BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

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Contact: Sarah Stone, Principal Ecologist
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Date: 23rd April 2020

Dear Paul,

eDNA ASSESSMENT OF PONDS WITHIN 500M OF THE PROPOSED DEVELOPMENT SITE TO THE SOUTH OF LEE LANE, ROYSTON, SOUTH YORKSHIRE.

Please find below a summary of a great crested newt (GCN) *Triturus cristatus* survey carried out on ponds within 500m of the proposed development site, south of Lee Lane in Royston, Barnsley.

Scope of Survey and Methodology

An environmentalDNA (eDNA) survey was undertaken of ponds within 500m of the proposed development site on 16th April 2020. **Figure 1** below shows those ponds which were considered as part of this survey, with the redline boundary of the proposed development site.

eDNA based surveys for GCN are nationally recognised as an approved methodology for ecological impact assessments for the planning and development sector. Organisms release DNA into the environment constantly in the form of urine, faeces, gametes, shedding of skin etc and this remains present in aquatic environments for up to three weeks. The survey follows strict protocol, set out by Defra and approved by Natural England[1]. Surveys must take place

[1] Report WC1067 Analytical and methodological development for improved surveillance of the Great Crested Newt (January 2014). Freshwater Habitats Trust, Spygen, Amphibian and Reptile Conservation and the Durrell Institute of Conservation and Ecology

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between 15th April and 30th June, as the concentration of DNA in a pond at this time should be relatively high.

Surveys were carried out in line with the standard methodology by Sarah Stone MCIEEM and Amy Dowers ACIEEM. Both surveyors are experienced in collecting eDNA samples for GCN and both are registered to use Natural England Class Licences to survey for GCN (2015-17460-CLS-CLS and 2018-33036-CLS-CLS respectively).

The results were provided by SureScreen Scientifics.

Figure 1: Ponds within 500m of Proposed Development Site

Results

On the day of the survey, Ponds 1 and 2 were found to be completely dry. Pond 4 has been found by multiple surveyors to be absent and was also therefore discounted from this survey.

Pond 6 was found to be almost dry, with a shallow pool of water present in approximately 25% of the pond's surface area. However, this was too shallow for the DNA sample to be taken (<10cm deep), as when taking a sample 30ml of water must be collected without sediment, as this can interfere with the results. It was considered highly likely that this pond would dry out fully imminently and would therefore be extremely unlikely to provide an opportunity for breeding GCN. Furthermore, there was no aquatic vegetation to provide an egg-laying substrate and the pond was located within horse grazed pasture, with minimal cover in the surrounding terrestrial habitats.

Samples were taken from Ponds 3 and 5, which were both fully accessible.

A summary is provided in **Table 1** below.

Table 1: Examples of characteristics that inform assessment of roost potential

Pond Number	Details	Sampled for GCN	Photo
1	Completely dry on 16th April 2020	No	
2	Completely dry on 16th April 2020	No	

Pond Number	Details	Sampled for GCN	Photo
3	Sampled for GCN – condition as previous (no updated photo)	Yes	N/A
4	Pond not present (all parties in agreement over this)	N/A	N/A
5	Sampled for GCN – condition as previous (no updated photo)	Yes	N/A
6	Pond almost completely dry on 16th April 2020, with the exception of a very shallow area of water, less than 10cm deep and only present in less than 50% pond, no aquatic vegetation. Extremely unlikely to support GCN.	No – water not deep enough for DNA sampling. Considered highly likely to dry imminently.	

The samples taken from Pond 3 and Pond 5 were both returned as negative for the presence of GCN.

A copy of the SureScreen report is appended to this letter.

Evaluation and Recommendations

GCN are typically present within ponds between mid-March and mid-June for breeding. If ponds are dry during this key period, a population of GCN is highly unlikely to persist due to a lack of opportunities for breeding and new recruitment into the population.

Given the results for those ponds which did hold water were negative for GCN and the remaining ponds were dry, it is considered that a population of GCN is not present within this area. Development within the site to the south of Lee Lane can therefore proceed without constraints from GCN.

