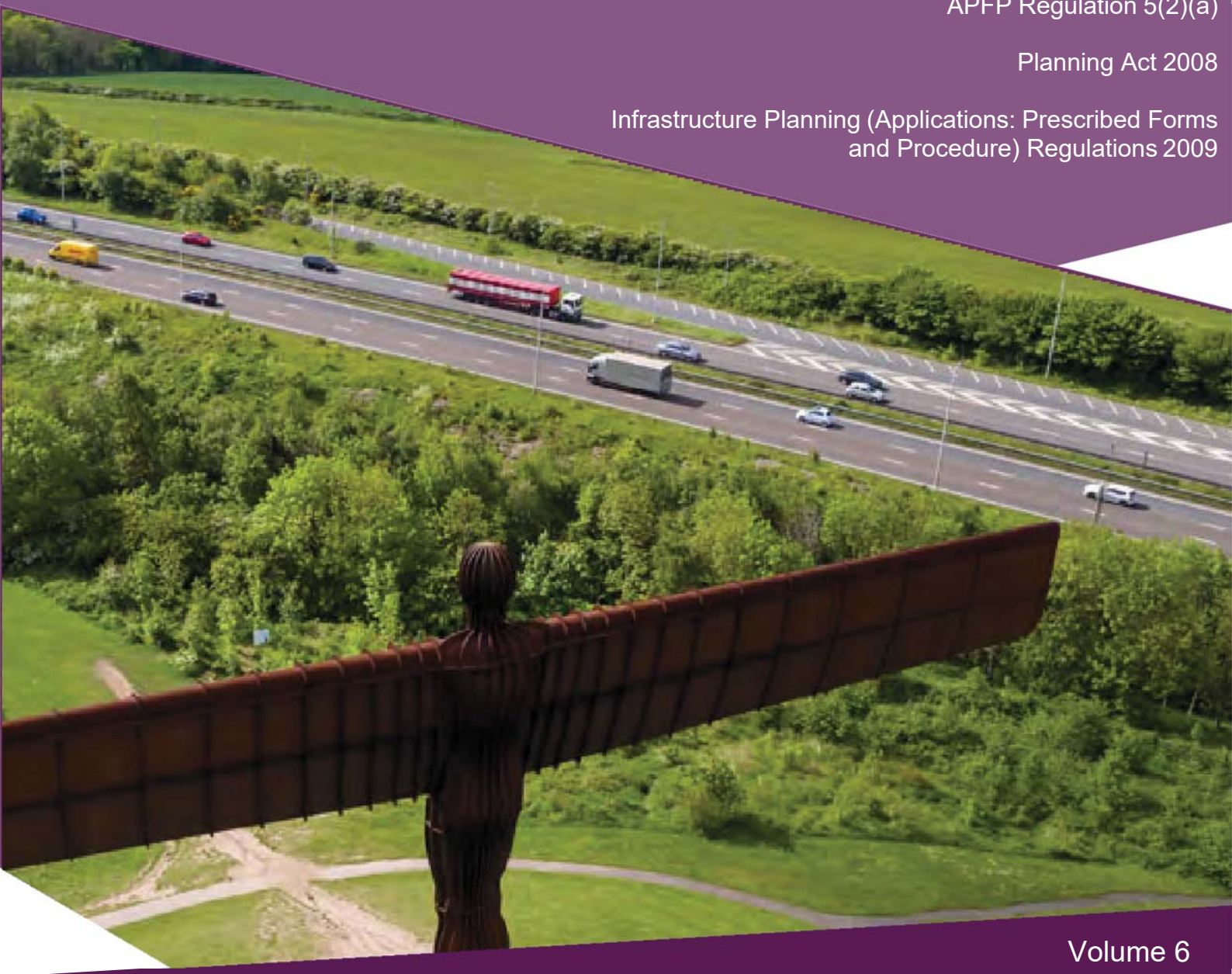
Scheme Number: TR010031

6.3 Environmental Statement – Appendix 8.6 Great Crested Newt Survey Report (2017)

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009



Volume 6

August 2019

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedures) Regulations 2009

A1 Birtley to Coal House

Development Consent Order 20[xx]

Environmental Statement - Appendix

Regulation Reference:	APFP Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010031
Application Document Reference	TR010031/APP/6.3
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Version	Date	Status of Version
Rev 0	14 August 2019	Application Issue

CONTENTS

TABLES

FIGURES

APPENDICES

EXECUTIVE SUMMARY

WSP were commissioned by Highways England to undertake a suite of ecology surveys in support of the proposals for A1 Birtley to Coal House Improvement Scheme (hereafter referred to as the 'Scheme'), including great crested newt (GCN) *Triturus cristatus* surveys. The Scheme is located between J65 (Birtley) and J67 (Coal House) and is approximately 6.5km in length as shown on **Figure 1**. The Scheme involves on-line widening and the replacement of Allerdene Bridge as close as possible to the existing structure to enable the retention of Coal House interchange.

The GCN survey assessment comprised land within 500m of the Scheme (hereafter referred to as the 'Survey Area').

A total of 17 waterbodies were identified within 500m of the Scheme from a review of aerial imaging and a further two waterbodies were identified during subsequent visits to the Survey Area.

11 of the 19 waterbodies were scoped out from further surveys as they were either separated from the site by barriers to newt migration (such as main roads or water courses with flowing water) or were unsuitable for GCN. Habitat Suitability Index (HSI) assessments and environmental DNA (e-DNA) analysis was carried out at the eight remaining waterbodies (one of which (waterbody 15) is within the Scheme).

Three of the eight waterbodies returned positive e-DNA results for GCN. Owing to the close proximity of ponds returning both positive and negative e-DNA results, all eight ponds underwent further presence/likely absence and population estimate surveys for GCN using traditional methods. The surveys were completed between May and June 2017, using three of the following techniques: torching, bottle trapping, egg searching, netting and refuge searching in line with good practice (English Nature, 2001).

Access permission to waterbody 14 was removed after the e-DNA visit and access permission to waterbodies 15, 16 and 17 were removed after the first presence/likely absence visit. As a result, a full suite of surveys was not carried out at any of these waterbodies.

Despite positive e-DNA results for pond B, no GCN were recorded in any of the pond during the presence/likely absence and population size class assessment (PSCA). Other amphibians recorded at several of the ponds included smooth newt *Lissotriton vulgaris*, undetermined smooth/palmate newts, common toad *Bufo bufo* and common frog *Rana temporaria.*

Despite no GCN being recorded during the presence/likely absence or population size class assessment (PSCA), a precautionary method of works should be taken. Vegetation removal

and land clearance in areas of habitat identified as suitable for GCN should be carried out under a watching brief provided by a suitably qualified and experienced ecologist.

The baseline conditions described in this report are accurate at the time at which the survey was undertaken, however, the data obtained in this survey will only remain valid for a period of two years from the date of this report, and further surveys are recommended if development occurs after the data has expired.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1. WSP was instructed by Highways England to conduct great crested newt (GCN) *Triturus cristatus* surveys in connection with the proposed A1 Birtley to Coal House Improvement Scheme hereafter referred to as the Scheme.

1.1.2. The Scheme is located between J65 (Birtley) and J67 (Coal House) and is approximately 6.5km in length as shown on **Figure 1**. The A1 between Birtley and Coal House will be improved by widening the existing road to provide a three lane carriageway and replacement of Allerdene Bridge as close as possible to the existing structure to enable the retention of Coal House interchange.

1.1.3. The Survey Area for the survey comprised land within 500m of the Scheme. The red line shown on **Figure 1** is hereafter referred to as the Scheme Footprint. It should be noted that the survey effort presented in this report was based on a Scheme Footprint, which was then superseded in October 2017. Any required survey updates will be undertaken and presented in the Environmental Impact Assessment (EIA).

1.2 BRIEF AND OBJECTIVES

1.2.1. Highways England commissioned WSP to complete amphibian surveys on ponds identified as potentially suitable for GCN on or within 500m of the Scheme. The purpose of these surveys was to:

- Determine the presence or likely absence of protected and notable species of amphibian from ponds providing suitable breeding habitat within the Survey Area.
- If present, conduct a population size class assessment (PSCA) and make recommendations as to how the Scheme should account for GCN (and other notable species) in relation to relevant legislation and planning policy.

