



Harworth Estates

Rockingham Business Park, Barnsley

GREAT CRESTED NEWT REPORT

October 2017

FPCR Environment and Design Ltd

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1.0 INTRODUCTION

- 1.1 The following report has been prepared by FPCR Environment and Design Ltd on behalf of Harworth Estates Ltd. and details the findings of great crested newt (GCN) *Triturus cristatus* surveys undertaken on a site adjacent to Shortwood Business Park, Barnsley. The need for further surveys of this group was identified during an initial habitat assessment carried out in April 2015.

Site Location and Context

- 1.2 The subject site is located adjacent to the west of Shortwood Business Park in Barnsley, South Yorkshire (central grid ref: SE356 010) and includes parcels of land to the north and south of the A6195 dual carriageway. The subject site consists of a former quarry restored to arable and improved pasture with associated native hedgerows and plantation broad-leaved woodland. An attenuation pond, drainage channel (partially culverted) and associated semi-improved grassland are in the southwest and further limited parcels of semi-improved grassland are associated with plantation margins.
- 1.3 In terms of surrounding habitats, the existing residential development of Birdwell is situated to the north-west and to the south the more extensive residential area of Hoyland. Junction 36 of the M1 Motorway lies less than 600m to the west. The surrounding land use is largely arable and pasture with an area of broad-leaved semi-natural woodland to the north.
- 1.4 Two ponds are located within the site boundary (P1 and P1a) with a further five ponds (P1b – P5) located within 500m (Figure 1). Great crested newt surveys of ponds P1 and P2-P5 were undertaken in 2013¹ and 2014² by AES in support of a previous application. GCN surveys were undertaken on the same ponds by FPCR in 2015 and repeated in 2017 to update the baseline information.

Proposals

- 1.5 Proposals are for a business park development comprising warehousing with associated parking, lorry compounds and infrastructure.

¹ AES 2013 Great Crested Newt Late Season Survey, Rockingham

² AES 2014 Survey and Assessment for Great Crested Newt (*Triturus cristatus*) and other Amphibian Species, Rockingham.

2.0 LEGISLATION

- 2.1 GCN are afforded full legal protection under the Conservation of Habitats and Species Regulations 2010 (as amended) and the Wildlife & Countryside Act 1981 (as amended).
- 2.2 Under Regulation 41 of the Conservation of Habitats and Species Regulations 2010 (as amended) it is illegal to:
- Deliberately capture, injure or kill any wild animal of a European Protected Species (EPS);
 - Deliberately disturb wild animals of an EPS (affecting ability to survive, breed or rear young) – disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young;
 - Deliberately disturb wild animals of an EPS (impairing ability to migrate or hibernate) disturbance of animals includes in particular any disturbance which is likely to impair their ability in the case of hibernating or migratory species to hibernate or migrate;
 - Deliberately disturb wild animals of an EPS (affecting local distribution and abundance) – disturbance of animals includes in particular any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong;
 - Deliberately disturb wild animals of an EPS (whilst occupying a structure or place used for shelter or protection) – intentionally or recklessly disturb any wild animal while it is occupying a structure or place which it uses for shelter or protection;
 - Damage or destroy a breeding site or resting place of a wild animal an EPS.
- 2.3 Under the Wildlife and Countryside Act 1981 (as amended) it is illegal to:
- Recklessly or intentionally kill, injures or take any wild animals included in Schedule 5;
 - Recklessly or intentionally damage or destroy, or obstruct access to any structure or place which any wild animal included in Schedule 5 uses for shelter or protection;
 - Recklessly or intentionally disturb any such animal while it is occupying a structure or place which it uses for shelter or protection.

3.0 METHODOLOGY

Desktop Study

- 3.1 In order to compile existing baseline information regarding amphibians, relevant ecological information was requested from statutory and non-statutory nature conservation organisations, including:
- Sheffield Biological Records Centre (SBRC)
 - Rotherham Biological Records Centre (RBRC)
 - Natural England via the Multi Agency Geographic Information for the Countryside (MAGIC) interactive map (www.magic.gov.uk)
- 3.2 Further inspection, using colour 1:25,000 OS base maps (www.ordnancesurvey.co.uk) and aerial photographs from Google Earth (www.maps.google.co.uk), was also undertaken in order to

provide additional context and identify any features of potential importance for nature conservation in the wider countryside.

