

A1 Birtley to Coal House

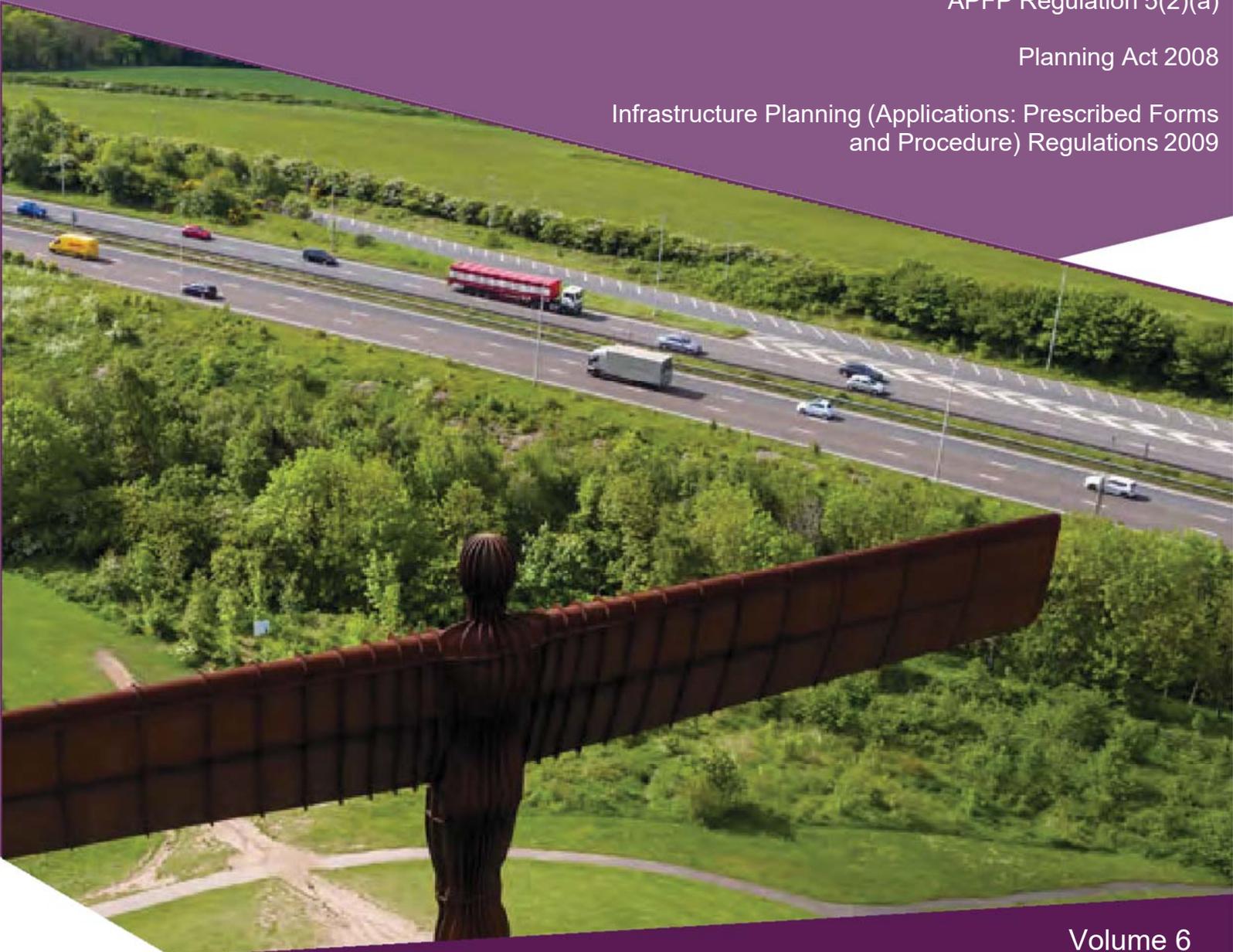
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Infrastructure Planning (Applications: Prescribed Forms
and Procedure) Regulations 2009



Infrastructure Planning

Planning Act 2008

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

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**Environmental Statement -
Appendix**

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EXECUTIVE SUMMARY

WSP was commissioned by Highways England to undertake a great crested newt assessment in support of proposals for the A1 Birtley to Coal House Scheme “the Scheme”. The Scheme consists of the widening and upgrading of the existing road to provide a four-lane carriageway on the southbound and three lanes on the northbound and replacement of Allerdene Bridge. This is hereby referred to as the ‘Scheme’.

An assessment of ponds within 500m of the Scheme Footprint was completed by WSP in 2017, identifying the presence of nineteen waterbodies (WSP, 2017).

During the 2017 surveys, great crested newts were positively identified within Ponds B, 14 and 15, located within 250 m of the Scheme Footprint, via environmental DNA (eDNA) surveys. It was intended to complete GCN population surveys on these waterbodies and an additional two ponds within 50m of Pond 15 (Ponds 16 and 17), but due to access restrictions full survey requirements of six surveys between mid-March and mid-June (with at least three surveys between mid-April and mid-May inclusive), were not completed. However, due to the potential impacts of the Scheme, it was concluded that works could proceed under a precautionary working method statement. Following the issue of an updated red line boundary in late 2017, which detailed land take within the vicinity of the waterbodies, it was considered that an updated GCN assessment of the above ponds was required during Spring 2018.

A presence / likely absence assessment (using conventional survey techniques; bottle trapping, torching, netting and egg searches) was undertaken for Ponds B and 14, and Ponds 15, 16 and 17 were subject to an environmental DNA (eDNA) survey.

The 2018 results indicate the likely absence of great crested newts from Ponds B and 14; no great crested newts or signs of their presence (i.e. eggs or larvae) were recorded during the surveys. The eDNA results were negative for ponds 15, 16 and 17. Taking into consideration the findings of the 2017 and 2018 survey effort, great crested newts are considered likely absent from Ponds 15, 16 and 17, whilst a small population is assumed present within both Ponds B and 14.

The only amphibian species found to be present during the surveys were smooth newts and tadpoles (either common frog or common toad). Common toad is listed as a Species of Principal Importance (SPI) in accordance with Section 41 of the NERC Act 2006; therefore, public bodies, including local planning authorities, have a duty to have regard for the conservation of this species when carrying out their functions.