1.2.2. The results of these surveys, and subsequent recommendations, are included within this report.

1.3 ECOLOGICAL BACKGROUND

1.3.1. WSP undertook an extended Phase 1 habitat survey of the Scheme in December 2015 (WSP | PB 2016a) and updated surveys of areas that could not be accessed during this initial survey in September 2016 (WSP | PB 2016b). These surveys identified suitable terrestrial habitat for GCN within the Scheme in the form of semi-improved neutral grassland, scrub and woodland; as well as one waterbody within the Scheme Footprint and a further 16 waterbodies within 500m. Two additional waterbodies were identified within 500m during subsequent site visits, making a total of 19 waterbodies on or within 500m of the Scheme. 11 of the waterbodies (1, 2, 3, 4, 5, 6, 9, 10, 11, 12 and 13) were scoped out of further survey as these waterbodies were either assessed as unsuitable for GCN or were separated from the Scheme by barriers to newt migration.

1.3.2. An ecological records search was carried out as part of the extended Phase 1 habitat survey (WSP | PB 2016a), which highlighted records of GCN at Birtley Claypits (NZ 261 565) approximately 2 km from the Scheme Footprint in 2004 and 2013.

2 METHODOLOGY

2.1.1. All waterbodies identified as potentially suitable for GCN and not separated by barriers to newt movement, on or within 500m of the Scheme underwent the following surveys:

- Habitat Suitability Index (HSI) assessment
- Environmental DNA (e-DNA) analysis
- Presence/likely absence surveys using traditional methods
- Population size class assessments

2.1.2. The location of the ponds surveyed is shown in **Figures 2a** and **2b**. A summary of distances of the ponds from the nearest extent of the Scheme can be found in **Table 2-1**, below.

Table 2-1 - Summary of distances of ponds from the Scheme

Pond number	Distance and orientation from Scheme
A	50m south west
B	125m north
7	180m west
8	180m west
14	390m north east
15	within Scheme
16	15m east
17	20m east

2.1.3. As a result of the methodology described above, a total of 19 waterbodies were identified as requiring further surveys to determine whether GCN were present. Descriptions of the methods for these surveys are as follows.

2.2 HABITAT SUITABILITY INDEX (HSI) ASSESSMENT

2.2.1. All waterbodies identified as potentially suitable to support GCN within the Survey Area were assessed for their suitability, using the standard HSI assessment method (ARG UK, 2010, based on Oldham et al. (2000)). Waterbodies were identified based on the previous survey reports and using 1:25,000 Ordnance Survey (OS) mapping; this was also cross referenced against aerial photography. Waterbodies within the Survey Area which have major barriers such as main rivers or major roads (dual carriageway or motorway) were excluded from the survey.

2.2.2. In total 19 waterbodies were subject to HSI assessment. A desk based review of waterbodies was carried out following which the waterbodies were assessed and scored on ten key variables which are known to influence breeding populations of GCN, in accordance with standard methods (ARG UK, 2010). These variables are:

- Geographic location
- Waterbody area
- Waterbody permanence
- Water quality
- Waterbody shading
- Impact of waterfowl
- Fish stocks
- Number of waterbodies within 1km
- Terrestrial habitat around the waterbody
- Macrophyte cover of the waterbody

2.2.3. Scores for each of the above variables were used to calculate an overall HSI value for each waterbody. The value was cross referenced with the guidelines (ARG, 2010) to assign the pond to one of five categories, 'poor', 'below average', 'average', 'good' or 'excellent'. Index calculation is not a failsafe method of identifying whether a waterbody supports GCN or not, therefore professional judgement and availability of records of great crested newt in the locality have also been used to inform the requirement for further survey.

2.3 ENVIRONMENTAL DNA SURVEY

2.3.1. All eight suitable waterbodies (as per **Table 3.1** above) were subject to e-DNA assessment. E-DNA assessments were undertaken to provide strong data to supplement traditional survey method data.

2.3.2. Each waterbody was visited and, where water was present, the perimeter (where accessible) was walked to identify the locations from where e-DNA samples could be collected. The samples were taken following the standard guidance set out in Biggs et al. (2014).

2.4 PRESENCE/LIKELY ABSENCE SURVEYS

2.4.1. Normally waterbodies that are classified as having potential to support GCN in the HSI assessment (Below Average or better) are subject to presence/absence survey by a suitably qualified ecologist using the standard survey methodology (English Nature, 2001). GCN are a mobile species and a population can occupy or transition from multiple waterbodies when they are in close proximity to each other. Owing to the close proximity of all waterbodies to either one another or the Scheme, all waterbodies identified as suitable for GCN and analysed for e-DNA underwent further presence/likely absence surveys for GCN.

2.4.2. Conventional presence/likely absence surveys comprised four visits to each waterbody requiring further survey. These surveys spread across the recommended survey period

(mid-March to mid-June, with at least half the visits falling between mid-April and mid-May). Survey visits were completed under suitable weather conditions, when overnight temperatures were above 5°C and wind and rain were not sufficient to affect the torchlight survey results (through disturbance to the water surface).

2.4.3. During each survey at least three of the following survey techniques were employed:

- Torchlight – each waterbody was searched systematically for amphibians after dark using a bright torch; all amphibians observed were recorded, with the number of male, female and juvenile newts noted. The duration of the torchlight survey was determined by the time taken to walk slowly around the waterbody perimeter.
- Bottle-trapping – where waterbodies held sufficient water and it was safe to do so, each waterbody was trapped using bottle traps constructed and set in accordance with standard guidance (English Nature, 2001). Traps were set at a ratio of one for every 2m of waterbody perimeter, where access allowed, and were set prior to dusk and checked and removed the following morning.
- Egg searching – suitable vegetation in each waterbody was searched for newt eggs which are laid on submerged or floating leaves folded around the egg. The duration of the egg search was either the amount of time required to thoroughly search all vegetation present, or a maximum of 15 minutes per site visit[1].
- Net – where the above techniques were not practical a net was used to sample the pond at regular intervals around the edge of the waterbody.
- Refuge search – suitable refuges such as logs, bark, rocks and debris were lifted and searched underneath for amphibians. The duration of the egg search was the amount of time required to search thoroughly through all suitable refuges present.

2.5 POPULATION CLASS SIZE ASSESSMENT

In accordance with good practice guidelines (English Nature, 2001), when a waterbody sampled for e-DNA returns a positive result or GCN are identified as present within a waterbody during the first four conventional surveys, a total of six conventional surveys must be completed to determine the population size class assessment (PSCA) following the methods described in a **Section 3.2.3** above.

The resultant peak adult counts of GCN were then cross referenced with standard guidelines to establish the population size class (English Nature, 2001). The population size class categories within the guidelines are reproduced below for information:

- Small – maximum peak adult counts[2] of up to 10.

[1] Once a great crested newt egg has been recorded, no egg searching was conducted on subsequent visits to avoid unnecessary uncovering of eggs, which would then be at an increased risk of predation.
[2] Peak counts, as counted at a waterbody, on one night, through torch survey or bottle trapping.

- Medium – maximum peak adult counts of between 11 and 100.
- Large – maximum peak adult counts over 100.

2.6 DATES OF SURVEY, METHODS USED AND PERSONNEL

2.6.1. HSI assessments were carried out by Senior Ecologist Vicky Newlove and Assistant Ecologist Emily Shipley, Vicky is licensed by Natural England to survey and both Vicky and Emily have experience in assessing habitats for suitability to support protected and notable species of amphibian.

2.6.2. The e-DNA samples were taken during the e-DNA season, defined as 'the 15th April – 30th June' (DEFRA & Natural England 2015) by Vicky Newlove, assisted by Emily Shipley. Vicky is licensed by Natural England to survey for GCN and has received training on e-DNA sampling.