- 3.3 In addition data from previous great crested newt surveys of the site carried out during 2013 (AES 2013), 2014 (AES 2014) in support of a previous application has also been included for contextual reference. This report also includes data from a previous great crested newt survey carried out in 2015 (FPCR 2015³).

Field Study

Habitat Suitability Index (HSI)

- 3.4 The site was initially walked in April 2015 and any waterbodies found within the site were noted and described along with any suitability to support GCN. Where access was granted, ponds within a 500m radius of the site were also surveyed and assessed for their suitability.
- 3.5 The assessment to determine the suitability of each pond for GCN was made using the HSI methodology, as developed by Oldham et al (2000)⁴. The HSI provides a measure of the likely suitability of a waterbody for supporting newts. This methodology assesses ponds against ten pre-determined criteria, producing a score that indicates suitability for GCN occupation. Generally, waterbodies with a higher score are more likely to support GCN than those with a lower score and there is a positive correlation between HSI scores and waterbodies with newts recorded. Ten separate attributes are assessed for each pond:
- Location (Area A, B or C within the UK);
 - Pond Area (size in metres²);
 - Permanence (how many times it may dry out in a decade);
 - Water quality (invertebrate diversity);
 - Shade (percentage of a water bodies perimeter shaded);
 - Fowl (impact of waterfowl if present);
 - Fish (impact of fish if present);
 - Pond Count (density of ponds within 1km);
 - Terrestrial Habitat (quality of surrounding habitat); and
 - Macrophytes (percentage of surface area occupied).
- 3.6 A score is assigned according to the most appropriate criteria level set within each attribute and total score calculated of between 0 and 1. Pond suitability is then determined according to the following scale.

³ FPCR 2015 Great Crested Newt Report

⁴ Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). *Evaluating the Suitability of Habitat for the GCN (Triturus cristatus)*. Herpetological Journal 10 (4), 143-155.

Table 1: HSI Scale

HSI score	Pond Suitability
<0.5	Poor
0.5 - 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

Aquatic Surveys

- 3.7 A total of six waterbodies (P1, P1a, P1b, P2, P4 and P5) were surveyed following the methods recommended by Natural England as detailed in the Great Crested Newt Mitigation Guidelines (English Nature, 2001). Pond P3 was dry during the survey period so could not be aquatically surveyed. To determine the presence or absence of great crested newts, four individual survey visits were performed. In ponds where GCN were recorded during the first four survey visits or where they have been recorded in previous years a total of six individual survey visits were undertaken. Appropriately licensed ecologists from FPCR completed all of these surveys during suitable conditions i.e. when the ambient air temperature exceeded 5°C, with little/no wind and no rain. Survey conditions for each occasion are detailed in Table 2.

Table 2: Survey Conditions

Survey Date	Survey Conditions					
	Wind	Rain	Evening temp (°C)		Morning temp (°C)	
			Air pm	Water pm	Air am	Water am
08/05/2017	1	0	12	11	10	9
11/05/2015	1	0	17	12	10	10
15/05/2017	1	1	14	12	14	11
18/05/2017	1	1	13	15	12	15
23/05/2017	1	1	18	18	16	16
05/06/2017	2	1	16	15	13	13

- 3.8 On each survey occasion (if the presence of GCN had not previously been confirmed), three of a possible four different techniques (egg search, sweep net, bottle-trap and torch-light surveys) were used where possible. Where GCN had been confirmed guidance requires only two survey methodologies (bottle-trapping and torch-light) to be undertaken. A summary of all methodologies is provided below:

Bottle Trapping

- 3.9 Bottle traps were set within the water body in the evening at densities of one trap per two metres of shoreline (where feasible) and left overnight for inspection in the morning. Traps were partially submerged in the water leaving an air bubble in the bottle and secured by a cane marked with a high visibility tape to ensure relocation the following day. Care was taken to ensure that trapping

did not occur during excessively warm weather, when the temperature inside the trap could rise considerably, reducing oxygen levels and potentially suffocating the newts.

