



Mr N. Davill

Land off Owthorpe Lane, Kinoulton, Nottinghamshire

ECOLOGICAL APPRAISAL

September 2022

FPCR Environment and Design Ltd

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1.0 INTRODUCTION

- 1.1 Mr N. Davill, c/o Stanford Partnership LLP., commissioned FPCR Environment and Design Ltd. to undertake an Ecological Appraisal for a parcel of land, approx. 0.4 ha in size, located off Owthorpe Lane on the northern village border of Kinoulton in Nottinghamshire (central grid reference SK 68086 31142).
- 1.2 The objective of the study was to determine habitats and species presence/potential presence within the site to allow an assessment of their ecological value, along with any potential ecological constraints to future development of the site for residential housing.
- 1.3 Additional objectives were to identify the need for additional surveys where appropriate, and to consider opportunities for ecological mitigation and enhancements within any future development design.
- 1.4 Initial surveys were undertaken during the 2019 ecological survey season, with further updates undertaken in 2022.
- 1.5 Owthorpe Lane borders the south-western site boundary while the village of Kinoulton is present to the south-west and south-east of the site. Actively grazed pasture and a hay meadow are present to the north-west and north with the wider landscape dominated by a mixture of arable and grazed fields intersected by hedgerows, pockets of small residential areas and very limited patches of woodland.
- 1.6 The proposed development of the site will include five residential properties along with associated residential gardens, hardstanding, and a shared driveway off Owthorpe Lane, entering the site via the southern corner

2.0 METHODOLOGY

Desk Study

- 2.1 A consultation exercise was completed with statutory and non-statutory nature conservation organisations for baseline ecological information. The search area for biodiversity information was related to the significance of sites, species and potential zones of influence, as follows:

10km around the application area for sites of International Importance (e.g. Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites) and sites of National or Regional Importance (e.g. Sites of Special Scientific Interest); and

1km around the application site for non-statutory sites of County or Local Importance (e.g. Sites of Importance for Nature Conservation (SINC), Local Wildlife Sites (LWS) and Local Nature Reserves (LNR) and species records (e.g. legally protected or notable species).

- 2.2 Organisations consulted included:

Natural England via the Multi Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk)

Nottinghamshire Biological and Geological Records Centre (NBGR).

- 2.3 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 area.

Field Survey

Overview

- 2.4 The survey technique adopted for the habitat assessment followed the Extended Phase 1 habitat survey technique as recommended by Natural England (JNCC, 2010¹). This comprised a walkover of the site on 11th June 2019, with an update undertaken on 22nd September 2022, mapping and broadly describing the principal habitat types and identifying the dominant plant species present within each habitat type and any invasive weeds (where present). Whilst the plant species lists obtained should not be regarded as exhaustive, sufficient information was obtained to determine broad habitat types.

- 2.5
- 

¹ JNCC 2010. *Handbook for Phase 1 habitat survey - a technique for environmental audit*, ISBN 0 86139 636 7

² *The Wildlife and Countryside Act 1981* (as amended). [Online]. London:HMSO Available from <http://www.legislation.gov.uk/ukpga/1981/69>

<http://www.legislation.gov.uk/ukpga/1992/51/contents>

⁴ <http://www.legislation.gov.uk/ukxi/2017/1012/contents/made>

Habitats

- 2.6 Hedgerows were surveyed using the Hedgerow Evaluation and Grading System (HEGS) (Clements & Toft 1992⁵). The aim of the assessment is to allow the rapid recording and ecological appraisal of any given site in the UK, and to allow the grading of the individual hedges present, in order to identify those which are likely to be of greatest significance for wildlife. This method of assessment includes noting down: canopy species composition, associated ground flora and climbers; structure of the hedgerow including height, width and gaps, and associated features including number and species of mature tree and the presence of banks, ditches and grass verges.
- 2.7 Using the HEGS methodology each hedgerow can then be given a grade. These grades are used to assign a nature conservation value to each hedgerow as follows:
- | | |
|-----------------|-------------------------------|
| Grade -1, 1, 1+ | High to Very High Value |
| Grade -2, 2, 2+ | Moderately High to High Value |
| Grade -3, 3, 3+ | Moderate Value |
| Grade -4, 4, 4+ | Low Value |
- 2.8 Hedgerows graded -2 or above are suggested as being a nature conservation priority.
- 2.9 The hedgerows were also assessed for their potential ecological value under the Hedgerow Regulations 1997 (Statutory Instrument No: 1160)⁶ to determine whether they qualified as 'Important Hedgerows' under the Regulations. This was achieved using a methodology in accordance with both the Regulations and DEFRA guidance⁷. An assessment of archaeological importance as defined under the Hedgerow Regulations 1997 was beyond the scope of this assessment.
- 2.10 All hedgerows were also assessed as to whether they qualified as Habitats of Principal Importance (Priority Habitats) under Section 41 of the Natural Environment & Rural Communities (NERC) Act 2006⁸, i.e. whether they consisted of 80% or more native species.

Fauna

2.11

2.12

⁵ Clements, D.K. and Tofts R.J. 1992. *Hedgerow Evaluation and Grading Systems (HEGS): A Methodology for the Ecological Survey, Evaluation and Grading of Hedgerows*. Countryside Planning and Management.

⁶ *The Hedgerow Regulations 1997 – Statutory Instrument 1997 No. 1160*. [Online]. London: HMSO. Available at: <http://www.legislation.gov.uk/ukSI/1997/1160/contents/made>.

⁷ DEFRA. 1997. *The Hedgerow Regulations 1997. A Guide to the Law and Good Practice*. London: HMSO

⁸ <https://www.legislation.gov.uk/ukpga/2006/16/contents>

- Latrines: often located close to setts, at territory boundaries or adjacent to favoured feeding areas;
- Prints and paths or trackways;
- Hairs caught on rough wood or fencing
- 2.13 Other evidence: including snuffle holes, feeding and playing areas and scratching posts

Bats

Ground Level Tree Assessment

- 2.14 The trees on site were assessed from ground level (using binoculars and a torch) on 3rd June 2019 and updated on the 22nd June 2022 for their potential to support roosting bats and to enable recommendations with respect to the proposed works. During the survey Potential Roosting Features (PRFs) for bats such as the following were sought (based on p16, British Standard BS 8596:2015, Surveying for Bats in Trees and Woodland):

Natural holes (e.g. knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar.

Man-made holes (e.g. cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems.

Woodpecker holes.

Cracks/splits in stems or branches (horizontal and vertical)

Partially detached, loose or bark plates.

Cankers (caused by localised bark death) in which cavities have developed.

Other hollows or cavities, including butt rots.

Compression of forks with occluded bark, forming potential cavities.

Crossing stems or branches with suitable roosting space between.

Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk).

Bat or bird boxes.

Other suitable places of rest or shelter not listed above.

- 2.15 Certain factors such as orientation of the feature, its height from the ground, the direct surroundings and its location in respect to other features, may reduce enhance or reduce the potential value.
- 2.16 Based on the above, trees were classified into general bat roost potential groups based on the presence of such features. Table 1 (below) broadly classifies the potential categories as accurately as possible as well as discussing the relevance of the features. This table is based upon Table 4.1 and Chapter 6 in *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (J., Collins (Bat Conservation Trust), 2016¹⁰).

¹⁰ Collins, J. (ed.) 2016. *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust.

- 2.17 Although the British Standard 8596:2015 document groups trees with moderate and high potential, these have been separated in Table 1 (as per Table 4.1 in *The Bat Conservation Trust Guidelines*) to allow more specific survey criteria to be applied.

Table 1: Classification and Survey Requirements for Bats in Trees

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
High Potential	A tree with one or more Potential Roosting Features that are obviously suitable for larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat. Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.	Aerial assessment by roped access bat workers (if appropriate) and / or nocturnal survey during appropriate period (May to August). Following additional assessments a tree may be upgraded or downgraded based on findings. If roost sites are confirmed and the tree or roost is to be affected by proposals a licence from Natural England will be required. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate.
Moderate Potential	A tree with Potential Roosting Features which could support one or more potential roost sites due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat but unlikely to support a roost of high conservation status (i.e. larger roost, irrespective of wider conservation status). Examples include (but are not limited to); woodpecker holes, rot cavities, branch socket cavities, etc.	A combination of aerial assessment by roped access bat workers and / or nocturnal survey during appropriate period (May to August). Following additional assessments a tree may be upgraded or downgraded based on findings. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate. If a roost site/s is confirmed a licence from Natural England will be required.
Low Potential	A tree of sufficient size and age to contain Potential Roosting Features but with none seen from ground or features seen only very limited potential. Examples include (but are not limited to); loose/lifted bark, shallow splits exposed to elements or upward facing holes.	No further survey required but a precautionary working method statement may be appropriate.
Negligible/No potential	Negligible/no habitat features likely to be used by roosting bats	None.

* Conservation of Habitat and Species Regulations 2017 (as amended) affords protection to "breeding sites" and "resting places" of bats. The EU Commission's Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC, February 2007 states that these are places "where there is a reasonably high probability that the species concerned will return".

Bat Roost Assessment of Building

- 2.18 One building was present on the site; external aspects of this building were examined on 2nd July 2019. An update survey of the building was undertaken on 22nd June 2022. Structural features with the potential for use by roosting bats were recorded, and suitable access points such as small gaps under eaves/soffit boards, raised or missing ridge tiles and gaps at gable ends were identified. Evidence to substantiate use by bats was also sought including staining from urine and/or fur, and the presence of bat droppings in and around features. Indicators that potential access points were not used included the presence of heavy cobwebbing and general detritus around these points.
- 2.19 An internal building inspection, including examination of roof voids where present, was also carried out to determine if there was any evidence of previous or present occupation by bats, or features present that might potentially support roosting bats. Evidence of occupation might comprise the presence of live or dead bats, droppings, urine staining, feeding remains, the conspicuous absence of cobwebs, and grease / scratch marks on timbers.
- 2.20 The above surveys were each undertaken by a licensed bat ecologist from FPCR (2nd July 2019 Natural England Class Licence Registration Number: 2015-11905-CLS-CLS, 22nd June 2022 Natural England Class Licence Registration Number: 2021-51397-CLS-CLS).