2.6.3. The dates of surveys, methods used and personnel who carried out the presence/likely absence and population size class assessment surveys are listed in **Table 2-1** below. Both Barney Leigh and Charis Russell-Smith hold Natural England survey licences for GCN (2015-19026-CLS-CLS & 2015-25299-CLS-CLS respectively). Barney has three years' of experience surveying for GCN and Charis has two years' of experience surveying for GCN.

Table 2.2 - Dates of surveys, methods and personnel

Waterbody	Date					
	02/05/17 Methods & Surveyors	08/05/17 Methods & Surveyors	15/05/17 Methods & Surveyors	24/05/17 Methods & Surveyors	08/06/16 Methods & Surveyors	15/06/17 Methods & Surveyors
A	Barney Leigh & Emily Shipley. Bottle trapping, netting & egg search.	Gill Birtles & Charis Russell-Smith. Torching, bottle trapping & egg search.	Gill Birtles & Barney Leigh. Torching, bottle trapping & egg search.	Emily Shipley & Charis Russell-Smith. Torching, bottle trapping & netting.	N/A	N/A
B	Barney Leigh & Emily Shipley. Bottle trapping, netting & egg search.	Gill Birtles & Charis Russell-Smith. Torching, bottle trapping & egg search.	Gill Birtles & Barney Leigh. Torching, bottle trapping & egg search.	Emily Shipley & Charis Russell-Smith. Torching, bottle trapping & egg search.	Barney Leigh & Mate Vakarcs. Torching, bottle trapping & egg search.	Gill Birtles & Barney Leigh. Torching, bottle trapping & egg search.
7	Barney Leigh & Emily Shipley. Torching, bottle trapping & egg search.	Gill Birtles & Charis Russell-Smith. Torching, bottle trapping & egg search.	Gill Birtles & Barney Leigh. Torching, bottle trapping & egg search.	Emily Shipley & Charis Russell-Smith. Torching, bottle trapping & netting.	N/A	N/A

Waterbody	Date					
	02/05/17 Methods & Surveyors	08/05/17 Methods & Surveyors	15/05/17 Methods & Surveyors	24/05/17 Methods & Surveyors	08/06/16 Methods & Surveyors	15/06/17 Methods & Surveyors
8	Barney Leigh & Emily Shipley. Torching, bottle trapping & egg search.	Gill Birtles & Charis Russell-Smith. Torching, bottle trapping & netting.	Gill Birtles & Barney Leigh. Torching, bottle trapping & netting.	Emily Shipley & Charis Russell-Smith. Torching, bottle trapping & egg search.	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A	N/A
15	Barney Leigh & Emily Shipley. Bottle trapping, egg search & refugia search.	N/A	N/A	N/A	N/A	N/A
16	Barney Leigh & Emily Shipley. Bottle trapping, egg search & refugia search.	N/A	N/A	N/A	N/A	N/A
17	Barney Leigh & Emily Shipley. Bottle trapping, egg search & refugia search.	N/A	N/A	N/A	N/A	N/A

2.7 NOTES AND LIMITATIONS

2.7.1. Access to waterbody 14 was removed after the e-DNA visit and access to waterbodies 15, 16 and 17 was removed after the initial presence/likely absence visit. As a result it was not possible to undertake further visits. Waterbodies 14 and 15 returned positive results for e-DNA. Waterbodies 15, 16 and 17 were all small fisheries ponds and carp were observed during the e-DNA survey. An assumed presence of GCN was taken, therefore, the survey effort is considered to be valid.

2.7.2. The conditions described in this report are accurate at the time of survey. Should considerable time pass (e.g. 2+ years) and/or conditions/land-use within the Survey Area change prior to the commencement of works, it is recommended that an update survey is undertaken.

2.7.3. A number of the ponds were extremely turbid (particularly during the first presence/likely absence survey) which affected the clarity of the water. This is not considered a constraint on survey effort as other methods such as bottle trapping were used in conjunction with torching and smooth newts were observed in the ponds using torching methods.

3 RESULTS AND EVALUATION

3.1 HABITAT SUITABILITY INDEX (HSI) ASSESSMENT

3.1.1. The initial desk based assessment of waterbodies included a total of 17 waterbodies. The total number of waterbodies increased to 19 following a site visit (waterbodies A and B were identified),

3.1.2. The desk based assessment undertaken as part of the HSI, scoped out a number of waterbodies due to the presence of major barriers between them and the Scheme. Waterbodies 1, 2, 3, 4, 5 and 6 were scoped out of further assessment due to the River Team forming a large barrier between them and the Scheme.

3.1.3. Five waterbodies were scheduled for HSI assessment but upon arriving to carry out the assessment they were deemed unsuitable for GCN and the HSI was not completed in full. These waterbodies include 9, 10, 11, 12 and 13. Waterbodies 9 and 10 are in-fact slow moving watercourses and therefore considered sub-optimal for GCN. Waterbodies 11, 12 and 13 are active large commercial fishing lakes and therefore considered sub-optimal for GCN.

3.1.4. Of the eight waterbodies scoped in for further assessment none achieved Poor HSI scores. Three of the waterbodies scored as ‘Good’, two were ‘Average’ and three were ‘Below Average’. **Table 3-1** below contains a summary of the HSI assessment results and a full breakdown of them can be found in **Appendix C**.

Table 3-1 - Summary of HSI results

Waterbody	HSI Score
A	Average
B	Below Average
7	Good
8	Good
14	Good
15	Below Average
16	Average
17	Below Average

3.2 ENVIRONMENTAL DNA (E-DNA) ANALYSIS

3.2.1. Three of the waterbodies (14, 15 and B) returned positive e-DNA results with each returning 1/12 positive replicates. Despite this low result it must be concluded that GCN are or have been present, although it may be a single newt or a small population intermittently using the pond. Replicant scores cannot be used to accurately quantify population sizes but the results obtained herein would indicate this scenario. E-DNA is thought to be detectable in waterbodies for 7-21 days before it degrades, although this can be affected by weather conditions and other environmental influences. E-DNA can reside in sediment for longer however.

3.2.2. The rest of the waterbodies (7, 8, 16, 17 and A) returned negative results.

3.2.3. Tests from all the waterbodies passed control tests indicating the samples were not degraded and the tests were not inhibited.

3.2.4. The laboratory results are given in **Appendix D**.

3.2.5. All 8 waterbodies were subsequently surveyed for presence/likely absence surveys for GCN using traditional methods as all waterbodies are within close proximity to one another (**Figures 2a** and **2b**) and it could be assumed that GCN that are potentially present in one pond would also use adjacent ponds.

3.3 PRESENCE/LIKELY ABSENCE SURVEY AND POPULATION CLASS SIZE ASSESSMENT

3.3.1. After the e-DNA analysis survey, access permission was removed for waterbody 14 and no further surveys of this waterbody were carried out.

3.3.2. Presence/likely absence surveys were carried out on all seven remaining waterbodies however, after the initial presence/likely absence survey, access permission was removed for waterbodies 15, 16 and 17 and no further survey of these waterbodies was carried out. These three waterbodies are all old fishing lakes and carp were observed in waterbody 15 during the e-DNA survey and are likely to be present in waterbodies 16 and 17. No GCN were found during the initial presence /likely absence survey of these waterbodies.

3.3.3. No GCN were recorded in waterbodies 7, 8, A or B during the presence/likely absence or population size class assessment surveys.

3.3.4. Other amphibians recorded in several of the waterbodies during the surveys include smooth newts, undetermined smooth/palmate newts, common toads and common frogs. A summary of the presence/likely absence and population class size assessment surveys is found in Table 4.2 below and the full results are included in Appendix A.

3.3.5. The surveys were completed under appropriate weather conditions with the overnight minimum temperatures ranging between 5^{o}C and 14$_{o}$C. Full details of the survey conditions on each survey visit are included in **Appendix B**.