The habitat loss within 500m of Ponds B and 14 is minimal and if used, the Natural England ‘Rapid Risk Assessment Tool’ would suggest an impact is high unlikely. Therefore, it is recommended that works within 500m of Ponds B and 14, which is not separated by a barrier to dispersal, are undertaken under a Precautionary Working Method Statement

(PWMS). Whilst a great crested newt population is considered likely absent from Ponds 15, 16 and 17, it is considered best practice to also adopt the precautionary working methods for works in proximity to these ponds. Indicative precautionary working methods have been included within the recommendations of this report, including timing of works, toolbox talk, pre-commencement searches and ecological supervision.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1. WSP UK Ltd. (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 Scheme, hereafter referred to as the “Scheme”, see **Figure 1**.
- 1.1.2. The Scheme, is 6.5 km in length and will include replacement of Allerdene Bridge. Most of the work will take place within the highway boundary, however, some additional land will be required alongside the A1 at certain points to enable the additional lanes to be constructed.
- 1.1.3. The Scheme will provide additional capacity by widening to four lanes between junction 65 and 67 on the southbound carriageway and three lanes with an additional lane to help manage traffic joining and leaving the A1 between junctions on the northbound carriageway. It also includes a replacement structure of Allerdene Bridge to the immediate south of the current structure, which will tie in to the existing junction 67 Coal House roundabout. The Scheme will also look to install electronic signage to provide driver information along the road.

1.2 ECOLOGICAL BACKGROUND

- 1.2.1. An assessment of ponds within 500m of the Scheme (hereafter referred to as the “Survey Area”) was completed in 2017 by WSP, identifying the presence of nineteen waterbodies (WSP, 2017). Of these, eleven waterbodies were scoped out from further survey as they were either separated from the site by barriers to newt migration (such as main roads or fast-flowing watercourses) or were considered unsuitable for GCN. The remaining eight waterbodies were subject to a full assessment for great crested newt presence / likely absence, as referenced later within this report.
- 1.2.2. Great crested newts were positively identified within Ponds B, 14 and 15, located within 250m of the Scheme, via environmental DNA (eDNA) surveys. It was intended to complete GCN population surveys on these waterbodies and an additional two ponds within 50 m of Pond 15 (Ponds 16 and 17). However, with the exception of Pond B, due to access restrictions, full survey requirements of six surveys between mid-March and mid-June (with at least three surveys between mid-April and mid-May inclusive), were not completed. The population size class assessment completed for Pond B did not record any great crested newts.
- 1.2.3. At the time, the survey constraints were not considered a restriction, as the Scheme Footprint detailed minimal land take within the vicinity of the waterbodies with positive eDNA and therefore GCN presence. It was therefore concluded that works could proceed under a PWMS.

- 1.2.4. Following the issue of an updated Scheme Footprint in late 2017, detailing additional land take within the vicinity of the waterbodies, it was considered that an updated GCN assessment of the above ponds was required during spring 2018.
- 1.2.5. Liaison with Natural England was undertaken regarding the design of the 2018 survey, which included waterbodies being subject to presence/absence surveys only due to the access restrictions and Ponds 15, 16 and 17 being subject to eDNA surveys only, due to further access restrictions. The liaison concluded that professional judgement should be relied upon.

1.3 BRIEF AND OBJECTIVES

- 1.3.1. Following assessments completed in 2017, Highways England commissioned WSP to:
 - Update the Habitat Suitability Index (HSI) assessment of Ponds B, 14, 15, 16 and 17 to assess their suitability as aquatic habitat for great crested newts.
 - Complete a great crested newt survey to confirm the presence or likely absence of this species from Ponds B, 14, 15, 16, 17 and the population size class (where required).
- 1.3.2. The results of this survey, and subsequent recommendations, are included within this report.

2 METHODS

2.1 OVERVIEW

- 2.1.1. Five waterbodies, located within 500m of the Scheme, were subject to an update presence / likely absence survey for great crested newts using industry standard techniques, as presented in **Table 2-1** below. Due to time constraints following access permission (addressed in the limitation section of this report), presence / likely absence surveys utilising standard techniques were carried out at Ponds B and 14 with a total of four visits for each. Due to access being obtained late in the season, Ponds 15, 16 and 17 were subject to an eDNA assessment.

Table 2-1 - Survey Effort

Waterbody	2017 Survey Methods	2018 Survey Methods
Pond B	HSI, eDNA, Population Size Class	HSI, Presence/Absence survey
Pond 14	HSI, eDNA	HSI, Presence/Absence Survey
Pond 15	HSI, eDNA	HSI, eDNA assessment
Pond 16	HSI, eDNA	HSI, eDNA assessment
Pond 17	HSI, eDNA	HSI, eDNA assessment

2.2 HABITAT SUITABILITY INDEX (HSI) ASSESSMENT

- 2.2.1. Ponds B, 14, 15, 16 and 17 were assessed for their suitability to support great crested newts, using the standard HSI assessment method (ARG UK, 2010, based on Oldham et al. (2000)). The HSI assessment completed in 2018 was an update to that completed in 2017 (WSP, 2017).
- 2.2.2. Water bodies were assessed and scored on ten key variables which are known to influence breeding populations of great crested newts, in accordance with standard methods (ARG UK, 2010). These variables are:
- Geographic location
 - Water body area
 - Water body permanence
 - Water quality
 - Water body shading
 - Impact of waterfowl
 - Fish stocks
 - Number of water bodies within 1km

- Terrestrial habitat around the water body
- Macrophyte cover of the water body

2.2.3. Scores for each of the above variables were used to calculate an overall HSI value for each water body. This was then 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 water body supports great crested newts or not; therefore, professional judgement and availability of records of great crested newt in the locality has also been used to inform the requirement for further survey.

2.3 PRESENCE / LIKELY ABSENCE SURVEY

- 2.3.1. Ponds B and 14 were subject to further survey to confirm the presence/ likely absence of great crested newts.
- 2.3.2. The survey comprised four visits to each water body, spread across the recommended survey period (mid-March to mid-June, with at least two of 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).
- 2.3.3. Where possible, at least three survey techniques were used during each survey visit to search for the presence of great crested newts in line with good practice (English Nature, 2001); these included:
- **Torchlight searching** – each water body 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 of each species noted. The duration of the torchlight survey was determined by the time taken to walk slowly around the water body perimeter.
 - **Bottle-trapping** – each water body was trapped using bottle traps constructed and set in accordance with standard guidance (JNCC, 1998). Traps were set at a ratio of one for every 2m of water body perimeter with a maximum of 50 per water body. The traps were set prior to dusk, and checked and removed the following morning.
 - **Egg searching** – suitable vegetation in each water body was searched for newt eggs which are laid on submerged or floating leaves and folded around the egg. The duration of the egg search was either the amount of time required to search thoroughly all vegetation present, or a maximum of 15 minutes per survey visit¹.