Sweep Netting

- 3.10 Long handled sweep-nets were used to sample the margins of the pond for GCN, with approximately 15 minutes of netting per 50m of shoreline.

Torch-Light Survey

- 3.11 Torching involved searching the water body after dusk using high-powered torches to scan the margins and potential display areas for newts. The perimeter of the pond was walked slowly to record any newts observed. Torch surveys are unsuitable within heavily vegetated and / or turbid ponds or after periods of heavy rain as visibility is diminished.

Egg Searching

- 3.12 Newts lay single eggs on leaves of aquatic plants or other suitable pliable material, after which the material is folded over the egg to protect it. GCN eggs can be distinguished from those of the other newts by their size, shape and colour. Submerged vegetation was examined for newt eggs and folded leaves gently opened to check for eggs. If a GCN egg had been identified, no further leaves would have been examined thereby minimising any further potential disturbance.

Survey Limitations

- 3.13 Aquatic surveys were not undertaken on pond P3 which was dry for the duration of the survey period.

4.0 RESULTS

Desk Study

- 4.1 Full details of the desk study are provided in the separate ecological appraisal (FPCR 2015⁵). In summary, two records of GCN were returned for within 1km of the site boundary. These records were those recorded during previous surveys of the site in 2013 / 2014 by AES Ltd. These records / results are detailed in Table 3 below.
- 4.2 Smooth Newt *Lissotriton vulgaris*, Common Frog *Rana temporaria*, and Common Toad *Bufo bufo* were recorded c.60m north of the subject site within Shortwood Business Park (in Pond 5) in 2009. Common Frog and Smooth Newt were recorded within the on-site pond P1 in 2005; and Smooth Newt and Common Toad were recorded c.100m west of the subject site in 2005.

Previous Survey

- 4.3 Surveys of the site were undertaken by Applied Ecological Services Ltd during 2013 and 2014 (AES Ltd⁶). A single great crested newt was recorded in pond P2 during 2014 with great crested newt nymphs also stated as being recorded in P1 during 2013 (although the photograph

⁵ FPCR 2015 Ecological Appraisal

⁶ AES Ltd 2013 *Great Crested Newt Late Season Survey: Rockingham* & AES Ltd 2014 *Survey and Assessment for Great Crested Newt (Triturus cristatus) and other Amphibian Species: Rockingham*

presented in the report appears to be inconclusive). Table 3 gives a summary of these results (the above pond numbers relate to FPCR nomenclature).

Table 3: Results from 2013 and 2014 GCN Surveys

FPCR Pond #	AES Pond #	No. Individuals						Presence / Absence			
		GCN		Smooth Newt		Unidentified Newt		Frog		Toad	
		2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
P4	P1	-	-	-	55	-	-	Y	Y	-	-
P3	P2	-	-	-	8	-	-	-	-	-	-
P2	P3	-	1	-	66	-	-	Y	Y	Y	Y
P1	P4	Y*	-	6	44	-	2	Y	-	-	-
P5	Shortwood Pond	-	-	1	20	-	-	Y	Y	-	-

*Nymphs observed

Pond Descriptions

Pond 1

- 4.4 An attenuation pond (SE 3533 0080) located south of the A6195, within the site boundary (photograph 1), connected to land to the north via an underpass (photograph 1). Measuring approximately 40m by 15m, it was characterised by an abundance of floating vegetation dominated by ivy-leaved duckweed *Lemna trisulca* and gently sloping margins dominated by common reed *Phragmites australis* together with abundant reed sweet-grass *Glyceria maxima* and reedmace *Typha latifolia*. Other flora noted included water forget-me-not *Myosotis aquatic* and celery-leaved buttercup *Ranunculus sceleratus*. A steep-sided drainage channel terminating at a culvert head at the north bank was dominated by water-cress *Nasturtium officinale*.

Pond 1a

- 4.5 A pooled section of ditch (SE 3553 0065), located within the site boundary, connected to P1 via a steep-sided wet ditch. It has steep margins and marginal aquatic flora limited to frequent reed-mace with open areas of water dominated by broad-leaved pondweed *Potamogeton natans*.