If you have any queries or require any further information, please do not hesitate to contact me.

Yours sincerely

S.J.Stone

Sarah Stone MSc BSc (Hons) MCIEEM
Principal Ecologist

SureScreen Scientifics

Folio No: E6741
Report No: 1
Purchase Order: POR031219
Client: BWB CONSULTING
Contact: Sarah Stone

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 17/04/2020
Date Reported: 20/04/2020
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1035	Pond 3, Lee Lane	SE 34829 11266	Pass	Pass	Pass	Negative	0
1042	Pond 5, Lee Lane	SE 34802 11279	Pass	Pass	Pass	Negative	0

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

Reported by: Sarah Evans **Approved by:** Chris Troth

METHODOLOGY

The samples detailed above have been analysed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample which then undergoes DNA extraction. The extracted sample is then analysed using real time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. True positive controls, negative controls and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd is ISO9001 accredited and participate in Natural England's proficiency testing scheme for GCN eDNA testing. We also carry out regular inter-laboratory checks on accuracy of results as part of our quality control procedures.

INTERPRETATION OF RESULTS

SIC: **Sample Integrity Check** [Pass/Fail]
When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results.

DC: **Degradation Check** [Pass/Fail]
Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.

IC: **Inhibition Check** [Pass/Fail]
The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

Result: **Presence of GCN eDNA** [Positive/Negative/Inconclusive]
Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.
Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.

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ENVIRONMENTAL PLANNING

Bellway Homes Ltd (Yorkshire Division)

Lee Lane
Royston

Ecological Impact Assessment

Bellway Homes Ltd (Yorkshire Division)

Lee Lane

Royston

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EXECUTIVE SUMMARY

BWB Consulting (BWB) was instructed by Bellway Homes (Yorkshire Division) to carry out an Ecological Impact Assessment relating to a proposed residential development off Lee Lane, Royston, Royston. The table below contains a summary of the likely significant effects of the proposed residential development relating to the construction phase, the completed development and cumulative effects.

An Extended Phase 1 Habitat survey was undertaken at the Site to determine the habitats present and their potential value for protected and notable species.

The Site is dominated by arable land (stubble) which is becoming encroached upon by grass and tall ruderal species.

Receptor	**Nature of Effect** (Permanent/Temporary)	**Significance** (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	**Mitigation / Enhancement Measures**	**Geographical Importance***							**Residual Effects** (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L	
Construction											
Wildlife Designations	None envisaged	Not applicable									
Habitats	Natural habitats on-site are generally of low ecological value. Hedgerows would qualify as Priority habitats under the NERC Act 2006 but are to be retained and protected.	Not applicable									
Amphibians	None envisaged	Not applicable									
Badger	None envisaged	Not applicable									
Bats	Two trees identified as having low potential to support roosts to be felled.	Minor adverse effect at less than local level	Precautionary soft felling							*	Negligible

Birds	Potential for disturbance during construction phase	Minor adverse effect at less than local level	Precautionary working methods.							*	Negligible
Reptiles	None envisaged	Not applicable									
Hedgehogs	Potential for animals to fall into/become trapped in open excavations.	Minor adverse effect at less than local level	Precautionary working methods.							*	Negligible
Operational											
Bats	Potential for disturbance from lighting	Minor adverse effect at less than local level	Lighting scheme to follow best practice guidance							*	Negligible
* Geographical Level of Importance I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local											

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APPENDIX 1: Relevant Legislation
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1. INTRODUCTION