¹ Once a great crested newt egg had been recorded, no egg searching occurred on subsequent visits to avoid unnecessary uncovering of eggs which would then be at an increased risk of predation.

- **Netting** – a net was used to sample each water body at regular intervals (every 2m) around the water body perimeter.

2.4 ENVIRONMENTAL DNA ASSESSMENT

2.4.1. Ponds 15, 16 and 17 were subject to an eDNA assessment. This involved obtaining water samples using a kit provided by a Natural England approved supplier (NatureMetrics). The water samples were preserved on site in a buffer solution, stored in a cool box to avoid degradation of the sample and returned via courier to the laboratory for analysis. The sampling and analysis techniques were compliant with the approved protocol, as recognised by Natural England (Biggs, J et. al., 2014).

2.5 DATES OF SURVEY AND PERSONNEL

2.5.1. The date for each survey visit is displayed in **Table 2-2** below.

Table 2-2 - Survey Dates

Waterbody	Updated HSI (2018)	Presence/ Likely Absence Survey Visit				eDNA
		1	2	3	4	
Pond B	09/05/18	09/05/18	14/05/18	31/05/18	18/06/18	N/A
Pond 14	09/05/18	09/05/18	14/05/18	31/05/18	18/06/18	N/A
Pond 15	19/06/18	N/A	N/A	N/A	N/A	19/06/18
Pond 16	19/06/18	N/A	N/A	N/A	N/A	19/06/18
Pond 17	19/06/18	N/A	N/A	N/A	N/A	19/06/18

2.5.2. Each survey was completed by surveyors with sufficient experience (lead surveyors had a minimum of 1 year experience). At least one surveyor per visit held a Natural England class survey licence for great crested newts (licence numbers: 2017-32464-CLS-CLS; 2015-16685-CLS-CLS; 2017-31873-CLS-CLS).

2.6 NOTES AND LIMITATIONS

2.6.1. It was anticipated that a population size class assessment would be undertaken for all five ponds, however, due to access permissions received later in the season, it was not possible to complete the full six visits required for this level of assessment. Four visits were achieved on Ponds B and 14, equivalent to a presence / likely absence survey. This constraint to the survey effort has been taken into account in the recommendations of this report and a precautionary approach has been taken to the recommended mitigation. As such, this

reduced survey effort is not considered to have impacted the survey conclusions or recommendations.

- 2.6.2. It was anticipated that presence / likely absence surveys would be completed for all five ponds, however, access to Ponds 15, 16 and 17 was granted late in the season giving insufficient time to carry out full presence / likely absence surveys in accordance with best practice guidelines. These ponds were therefore subject to an eDNA assessment. This technique is recognised by Natural England for establishing presence / likely absence and therefore this is not considered to present a limitation to the survey conclusions.
- 2.6.3. Access was limited along the south and west margins of Pond B due to dense vegetation. There was no access to the north and east margins of Pond 14 due to being unable to access the edges of the waterbody. The northern most point was restricted by landownership. Considering smooth newts were found during the surveys and a range of survey techniques were employed during each survey, it is not considered that access limitations had a significant impact on the survey results.

3 RESULTS AND EVALUATION

3.1 OVERVIEW

- 3.1.1. Habitat suitability assessments were carried out to update results from 2017 for the five target ponds.
- 3.1.2. The HSI survey indicated that Pond B provides ‘good’ suitability for great crested newts. Since 2017, Pond B has improved from ‘below average’ suitability. Pond 14 has declined in suitability from ‘good’ suitability in 2017 to ‘poor’ in 2018, which recorded significant impacts to the western and northern boundaries of the pond due to use by horses for drinking. The margins were largely absent of vegetation suitable for egg-laying and relatively steep sided.
- 3.1.3. The 2017 eDNA survey recorded presence of great crested newts Pond B, however, the following population size class assessment in 2017 and the 2018 presence / likely absence surveys indicated likely absence. Whilst a positive eDNA result was achieved in 2017 for Pond 14, the presence / likely absence survey in 2018 did not record any great crested newts and would therefore indicate absence.
- 3.1.4. The eDNA results were negative for Ponds 15, 16 and 17 with samples showing no degradation and indicating likely absence of great crested newts from these ponds. Full report in **Appendix D**.
- 3.1.5. Great crested newts were not recorded within any of the water bodies surveyed in 2018, however, due to the positive results obtained in 2017, a precautionary approach is recommended, as outlined in **Section 5**.

3.2 HABITAT SUITABILITY ASSESSMENT (HSI)

- 3.2.1. A summary of the HSI results and location information for the water bodies is included in **Table 3-1**. Water body numbers correspond to those in **Figure 2**, with photographs of each water body in **Appendix A**. The HSI calculation is included in **Appendix B**.

Table 3-1 - Summary of updated HSI results, 2018

Water body Ref.	Grid Reference	Proximity and Connectivity to Scheme	2017 HSI Score	2017 HSI Category	2018 HSI Score	2018 HSI Category	Photo Ref.
Pond B	NZ 27958 57013	100m north. Poor connectivity. Separated by pasture fields and road barriers (A1231, B1288 and Rockcliffe Way).	0.55	Below Average	0.76	Good	B

Water body Ref.	Grid Reference	Proximity and Connectivity to Scheme	2017 HSI Score	2017 HSI Category	2018 HSI Score	2018 HSI Category	Photo Ref.
Pond 14	NZ 28469 57172	400m north east. Connected by amenity grassland, woodland, scrub and arrow infrequently used lane.	0.79	Good	0.42	Poor	14
Pond 15	NZ 2817 5681	Within 15m of the Scheme (south east). Directly connected.	0.50	Below Average	0.67	Average	15
Pond 16	NZ 2821 5680	25m east. Located adjacent to A1 and A1231. Directly connected	0.69	Average	0.46	Poor	16
Pond 17	NZ 2822 5677	Closest proximity, 25m north east. Located adjacent to A1 and A1231. Directly connected	0.52	Below Average	0.55	Below Average	17

3.3 PRESENCE / LIKELY ABSENCE SURVEY

3.3.1. The results of the great crested newt presence/ likely absence are summarised in **Table 3-2** below.

Table 3-2 - Summary of Presence / Likely Absence Survey Results

Water Body Ref.	Adult GCN Peak Count	Breeding Activity Recorded	Incidental Species Recorded
Pond B	0	0	Smooth newts, tadpoles
Pond 14	0	0	Smooth newts