Nocturnal Bat Surveys of Building

- 2.21 Two dusk emergence bat surveys and one dawn re-entry bat survey were completed of the on-site building in 2019, and one emergence survey and one dawn re-entry survey were completed in 2022.
- 2.22 The primary objectives of surveys completed were to identify roosts, foraging areas, commuting routes and species utilisation of the development area. See Table 2 below for dates and timings of these surveys. Surveys were conducted in appropriate conditions, i.e. ambient temperatures above 10°C and with little wind and no rain.
- 2.23 This methodology takes into account the statutory guidance¹¹ and guidelines provided by the Bat Conservation Trust¹² and the Joint Nature Conservation Committee¹³. The survey effort was determined from recommendations provided in the above BCT guidance.
- 2.24 All nocturnal surveys were a minimum of 90 minutes in duration with an additional fifteen minutes before sunset or after sunrise. Surveyors were positioned around the building where they were able to observe all suitable roost features.
- 2.25 During the nocturnal surveys the species and location of any bat activity was recorded using Echo Meter Touch® bat detectors in conjunction with Echo Meter Touch® app and Apple Inc. iPad®. Post-survey, bat calls were analysed using Kaleidoscope© (Wildlife Acoustics) software package, by taking measurements of the peak frequency, inter-pulse interval, call duration and end frequency.
- 2.26 In addition, a Panasonic HC W850 with IR capacity (night-vision) camera was placed inside the building, alongside the use Echo Meter Touch® bat detectors by surveyors, to make a more thorough observation of the potential use of the building by bats.

¹¹ Mitchell-Jones, A.J. 2004. *Bat Mitigation Guidelines*. English Nature, Peterborough.

¹² Bat Conservation Trust 2016. *Bat Surveys for Professional Ecologists, Good Practice Guidelines*, 3rd Edition

¹³ Mitchell-Jones, A.J. and McLeish, A.P (eds.). 2004. *The Bat Workers' Manual*. 3rd Edition. JNCC, Peterborough.

- 2.27 The nocturnal surveys were completed by experienced bat workers and co-ordinated on site by a licensed bat worker (License Reference Number: 2015-11905-CLS-CLS (2019 surveys) and 2021-51397-CLS-CLS (2022 surveys)).

Table 2: Nocturnal Survey Dates

Survey Type	Survey date	Time (sunset/sunrise)	Conditions
Dusk Emergence	15.07.2019	21:07 – 22:52 (sunset 21:22)	19°C, 40% cloud cover, no wind, no rain.
Dawn Re-entry	30.07.2019	03:18 – 05:33 (sunrise 5:18)	16°C, 70% cloud cover, no wind, no rain.
Dusk Emergence	19.08.2019	20:08 – 21:53 (sunset 20:23)	16°C, 10% cloud cover, light breeze, no rain.
Dusk Emergence	22.06.2022	21.19 – 23.34 (sunset 21:34)	19°C, 60% cloud cover, no wind, no rain.
Dawn Re-entry	19.08.2022	03.51 – 06.06 (sunrise 5:51)	16°C, 15% cloud cover, no wind, no rain.

Foraging/Commuting Habitat

- 2.28 The potential for the site and immediate surrounds to support foraging and commuting bats was also assessed, with particular regard being given to the potential presence of continuous treelines and hedgerows providing good connectivity in the landscape, and any presence of varied habitat such as scrub, woodland, grassland and potential open water in the vicinity.

Great Crested Newt (GCN)

- 2.29 As part of the Phase 1 Habitat survey, a search for waterbodies within 500m of the site boundary was undertaken using OS mapping and aerial photographs. Five ponds were identified off-site, within this 500m radius, however access could be obtained for only one of these ponds P5.
- 2.30 A Habitat Suitability Index (HSI) assessment was undertaken on 30th July 2019 for this off-site pond. This assessment provides a measure of the likely suitability that a waterbody has for supporting great crested newts *Triturus cristatus* (GCN)^{14,15}. Whilst not a direct indication of whether or not a waterbody will support great crested newts, generally those 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 ponds in which GCN are recorded. Ten separate attributes are assessed for each pond to calculate the suitability of the ponds to support GCN:

Location within the UK	Presence of water-fowl
Pond area	Presence of fish
Frequency of pond drying	Number of other ponds within 1km
Water quality	Quality of surrounding terrestrial habitat
% shade	% cover by macrophytes

- 2.31 A score is assigned according to the most appropriate criteria level set within each attribute and a total score calculated of between 0 and 1. Pond suitability is then determined according to the scale set out in Table 3. Using the index score the predicted presence of GCN being found within a pond can be made, based on the proportion of ponds typically occupied at that suitability level.

¹⁴ Oldham et al., October 2000. Evaluating the Suitability of Habitats for the Great Crested Newt (*Triturus cristatus*), *Herpetological Journal* 10 (4).

¹⁵ ARG UK Advice Note 5 *Great Crested Newt Habitat Suitability Index*, Amphibian and Reptile Groups of the UK, May 2010.

Table 3: HSI Score and Suitability for Supporting Great Crested Newts

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

Reptiles

- 2.32 Habitats present within the site were considered for their potential suitability to support reptile populations, including presence of features which provide opportunities for reptiles to bask, forage and/or hibernate and areas of varied vegetation structure in sheltered locations with sunny aspects and connectivity to other suitable reptile habitats. This assessment was based on the methodology detailed in the Herpetofauna Workers Manual¹⁶ and the Froglife Advice Sheet¹⁷.

Other Species

- 2.33 The potential for other protected and/or notable species was assessed during the Phase 1 survey. This included recoding all bird species present at the time of survey, along with any terrestrial mammal field signs or sightings.

Limitations

- 2.34 The ground-based inspections of trees undertaken in 2019 and 2022 were undertaken outside the peak survey period listed by current BCT guidance of December to March. However, suitable features could be observed and it was considered that an accurate assessment of their potential could be made.

¹⁶ Gent, T. and Gibson, S. 1998. *Herpetofauna Workers' Manual*. JNCC, Peterborough.

¹⁷ Froglife, 1999. Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. *Froglife Advice Sheet 10*. Froglife, Halesworth.

3.0 RESULTS

Desk Study

Statutory Designated Sites

- 3.1 No statutory designated sites for nature conservation were located within, or directly adjacent to the site, and no sites of international importance for nature conservation were located within 10km of the application site.
- 3.2 In total six sites of national importance for nature conservation were located within 10km of the application site (Table 4). The closest of these is Kinoulton Marsh and Canal SSSI c.640m to the south west. The other five sites of national importance for nature conservation lay between 5km and 10km of the survey site. Details of these sites and their reason for designation is provided within Table 4 below.

Non-Statutory Designations

- 3.3 No non-statutory sites are located within the site or within 1km of the application site.

Table 4: Statutory Designated Sites

Site Name	Designation	Approx. Distance and Direction from Site	Size (ha)	Summary of Reasons for Designation
Kinoulton Marsh and Canal	SSSI	640m SW	2.9	Some of the richest marsh and open water habitats remaining in Nottinghamshire, representative of wetland plant communities on relatively base-rich soils in central and eastern England.

Species Records

- 3.4 Several records of protected species were returned from NBGR for the search area within a 1km radius of the survey site. A summary of the records considered to be of particular relevance to the study is provided below. The recorded locations of all species included are indicated in Figure 1.

Reptiles & Amphibians

- 3.5 One common lizard *Zootoca vivipara* record (1987) and two grass snake *Natrix helvetica* records (1987 and 2013) were returned. The common lizard and one of the grass snake records were taken from Kinoulton Marsh and Canal SSSI at approx. 720m south-west of the site while the other grass snake record was taken from near a pond at approx. 245m south of the site.
- 3.6 One common toad *Bufo bufo* record (2013) and five common frog *Rana temporaria* records (1993 – 2013) were returned for between c. 870m and 519m to the south-west of the site.
- 3.7 Nine smooth newt *Lissotriton vulgaris*, records (1993 – 2013) were returned, dating between 1993 and 2013. The closest of these are located approx. 250m to the west of the site.
- 3.8 Seven great crested newt records were returned, dating between 2013 and 2015. These were scattered to the west and south west of the site, some of which were associated with ponds that fall within a 500m radius of the proposed development area. A record taken at 235 m to the south was the closest to the site.

3.9

- 3.10 One record for Western European hedgehog *Erinaceus europaeus* was returned for within a 1km radius of the site (2015) at approx. 660m to the south west.
- 3.11 Three records from 2004 - 2005 for brown hare *Lepus europaeus* were returned with two being from the north west (at 360m and 480m from the site) and one was from the south east at approx. 640 m from the site.
- 3.12 Along Grantham Canal at 650m and 880m south from the site, two records for European water vole *Arvicola amphibius* (1980 – 1999) were returned.
- 3.13 No records for otter *Lutra lutra* or any other terrestrial mammal (excluding bats which is outlined below) within a 1km radius of the survey site were returned.

Bats

- 3.14 There are several records for bats relating to the search, with dates ranging from 1993 to 2015 (Table 5). The majority of records came from dusk emergence and dawn re-entry surveys and driven transects undertaken by either ecological consultants or as part of ecological research.
- 3.15 Twenty-one of these records originated from five central locations indicated in Figure 1 associated with residential housing at 400m and 570m to the south west, 340m to the south east and at 440m to the north east of the survey area.

Table 5: Summary of Bat Records within 2km from the Study Area

Species	Number of records	Dates	Shortest Distance from Site
<i>Chiroptera</i> sp.	3	1993	240m
<i>Myotis</i> sp.	4	2015	490m
<i>Nyctalus</i> sp.	1	2015	490m
<i>Pipistrellus</i> sp.	3	1995 - 2007	440m
Brown Long-eared bat <i>Plecotus auritus</i>	2	2015	380m
Common Pipistrelle <i>Pipistrellus pipistrellus</i>	12	2000 - 2015	50m
Noctule <i>Nyctalus noctula</i>	4	2015	380m
Soprano Pipistrelle <i>Pipistrellus pygmaeus</i>	4	2015	380m

Birds

- 3.16 Eighteen bird records were returned for a total of twelve species within a radius of 1km of the survey site while no bird records come from the survey site itself. All the records were concentrated around one central location approx. 180m to the south-east of the survey site. All bird records are summarised in Table 6 below, and the central location of these records around the survey site is indicated on Figure 1.