Table 3-2 - Summary of GCN survey results

Waterbody	Presence/likely absence survey result	PSCA Adult GCN Peak Count	Breeding Activity Recorded	GCN Population Size Class	Incidental Species Recorded
A	Absent	0	None	N/A	Smooth newts & common frogs.
B	Absent	0	None	N/A	Smooth newts & common frogs.
7	Absent	0	None	N/A	Smooth newts, common toads & common frogs.
8	Absent	0	None	N/A	Smooth newts, small newts[3] & common frogs.
14	No access	N/A	N/A	N/A	N/A
15	Absent, no access after first visit, fish present	N/A	N/A	N/A	N/A
16	Absent, no access after first visit, fish present	N/A	N/A	N/A	N/A

[3] Small newts refers to either smooth newt or palmate newt but that could not be identified during the survey owing to conditions or lack of vision on identifying features. Both species have the same legal status.

Waterbody	Presence/likely absence survey result	PSCA Adult GCN Peak Count	Breeding Activity Recorded	GCN Population Size Class	Incidental Species Recorded
17	Absent, no access after first visit, fish present	N/A	N/A	N/A	N/A

4 IMPLICATIONS FOR THE SCHEME

4.1 OVERVIEW

4.1.1. GCN and their places of rest are afforded strict protection under European-level legislation; in addition planning policy affords further protection within the planning system, as described below. Although no GCN were recorded in any of the ponds during the presence/likely absence and population size class assessment surveys, ponds that returned positive e-DNA results but could not be surveyed further are present on and within 500m of the Survey Area. As a result, it will be necessary to adopt appropriate avoidance and/or mitigation measures as part of the Scheme, see Section 5.

4.1.2. It could not be ascertained if the waterbody in closest proximity to the Scheme Footprint (waterbody 15) is a GCN breeding pond due to lack of access, however a positive e-DNA result was recorded indicating use by GCN during their aquatic phase. Further survey will be required if this waterbody will be damaged or destroyed as part of the Scheme.

4.1.3. Waterbody 14 is approximately 380m from the Scheme Footprint and impacts are considered highly unlikely. However, as noted in **Section 1.1**, the Scheme Footprint was revised in October 2017 and supersedes the one presented in this report. No impacts are anticipated to waterbody 14 in the revised Scheme Footprint. If necessary, further survey would be undertaken if impacts are predicted to waterbody 14 as this has not been subjected to presence/absence surveys but a positive e-DNA result was recorded.

4.1.4. Common toad, a Species of Principal Importance (SPI), was recorded in waterbody 7 and may also be present in those waterbodies not surveyed as well as the surrounding terrestrial habitat within the Scheme, the avoidance measures proposed to protect GCN will also prevent harm to this species.

4.2 LEGAL COMPLIANCE

GREAT CRESTED NEWT

4.2.1. GCN are afforded a high level of protection under the Conservation of Habitats and Species Regulations 2010 (as amended) (the 'Habitat Regulations'), the legislation means that it is an offence to:

- Deliberately capture, injure or kill a great crested newt.
- Deliberately disturb great crested newts; 'disturbance of animals includes in particular any disturbance which is likely:

  (a) 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, to hibernate or migrate; or

(b) to affect significantly the local distribution or abundance of the species to which they belong.'

- Damage or destroy a breeding site or resting place used by this species.

4.2.2. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of animals when using places of shelter, and obstruction of access to places of shelter.

4.2.3. Due to the high level of protection afforded to GCN and their habitat, mitigation for this species is governed by a strict licensing procedure administered by Natural England (normally, planning permission must be obtained before a licence can be sought). Licencing is subject to three tests, as defined under the Habitats Regulations 2010, these must also be applied by the planning authority before granting permission for activities affecting GCN. For permission to be granted the following criteria must be satisfied:

- The proposal is necessary '*to preserve 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';*
- *'There is no satisfactory alternative'*; and
- The proposals *'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'.*

4.2.4. The GCN is also listed as a SPI for the Conservation of Biodiversity in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Under Section 40 of the NERC Act (2006) public bodies (including local planning authorities) have a duty to have regard for the conservation of SPI when carrying out their functions, including determining planning applications.

OTHER AMPHIBIANS

4.2.5. Smooth newt, common frog and common toad are also present within the Survey Area. Although these are not afforded as high a level of protection as GCN, common toad is listed as a SPI (details provided above) and therefore their presence needs to be taken into consideration by public bodies when performing any functions with a view to conserving biodiversity. Furthermore, smooth newt and common frog are protected from sale and trade.

4.3 PLANNING POLICY COMPLIANCE

4.3.1. At the national level the National Planning Policy Framework (2012) forms the basis for planning system decisions with respect to conserving and enhancing the natural environment; the ODPM circular 06/2005 also provides supplementary guidance, including confirmation that 'the presence of a protected species is a material consideration when a planning authority is considering a development proposal'.

4.3.2. The NPPF sets out, amongst other points, how at an overview level the 'planning system should contribute to and enhance the national and local environment by:

- *Recognising the wider benefits of ecosystem services; and*

- *Minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures…'*

4.3.3. A list of principles which local planning authorities should follow when determining planning applications is included in the NPPF, and includes the following:

- *'- if significant harm resulting from a development cannot be avoided…adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *- …opportunities to incorporate biodiversity in and around developments should be encouraged;*
- *- … planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland…unless the need for, and benefits of, the development in that location clearly outweigh the loss…'*

4.4 BIODIVERSITY ACTION PLANS

4.4.1. Ponds are listed as a priority habitat within the Northumberland Biodiversity Action Plan (LBAP) in association with the Great Crested Newt Species BAP.

4.4.2. It should be noted that even a partial loss of terrestrial habitat can impact on populations that may be present, especially where this occurs close to breeding ponds, and so compensation for terrestrial habitats is also an important issue to address. Receptor site habitats may also need to adequately accommodate other species as part of the mitigation, e.g. other amphibian species.

5 RECOMMENDATIONS

5.1.1. Although no GCN were recorded during any of the presence/likely absence and population size class assessment surveys; two waterbodies that could not be further surveyed returned positive e-DNA results, one (waterbody 15) of which is within the Scheme Footprint and the second waterbody (waterbody 14) is within close proximity to the Scheme Footprint.

5.1.2. The lack of GCN in the waterbodies which tested positive for GCN e-DNA (waterbodies 14, 15 and B) cannot be taken to mean that GCN are not present in these waterbodies, merely that population numbers may have been too low to detect using conventional survey techniques or newts present in the wider area (up to 1km away) may have traversed the site during this time. 'False positives' can however arise due to cross-contamination or the risk of e-DNA being introduced into the site via other aquatic species such as heron or water vole.

5.1.3. Currently detailed plans and methods of work are unknown, so the full potential impact of the works is unknown. Works are likely to involve the loss of suitable terrestrial habitat.

5.1.4. Based on the current understanding of works and the results of the GCN surveys, a precautionary method of works should be adopted which may include the following:

- On site staff to be made aware of the potential presence of GCN, toads and other amphibians, their nature conservation value and appropriate actions relating to management of the species onsite through induction/tool-box talks.
- Measures to avoid pollution of any ponds.
- Coverage and daily inspection of drains, bunds and excavations to prevent/remove any trapped animals, this should be carried out by a suitably qualified and experienced ecologist (SQE).
- Amphibians found to be removed to a suitable pre-determined habitat area, away from construction by the SQE.
- Sympathetic clearance of suitable habitats between April and September, such as search and scare protocols and the strimming of tall grass to a height of 10-15 cm, prior to clearance.
- If such timing is not possible then vegetation removal should be carried out under the watching brief of the ecologist. This may involve a finger-tip search of any areas to be cleared for any GCN, other amphibians or reptiles potentially present prior to clearance, vegetation should then be cleared to a height of 150mm before being searched again by the SQE, then it should be cleared to ground level.
- Works to be timed to avoid peak amphibian migration times in crossing habitats likely to be used by large numbers of amphibians.
- Clearance/removal by hand of suitable hibernacula habitats (e.g. rubble piles, fallen deadwood, disused badger burrows) by or under the supervision of the SQE, avoiding the hibernation period October – March.

6 CONCLUSIONS

6.1.1. GCN were recorded in any of the waterbodies, where surveyed and accessible, in contrast to the e-DNA results, which were positive for waterbodies 14, 15 and B.