Pond 1b

- 4.6 A pooled section of ditch (SE 35617 00575) located just outside of the site boundary (<5m east) connected to pond P1a and P1 via a ditch. The waterbody was absent of aquatic and marginal vegetation.

Pond 2

- 4.7 An attenuation pond (SE 3523 0102) located north of the A6195. Aquatic vegetation comprised reedmace and common reed. The pond has recently been re-profiled under outline planning consent and in agreement with the LPA (Barnsley Council). These works have since been completed.

Pond 3

- 4.8 An attenuation pond (SE 3525 0133) linked to pond P4 via a drainage channel and culvert measuring 10m x 10m. Largely rainwater fed, vegetation was dominated by common reed and surrounding habitat characterised by tussocky grassland and dense scrub. This pond was dry throughout the survey season.

Pond 4

- 4.9 An attenuation pond located north of pond 3 (SE 3527 0142). Largely rainwater fed pond with aquatic vegetation limited to sweet-grass *Glyceria* sp surrounded by tussocky grassland and scattered scrub.

Pond 5

- 4.10 An established balancing pond (SE 3561 0151) at Shortwood Business Park with dense reedmace coverage and sweet-grass surrounded by tussocky grassland and dense scrub.

Habitat Suitability Index (HSI) Assessment

- 4.11 Table 4 provides a summary of the HSI assessment for all accessible ponds. Detailed HSI results are provided in Appendix A.

Table 4: HSI Scores

Pond	HSI Score	Predicted Presence	HSI Category
1	0.86	93%	Excellent
1a	0.60	20%	Below Average
1b	0.63	55%	Average
2	0.74	79%	Good
3	Dry		
4	0.86	93%	Excellent
5	0.82	93%	Excellent

Terrestrial Habitat

- 4.12 To the north of the A6195 the site was divided between arable fields and plantation broad-leaved woodland. The arable habitats offered extremely limited suitability for GCN due to their exposed nature and lack of habitat structure. The plantation woodland comprised habitat of greater value providing potential connectivity between the ponds surrounding with potential habitat for sheltering and over-wintering. To the south of the A6195 the majority of the site was split between further areas of plantation broad-leaved woodland providing habitat of greater value and intensively managed improved grassland which was considered to be generally unsuitable for GCN. The remainder of the habitats included scrub, hedgerows and wet and dry ditches, all of which had value providing potential sheltering and foraging habitat and links across the site and into the wider area.

Aquatic Surveys

- 4.13 Aquatic surveys were undertaken on ponds P1 - P5 during May and June 2017. No great crested newts were recorded during the surveys (Table 5). Smooth newts were recorded in ponds P1, P1a, P1b, P2 and P4 with a peak count of 58 recorded in pond P1 on the 11th May 2018. Common frog was also recorded. Full survey results can be found in Appendix B.

Table 5: Great Crested Newt Survey Results

Pond Number	Total Count							
	GCN		Smooth		Toad		Frog	
	Num	Eggs	Num	Eggs	Num	eggs	Num	eggs
1	-	-	108	Y	-	-	1	-
1a			5				1	
1b	-	-	12	-	-	-	-	-
2	-	-	2	-	-	-	-	-
3	-	-	-	-	-	-	-	-
4	-	-	22	-	-	-	-	-
5	-	-	4	-	-	-	-	-

5.0 DISCUSSION & RECOMMENDATIONS

Ponds

- 5.1 Two ponds (P1 and P1a) were located within the site boundary with the remainder (P1b – P5) located in surrounding habitat within 500m. An ornamental pond located approximately 450m north of the site boundary (SE 3504 0167) was not subject to GCN surveys due to limited commuting habitat linking it to on-site habitats. Aquatic surveys were not undertaken on pond P3 as it was dry for the duration of the survey period.