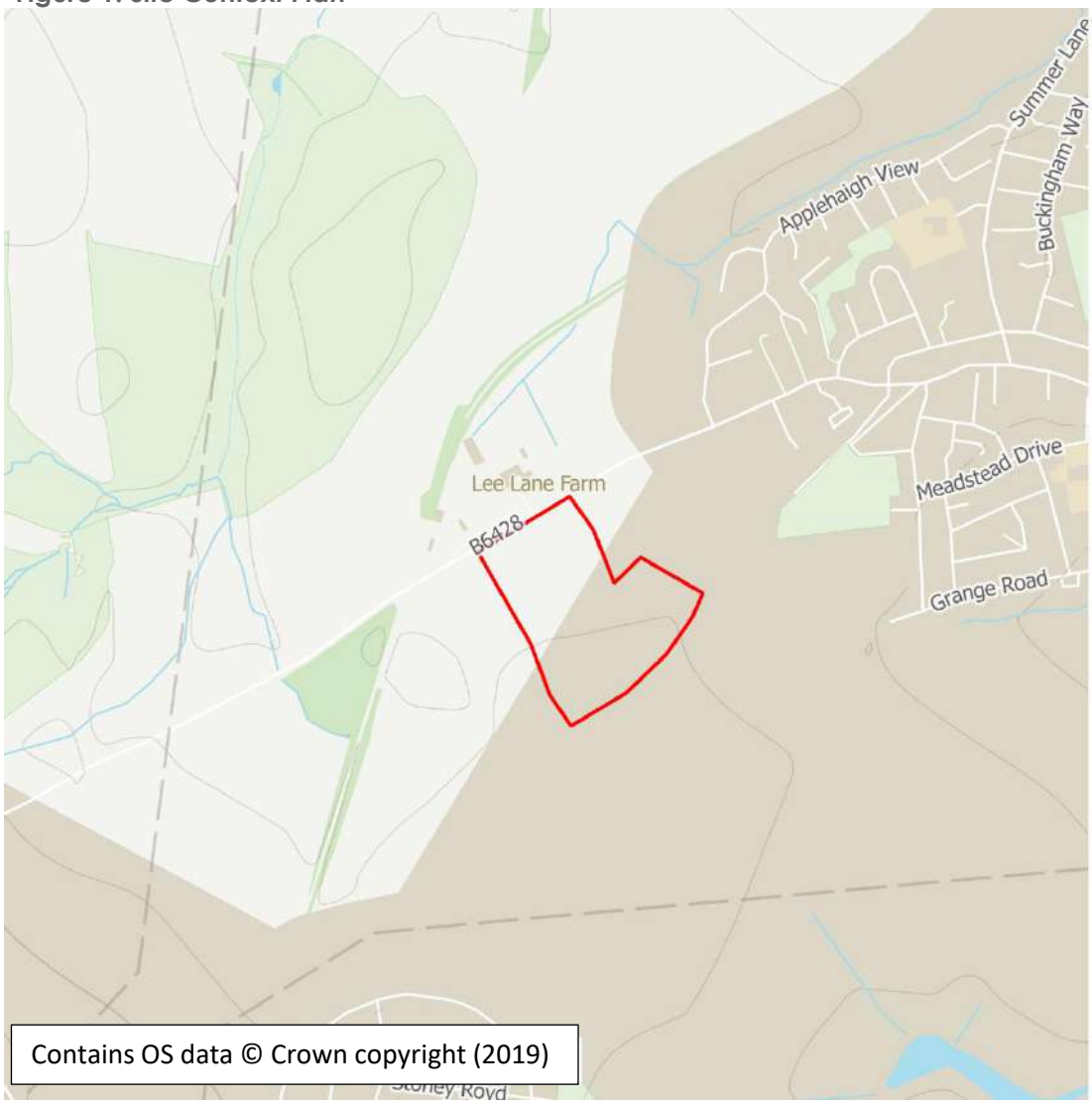
Instruction

1.1 BWB Consulting Ltd (BWB) was instructed by Bellway Homes (Yorkshire Division) (the Client) to carry out an Ecological Impact Assessment (EcIA) on land off Lee Lane, Royston. This is in relation to a proposed residential development. The Site was subject to an Extended Phase Habitat Survey in July 2018 and an updated survey in October 2019 to ground truth the findings of the 2018 survey.

1.2 The Site is located off Lee Lane, Royston (SE 3486 1104) and comprised an arable field which was itself surrounded by agricultural land.