6.1.2. Based on the findings of this report, an Ecological Impact Assessment (EcIA) will be submitted as part of the EIA.

6.1.3. Access permission to waterbodies 14, 15, 16 and 17 was removed before the full four presence/likely absence surveys could be completed. Waterbodies 14 and 15 returned positive e-DNA results, however, carp were recorded in waterbody 15 and are likely to be present in 16 and 17 as well. These waterbodies offer few areas where GCN could be safe from predation such as shallow vegetated areas to which carp could not access. It is therefore considered that a sustainable population of GCN are unlikely to be present in these waterbodies but the presence of small numbers of individuals cannot be ruled out. As no presence/likely absence surveys were carried out on waterbody 14, the presence of GCN in this waterbody cannot be ruled out.

6.1.4. It is therefore considered the positive e-DNA results from waterbodies 14, 15 and B are likely to be due to either the presence of a very small GCN population such that it was undetectable by conventional survey techniques, or the result of a single GCN passing through or the introduction of GCN e-DNA via other routes generating a ‘false positive’.

6.1.5. Smooth newts, undetermined smooth/palmate newts, common toads and common frogs were present within several of the waterbodies and evidence of smooth newts breeding, in the form of eggs, was recorded. There is the potential for these species to be present in terrestrial habitat within the Survey Area.

6.1.6. The full extent and nature of the works required for the Scheme is unknown but would likely result in the loss of a small amount (less than 0.1 ha) of terrestrial habitat suitable for potential GCN and other amphibians on the site lying within 100m or 100 to 250m of a potential breeding pond (waterbodies 14 and 15). Given this anticipated impact (assuming no impact on these waterbodies) and the survey results obtained, an offence under the Conservation of Habitats and Species Regulations 2010 (as amended) is unlikely if precautionary measures are followed.

6.1.7. A precautionary method of works should be followed for all works and if there are to be any site clearance works close to any waterbodies, then hand searches for GCN should be undertaken within a 250m buffer of the pond before works take place. Methods for this are detailed in **Section 5.1.4**.

RECOMMENDATIONS AND ENHANCEMENT MEASURES

6.1.8. Any waterbody within the site should be retained and enhanced for amphibian use where possible, and any waterbody planned to be installed within the site should be designed and planted for amphibian use, for example with the installation of hibernacula and using a native planting scheme.

6.1.9. Any terrestrial habitat suitable for GCN and other amphibians that will be lost as a result of the works should be compensated for by the provision of replacement habitat within the site or in the immediate surrounding area.

6.1.10. The Scheme Footprint should be kept to a minimum to reduce impact on local amphibian populations.

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- Department for Communities and Local Government (2012) National Planning Policy Framework. HMSO, UK. (http://www.communities.gov.uk/publications/planningandbuilding/nppf)
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- Northumberland Biodiversity Action Plan (NBAP) (2008) Northumberland Biodiversity Partnership, Northumberland.
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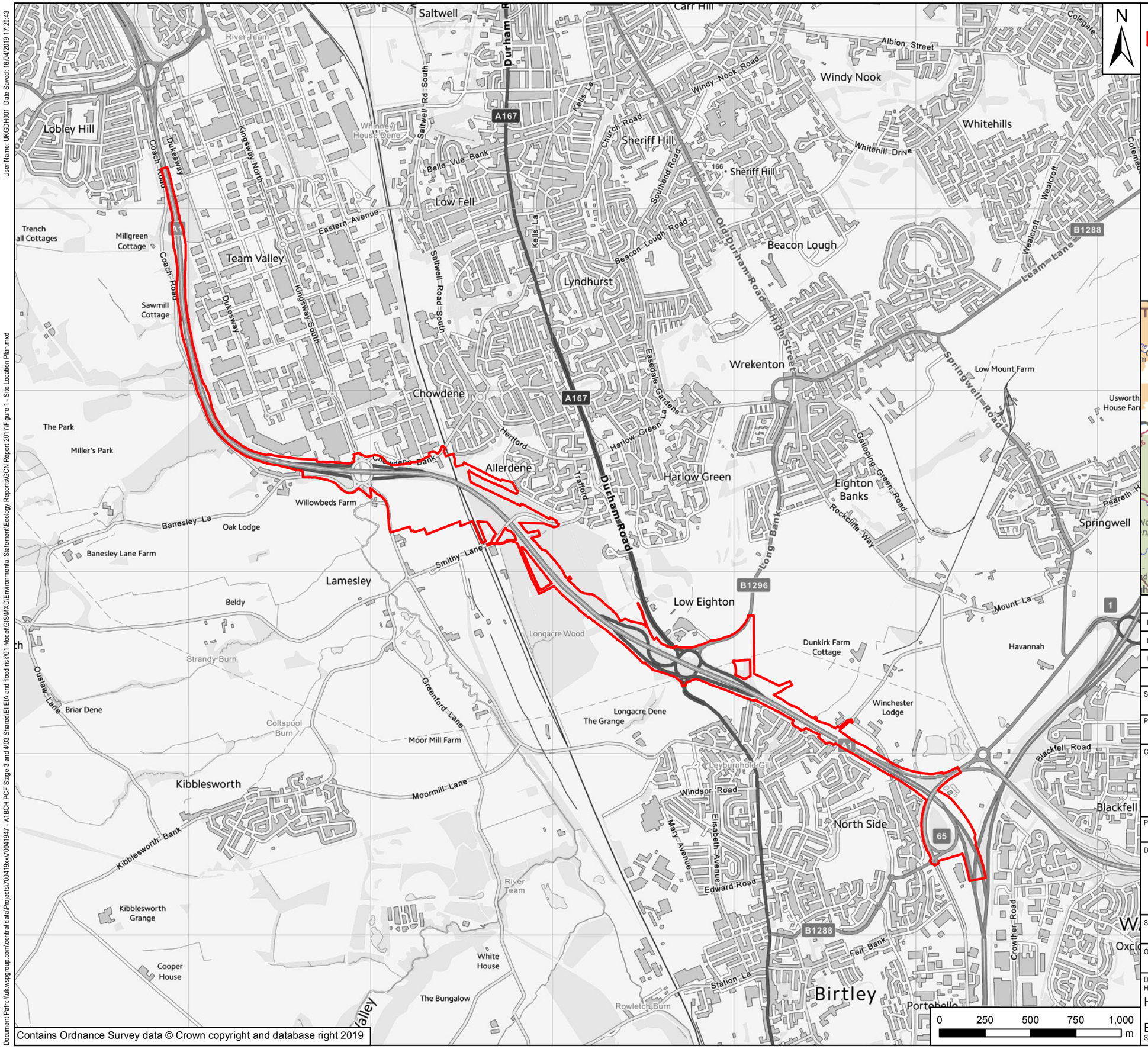
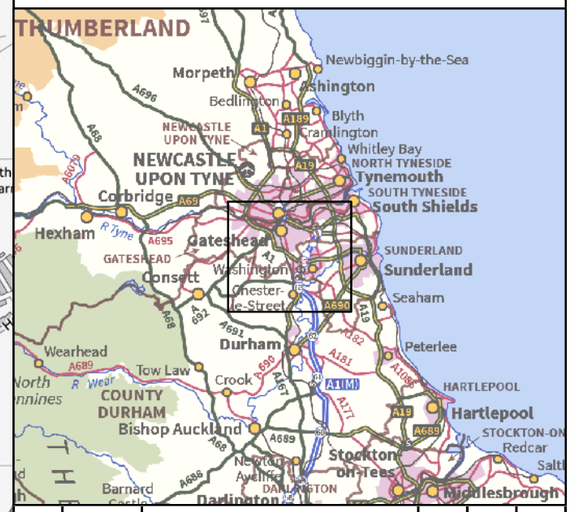
INTERNAL REFERENCES

- WSP | PB (2016) A1 Coalhouse to Birtley Extended Phase 1 Habitat Survey Report (Additional)
- WSP | PB (2016) A1 Birtley to Coalhouse Update Ecological Assessment Report (Additional)