Great Crested Newts

- 5.2 GCN nymphs were stated as being present within P1 during netting surveys in 2013 undertaken by AES; however, aquatic surveys completed by AES the following year and by FPCR in 2015 and 2017 found no evidence of GCN during any of the survey occasions. It is therefore considered reasonably unlikely that GCN are present within this waterbody.
- 5.3 GCN were stated as being present within P2 during torching surveys by AES in 2014 where a single GCN was recorded. Following these surveys the LPA confirmed that works to 'Phase 1' of the development, including vegetation management, removal of existing earth mounds and profiling of P2, could be undertaken under precautionary method statement. In summary mitigation consisted of a 'finger-tip' search (prior to works surrounding the pond) of appropriate habitats within 60m of the pond. Cleared vegetation was either removed from site within 24hrs of clearance or raised on pallets, if cleared after this time, to remove any potential for creating GCN hibernating habitat. The ponds, and areas of retained habitat, were protected for the duration through installation of fencing at the works boundary.

- 5.4 No GCN were found during works to 'Phase 1' of the development and the GCN surveys undertaken by FPCR in 2015 and 2017 also observed no GCN. Based on this and in conjunction with the results of previous survey it is considered likely that only a very small number of individual GCN are present within P2. It is therefore considered that mitigation measures on a similar scale to those undertaken for works surrounding P2 are appropriate for further future ground works / vegetation clearance within 60m of the pond, this is further detailed in 'Mitigation' below.

Other Amphibians

- 5.5 All common amphibian species are protected from sale by the Wildlife and Countryside Act 1981 (as amended). Common toad is listed as a Species of Principal Importance under Section 41 of the NERC Act 2006.
- 5.6 A medium population of smooth newts was recorded in pond P1 and small populations of smooth newts were recorded in association with ponds P1a, P1b, P2, P4 and P5. The highest number was recorded in pond P1 with a peak count of 58, recorded on 11th May 2017. As all ponds are due to be retained no direct impacts on aquatic habitat for this species are anticipated.
- 5.7 Other common amphibian species recorded common frog which was recorded in ponds P1, P1a and P1b with a peak count of one in each pond. Tadpoles were recorded in ponds P1, P2 and P4. No other common amphibian species were recorded during 2015 but common frog adults and tadpoles were observed in ponds P1, P2, P4 and P5 during 2013-14 surveys. Precautionary mitigation to avoid harm to any potential toads in the vicinity of pond P2 is included in the Mitigation section.

Mitigation

- 5.8 In order to ensure that no GCN or common amphibians are harmed as part of the proposals the following precautionary mitigation shall be implemented:
- Any areas proposed for works to habitats within 60 m of P2 shall be subject to a 'finger-tip' search by a qualified ecologist immediately prior to works commencing. This should take place outside of the hibernating season (typically November – February inclusive) and will include searching all areas that have the potential to be utilised by GCN (and common amphibian) such as scrub, tussocky grassland, woodland and any refuge or form of potential sheltering habitat. Vegetation should be removed within 24hrs and checked again if there is a delay past this period. In the event that GCN are found works will stop and advice sought from the LPA.
 - To avoid creation of new habitat all vegetation should be removed from site, raised on pallets or centrally located within arable compartments to remove any potential for habitation and subsequent harm to these species.
 - Protective fencing should be installed around all ponds and surrounding terrestrial habitat that will not be affected by the works to ensure that there are no direct impacts to these habitats. Fencing should remain in place for the duration of works and there should be no transgression of people or machinery past this point.

- No machinery / plant or construction material should be stored within fenced areas to avoid potential harm to GCN and all appropriate pollution-prevention measures shall be undertaken to ensure no adverse impacts upon any waterbodies.