1.3 **Figure 1** shows the Site location.

Figure 1: Site Context Plan



Aims

1.4 The primary purpose of this assessment is to provide a baseline of all ecological considerations and associated impacts relating to the development proposals. This will include mitigation and enhancement as appropriate.

Scope of Works

1.5 The ecological appraisal was informed by a desk-based study and a Site survey. The approach to this Ecological Impact Assessment follows best practice published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2019) and the British Standards Institution (BSI, 2013). Further details are provided later in this report.

Legislation and Planning Policy

1.6 The following legislation relates to species and habitats that could potentially occur in association with the Site:

- The Conservation of Habitats and Species Regulations 2019 (as amended);
- The Wildlife and Countryside Act 1981 (as amended);
- The Countryside and Rights of Way (CRoW) Act 2000;
- Natural Environment and Rural Communities (NERC) Act 2006;
- The Protection of Badgers Act 1992;
- Wild Mammals (Protection) Act 1996; and
- The Hedgerow Regulations 1997.

1.7 Further information on the legislation relevant to this Site is provided in **Appendix 1**.

1.8 Consideration has also been given in this report to relevant National and Local Planning Policy as summarised below.

1.9 The National Planning Policy Framework (NPPF) guides Local Planning Authorities (LPAs) when developing their planning policies and considering planning applications affecting protected habitats, sites and species.

1.10 In respect of the natural environment, the NPPF states that:

1.11 "Planning policies and decisions should contribute to and enhance the natural and local environment by:

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and

other benefits of the best and most versatile agricultural land, and of trees and woodland;

c) *maintaining the character of the undeveloped coast, while improving public access to it where appropriate;*

d) *minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*

e) *preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and*

f) *remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate*."

1.12 Through the NPPF and Section 40 of the NERC Act, LPAs have a duty to consider habitats and species listed as being of principal importance for nature conservation in England on Section 41 (S41) of the Act when considering a planning application. In addition, the biodiversity duty of local planning authorities also covers species and habitats listed in local biodiversity action plans.

1.13 Additionally, Policy 36 of the Barnsley Core Strategy states the following:

"Development will be expected to conserve and enhance the biodiversity and geological features of the borough by:

- protecting and improving habitats, species, sites of ecological value and sites of geological value with particular regard to designated wildlife and geological sites of international, national and local significance, ancient woodland and species and habitats of principal importance identified in Section 74 of the Countryside and Rights of Way Act 2000 and in the Barnsley Biodiversity Action Plan maximising biodiversity and geodiversity opportunities in and around new developments
- conserving and enhancing the form, local character and distinctiveness of the river corridors of the Dearne and Dove as natural floodplains and important strategic wildlife corridors Development which may harm a biodiversity or geological feature will not be permitted unless effective mitigation and/or compensatory measures can be ensured."

2. METHODS

Scope of the Assessment

Zone of Influence (ZOI)

2.1 The search area for biodiversity information was related to the significance of sites and species and potential zones of influence, as follows:

- 5km around the Site for sites of International Importance (e.g. Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar site);
- 2km around the Site for sites of National or Regional Importance (e.g. Sites of Special Scientific Interest (SSSI) and Local Nature Reserves (LNR)); and
- 2km around the Site for sites of County Importance (e.g. Sites of Importance for Nature Conservation (SINC)/Wildlife Sites and species records (e.g. protected, UK BAP or notable species).

2.2 The 'zone of influence' for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the Site boundaries. For this scheme, the zone of influence was not considered to extend beyond the Site.

Consultation

2.3 Barnsley Biological Records Centre (BBRC) and West Yorkshire Ecology (WYE) were contacted in 2018 to request records of any locally designated sites and/or protected species from the Site and land within a 2km radius. Records more than ten years old have been largely disregarded.

2.4 Additionally, South Yorkshire Badger Group and South Yorkshire Bat Group were contacted in 2019 to obtain additional records. The results of this are incorporated into this report.