Table 6: Summary of Bird Records from within a 1km radius of the Study Area

Species	Number of records	Dates
Barn Swallow <i>Hirundo rustica</i>	2	2012 – 2013
Common Buzzard <i>Buteo buteo</i>	6	2009 - 2016
Common Chiffchaff <i>Phylloscopus collybita</i>	1	2012
Common Kingfisher <i>Alcedo atthis</i>	1	2013
Common Whitethroat <i>Sylvia communis</i>	1	2012
Grey Plover <i>Pluvialis squatarola</i>	1	2012
Hen Harrier <i>Circus cyaneus</i>	1	2010
Hobby <i>Falco subbuteo</i>	1	2015
Linnet <i>Linaria cannabina</i>	1	2012
Marsh Tit <i>Poecile palustris</i>	1	2013
Mute Swan <i>Cygnus olor</i>	1	2012
Wryneck <i>Jynx torquilla</i>	1	2008

Invertebrates

- 3.17 A number of invertebrate records were returned. These records were all centred around two locations with five records coming from the location 800m to the north of the site where Black-tailed Skimmer *Orthetrum cancellatum*, Broad-bodied Chaser *Libellula depressa*, Emperor Dragonfly *Anax imperator*, Migrant Hawker *Aeshna mixta*, and ruddy darter *Sympetrum sanguineum*, were recorded in 2000.
- 3.18 The other central location for invertebrate records was at 700m to the south (within Kinoulton Marsh and Canal SSSI) and here 46 records were taken in 2002, for species of aquatic beetle, all within the following genera: *Agabus*, *Anacaena*, *Cercyon*, *Colymbetes*, *Cymbiodyta*, *Enochrus*, *Halipilus*, *Helochares*, *Helophorus*, *Hydraena*, *Hydrobius*, *Hydroglyphus*, *Hydroporus*, *Hygrotus*, *Ilybius*, *Laccobius*, *Laccophilus*, *Noterus*, *Ochthebius*, *Rhantus*, *Corixa*, *Gerris*, *Hesperocorixa* and *Sigar*.

Phase 1 Field Survey – Habitats

Overview

- 3.19 The site comprised a variety of habitats including poor semi-improved grassland, semi-natural broadleaved woodland, scattered trees, dense scrub, a dry ditch and tall ruderal vegetation. A small disused storage building with lean-to (TN1, Figure 2) was present in the north-east and the site was bounded by a combination of four short sections of native species-poor hedgerows, wooden post-and-rail fencing, wire-stock proof fencing and an approximately 25m long section of low garden wall. Full species lists for each habitat type are provided in Appendix A.

Poor Semi-improved Grassland

- 3.20 The site consisted predominantly of poor semi-improved grassland (Photo 1) which appeared to be unmanaged with sward length up to 1m in height. Grass species recorded included; barren brome *Anisantha sterilis*, meadow foxtail *Alopecurus pratensis*, crested dog's-tail *Cynosurus cristatus*, wall barley *Hordeum murinum* and Yorkshire-fog *Holcus lanatus* recorded at least frequently throughout the sward. Occasionally recorded grass species included; false oat-grass *Arrhenatherum elatius*, annual meadow-grass *Poa annua*, cock's-foot *Dactylis glomerata*, Italian rye-grass *Lolium multiflorum* and soft brome *Bromus hordeaceus*.

- 3.21 Herbaceous species distribution was patchy and reflected variation in moisture levels and sun exposure across the site. The most frequently occurring species included common vetch *Vicia sativa*, cow parsley *Anthriscus sylvestris*, hogweed *Heracleum sphondylium*, meadow buttercup *Ranunculus acris*, meadow vetchling *Lathyrus pratensis* and red clover *Trifolium pratense* with a localised patch of yellow-rattle *Rhinanthus minor*.



Photograph 1: Unmanaged, poor semi-improved grassland. Circled in red is also defunct, species-poor hedgerow H1.

Semi-natural Broadleaved Woodland

- 3.22 A small, irregularly shaped area of semi-natural broadleaved woodland was present at the south-western site boundary and consisted of predominantly semi-mature crack willow *Salix x fragilis*, along with semi-mature and young elder *Sambucus nigra*, common hawthorn *Crataegus monogyna* and apple *Malus* species.
- 3.23 The woodland understory was not very dense and consisted mainly of brambles *Rubus fruticosus* agg., rose *Rosa* sp., blackthorn *Prunus spinosa*, common nettle *Urtica dioica*, cleavers *Galium aparine* and false oat-grass *Arrhenatherum elatius*, along with some dead wood due to two small fallen trees and old brush piles. The south-eastern woodland edge was fringed by a band of tall ruderal vegetation (described below).

Scattered Broadleaved Trees

- 3.24 A number of scattered trees were present within and directly adjacent to the site. These included four very young ash *Fraxinus excelsior* trees along the north-western site boundary, three semi-mature ash trees to the west of the area of broadleaved woodland, as well as young and semi-mature fruit trees consisting of apple and cherry *Prunus* sp., within the dense scrub (see description below) present on the north-eastern half of the site (Figure 2).



Photograph 2: Semi-natural broadleaved woodland with band of tall ruderal vegetation along south eastern edge.



Photograph 3: Two ash saplings on the north western site boundary with three ivy clad, semi-mature ash trees, to the west of the area of broadleaved woodland.

Scrub & Dry Ditch

- 3.25 Dense, continuous scrub was present in the north of the site, spanning the width of the site. Part of this band of scrub was made up of a previously unmanaged hedgerow which had been allowed to grow out. Here a dry ditch was also present within the scrub.

- 3.26 Scrub habitat was dominated by common woody species including ash, blackthorn, bramble, common hawthorn and elder, while the understory contained species similar to those found in tall ruderal habitats at the site (see below).
- 3.27 A short line of hawthorn dominated scrub was also present along the north-western site boundary, near the three semi-mature ivy-clad ash trees.

Tall Ruderal Vegetation

- 3.28 Limited tall ruderal vegetation was present on the peripheries of the poor semi-improved grassland habitat where it remained unmanaged. Here typical herbaceous species included cleavers, common nettle, broad-leaved dock *Rumex obtusifolius*, field bindweed *Convolvulus arvensis*, hedge bindweed *Calystegia sepium*, hogweed, meadow vetchling, prickly sow-thistle *Sonchus asper*, and smooth sow-thistle *Sonchus oleraceus*. Along the low wall on the south-western site boundary, additional species included a cultivated *Iris* sp. (most likely an escapee from neighbouring gardens), and bracken *Pteridium aquilinum*.
- 3.29 A larger area of tall ruderal vegetation was situated between the patches of scrub to the north of the site. Here, woody species such as bramble as well as ash, elder and blackthorn suckers from surrounding scrub habitat were more abundant.

Hedgerows

- 3.30 Three hedgerows were identified on the boundaries of the site (H1 to H3), all of which were species poor. Defunct hedgerows H1 and H2 were not assessed under the Hedgerow Regulations criteria nor scored under the HEGS assessment as they were not classified as 'hedgerows' due to:

The length being less than 20m (H1 c. 8m and H2 c18m); and

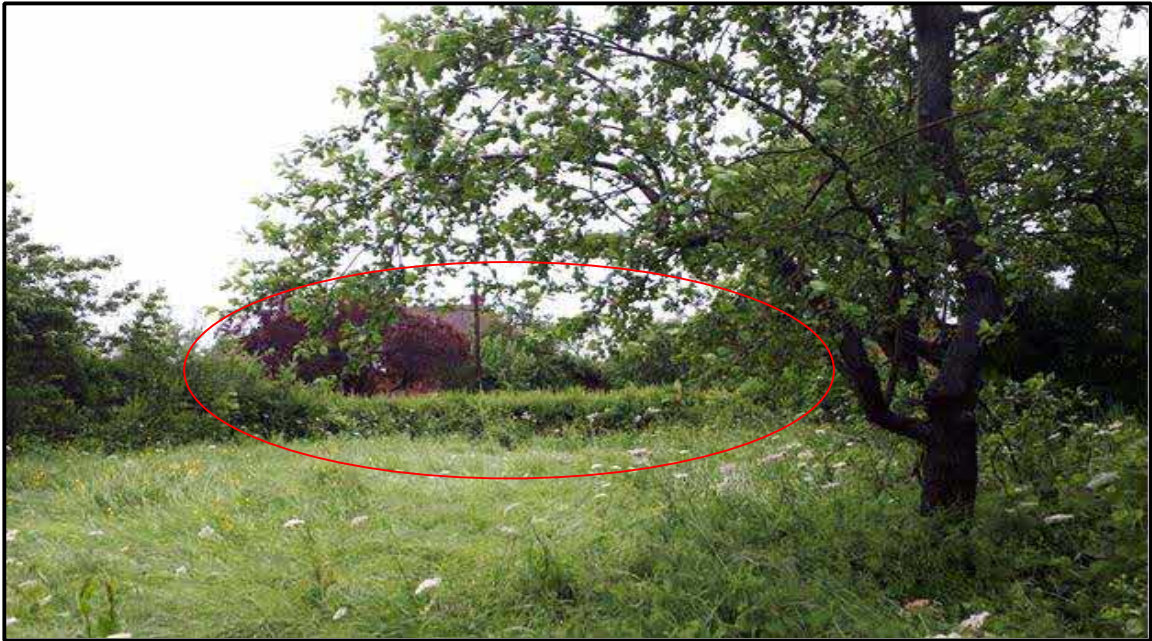
The gap between H3 and H1 (Photo 1 and 3), and that between H2 and the dense scrub to the north of the site, was larger than 20m. As such H1 and H2 were classed as individual defunct hedgerow sections.

- 3.31 The section of H3 which made up the south-western site boundary was approx. 53m in length and was dominated by blackthorn with ash and hawthorn also present. However, this was part of a longer hedgerow which extended outside the ownership of the proposed development site and made up a hedgerow with a total length of approx. 154m with a species composition similar to that of the 53m section.
- 3.32 H3 qualifies as a Habitat of Principal Importance as described in Section 41 of the NERC Act 2006 since it comprises at least 80% native woody species. A summary of the extent and ecological value of H3 is provided in Table 7.

Table 7: Summary of the Extent of the Hedgerows and their Ecological Value

Hedgerow	Length (m)	Important (Hedgerow Regs)	HEGS SCORES					
			Structural	Connectivity	Diversity	Associated Features	Grade	Value
H3	52.6	No	8	6	4	0	2	Moderately High

- 3.33 The hedge base flora of all the hedgerows at this site was largely species poor, with typical ruderal species such as bramble, cleavers and common nettle along with some additional species such as common vetch, wood avens *Geum urbanum* and hedge garlic *Alliaria petiolata*.