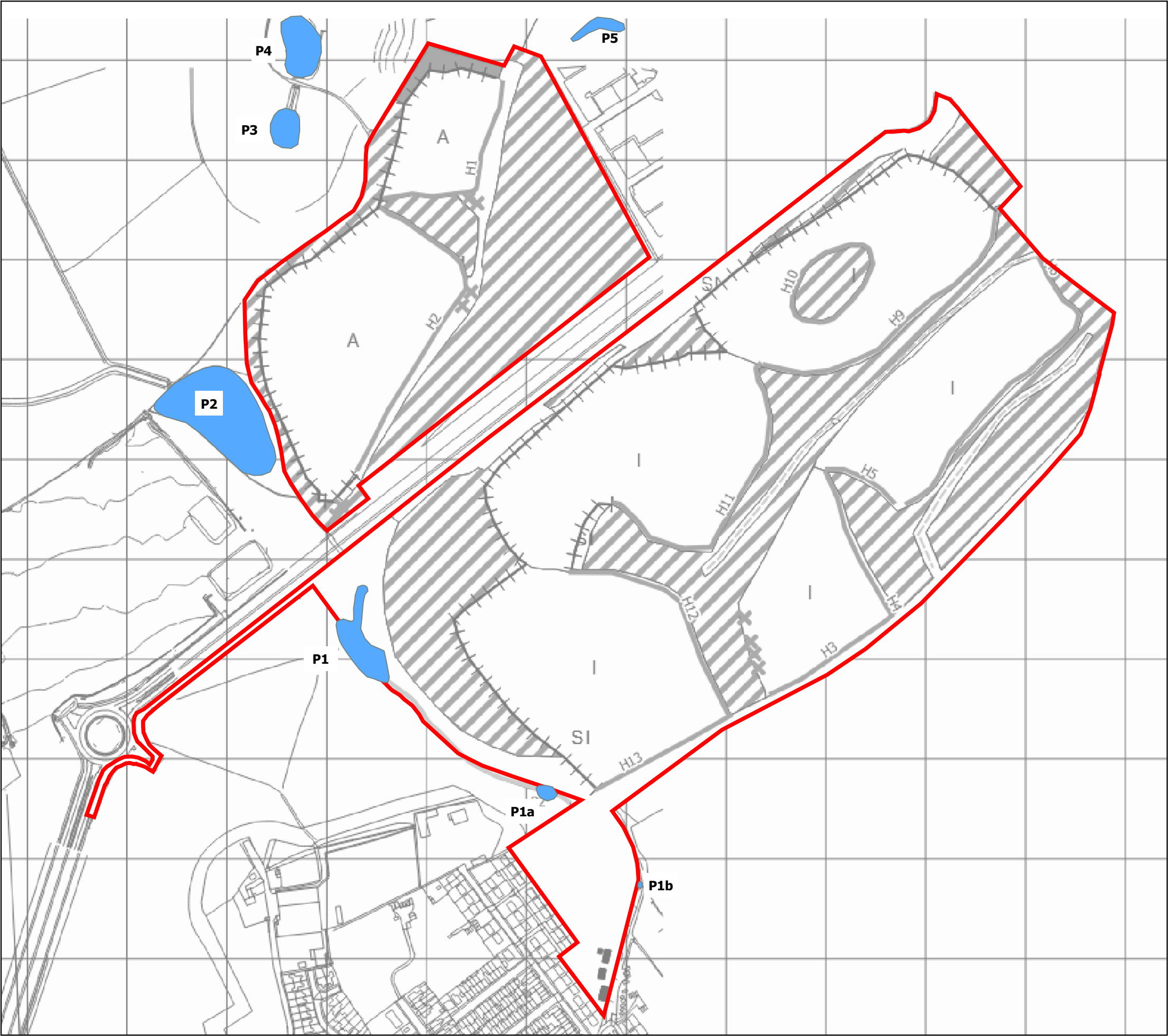
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APPENDIX A – HSI SCORES