- 3.3.2. All surveys were completed under appropriate conditions, with overnight minimum temperatures ranging between 6°C and 13°C and pond conditions suitable for methods used to be effective. Full details of weather and pond conditions on each survey visit are included in **Appendix C**.
- 3.3.3. The 2017 survey visit identified the presence of great crested newts in both Ponds B and 14 via an eDNA survey, however, the 2018 survey results indicate the likely absence of great crested newts within Ponds B and 14; no great crested newts or signs of their presence (i.e. eggs or larvae) were recorded during the survey. In addition, the population size class assessment undertaken in 2017 for Pond B did not record any great crested newts during the six survey visits. Access was not permitted in 2017 for surveys of Pond 14.
- 3.3.4. It is possible that a low population of great crested newts is supported by Ponds B and 14 and remained undetected during the surveys in both 2017 and 2018. Due to the positive identification of great crested newts from 2017, it is considered appropriate to assume a low population of newts is supported within Ponds B and 14. Given the presence of a busy road network between both ponds, these would also be considered as separate populations,
- 3.3.5. The Scheme will result in the loss of a small area of great crested newt habitat within 500 m of Pond B, a mixture of semi-improved grassland, intact species-poor hedgerow, scattered scrub and broadleaved woodland; 0.005 ha within 100 m, 0.11 ha between 100 and 250 m and 0.24 ha between 250 and 500 m. Utilising the Natural England 'Rapid Risk Assessment Tool' (Natural England, 2015), the result would indicate that an offence is highly unlikely (presented in **Appendix E**). The habitat loss is reduced for Pond 14 as it is located approximately 400 m from the Scheme and, therefore, the likelihood of offence is also highly unlikely.

3.4 ENVIRONMENTAL DNA ASSESSMENT

- 3.4.1. The results of the great crested newt eDNA survey are summarised in **Table 3-3** below, with the Nature Metrics report presented in Appendix D.

Table 3-3 - eDNA results 2018

Water Body Ref.	Degradation	GCN status
Pond 15	No	Negative
Pond 16	No	Negative
Pond 17	No	Negative

- 3.4.2. The survey results indicate the likely absence of great crested newts within Ponds 15, 16 and 17; all pond samples provided negative great crested newt status. All samples were

collected within the appropriate timeframe for eDNA testing and no degradation or inhibition of the samples was detected within the laboratory. Ponds 15, 16 and 17 are all located within a small area of land bound by the surrounding road network and therefore unconnected to other ponds in the surrounding area (including Ponds B and 14). It is possible that a small and remnant population was present in 2017 and has been lost prior to the 2018 survey period. As such, great crested newts are considered absence from Ponds 15, 16 and 17.

4 IMPLICATIONS FOR DEVELOPMENT

4.1 OVERVIEW

- 4.1.1. Legislation and national planning policy relating to great crested newts is set out below for information purposes only. Taking into consideration the findings of the 2017 and 2018 survey effort, great crested newts are considered likely absent from Ponds 15, 16 and 17, whilst a small population is considered present within both Ponds B and 14. The habitat loss within 500 m of Ponds B and 14 is minimal and therefore, it is recommended that the works within 500 m of Ponds B and 14 are undertaken under precautionary working methods, detailed below. This conclusion has been confirmed through use of the Natural England 'Rapid Risk Assessment Tool'. As best practice, it would also be recommended that the precautionary working methods are adopted for works in a similar proximity of Ponds 15, 16 and 17.

4.2 LEGAL COMPLIANCE

GREAT CRESTED NEWTS

- 4.2.1. Great crested newts are afforded a high level of protection under the Conservation of Habitats and Species Regulations 2017 (the 'Habitat Regulations'), the legislation means that it is an offence to:
- Deliberately capture, injure or kill a wild great crested newt;
 - Deliberately disturb wild 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 great crested newts 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).

OTHER AMPHIBIANS

- 4.2.4. Whilst the smooth newts *Lissotriton vulgaris* are protected from sale and trade, this species is not afforded the high level of protection given to the great crested newt.
- 4.2.5. The common toad is also listed as a Species of Principal Importance (SPI) in accordance with Section 41 of the NERC Act 2006; therefore, public bodies, including local planning authorities, have a duty to have regard for the conservation of this species when carrying out their functions.

4.3 PLANNING POLICY COMPLIANCE

- 4.3.1. At the national level the National Planning Policy Framework (2018) forms the basis for planning system decisions with respect to conserving and enhancing the natural environment, including great crested newts. 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 *‘The purpose of the planning system is to contribute to the achievement of sustainable development.’*
- *... recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services....; and*
 - *minimising impacts on and providing net gains for 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 to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused ‘*
 - *- ... development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
 - *development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons⁵⁸ and a suitable compensation strategy exists; and*
 - *development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.’*

- 4.3.4. At a local level, great crested newts are a priority species in the Northumberland Biodiversity Action Plan (LBAP).

5 RECOMMENDATIONS AND CONCLUSION

- 5.1.1. As the impact to great crested newts as a result of habitat loss is considered minimal, it is recommended that works within 500m of Ponds B and 14 and not separated by a barrier to dispersal (such as the A1 carriageway) are conducted under a PWMS. This document should be developed prior to site work commencing. Full details will be presented within the PWMS document, however, as an overview this is likely to include:
- **Timing of Works** – habitat clearance within 500m of Ponds B and 14 is recommended during the optimal period of mid-April to mid-June, when the majority of newts will have returned to their breeding ponds.
 - **Toolbox Talk** – whilst it is unlikely that operatives will encounter a great crested newt during works, it is recommended that all site operatives receive a briefing from a Suitably Experienced Ecologist (SEE). The briefing shall include details of the legal protection of great crested newts, the PWMS, tips on identification of great crested newts and the procedures to follow should the species be discovered during works.
 - **Hand Searching and Site Work Supervision** – Immediately prior to the works commencing, the proposed works area will be thoroughly hand searched by a licenced ecologist (or accredited agent). The hand search must take place no earlier than 24 hours prior to works commencing and will concentrate on all suitable terrestrial vegetation within the works area (including access route(s)).
 - **Working Methods** – all vehicles, plant and equipment on site must stick to predetermined access routes and must not encroach onto any habitats or areas which have not been hand searched prior to works taking place.
 - **Procedure should a great crested newt be identified** – if a great crested newt is encountered during the proposed works, all activities in the area would cease immediately. If not present on site at the time, the SEE would be contacted to make an assessment of the situation and to determine whether a European Protected Species (EPS) Licence would be required before work in that area proceeds. If considered necessary, guidance would be sought from Natural England.
- 5.1.2. The above PWMS approach will also put in place suitable mitigation to address the potential for common amphibians, such as common toad, to be present within the works area. As such, it is considered best practice to adopt the same precautionary methods for works within 500m of Ponds 15, 16 and 17 that are not separated by a barrier to dispersal. Any further mitigation for the protection of common amphibians will be fully outlined within the Environmental Impact Assessment (EIA) for the Scheme, as will any enhancement opportunities for amphibians.