Rev	Date	Description	By	Chk'd	App'd
P03	Apr 2019	Third Issue	GH	JR	KS
P02	Mar 2019	Second Issue	GH	JR	KS
P01	Dec 2018	First Issue	GH	JR	NJA

Key

Scheme Footprint

Suitability

Status

PINS Reference Number: TR010031

Client: highways england

Project Title: A1 Birtley to Coal House Scheme

Drawing Title: Figure 1 Site Location Plan

Scale	Drawn	Checked	Approved	Authorised
1:20,000	GH	JR	KS	NJA
Original Size: A3	Date: Dec 2018	Date: Dec 2018	Date: Dec 2018	Date: Dec 2018

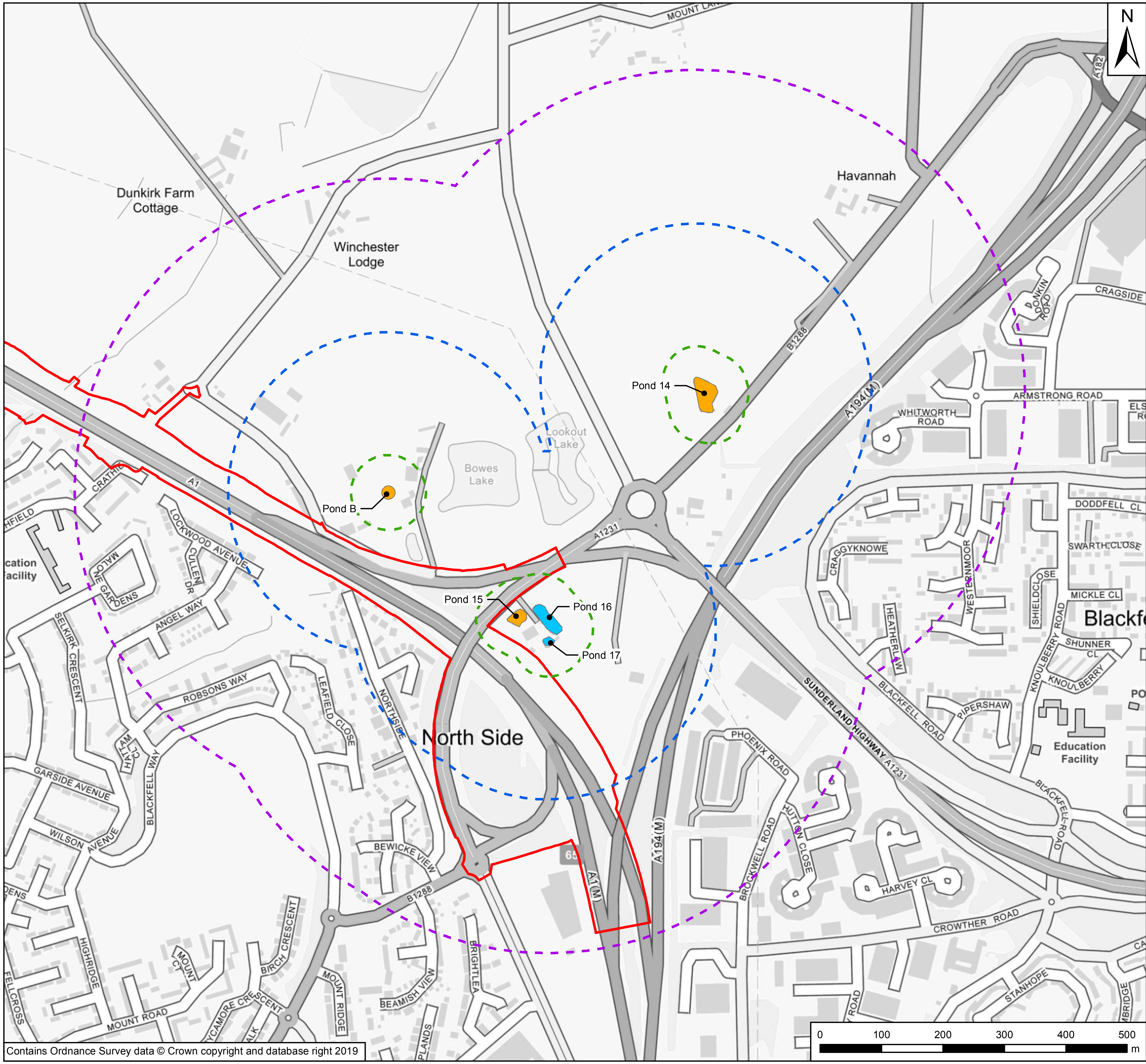
Drawing Number: HE PIN HE551462 B2CH (Section | Type | ID)

Originator: WSP (Direction | Type)

Volume: 6.3 (Role | Number)

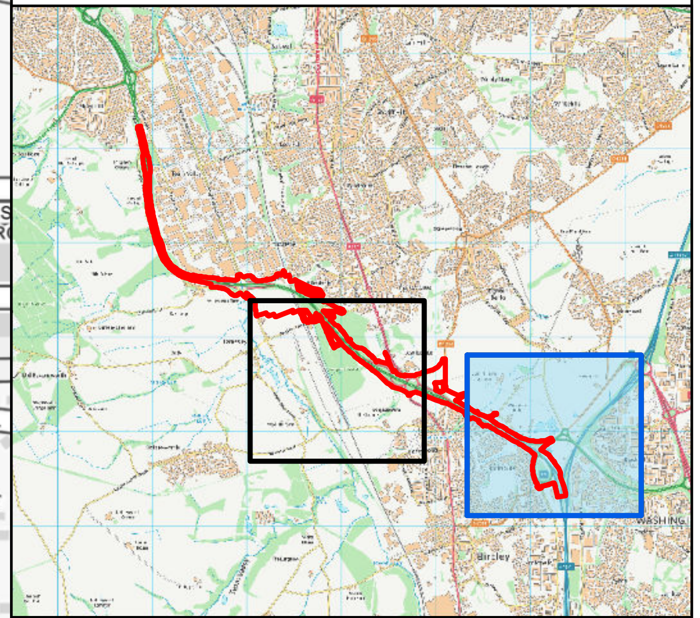
Revision: P03

PW Stage Code


N
MOUNT LANE
A182
Havannah
Dunkirk Farm Cottage
Winchester Lodge
CRAGSIDE
DONKIN ROAD
B1288
A194(M)
ARMSTRONG ROAD
WHITWORTH ROAD
Pond 14
Lookout Lake
Bowes Lake
Pond B
A1
A1231
CRATHIE
LOCKWOOD AVENUE
CULLEN DR
MALVERN GARDENS
ANGEL WAY
SELKIRK CRESCENT
ROBSONS WAY
LEAFIELD CLOSE
NORTHSIDE
Pond 15
Pond 16
Pond 17
DODDFELL CL
SWARTH CLOSE
CRAGGYKNOWE
WESTERNMOOR
HEATHERLAW
SHIELDCLOSE
MICKLE CL
Blackf
SHUNNER CL
KNOULBERRY ROAD
KNOULBERRY
BLACKFELL ROAD
PIPERSHAW
SUNDERLAND HIGHWAY A1231
Education Facility
North Side
PHOENIX ROAD
HUTTON CLOSE
BROCKWELL ROAD
HARVEY CL
CROWTHER ROAD
BLACKFELL ROAD
GARSIDE AVENUE
BLACKFELL WAY
WILSON AVENUE
BEWICKE VIEW
B1288
A1(M)
A194(M)
65
HIGHRIDGE
BIRCH CRESCENT
MOUNT CT
MOUNT RIDGE
BRIGHTLEA
BEAMISH VIEW
MOUNT ROAD
SYCAMORE CRESCENT
FELLCROSS
STANHOPE
0 100 200 300 400 500 m

Key

- Scheme Footprint
- Pond Locations
  - eDNA Positive
  - eDNA Negative
- Core Zone (50m)
- Intermediate Zone (250m)
- Distant Zone (500m)



Rev	Date	Description	By	Chk'd	App'd
P03	Apr 2019	Third Issue	GH	JR	KS
P02	Mar 2019	Second Issue	GH	JR	KS
P01	Dec 2018	First Issue	GH	JR	NJA