Photograph 4: A section of managed, species poor hedgerow (H3; circled in red) along Owthorpe Lane.



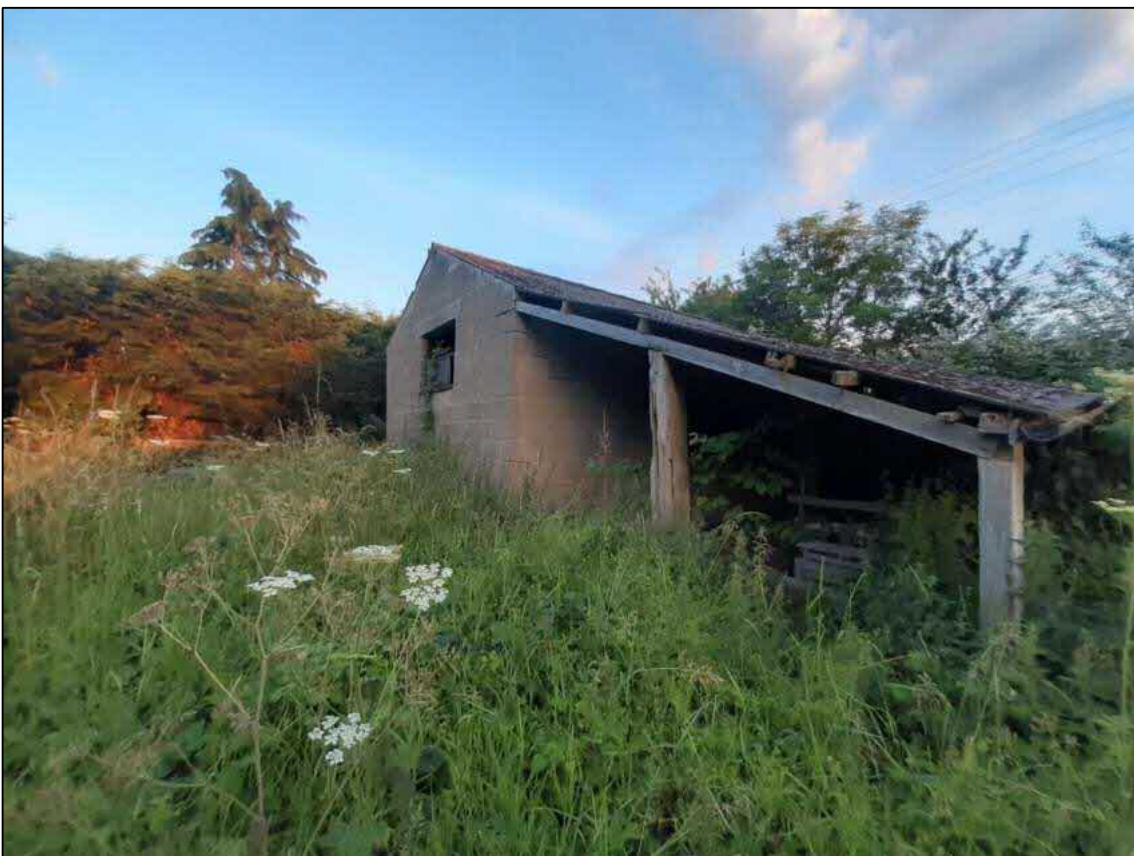
Photograph 5: The less managed species poor, defunct hedgerow (H2) along the south-eastern site boundary.

Building

- 3.34 A disused and dilapidated stable/storage building (TN1, Figure 2) was present in the north-east of the site. The building was surrounded by dense scrub and tall ruderal vegetation. The building is discussed further below.



Photograph 6: Northern elevation of the breezeblock storage building (TN1)



Photograph 7: Lean-to area on the north-western elevation of the storage building (TN1), surrounded by tall ruderal and scrub vegetation.

Phase 1 Field Survey – Fauna

3.35

3.36

Bats*Ground Level Roost Assessment - Trees*

- 3.37 Four trees were identified within the site as having low potential for roosting bats. This comprised; three semi-mature ash trees (T1, T2 and T3, Figure 2) with extensive ivy growth and one semi-mature to early-mature apple tree (T4, Figure 2) with dead wood, broken limbs and rot holes (see Appendix B).

Bat Roost Assessment – Building

- 3.38 The building (TN1, Figure 2) was a single storey dilapidated storage/stable with a lean-to on the north-western aspect. It was constructed from breezeblock with a pitched corrugated asbestos roof. The lean-to was constructed mainly from wooden posts and beams. External potential access points into the building for bats comprised open aspects of the lean-to, open doorways and broken windows.
- 3.39 Internally no underling or roof void was present. Gaps suitable for roosting bats were present in the ridge and within wooden beams on the lean-to. At the southern gable a small number of large yellow underwing *Noctua pronuba* moth remains were present along with one fresh bat dropping. The evidence indicated the presence of a bat feeding perch. Consequently, further nocturnal surveys were undertaken in 2019, totalling three surveys.
- 3.40 During the update internal/external building assessment undertaken in 2022, no structural changes to the building were identified, with the building confirmed to remain in a very similar condition to that noted previously. No evidence of the presence of bats was identified on this occasion however, such as accumulations of bat prey remains or the presence of bat droppings.

*Nocturnal Surveys of Building**Dusk emergence, 15th July 2019*

- 3.41 During the dusk survey one brown long-eared bat was observed entering the building from the open door on the eastern elevation at approx. 22:57 (1hr 35 min after sunset). This individual bat was seen to utilise the sheltered space within the south-western end of the building (potentially for foraging), before settling on the apex of the ceiling in a gap under the ridge tile, at approx. 23:05.
- 3.42 Other bat activity was dominated by common pipistrelle between 21:52 (45 mins after sunset) and 23:15 (1 hr 7 mins after sunset) associated with foraging within the surrounding tall ruderal habitat. No other bats were observed to use the building during the survey.

Dawn re-entry, 30th July 2019

- 3.43 During the dawn survey, several bats were seen to use the survey area for foraging between 03:55 (1 hr 23 mins before sunrise) and 04:48 (35 mins before sunrise) after which time no further bat activity was recorded. Bat species consisted of 13 passes by common pipistrelle and 10 passes by noctules. These were observed foraging over the tall ruderal vegetation and dense scrub near the eastern site boundary and adjacent to residential gardens.
- 3.44 No bats were observed re-entering or using the building structure in any way during this survey.

Dusk emergence, 19th August 2019

- 3.45 During the second dusk survey, one unidentified *Myotis* species bat was observed to enter the building via the open door at 21:26 (approx. 1 hr after sunset), using the interior building space for foraging for approx. 7 minutes before exiting the building via the same doorway.
- 3.46 Additionally, nine further passes by common pipistrelle and three passes by noctules were recorded between 20:47 (approx. 24 mins after sunset) and 21:20 (approx. 1 hr after sunset) This additional bat activity was again associated with foraging within the tall ruderal habitat surrounding the building.

Dusk emergence, 22nd June 2022

- 3.47 Several bats were recorded using the survey area for foraging between 22:02 (18 mins after sunset) and 23:13 (1 hour 39 mins after sunset), after which time no further bat activity was recorded. Bat activity consisted of 13 passes by common pipistrelle, a single pass by an unidentified *Pipistrellus* sp. and 2 passes by a brown long-eared bat. Bat foraging activity was observed over the tall ruderal vegetation and dense scrub near the eastern site boundary.
- 3.48 No bats were observed emerging from or otherwise using the building structure in any way during this survey.

Dawn re-entry, 19th August 2022

- 3.49 Several bats were recorded foraging within the survey between 03:51 (2 hours before sunrise) and 05:20 (31 mins before sunrise), after which time no further bat activity was recorded. Bat activity consisted of 24 passes by common pipistrelle, 7 passes by soprano pipistrelle, 3 passes by an unidentified pipistrelle species, 4 passes by unidentified *Myotis* species, 5 passes by noctule and 3 passes by brown long-eared bat. Bats were again observed foraging over the tall ruderal vegetation and dense scrub near the eastern site boundary.
- 3.50 No bats were observed returning to or otherwise using the building structure in any way during this survey.

Foraging / Commuting Habitat

- 3.51 Habitats within the site were of a minimal size and of low species diversity, as such the habitats present were considered to provide low quality commuting and foraging opportunities for bats, with the scrub, woodland and hedgerows providing limited commuting habitat due to the poor connectivity into the wider area.

Great Crested Newts

Terrestrial Habitats

- 3.52 Suitable terrestrial habitats within the site included the perimeter hedgerows, woodland and areas of scrub which provided potential habitat for foraging, commuting as well as areas of rest and shelter. The poor semi-improved grassland provided potential additional foraging habitat.

Aquatic Habitats – HSI Assessment

- 3.53 No waterbodies were present within the proposed development site however, five ponds (P1 to P5, Figure 3) were identified within a 500m radius of the site.
- 3.54 Access was permitted to survey only one of these five ponds (Pond P5) which was assessed as having 'good' suitability for GCN. A description and the HSI result for the accessible pond is presented in Table 8, Appendix C.
- 3.55 Of the remaining ponds, the nearest two ponds to the proposed development site (P1 and P2) were situated at approx.158m north from the site, but no previous GCN records were found for these two ponds (both waterbodies are understood to have been constructed in the early 2000s as fishing ponds¹⁸. There was limited terrestrial habitat connectivity between these two ponds and the proposed development area, with the majority of the area between the site and the ponds consisting of improved and managed, pasture.
- 3.56 Pond P3 was situated at 235m south from the site within a residential garden off Main Street, with Owthorpe Lane and a band of residential housing separating the site and the pond, and previous GCN records were associated with this pond.
- 3.57 Ponds P4 and P5 were situated within neighbouring residential gardens off Lindy Close at approx. 360m west from the site and these ponds were also separated from the site by Owthorpe Lane and a band of residential housing. Both ponds P4 and P5 had previous GCN records associated with them.

Reptiles

- 3.58 The hedgerow, scrub and grassland, with the adjacent tall ruderal habitat, provides structural diversity and therefore represents limited suitable habitat for reptiles. However, no reptile evidence was found during the field surveys.