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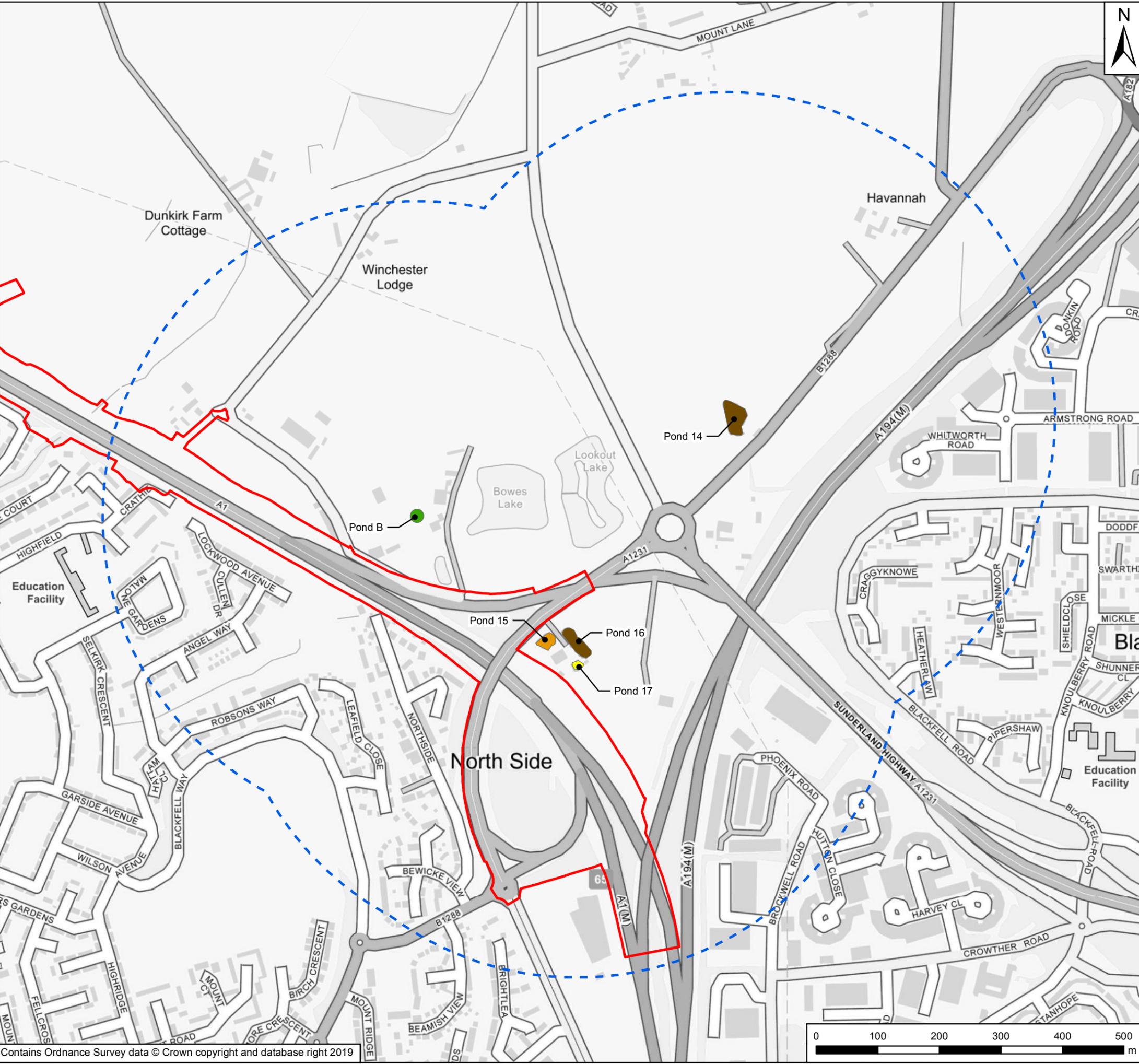
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User Name: UKGDH001 Date Saved: 16/04/2019 17:23:17
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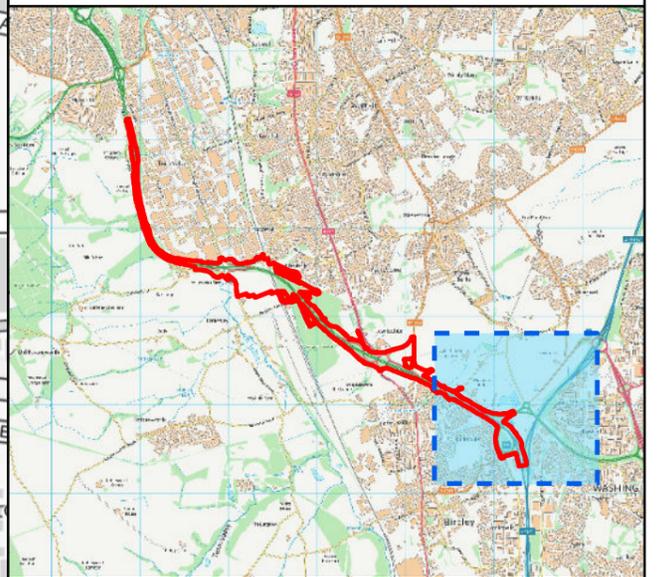