Pond	SI -1		SI - 2		SI -3		SI -4		SI -5		SI -6		SI -7		SI -8		SI -9		SI -10		HSI Score	Pond Suitability	Predicted Presence
	Geographical Location		Pond Area		Pond Drying		Water Quality		Shade (Perimeter)		Water Fowl		Fish		Ponds within 1km		Terrestrial Habitat		Macrophytes				
	Field result (A, B, C)	SI score	Field result (m2)	SI score	Field result	SI score	Field result	SI score	Field result (% cover)	SI score	Field result	SI score	Field result	SI score	Field result	SI score	Field result	SI score	Field result (% cover)	SI score			
1	A	1	600	1	Never	0.9	Moderate	0.7	10	1	Minor	0.7	Possible	0.7	8	0.9	Good	1	40	0.7	0.84	Excellent	93%
1a	A	1	8	0.1	Sometimes	0.5	Moderate	0.7	60	1	Absent	1	Absent	1	8	0.9	Moderate	0.7	60	0.6	0.62	Average	55%
1b	A	1	16	0.1	Sometimes	0.5	Moderate	0.7	40	1	Absent	1	Absent	1	8	0.9	Good	1	5	0.4	0.59	Below Average	20%
2	A	1	1200	0.9	Rarely	1	Poor	0.3	0	1	Minor	0.7	Possible	0.7	9	0.9	Moderate	0.7	30	0.6	0.74	Good	79%
3	Dry																						
4	A	1	1000	1	Never	0.9	Moderate	0.7	0	1	Minor	0.7	Absent	1	9	0.9	Good	1	30	0.6	0.86	Excellent	93%
5	A	1	400	0.8	Never	0.9	Moderate	0.7	15	1	Absent	1	Minor	0.3	9	0.9	Good	1	70	1	0.82	Excellent	93%

APPENDIX B – AQUATIC SURVEY RESULTS

Pond Number	Survey Date	Evening air temp	Methodology Employed	Highest count									
				GCN		Smooth		Palmate		Toad		Frog	
				Num	Eggs	Num	Eggs	Num	Eggs	Num	eggs	Num	eggs
1	08/05/2017	12°	B,T,E	-	-	8	-	-	-	-	-	1	-
1	11/05/2017	18°	B,T,E	-	-	58	-	-	-	-	-	-	-
1	15/05/2017	14°	B,T,E	-	-	22	Y	-	-	-	-	-	-
1	18/05/2017	16°	B,E	-	-	2	-	-	-	-	-	-	-
1	23/05/2017	18°	B,T,E	-	-	14	-	-	-	-	-	-	-
1	05/06/2017	16°	B,T,E	-	-	4	-	-	-	-	-	-	-
1a	08/05/2017	12°	B,T,E	-	-	-	-	-	-	-	-	1	-
1a	11/05/2017	16°	B,T,E	-	-	2	-	-	-	-	-	-	-
1a	15/05/2017	14°	B,T,E	-	-	3	-	-	-	-	-	-	-
1a	18/05/2017	13°	B,E	-	-	-	-	-	-	-	-	-	-
1b	08/05/2017	12°	B,T,E	-	-	4	-	-	-	-	-	-	-
1b	11/05/2017	17°	B,T,E	-	-	4	-	-	-	-	-	1	-
1b	15/05/2017	14°	B,T,E	-	-	1	-	-	-	-	-	1	-
1b	18/05/2017	13°	B,E	-	-	3	-	-	-	-	-	-	-
2	08/05/2017	12°	B,T,E	-	-	-	-	-	-	-	-	-	-
2	11/05/2017	18°	B,T,E	-	-	-	-	-	-	-	-	-	-
2	16/05/2017	14°	B,T,E	-	-	-	-	-	-	-	-	-	-
2	18/05/2017	16°	B,E	-	-	-	-	-	-	-	-	-	-
2	23/05/2017	18°	B,T,E	-	-	2	-	-	-	-	-	-	-
2	05/06/2017	16°	N,T,E	-	-	-	-	-	-	-	-	-	-
4	08/05/2017	12°	B,T,E	-	-	3	-	-	-	-	-	-	-
4	11/05/2017	18°	B,T,E	-	-	5	-	-	-	-	-	-	-
4	18/05/2017	16°	B,E	-	-	8	-	-	-	-	-	-	-
4	15/05/2017	14°	B,T,E	-	-	6	-	-	-	-	-	-	-
5	08/05/2017	12°	B,T,E	-	-	-	-	-	-	-	-	-	-
5	11/05/2017	18°	B,T,E	-	-	-	-	-	-	-	-	-	-
5	15/05/2017	14°	B,T,E	-	-	-	-	-	-	-	-	-	-
5	18/05/2017	14°	B,E	-	-	4	-	-	-	-	-	-	-



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Legend

 Ponds



Harworth Estates
Rockingham Business Park, Barnsley

Pond Location Plan



Scale: 1:4,000

JAT / JD

11/10/2017

Figure 1

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