Birds

- 3.59 Suitable nesting and foraging habitat for common bird species was present within the site comprising scrub, hedgerows, woodland and scattered trees, as well as tall ruderal vegetation and grassland. Bird species observed during the surveys included blackbird *Turdus merula*, woodpigeon *Columba palumbus*, magpie *Pica pica*, robin *Erithacus rubecula*, carrion crow *Corvus corone* and great tit *Parus major*.
- 3.60 In addition, during the field survey in 2019 a recently active bird nest, likely belonging to wren *Troglodytes troglodytes*, was observed within the derelict storage building on the site.

¹⁸ <https://planningon-line.rushcliffe.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=0001255FUL>

Water Vole & Otter

- 3.61 From the desk study water vole and otter were identified within 1km of the site. However, no waterways connect to the site. Furthermore, a single dry ditch was present within the site which is unsuitable for these species.

Brown Hare

- 3.62 No field signs were observed during the field survey for brown hare. The open grassland was a small area with a long sward, enclosed by hedgerows, woodland and scrub and thus, the habitat within the site was sub-optimal for use by brown hare.

Hedgehog

- 3.63 No field signs were observed during the field surveys for hedgehog however the scrub, woodland and tall ruderal vegetation at the site was suitable for use by hedgehogs for foraging, commuting and hibernating.

Invasive Species

- 3.64 No invasive species were observed at the site during the survey.

Invertebrates

- 3.65 Meadow brown *Maniola jurtina*, peacock *Aglais io* and comma *Polytonia c-album* butterflies were observed utilising the grassland, tall ruderal vegetation and scrub within the site.

4.0 DISCUSSION AND RECOMMENDATIONS

Proposals

- 4.1 It is understood (at the time surveys) that the proposed development will result in the loss of poor semi-improved grassland, scrub and tall ruderal habitat on site, to facilitate a small residential development comprising of five houses with associated hardstanding and residential gardens.

Statutory Designated Sites

- 4.2 There were no statutory sites of international or national nature conservation importance present within, or adjacent to, the proposed development site.
- 4.3 One statutory designated site (Kinoulton Marsh SSSI) was situated within 1km of the proposed development site. This site is designated for marsh and open water habitats and wetland plant communities, none of which were present within the proposed development site nor were they connected to the development site. From a review of the MAGIC database, the site falls within the 1km SSSI Impact Risk Zones (IRZ) for Kinoulton Marsh SSSI. However, at this distance only 'residential developments of 100 unit or more' or 'residential development of 50 or more houses outside existing settlements/urban areas' need to consider impacts upon this SSSI.

Non-Statutory Designated Sites

- 4.4 No non-statutory sites were located within the site, or within 1km of the application site.

Habitats

- 4.5 The degree to which habitats receive consideration within the planning system relies on a number of mechanisms, including:

Inclusion within a specific policy, for example veteran trees, ancient woodland and linear habitats within the National Planning Policy Framework (NPPF);

A non-statutory site designation (e.g. Local Wildlife Site);

Habitats considered as habitats of principal importance for the conservation of biodiversity as listed within Section 41 of the NERC Act 2006;

Habitats identified as being a Priority Habitat within the local Biodiversity Action Plan (Nottinghamshire Local BAP).

- 4.6 The only on-site habitat identified during the survey, which falls within the above listed categories were the hedgerows.
- 4.7 Under the NPPF, development should seek to contribute a net gain in biodiversity with an emphasis on improving ecological networks and linkages where possible.

Poor Semi-improved Grassland

- 4.8 Approximately half of the developable area comprised poor semi-improved grassland. The species composition was reviewed against the SINC Selection in Nottinghamshire for Neutral Grassland and only four species were present within the site that are on this list (which requires 14 or more herb species to be present to be an important wildlife site). As such the grassland is considered to be of limited biodiversity value.

4.9 Poor semi-improved grassland is also not a Habitat of Principal Importance and is well represented in the local area. Consequently, any loss of this habitat is not considered a statutory ecological constraint to the development.

4.10 It is recommended that species-rich grassland be created where possible within the south of the site as part of the proposals.

Broadleaved Woodland & Trees

4.11 Three semi-mature ash trees were located in the south-west of the site adjacent to the woodland, along with semi-mature apple and cherry trees in the north and north-east of the site, among dense scrub and tall ruderals. However, the majority of semi-mature trees were located within the willow-dominated broadleaved woodland which was limited in structure and botanical diversity. This habitat does, however, provide suitable foraging and nesting opportunities for local wildlife.

4.12 The woodland and semi-mature ash trees are anticipated to be retained within the development. The loss of other semi-mature trees in the remainder of the site can be mitigated for by the planting of new trees to increase the extent of the woodland area, and within new hedgerows. It is recommended that a variety of locally occurring native tree species be planted that are flower-, fruit- and seed-bearing species in order to enhance the value of the site for foraging wildlife.

4.13 Any retained trees should be suitably protected during construction activities i.e. working methods should adhere to standard best practice guidance. This would include BS5837 Trees in Relation to Construction – Recommendations: 2012 for trees and hedgerows.

Dense Scrub & Tall Ruderal Vegetation

4.14 Scrub (with dry ditch) and tall ruderal vegetation which form the northern part of the site are likely to be lost as a result of the development. Whilst these areas provided some limited diversity to the habitats present within the site, these were dominated by common and widespread species including bramble and nettle and were of limited ecological value. Consequently, any loss of these habitats is not considered a statutory ecological constraint to the development.

Hedgerows

4.15 Only one formal hedgerow was present on site (H3) and was assessed as being of moderately high ecological value and, as it comprised greater than 80% native woody species, it is a Habitat of Principal Importance under Section 41 of the NERC Act 2006.

4.16 It is likely that the majority of H3 will be retained, with the removal of only a small section required to facilitate site access. The loss of this section should be mitigated for via the planting of native species hedge sections at least equal to the length of that which will be lost, along the site boundaries.

4.17 Defunct hedgerows H1 and H2 (Figure 2) were not classified as 'hedgerows'. However, these sections are likely to be retained and will form part of a new perimeter native species-rich hedgerow. This will be planted as part of the development connecting all the perimeter hedgerows forming a continuous linear boundary feature thus enhancing these features and improving connectivity for wildlife.

4.18 Preference should be given to the use of locally native woody species within any new planting scheme, with an emphasis on species bearing nectar, berries, fruit and nuts, as these enhance the foraging opportunities for local wild fauna including birds and invertebrates. Ideally, planting should

include a mix native species such as blackthorn, hawthorn, field maple, dog-rose, holly, hazel, beech, elder, dogwood and crab apple. Further enhancements can be provided in the form of management of the hedgerows (to improve their structure).

- 4.19 Hedgerows that will be retained should be suitably protected during construction activities i.e. working methods should adhere to standard best practice guidance. This would include BS5837 Trees in Relation to Construction – Recommendations: 2012 for trees and hedges.

Fauna

4.20

4.21

4.22

4.23

Bats

Roosts - Trees

- 4.24 Three semi-mature ash trees and one apple tree were assessed to have low potential for supporting roosting bats. The three ash trees are likely to be retained adjacent to and within the area of woodland to the south of the site. Where possible, lighting which illuminates any potential bat roosting features should be avoided.
- 4.25 The apple tree is likely to be removed as a result of the development. No further survey work is required upon low bat roost potential trees. However, as bats are known to frequently move roosts, utilising tree roosts on an occasional basis, as a precaution immediately prior to removal the PRFs should be inspected by a licenced bat worker (and if deemed necessary at the time, a nocturnal survey, May-August). Following this the PRFs upon the tree should be carefully lowered to the ground via soft felling techniques and left on the ground for a period of 24 hours before chipping.
- 4.26 It is recommended that a small number of bat boxes are installed onto suitable retained trees or within/onto new dwellings to provide enhanced roosting opportunities for bats within the site.

Roosts - Buildings

- 4.27 During the 2019 internal/external inspection, the building on site was inspected and signs of use by bats as a roost were noted in the form of a single bat dropping and bat feeding remains (yellow underwing moth wings).
- 4.28 Nocturnal surveys undertaken in 2019 recorded a single brown long-eared bat returning to a gap in the ridge of the storage building on one occasion, and evidence of feeding remains within the building. No other bats were identified utilising the building during surveys undertaken in 2019, therefore the building was considered likely to comprise no more than a night roost / feeding roost used on an occasional basis by an individual bat.
- 4.29 The updating internal/external building inspections and nocturnal surveys completed in 2022 recorded no evidence of the presence of bats. As no active roost was identified, roosting bats are not identified as a statutory constraint to the proposals, and the loss of the building is not considered likely to affect the Favourable Conservation Status of bats in the local area. Furthermore no requirement for a derogation licence is identified.
- 4.30 Given the historic use of the building it is however recommended that appropriate mitigation and enhancements be implemented as outlined below. The proposals offer several opportunities to mitigate any initial minor negative impacts on bats due to the development, and provide considerable enhancement for local bat populations in the long-term.

Bat Mitigation Strategy

Prior to the demolition of the building, a small number of bat boxes will be installed upon suitably retained trees. The boxes will be located in a sheltered spot and placed at a height of at least 3m from the ground installed on a variety of aspects. These will provide alternative roosting locations throughout the development.

No external lighting should be placed near to or on the bat access points of the bat boxes or bat void.

Prior to the start of development works, a Toolbox Talk will be given to all contractors that may come into contact with bats.

The demolition of the building can be undertaken at any time. Immediately prior to demolition an endoscope inspection of the suitable roosting features will be completed by an appropriately qualified ecologist.

Upon completion of the above the ecologist will supervise the hand / destructive search of the suitable roosting features upon the buildings. All materials will be removed, and all sides checked for bats / evidence of bats before being discarded. Due to the structure and numerous access points within the building, exclusion devices are not considered a feasible option.

Upon completion of these works, the building should be unsuitable for bat occupation due to the change in environmental conditions.

In the event bats are discovered during operations, all demolition activities should cease and further advice sought from the ecologist.

- 4.31 The strategy outlined above is considered to maintain the overall conservation status of the species in their natural range.