Key

- Scheme Footprint
- 500m Study Area

HSI Survey Results

- Good
- Average
- Below Average
- Poor



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**

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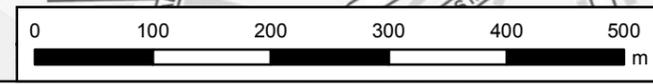
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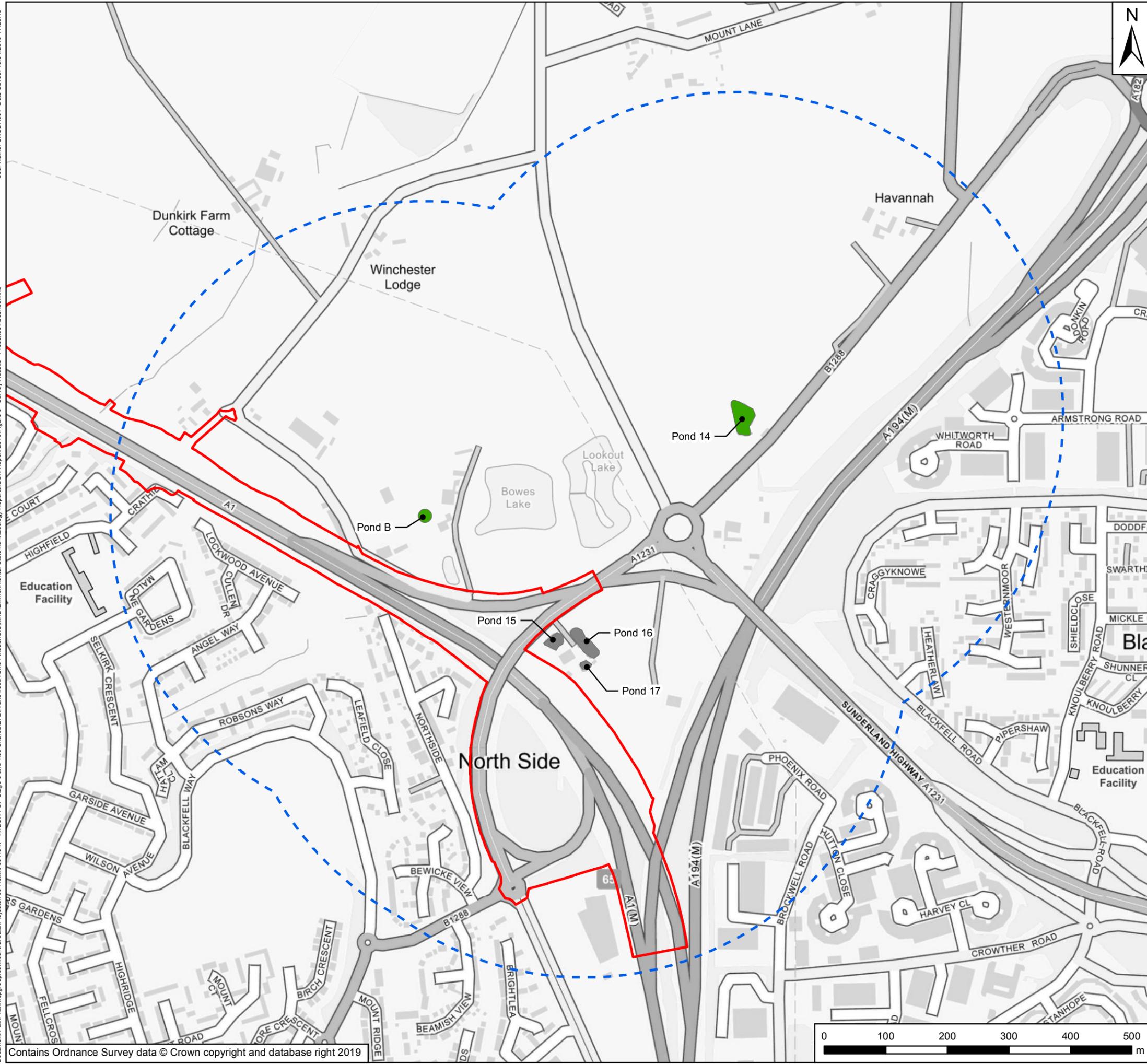
Drawing Title: **Figure 2 Survey Results - HSI Survey**

Scale	Drawn	Checked	Approved	Authorised
1:6,000	GH	JR	KS	NJA

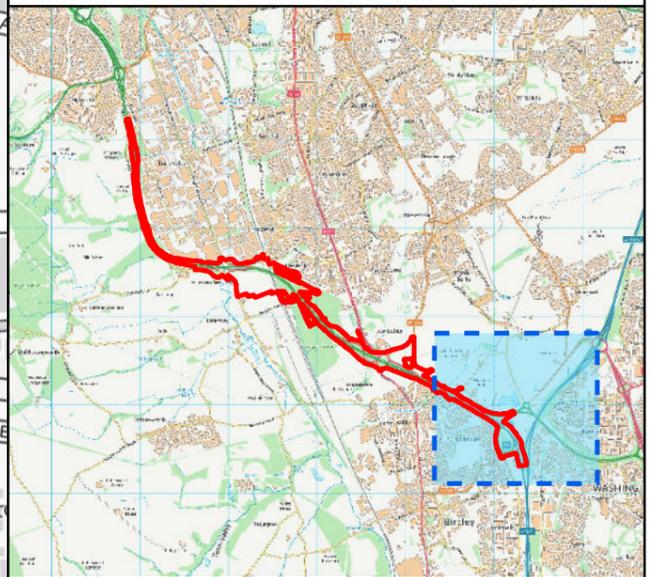
Original Size	Date	Date	Date	Date
A3	Dec 2018	Dec 2018	Dec 2018	Dec 2018

Drawing Number	Originator	Volume	Revision
HE551462	WSP	6.3	P03





- Key**
- Scheme Footprint
 - 500m Study Area
 - GCN Presence/Likely Absence**
 - Pond Surveyed - GCN Absent
 - Pond Not Surveyed



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:

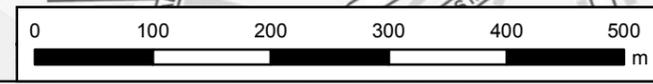
Project Title: **A1 Birtley to Coal House Scheme**