Suitability | Status

PINS Reference Number: TR010031

Client: highways england

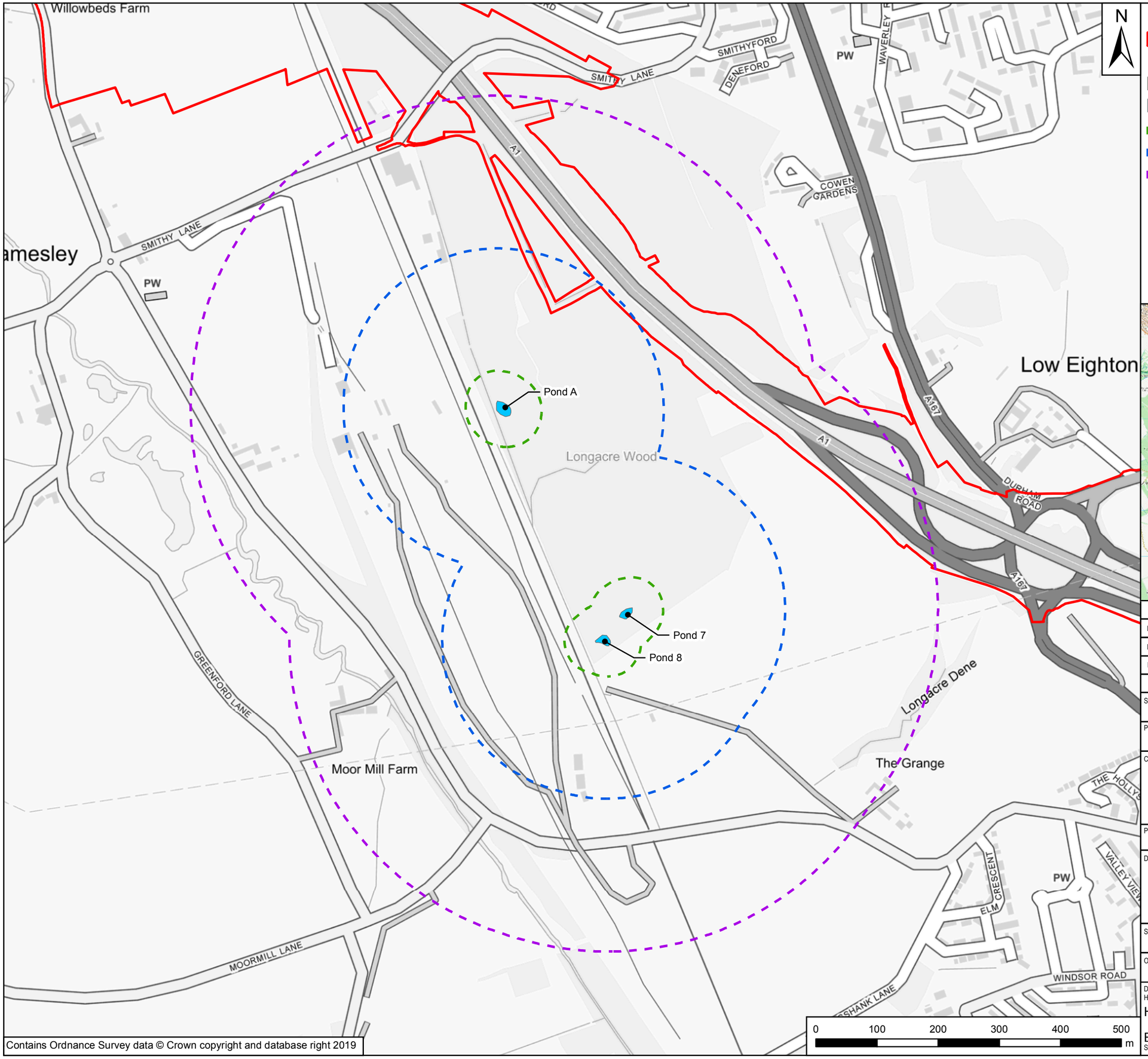
Project Title: A1 Birtley to Coal House Scheme

Drawing Title: Figure 2.1 Pond Location Plan

Scale	Drawn	Checked	Approved	Authorised
1:6,000	GH	JR	KS	NJA
Original Size: A3	Date: Dec 2018	Date: Dec 2018	Date: Dec 2018	Date: Dec 2018

Drawing Number HE PIN	Originator	Volume	Revision
HE551462	WSP	6.3	P03

B2CH
Section | Type | ID | Direction | Type | Role | Number
PW Stage Code



Rev	Date	Description	By	Chk'd	App'd
P03	Apr 2019	Third Issue	GH	JR	KS
P02	Mar 2019	Second Issue	GH	JR	KS
P01	Dec 2018	First Issue	GH	JR	NJA

Suitability

Status

PINS Reference Number: TR010031

Client: highways england

Project Title: A1 Birtley to Coal House Scheme

Drawing Title: Figure 2.2 Pond Location Plan

Scale	Drawn	Checked	Approved	Authorised
1:6,000	GH	JR	KS	NJA
Original Size	**Date**	**Date**	**Date**	**Date**
A3	Dec 2018	Dec 2018	Dec 2018	Dec 2018

Drawing Number
HE PIN: HE551462
Originator: WSP
Volume: 6.3
Revision: P03
B2CH
Section | Type | ID | Direction | Type | Role | Number
PW Stage Code

Appendix A

GCN SURVEY RESULTS

Waterbody A Presence/ Likely Absence and PSCA survey results

Date	GCN Detected	Peak Adult Count	GCN Eggs or Larvae present	Air Temperature (°C)	Vegetation cover (0-5)	Turbidity (0-5)	Other amphibians recorded	GCN Population Size Class
02/05/17	No	0	No	9.9	3	4	Yes	N/A
08/05/17	No	0	No	8	3	5	Yes	N/A
15/05/17	No	0	No	15	4	0	Yes	N/A
24/05/17	No	0	No	18	3	3	Yes	N/A

Waterbody B Presence/ Likely Absence and PSCA survey results

Date	**GCN Detected**	**Peak Adult Count**	**GCN Eggs or Larvae present**	**Air Temperature (°C)**	**Vegetation cover (0-5)**	**Turbidity (0-5)**	**Other amphibians recorded**	**GCN Population Size Class**
02/05/17	No	0	No	9.9	4	3	No	N/A

Date	GCN Detected	Peak Adult Count	GCN Eggs or Larvae present	Air Temperature (°C)	Vegetation cover (0-5)	Turbidity (0-5)	Other amphibians recorded	GCN Population Size Class
08/05/17	No	0	No	8	4	4	Yes	N/A
15/05/17	No	0	No	15	4	4	Yes	N/A
24/05/17	No	0	No	18	4	4	Yes	N/A
08/06/16	No	0	No	11	3	4	Yes	N/A
15/06/17	No	0	No	12.7	4	3	Yes	N/A

Waterbody 7 Presence/ Likely Absence and PSCA survey results

Date	GCN Detected	Peak Adult Count	GCN Eggs or Larvae present	Air Temperature (°C)	Vegetation cover (0-5)	Turbidity (0-5)	Other amphibians recorded	GCN Population Size Class
02/05/17	No	0	No	9.9	3	3	Yes	N/A

Date	GCN Detected	Peak Adult Count	GCN Eggs or Larvae present	Air Temperature (°C)	Vegetation cover (0-5)	Turbidity (0-5)	Other amphibians recorded	GCN Population Size Class
08/05/17	No	0	No	8	3	5	Yes	N/A
15/05/17	No	0	No	15	2	3	Yes	N/A
24/05/17	No	0	No	18	2	3	Yes	N/A

Waterbody 8 Presence/ Likely Absence and PSCA survey results

Date	GCN Detected	Peak Adult Count	GCN Eggs or Larvae present	Air Temperature (°C)	Vegetation cover (0-5)	Turbidity (0-5)	Other amphibians recorded	GCN Population Size Class
02/05/17	No	0	No	9.9	3	2	Yes	N/A
08/05/17	No	0	No	8	1	4	Yes	N/A
15/05/17	No	0	No	15	0	2	Yes	N/A
24/05/17	No	0	No	18	1	4	Yes	N/A