Foraging / Commuting Habitat

- 4.32 Thirty-two records exist for at least four species of bat within a range of 1km of the site. With the majority of the records from 2015. The habitat features of greatest value for bats within the site for commuting and foraging comprise the woodland and hedgerows which the majority likely to be retained (with the exception of small section of H3 to be removed to facilitate site access). However, the current poor connectivity of these features limits their value to the local bat population. Scrub and poor semi-improved grassland could also provide potential foraging habitat although this is considered to be of low quality due to the limited diversity.
- 4.33 From the completed survey work brown long-eared bats, common pipistrelle, soprano pipistrelle, noctule and an unidentified *Myotis* species were all occasionally identified utilising habitats on site as part of their natural foraging range.
- 4.34 Mitigation for the likely loss of the hedgerow section and the proposed new planting of a native species rich hedgerow surrounding the boundary of the site (which includes gapping up of currently defunct hedgerow sections) will improve the connectivity and commuting features present and will provide a foraging resource. In addition, the provision of any species rich grassland in the south and additional tree planting will increase species diversity and foraging opportunities for the local bat population.
- 4.35 To further minimise potential effects to the local bat population a sensitive lighting scheme should be used in the proposed development that minimises light spill onto the retained southern habitats (woodland, trees) and hedgerows along the boundaries.

Great Crested Newts

- 4.36 Great crested newts and their habitats in water and on land are protected under the Wildlife and Countryside Act 1981 (as amended), and by the Conservation of Habitats and Species Regulations 2017 (as amended). These make it an offence to damage, destroy or obstruct any place used by great crested newts for breeding or shelter, disturb a great crested newt, or kill, injure or take any great crested newt. In addition, great crested newt is listed as a species of principal importance to the conservation of biological diversity under the provisions of the NERC Act 2006.
- 4.37 Seven GCN records were returned within 1km of the site boundary, dating between 2013 and 2015. All of these records were taken from a concentrated area to the west and south west.
- 4.38 There were five ponds within a 500m radius of the site (P1, P2, P3, P4, and P5 in Figure 3). Three of these ponds, P3, P4 and P5 lay within the area of concentrated GCN records, between 230 – 365m from the proposed development site. Historically, GCN records were returned for each of these ponds.
- 4.39 Access was granted in 2019 to carry out an HSI assessment of only P5 which had 'good' suitability for GCN. However, it was concluded that the GCN population from P3 (c.230m), P4 (c.345m) and P5 (c.365m) are unlikely to be affected by the development for the following reasons:

Pond P3 is isolated from the development site via the built environment of Kinoulton;

P4 and P5 are located at the nearest point c.345m from the development site which is over the maximum routine migratory range which is estimated at approximately 250m from a breeding pond (Franklin, 1993; Oldham and Nicholson 1986; Jehle (2000), Jehle (2000));

GCN would be unlikely to travel over 345m to utilise the terrestrial habitats within the development site when more optimal suitable terrestrial habitat for GCN occurs within closer proximity to the ponds; and

Habitat connectivity from P4 and P5 to the development site is poor with gappy hedgerows and the presence of Owthorpe Lane which would act as a partial barrier to dispersal to GCN.

- 4.40 P1 and P2 are directly adjacent to one another at a distance of approx. 160m to the north of the site. With the use of up to date and historical aerial photography it appeared that these ponds have maintained the size, shape and vegetation management which is typical of private artificial fishing ponds since their construction in the early 2000s which would be unsuitable for GCN. No previous newt or amphibian records were returned for P1 or P2 and with fields of actively grazed pasture situated between the ponds and the site, there is an absence of suitable connective habitats between these two ponds and the site. As such GCN are not considered likely to be present.
- 4.41 At approx. 0.4 ha in total size, the site provides minimal suitable terrestrial habitat for GCN. Poor semi-improved grassland (approx. 0.2 ha) may offer suitable, albeit sub-optimal, foraging and commuting habitat, while perimeter hedgerows, woodland and scattered trees with scrub could provide opportunities for foraging, dispersal, rest and shelter. Therefore, even if GCN were present within P1 and P2 the loss of GCN terrestrial habitats would be minimal.
- 4.42 Based on the above, the Natural England rapid risk assessment was completed from their latest template for a method statement to support a licence application under Regulation 55(2)(e) of the Conservation of Habitats and Species Regulations 2017 in respect of GCN. The results of which are provided in Table 9 below.
- 4.43 The results of the rapid risk assessment are provided below which has determined that, given the habitats to be lost within the 200-500m area of the development, this would result in 'GREEN: OFFENCE HIGHLY UNLIKELY':

Table 9: Natural England Rapid Risk Assessment Results

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)	Notional offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	No effect	0
Land 100-250m from any breeding pond(s)	0.1 – 0.5 ha lost or damaged	0.1
Land >250m from any breeding pond(s)	No effect	0
Individual great crested newts	No effect	0
	Maximum:	0.1
Rapid risk assessment result:	GREEN: OFFENCE HIGHLY UNLIKELY	

- 4.44 In conclusion GCN present within P3, P4 and P5 are not affected by this development. It is considered that GCN are unlikely to be present within P1 / P2 and if present would be unlikely to utilise the terrestrial habitats within the development site and that if these habitats were lost to development (in accordance with the above rapid risk assessment) this would result in a negligible effect.
- 4.45 However, it is recommended, to minimise the already low risk as to the potential presence of GCN within terrestrial habitats, that site clearance should be undertaken using Reasonable Avoidance Measures as outlined within the Herpetofauna Method Statement in Section 5 of this report.

- 4.46 The development offers opportunities for some suitable habitat enhancements for amphibians such as the new native species-rich boundary hedgerow which will improve connectivity and provide foraging / shelter. In addition, management of the woodland / trees / hedgerows will enable log piles to be created in the south which will provide additional habitat for these species.

Reptiles

- 4.47 All common reptiles are protected from killing or injury under the Wildlife & Countryside Act 1981 (as amended) and are Species of Principal Importance under Section 41 of the NERC Act 2006.
- 4.48 Two records for grass snake and one record for common lizard were returned within 1km from the site. No evidence of reptiles was noted during the survey; however suitable habitats were present for common reptile species within the site in the form of hedgerow, scrub and grassland, with the adjacent tall ruderal.
- 4.49 Due to the small scale of the suitable reptile habitat which will be lost as a result of the proposed development, it is considered that further survey effort would be disproportionate. However, in order to ensure no breach of the relevant legislation takes place it is recommended that site clearance takes place under ecological supervision in a directional manner as outlined with the Herpetofauna Method Statement below.
- 4.50 Habitat retention and creation (hedgerow and tree planting) on the site peripheries will provide suitable habitat for common reptile species, should they be present, and will also create and enhance wildlife corridors and connectivity of habitats within the local landscape.
- 4.51 Management of the woodland/trees/hedgerows will enable log piles to be created in the south which will provide additional habitat for this species.

Birds

- 4.52 From the desk study eighteen bird records were returned for a total of twelve species and while no bird records come from the survey site itself, all the records were concentrated around one central location approx. 180m to the southeast of the survey site. A small number of common bird species were identified within the site during the surveys.
- 4.53 The proposals will result in the loss of areas of (i) semi-improved grassland and tall ruderal vegetation habitats which provide a foraging resource; and (ii) scrub, a small number of trees and short section of hedgerow which provides foraging and nesting habitat for common and widespread bird species. In addition, the derelict building which also provides nesting habitat for common widespread bird species will be demolished.
- 4.54 Whilst the loss of these habitats will reduce the overall availability of foraging/nesting resources for the generalist assemblage recorded, this will be adequately mitigated by additional planting which will improve connectivity around the site and management of retained features. In addition, species which are fruit and berry-rich should be incorporated into the landscaping scheme to provide a varied foraging resource to birds.
- 4.55 The woodland, majority of hedgerows/semi-mature trees will be retained and enhanced. These will continue to provide nesting and foraging habitats for the assemblage of common and widespread generalist species.

- 4.56 The creation of domestic gardens within the residential development will create an area of additional suitable habitat for urban edge species such as house sparrow *Passer domesticus*, a S41 Species of Principal Importance.

Nesting Birds

- 4.57 All wild bird species are protected while nesting by the Wildlife and Countryside Act 1981 (*as amended*). This legislation protects wild birds and their eggs from intentional harm, and makes it illegal to intentionally take, damage, or destroy a wild bird nest while it is in use or being built.
- 4.58 Any removal of suitable nesting habitat (hedgerow, scrub, trees, buildings) should therefore occur outside of the bird breeding season (March to August/September inclusive) to minimise the risk of disturbance to breeding birds. If this is not possible, such vegetation and built structures should be checked prior to removal by a suitably experienced ecologist to confirm the absence of active nests. If active nests are found, vegetation must be left undisturbed and suitably buffered from works until all birds have fledged. Specific advice should be sought prior to undertaking the clearance.
- 4.59 Further enhancements will be considered for inclusion within the development such as the provision of nest boxes for other S41 bird Species of Principal Importance.

Water Vole and Otter

- 4.60 No records of otter were returned from the desk study and while some water vole records exist to the south of the site near Grantham Canal. No suitable habitat for water vole or otter was situated within or near the proposed development site. As such water vole and otter are not a material consideration with regard to the proposed development.

Hedgehog and Brown Hare

- 4.61 One record for Western European hedgehog was returned at approx. 660m to the south-west of the site. This is a Species of Principal Importance under Section 41 of the NERC Act 2006. Some habitat within site was considered to be suitable for this species in terms of shelter provided by hedgerows and pockets of dense scrub. Some foraging opportunities are potentially provided within hedgerows/scrub.
- 4.62 Given the amount of similar habitat in the surrounding countryside, the proposed development is not anticipated to significantly affect the local population of hedgehog. However, habitat provisions such as the enhancement of hedgerows will adequately mitigate for habitat losses within the site for this species. Further enhancement could be considered such as incorporating log piles from habitat management into the woodland area and provision of hedgehog access points within garden fences.
- 4.63 Three records for brown hare were returned within a 700m radius of the site. Brown hare is a Species of Principal Importance under Section 41 of the NERC Act 2006. Primary habitat for this species is open farmland however, they will utilise areas of grassland such as within the proposed development site. Given the amount of similarly open grassland habitat in the surrounding countryside, the proposed development is not anticipated to significantly affect the local population of brown hare. Thus, brown hare is not a notable consideration with respect to the proposed development.

Invasive species

- 4.64 No invasive fauna or flora were observed within the survey area at the time of survey.

Invertebrates

- 4.65 Meadow brown *Maniola jurtina*, peacock *Aglais io* and comma *Polygonia c-album* butterflies were observed utilising the grassland and tall ruderals within the site, all of these species are widespread and common. From the desk study, all invertebrate records were more than 250m from the site and were for invertebrates associated with wetland habitats of which there are none present on site.
- 4.66 Habitats present within the site at the site are suitable for use by a multitude of common invertebrates, however these habitats are of a minimal size and such habitats are common within the wider countryside. These losses can be adequately mitigated for within the landscaping scheme via the planting of new native trees, shrubs and flowering lawn mixes, therefore invertebrate species are not considered to be a constraint to the development.