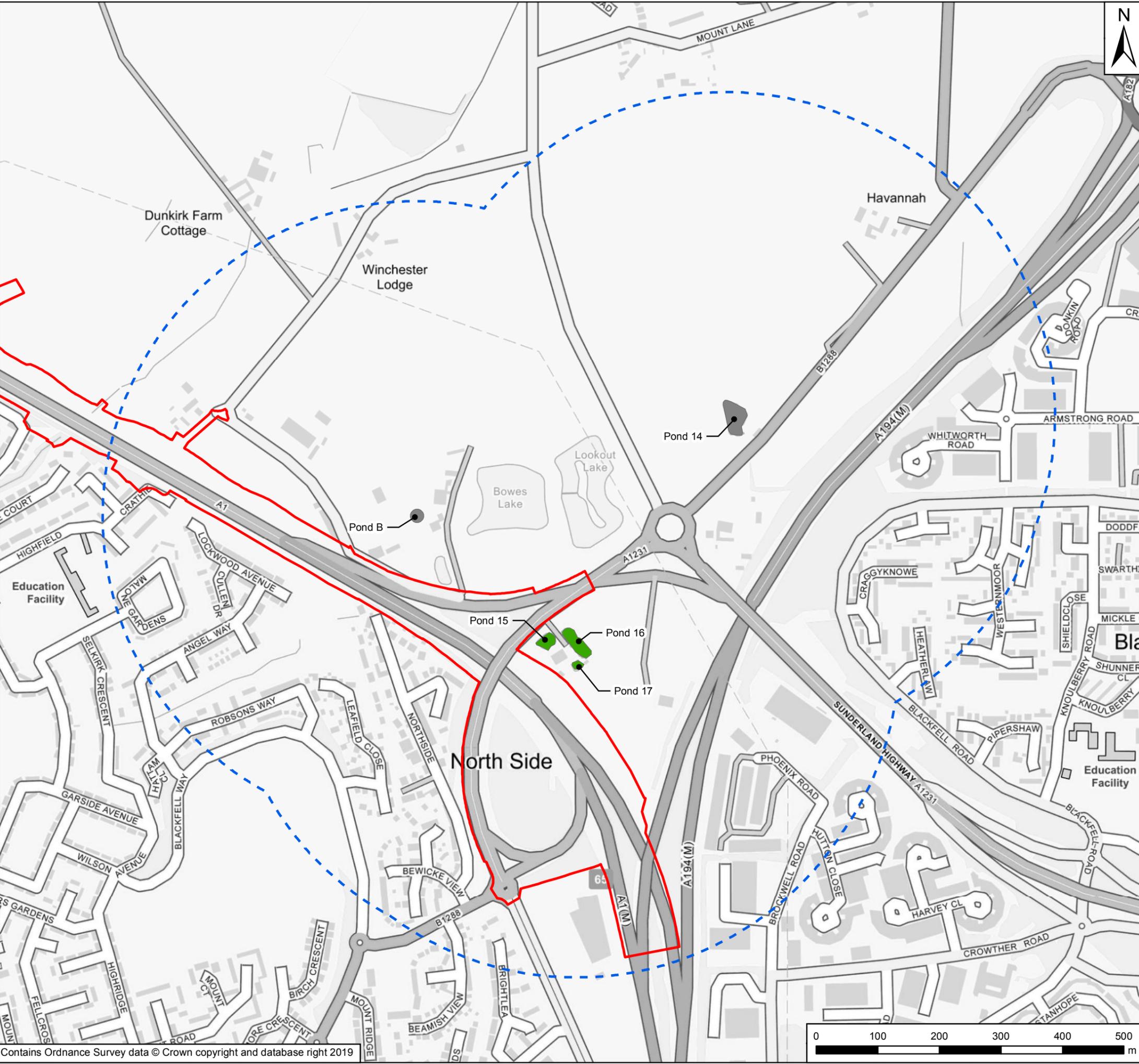
Drawing Title: **Figure 3 Survey Results - Presence/Likely Absence Surveys**

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	Originator	Volume	Revision
HE551462	WSP	6.3	P03



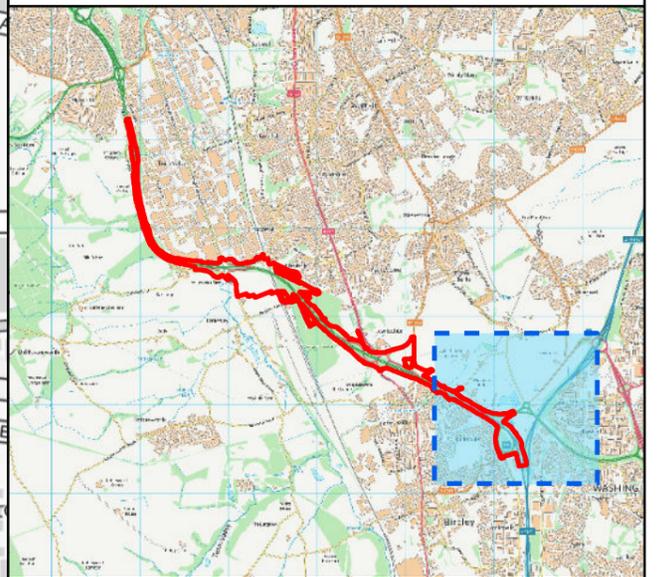


Key

- Scheme Footprint
- 500m Study Area

eDNA Assessment

- Pond Surveyed - Negative Result
- Pond Not Surveyed



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**

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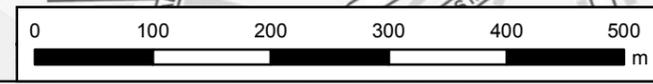
Project Title: **A1 Birtley to Coal House Scheme**

Drawing Title: **Figure 4 Survey Results - eDNA Assessment**

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	Originator	Volume	Revision
HE551462	WSP	6.3	P03



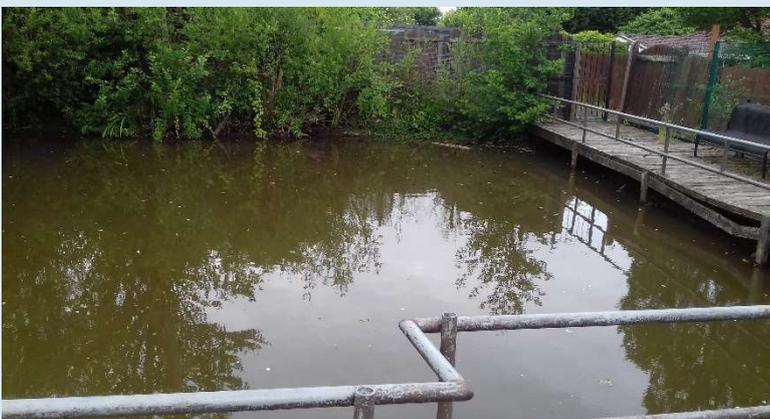
Appendix A

POND IMAGES



Pond Images

Pond Ref.	Image	Description / Comment
B		<p>Pond within residential garden. It is well established with high invertebrate life and dense vegetation.</p>
14		<p>Pond partially located within a pasture field largely grazed by horses. Evidence of horses accessing the pond along the western margin where banks are shallow.</p>
15		<p>Pond within uninhabited residential garden. Now surrounded by semi-improved grassland. A vegetated central island is present. Approximately half of the surface water was covered with green algae.</p>

Pond Ref.	Image	Description / Comment
16		<p>Old fishing pond no longer in use where fish remain present. Vegetation present along the north and north east margin. The south west margin comprises a combination of reed patches and bare concrete edges.</p>
17		<p>Old fishing pond no longer in use. Half of the pond margin has a boardwalk shading the muddy substrate beneath, where vegetation is absent. The remaining margin is fenced with minimal submerged vegetation.</p>