Waterbody 15 Presence/ Likely Absence and PSCA survey results

Date	GCN Detected	Peak Adult Count	GCN Eggs or Larvae present	Air Temperature (°C)	Vegetation cover (0-5)	Turbidity (0-5)	Other amphibians recorded	GCN Population Size Class
02/05/17	No	0	No	9.9	1	5	No	N/A

Waterbody 16 Presence/ Likely Absence and PSCA survey results

Date	GCN Detected	Peak Adult Count	GCN Eggs or Larvae present	Air Temperature (°C)	Vegetation cover (0-5)	Turbidity (0-5)	Other amphibians recorded	GCN Population Size Class
02/05/2017	No	0	No	9.9	0	4	No	N/A

Waterbody 17 Presence/ Likely Absence and PSCA survey results

Date	GCN Detected	Peak Adult Count	GCN Eggs or	Air Temperature (°C)	Vegetation cover (0-5)	Turbidity (0-5)	Other amphibians recorded	GCN Population Size Class

			Larvae present					
02/05/2017	No	0	No	9.9	0	5	No	N/A

Appendix B

SURVEY CONDITIONS

Survey conditions for waterbody A over the survey period

Date	Survey conditions			
	Precipitation	Air Temp. bottle traps set (°C)	Water Temp. bottle traps set (°C)	Mean air temp. during torching (°C)
02/05/2017	Dry	9.9	11.2	N/A
08/05/2017	Dry	8	10	8
15/05/2017	Dry	15	13.6	13
24/05/2017	Dry	18	18.5	17
Comments	Too turbid to torch during the first visit.			

Survey conditions for waterbody B over the survey period

Date	Survey conditions			
	Precipitation	Air Temp. bottle traps set (°C)	Water Temp. bottle traps set (°C)	Mean air temp. during torching (°C)
02/05/17	Dry	9.9	9.2	9.5
08/05/17	Dry	8	10	6.9
15/05/17	Dry	15	13	15.7
24/05/17	Dry	18	18.5	16
08/06/2017	Dry	11	10	10
15/06/2017	Dry	12.7	15.8	15
Comments	Too turbid to torch during the first visit.			

Survey conditions for waterbody 7 over the survey period

Date	Survey conditions			
	Precipitation	Air Temp. bottle traps set (°C)	Water Temp. bottle traps set (°C)	Mean air temp. during torching (°C)
02/05/2017	Dry	9.9	8.7	9.5
08/05/2017	Dry	8	10	8.4
15/05/2017	Dry	15	13.5	16.5
24/05/2017	Dry	18	18.5	17
Comments				

Survey conditions for waterbody 8 over the survey period

Date	Survey conditions			
	Precipitation	Air Temp. bottle traps set (°C)	Water Temp. bottle traps set (°C)	Mean air temp. during torching (°C)
02/05/2017	Dry	9.9	8.7	N/A
08/05/2017	Dry	8	10	8.2
15/05/2017	Dry	15	14.1	16.5
24/05/2017	Dry	18	18.5	17
Comments				

Survey conditions for waterbody 15 over the survey period

Date	Survey conditions			
	Precipitation	Air Temp. bottle traps set (°C)	Water Temp. bottle traps set (°C)	Mean air temp. during torching (°C)
02/05/2017	Dry	9.9	9.2	N/A

Survey conditions for waterbody 16 over the survey period

Date	Survey conditions			
	Precipitation	Air Temp. bottle traps set (°C)	Water Temp. bottle traps set (°C)	Mean air temp. during torching (°C)
02/05/2017	Dry	9.9	8.2	N/A

Survey conditions for waterbody 17 over the survey period

Date	Survey conditions			
	Precipitation	Air Temp. bottle traps set (°C)	Water Temp. bottle traps set (°C)	Mean air temp. during torching (°C)
02/05/2017	Dry	9.9	10.5	N/A

Appendix C

HSI RESULTS

	A	B	7	8	14	15	16	17
S1 Map location	1	1	1	1	1	1	1	1
SI2 Surface area	0.8	0.5	0.5	0.6	0.9	0.9	0.95	0.05
SI3 Desiccation rate	0.9	0.5	1	0.9	0.9	0.9	0.9	0.9
SI4 Water quality	0.33	0.67	0.67	0.67	0.67	0.67	0.67	0.67
SI5 Shade	0.7	1	1	1	1	1	1	1
SI6 Waterfowl	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
SI7 Fish population	0.67	0.33	0.67	0.67	0.67	0.01	0.33	0.33
SI8 Pond density	0.85	1	0.85	0.85	1	1	1	1
SI9 Terrestrial habitat	1	0.67	1	1	0.67	0.33	0.33	0.33
SI10 Macrophyte cover	0.4	1	0.4	0.5	0.6	0.8	0.6	0.6
Score	**0.69**	**0.55**	**0.74**	**0.77**	**0.79**	**0.50**	**0.69**	**0.52**
Pond Suitability	*Average*	*Below Average*	*Good*	*Good*	*Good*	*Below Average*	*Average*	*Below Average*

Appendix D

EDNA RESULTS

DNA Analysis Report - Commercial in Confidence

Customer:	WSP UK Limited
Address:	Three White Rose Office Park Millshaw Park Lane Leeds LS11 0DL
Contact:	Victoria Newlove
Email:	
Tel:	
Report date:	16-May-2017
Order Number:	GCN17-0471
Samples:	Pond Water
Analysis requested:	Detection of Great Crested Newt eDNA from pond water.

Thank you for submitting your samples for analysis with the Fera eDNA testing service. The details of the analysis are as follows:

Method:

The method detects pond occupancy from great crested newts (GCN) using traces of DNA shed into the pond environment (eDNA). The detection of GCN eDNA is carried out using real time PCR to amplify part of the cytochrome 1 gene found in mitochondrial DNA. The method followed is detailed in Biggs J., et al, (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.

The limits of this method are as follows: 1) the results are based on analyses of the samples supplied by the client and as received by the laboratory, 2) any variation between the characteristics of this sample and a batch will depend on the sampling procedure used. 3) the method is qualitative and therefore the levels given in the score are for information only, they do not constitute the quantification of GCN DNA against a calibration curve, 4) a 'not detected' result does not exclude presence at levels below the limit of detection.

The results are defined as follows:

Positive:	DNA from the species was detected.
eDNA Score:	Number of positive replicates from a series of twelve.
Negative:	DNA from the species was not detected; in the case of negative samples the DNA extract is further tested for PCR inhibitors and degradation of the sample.
Inconclusive:	Controls indicate degradation or inhibition of the sample, therefore the lack of detection of GCN DNA is not conclusive evidence for determining the absence of the species in the sample provided.

DNA Analysis Report - Commercial in Confidence

CustomerReference	Fera Reference	GCN Detection	GCN Score	Inhibition	Degradation
-	S17-005565	Negative	0	No	No
-	S17-005588	Negative	0	No	No
-	S17-005589	Positive	1	n/a	n/a
-	S17-005591	Positive	1	n/a	n/a
-	S17-005593	Positive	1	n/a	n/a
-	S17-005594	Negative	0	No	No
-	S17-005595	Negative	0	No	No
-	S17-005596	Negative	0	No	No

The results indicate that eDNA for great crested newts was detected in three of the samples and in the remaining samples eDNA was not detected (as detailed in the table above). Analysis was conducted in the presence of the following controls: 1) Extraction blank, 2) appropriate positive and negative PCR controls for each of the TaqMan assays (GCN, Inhibition, and Degradation). All controls performed as expected.

This test procedure was developed using research funded by the Department of Environment, Food and Rural Affairs, and was performed under the conditions of licensing arrangements with Applied Biosystems and patent rights owned by F. Hoffman-La Roche Ltd.

Issuing officer: Steven Bryce
Tel: 01904 462 324
Email: e-dna@fera.co.uk

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