5.0 HERPETOFAUNA METHOD STATEMENT

5.1 All site works shall proceed in accordance with the method statement as outlined below. This method statement includes precautionary works methods for the protection of reptiles:

Prior to any commencement of works a toolbox talk shall be presented to site management by an ecological clerk of works (ECoW).

Prior to any works areas of retained / enhanced habitats should be protected using Heras fencing.

Grassland / tall ruderal vegetation clearance should occur during the herpetofauna active season which runs between mid-March to September inclusive (during temperatures above 10°C).

Scrub and hedgerow removal should only be undertaken during the same period.

Prior to site clearance, grassland/scrub/tall ruderal vegetation/hedgerows should be strimmed/cut (to c.150mm) from an east to western direction immediately prior to works. The ECoW should then undertake a walkover/hand search of the habitats before these habitats are strimmed to ground level. This habitat should be maintained as a short sward of the grassland or bare ground.

Any trenches left overnight within this area must have a sloping end to prevent animals from becoming trapped within them.

No piles of rubble/soil which are likely to be created during works and could provide temporary suitable areas of shelter or rest for reptiles will be created within any area of the site.

If a reptile is identified works will cease and the animal be allowed to disperse naturally.

If a GCN is identified works will cease and advise sought from a GCN licenced ecologist.

Appendix A: Botanical Species list

Habitat	Common Name	Scientific Name	DAFOR
Poor Semi-improved Grassland	Annual Meadow-grass	<i>Poa annua</i>	O
	Barren brome	<i>Anisantha sterilis</i>	F
	Cleavers	<i>Galium aparine</i>	R
	Cock's-foot	<i>Dactylis glomerata</i>	O
	Common nettle	<i>Urtica dioica</i>	R
	Common vetch	<i>Vicia sativa</i>	Locally A
	Cow parsley	<i>Anthriscus sylvestris</i>	F
	Creeping buttercup	<i>Ranunculus repens</i>	O
	Creeping Thistle	<i>Cirsium arvense</i>	R
	Crested dog's-tail	<i>Cynosurus cristatus</i>	Locally A
	Cut-leaved crane's-bill	<i>Geranium dissectum</i>	O
	False oat-grass	<i>Arrhenatherum elatius</i>	O
	Field bindweed	<i>Convolvulus arvensis</i>	R
	Goat's-beard	<i>Tragopogon pratensis</i>	R
	Ground-elder	<i>Aegopodium podagraria</i>	R
	Hedge Bindweed	<i>Calystegia sepium</i>	R
	Hogweed	<i>Heracleum sphondylium</i>	F
	Italian rye-grass	<i>Festuca perennis</i>	O
	Lesser trefoil	<i>Trifolium dubium</i>	O
	Meadow buttercup	<i>Ranunculus acris</i>	F
	Meadow foxtail	<i>Alopecurus pratensis</i>	F
	Meadow vetchling	<i>Lathyrus pratensis</i>	F
	Perennial rye-grass	<i>Lolium perenne</i>	R
	Red Clover	<i>Trifolium pratense</i>	F
	Soft brome	<i>Bromus hordeaceus</i>	O
	Spear thistle	<i>Cirsium vulgare</i>	R
	Wall Barley	<i>Hordeum murinum</i>	Locally A
Yellow-rattle	<i>Rhinanthus minor</i>	Locally A	
Yorkshire-fog	<i>Holcus lanatus</i>	F	
Tall Ruderal	Ash (suckers)	<i>Fraxinus excelsior</i>	Locally F
	Bramble	<i>Rubus fruticosus</i> agg.	O
	Bracken	<i>Pteridium aquilinum</i>	R
	Broad-leaved dock	<i>Rumex obtusifolius</i>	F
	Cleavers	<i>Galium aparine</i>	A
	Clustered dock	<i>Rumex conglomeratus</i>	O
	Cock's-foot	<i>Dactylis glomerata</i>	F
	Common nettle	<i>Urtica dioica</i>	A
	Creeping buttercup	<i>Ranunculus repens</i>	R
	Creeping thistle	<i>Cirsium arvense</i>	O
	False oat-grass	<i>Arrhenatherum elatius</i>	F
	Field bindweed	<i>Convolvulus arvensis</i>	R
	Hedge bindweed	<i>Calystegia sepium</i>	R
	Hemlock	<i>Conium maculatum</i>	R
	Hogweed	<i>Heracleum sphondylium</i>	O

Habitat	Common Name	Scientific Name	DAFOR
	Iris (cultivated var.)	<i>Iris</i> sp.	R
	Meadow foxtail	<i>Alopecurus pratensis</i>	R
	Meadow vetchling	<i>Lathyrus pratensis</i>	Locally F
	Prickly sow-thistle	<i>Sonchus asper</i>	O
	Smooth sow-thistle	<i>Sonchus oleraceus</i>	O
Broadleaved Semi-natural Woodland	Apple	<i>Malus</i> sp.	O
	Ash	<i>Fraxinus excelsior</i>	A
	Blackthorn	<i>Prunus spinosa</i>	O
	Bramble	<i>Rubus fruticosus</i> agg.	O
	Cleavers	<i>Galium aparine</i>	F
	Common hawthorn	<i>Crataegus monogyna</i>	O
	Crack willow	<i>Salix x fragilis</i>	A
	Elder	<i>Sambucus nigra</i>	O
	False oat-grass	<i>Arrhenatherum elatius</i>	F
	Rose	<i>Rosa</i> sp.	R
	White willow	<i>Salix alba</i>	A
Scattered Broadleaved Trees	Apple	<i>Malus</i> sp.	O
	Ash	<i>Fraxinus excelsior</i>	F
	Cherry	<i>Prunus</i> sp.	O
Native Species-poor Hedgerows (woody species)	Ash	<i>Fraxinus excelsior</i>	F
	Blackthorn	<i>Prunus spinosa</i>	D
	Bramble	<i>Rubus fruticosus</i> agg.	F
	Common hawthorn	<i>Crataegus monogyna</i>	F
	Elder	<i>Sambucus nigra</i>	O
	Damson	<i>Prunus domestica</i> sp.	O
	Dog-rose	<i>Rosa canina</i>	O
	Leyland Cypress	<i>Cupressocyparis leylandii</i>	Locally D
	Ivy	<i>Hedera helix</i>	O
Dense/Continuous Scrub	Ash	<i>Fraxinus excelsior</i>	O
	Blackthorn	<i>Prunus spinosa</i>	A
	Bramble	<i>Rubus fruticosus</i> agg.	A
	Common Hawthorn	<i>Crataegus monogyna</i>	F
	Common nettle	<i>Urtica dioica</i>	A
	Dog-rose	<i>Rosa canina</i>	R
	Elder	<i>Sambucus nigra</i>	F
	Plum	<i>Prunus</i> sp.	F

The DAFOR species scale is as follows:

D = Dominant, A = Abundant, F = Frequent, O = Occasional and R = Rare

Species highlighted in red: upon the SINC Selection in Nottinghamshire for Neutral Grassland

Appendix B: Low Bat Roost Potential Trees – Photographs



Photograph B1: Three heavily ivy-clad trees (T1, T2, and T3) with low bat roost potential to the south of the site.



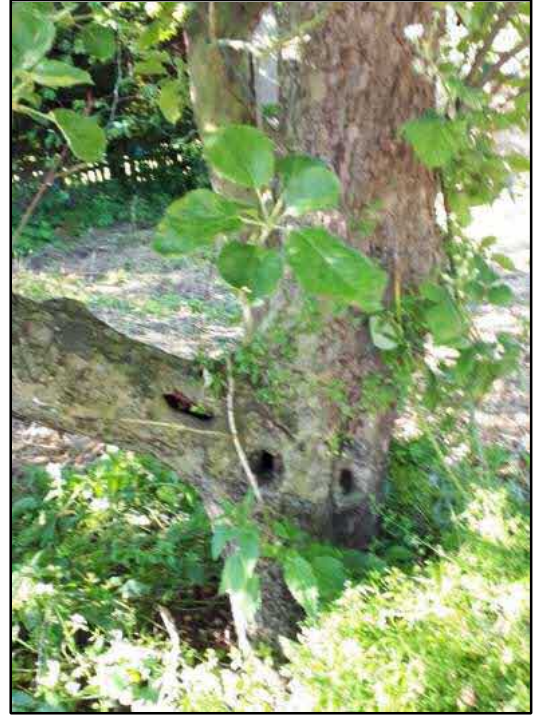
Photograph B2: Rot hole in apple tree T4, leading to an assessment of low bat roost potential.



Photograph B3: Apple tree T4 with rot holes leading to an assessment of low bat roost potential.



Photograph B4: Apple tree T4 with rot holes leading to an assessment of low bat roost potential.



Photograph B5: Apple tree T4 with rot holes leading to an assessment of low bat roost potential.



Photograph B6: Apple tree T4 with rot holes leading to an assessment of low bat roost potential.

Appendix C: Building TN1 – Photographs



Photograph C1: A potential roost features in the gaps between roof beams of the building (as indicated by a red arrow).



Photograph C2: A potential roost feature in the gap between brick work in a covered window of the building (as indicated by a red arrow).



Photograph C3: Broken windows of the building allowing free access for birds and bats.



Photograph C4: Broken door of the building allowing free access for birds and bats.



Photograph C5: A records of the interior south-western roof space and window structure at the time of survey.



Photograph C6: A record of the interior south-western roof space and window structure at the time of survey.



Photograph C7: A record of the interior south-western floor structure of the building at the time of survey.



Photograph C8: A record of the interior north-eastern roof space and window structure at the time of survey.



Photograph C9: A record of the interior north-eastern roof space and window structure at the time of survey.



Photograph C10: A record of the interior north-eastern floor structure of the building at the time of survey.



Photograph C8: A record of the interior north-eastern roof space and window structure at the time of survey.



Photograph C11: The location of a potential bat roost feature in a gap along roof apex. This is also where a brown long-eared bat was seen to roost during nocturnal surveys of the building.



Photograph C12: Example of yellow underwing feeding remains found within the building during the internal inspection in 2019.




Photograph C8: A record of the interior north-eastern roof space and window structure at the time of survey.