Appendix B

2018 HSI CALCULATIONS



2018 HSI Calculations and waterbody descriptions

Pond Ref.	Waterbody Description	S1: Geographic location	S2: Water body area	S3: Water body permanence	S4: Water quality	S5: % Shade (1m from bank)	S6: Impact of waterfowl	S7: Fish stocks	S8: Number of water bodies <1km	S9: Terrestrial habitat	S10: Macrophyte cover (%cover)	HSI SCORE	HSI CATEGORY
B	Pond within residential garden. It is well established with high invertebrate life and dense vegetation.	1	0.2	1	1	1	0.67	1	0.75	0.67	1	0.76	Good
14	Pond partially located within a pasture field largely grazed by horses. Evidence of horses accessing the pond along the western margin where banks are shallow.	1	0.9	0.9	0.33	1	0.01	0.67	0.75	0.33	0.35	0.42	Poor
15	Pond within uninhabited residential garden. Now surrounded by semi-improved grassland. A vegetated central island is present. Approximately half of the surface water was covered with green algae.	1	0.85	0.9	0.67	1	0.67	0.33	0.5	1	0.4	0.68	Average
16	Old fishing pond no longer in use where fish remain present. Vegetation present along the north and north east margin. The south west margin comprises a combination of reed patches and bare concrete edges.	1	0.95	0.9	0.67	1	0.67	0.01	0.5	0.67	0.4	0.47	Poor
17	Old fishing pond no longer in use. Half of the pond margin has a boardwalk shading the muddy substrate beneath, where vegetation is absent. The remaining margin is fenced with minimal submerged vegetation.	1	0.4	0.9	0.33	1	0.67	0.33	0.5	0.67	0.35	0.56	Below Average

Appendix C

PRESENCE / LIKELY ABSENCE SURVEY RESULTS



Pond B Survey Results

Pond Reference		B					
Date	GCN detected	Peak adult count ²	GCN Eggs or Larvae present	Air Temperature (oC) (min / max)	Vegetation Cover (0-5)	Turbidity (0-5)	Other Amphibians Recorded
09/05/2018	None	N/A	None	7 / 11	5	2	Smooth newt
14/05/2018	None	N/A	None	6 / 9	4	4	Smooth newt
31/05/2018	None	N/A	None	13 / 18	4	3	Other eggs
18/06/2018	None	N/A	None	10 / 15	4	4	Smooth newt

² Using one survey method (i.e torch or bottle trap)

Pond 14 Survey Results

Pond Reference		14					
Date	GCN detected	Peak adult count ³	GCN Eggs or Larvae present	Air Temperature (oC) (min / max)	Vegetation Cover (0-5)	Turbidity (0-5)	Other Amphibians Recorded
09/05/2018	None	N/A	None	7 / 11	1	4	Smooth newt
14/05/2018	None	N/A	None	6 / 9	0	4	Smooth newt
31/05/2018	None	N/A	None	13 / 18	0	5	Smooth newt
18/06/2018	None	N/A	None	10 / 15	1	3	Smooth newt Palmate

³ Using one survey method (i.e torch or bottle trap)

Appendix D

2018 EDNA REPORT



18261-WS-SP-1 Order number: WSP-13-SP

Great Crested Newt eDNA Results

Company: WSP
Address: 3 White Rose Office Park, Millshaw Park Lane, Leeds, LS11 0DL
Contact: Sarah Proctor
Project code | Task code: Birtley to Coal House - 70041947-E39 | B2CH eDNA - 15, 16, 17
Date of Report: 27 June 2018
Number of samples: 3

Thank you for sending your samples for analysis by NatureMetrics. Your samples have been processed in accordance with the protocol set out in Appendix 5 of Biggs et al. (2014).

DNA was precipitated via centrifugation at 14,000 x g and then extracted using Qiagen Blood and Tissue extraction kits.

qPCR amplification was carried out in 12 replicates per sample, using the primers and probe described by Biggs et al. (2014), in the presence of both positive and negative controls.

Results indicate GCN absence in your samples. No degradation or inhibition was detected, and all controls performed as expected. Conclusive results are therefore presented.

Results are based on the samples as supplied by the client to the laboratory. Incorrect sampling methodology may affect the results. Note that a negative result does not preclude the presence of Great Crested Newts at a level below the limits of detection.

Sample	Pond ID	Date arrived	Inhibition	Degradation	eDNA score	GCN status
GCN18-1893	'Pond 15'	21-Jun-18	No	No	0	Negative
GCN18-1902	'pond 16'	21-Jun-18	No	No	0	Negative
GCN18-1898	'Pond 17'	21-Jun-18	No	No	0	Negative

End of report

Report issued by: Dr. Cuong Tang

Contact: ct@naturemetrics.co.uk | 01491 829042



Understanding your results

- Positive:** GCN DNA has been detected in this sample, meaning that at least one of the 12 replicates has amplified. Remember that this is not a quantitative test, so you should not interpret a high eDNA score (e.g. 12/12) as necessarily indicating a larger population of GCN than a low eDNA score (e.g. 1/12).
- Negative:** No GCN DNA has been detected in this sample, and the internal and external controls worked as expected. This tells us that if there had been GCN DNA in the sample, we would have detected it, so we can be confident in its absence from the sample provided.
- Inconclusive:** No GCN DNA was detected in the sample, but the internal controls failed to amplify as expected. This means that any GCN DNA in the sample might also have failed to amplify properly, so we cannot have confidence in this negative result. Inconclusive results can be caused by degradation of the DNA (when the DNA marker contained in the ethanol in the kits fails to amplify) or by inhibition of the reaction (when the marker added in the lab fails to amplify) caused by certain chemicals or organic compounds that may be present in the water sample.



Appendix E

CRESTED NEWT RAPID RISK ASSESSMENT - POND B



Rapid Risk Assessment - Pond B

Component	Likely Effect	Notional Offence Probability
Great crested newt breeding pond(s)	No effect	0
Land within 100 m of any breeding pond(s)	0.005 ha lost or damaged	0.05
Land 100 – 250 m from any breeding pond(s)	0.11 ha lost or damaged	0.1
Land > 250 m from any breeding ponds(s)	0.24 ha lost or damaged	0.005
Individual great crested newts	No effect	0
	Maximum:	0.1
RAPID RISK ASSESSMENT RESULT:		Green: offence highly unlikely

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