Photograph C13: The bat dropping observed during the internal building inspection in 2019.

Appendix D: Habitat Suitability Assessment of P5

Table 8: Description and HSI Results of Pond P5

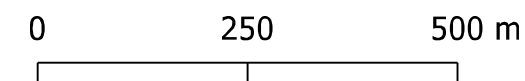
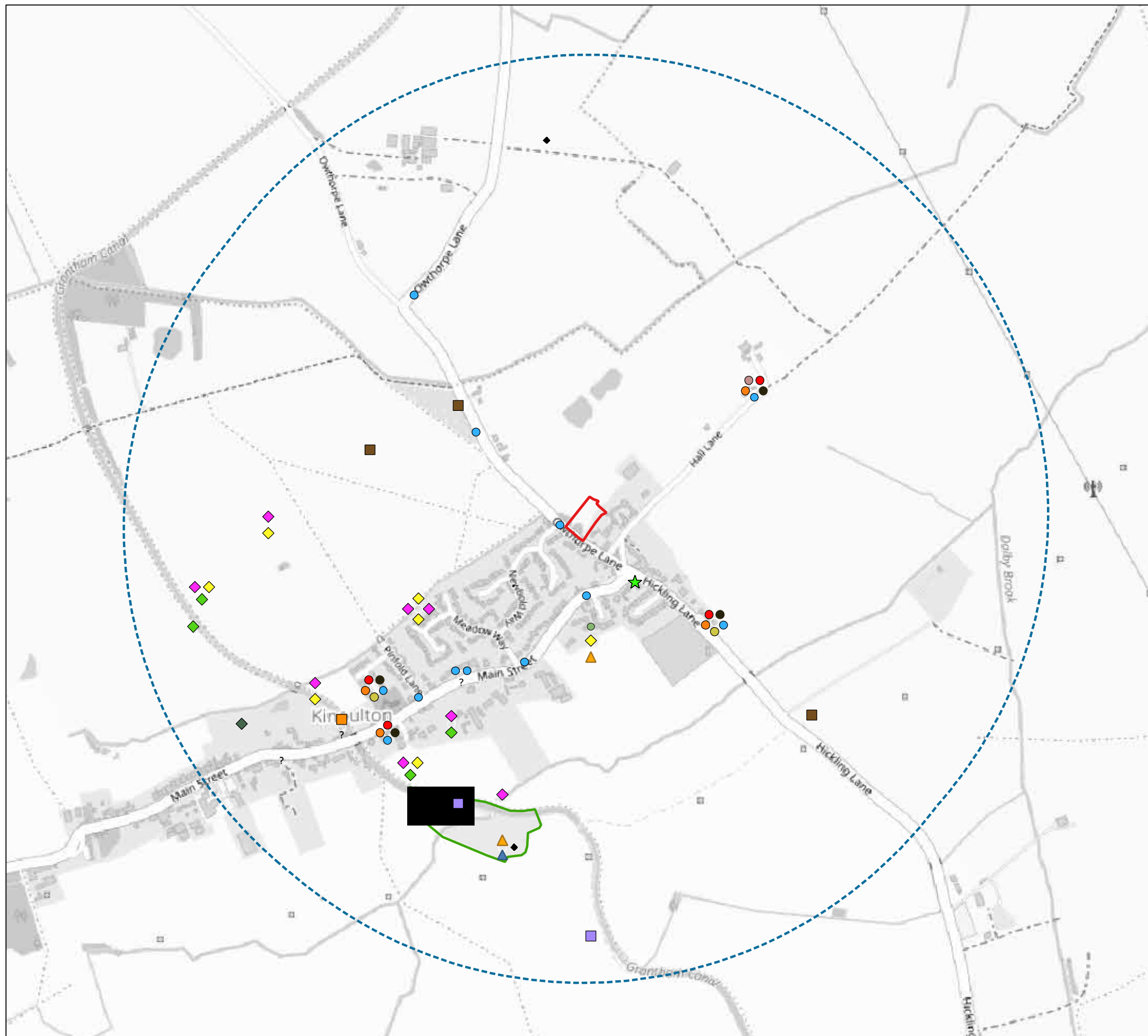
<p>Photograph</p>	
<p>HSI Score</p>	<p>0.70</p>
<p>Suitability</p>	<p>Good</p>
<p>Description and Location</p>	<p>Located within a residential garden off Lindy Close, approx. 365m south-west from the proposed development site, P5 is a small artificial garden pond, approx. 30m² surrounded by large pebbles and stone, set within amenity grassland near a field of rough grassland and planted garden shrub. The water quality was good, and water level was shallower towards the pond perimeter due to tiered construction, but approx. 1m deep towards the centre. Introduced aquatic vegetation was present in the form of grasses, reeds and water lilies, covering approx. 40 – 50% of the pond surface while the rest of the pond was somewhat shaded at certain times of day by trees in the adjacent garden. Water quality was clear.</p>

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Key
















- Site Boundary
- 1km buffer
- Kinoulton Marsh & Canal SSSI
- ◆ Great Crested Newt
- ◆ Smooth Newt
- ◆ Common Toad
- ◆ Common Frog
- ▲ Grass Snake
- ▲ Common Lizard
- Hedgehog
- Brown Hare
- Water Vole
- Brown Long-eared Bat
- ? Pipistrellus sp.
- Common Pipistrelle
- Soprano Pipistrelle
- Myotis sp.
- Nyctalus sp.
- Noctule
- ★ Bird Records Central Location
- ◆ Invertebrates

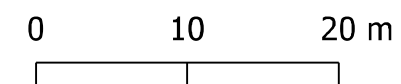
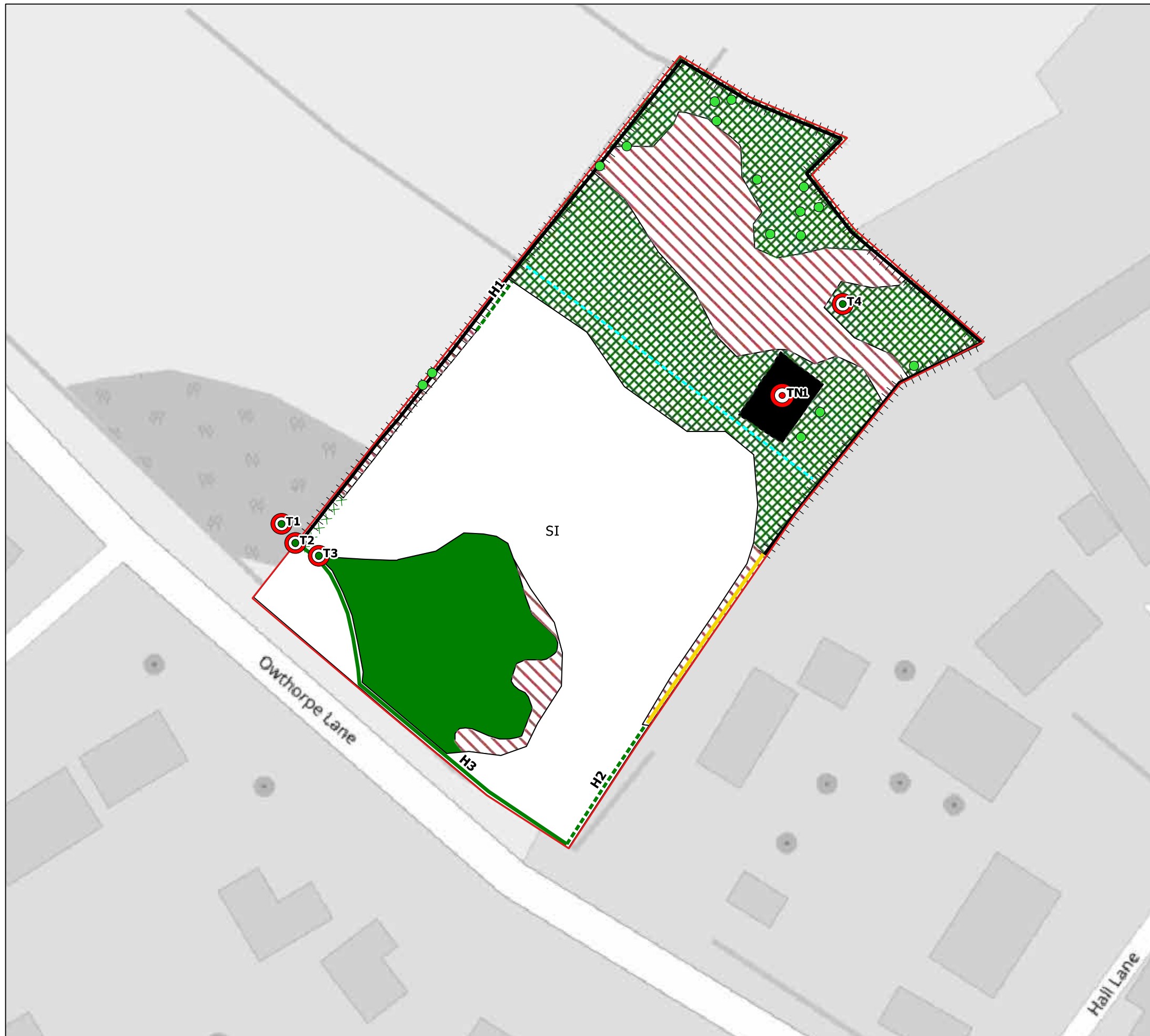


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Key

-  Site Boundary
-  Tree with bat potential
-  Target note
-  Broadleaved tree
-  Wall
-  Intact hedge - species-poor
-  Defunct hedge - species-poor
-  Fence
-  Dry ditch
-  Scrub (line)
-  Broadleaved woodland - semi-natural
-  Buildings
-  Other tall herb and fern - ruderal
-  Poor semi-improved grassland
-  Scrub (dense/continuous)



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 client: Mr N. Davill
 project: Land off Owthorpe Lane, Kinoulton, Nottinghamshire
 drawing title: Phase 1 Habitat Survey Plan
 scale at A3: 1:500
 drawing / figure number: Figure 2
 drawn: WVR/RJS
 issue: 3/10/2019
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Key

 Site Boundary

 GCN Records

 No GCN Records

 50m GCN buffer

 250m GCN buffer



client
Mr N. Davill
project
**Land off Owthorpe Lane, Kinoulton,
Nottinghamshire**
drawing title
Pond Plan



scale at A3
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Figure 3

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