2.5 The site was surveyed in 2010 by the Local Planning Authority ecologist as part of the wider MU5 site relating to the Local Plan. Although a significant period of time has passed since this survey was conducted, the 2019 survey concurs with the findings of the 2010 survey. Similarly, the Site was surveyed, as part of a larger proposal which included additional land to the north and east, by RSK in 2012 (RSK, 2012). This report was also available for review and the findings were comparable to the most recent survey results.

2.6 In addition, the data sources listed below were also searched to gather additional ecological data of relevance to the project, including the identification of non-designated ecologically sensitive habitats such as vegetation corridors, woodlands, watercourses and standing water.

- Multi-Agency Geographic Information for the Countryside (MAGIC);
- Ordnance Survey 1:25,000 mapping; and

- Aerial imagery (Google – imagery dated 2016).

2.7 The summary of these consultations is contained in **Table 1**.

Table 1: Outcome of Consultations

Consultee and Date of Correspondence	Statutory or Non-Statutory	What was the Consultation Regarding	Outcome of Consultation	Method of Communication
BBRC and WYE – 2018	Non-statutory	Location of non-statutory sites and historical ecological records.	The closest designated wildlife site was approximately 0.3km northwest of the Site. Numerous protected species records also returned	Email
South Yorkshire Badger Group	Non-statutory	Location of badger records	No records of setts or animals	Email
Multi Agency Geographic Information for the Countryside (NAGIC) – March 2019	Statutory.	Location of statutory sites.	Notton Wood Local Nature Reserve (LNR) was the only designated wildlife site within 2km of the Site. The LNR is an area of mixed woodland attracting a varied amount of wildlife located approximately 0.3km northwest of the Site. The Site is also within a Special Site of Scientific Interest (SSSI) Risk Zone but the development type is not included within a risk category.	Via website.

Extended Phase 1 Habitat Survey

2.8 A Site survey was undertaken on 21st October 2019 by Chris Grocock MSc BSc (Hons) GradCIEEM. Chris has extensive experience in survey and site assessment for protected species and is appropriately qualified for the surveys based on the CIEEM competencies for species surveys (CIEEM, 2017). Chris is registered to use a Natural England Class Licence to survey for bats (2016-24827-CLS-CLS) and great crested newts (GCN) *Triturus cristatus* (2015-17144-CLS-CLS).

2.9 The visit was completed using Phase 1 habitat survey techniques as defined in the standard methodology (JNCC, 2010).

2.10 The aim of the visit was to gather sufficient baseline information on the habitats within the Site in order to allow an interpretation of the ecological value of the land.

2.11 In addition, the methodology was extended to include a search for incidental evidence of protected / notable fauna and an assessment of the Site's potential to support protected / notable fauna. Specific consideration was given to the following species:

- Birds;
- Bats;
- Amphibians, including GCN;
- Reptiles;
- Badgers *Meles meles*;
- Priority Species, such as hedgehog *Erinaceus europaeus*.

2.12 Standard methodologies were used where applicable.

2.13 Habitats adjacent to the Site were viewed, where possible, from the Site boundaries in order to assess their potential to support protected species that could be utilising the survey Site.

Survey Comments

2.14 The survey methodology highlights habitats and features with potential for protected / notable species but is not designed to provide a comprehensive presence / absence survey.

2.15 In line with standard guidance, the results and recommendations within this report are valid for up to two years from the date of survey, assuming there are no significant changes to the survey Site or its immediate surroundings. Updated survey work may be required to support any future planning applications outside of this time period.

Assessment

2.16 The Ecological Impact Assessment has been undertaken following guidelines provided by CIEEM (CIEEM, 2019).

2.17 In order to assess the significance of effects, Important Ecological Features that could potentially be affected by the development have been identified and described and the potential effects quantified using a range of parameters (e.g. extent, magnitude and duration).

2.18 For the purposes of this assessment, a 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national / local nature conservation policy) or more wide-ranging (enhancement of biodiversity) (CIEEM, 2019).

2.19 Only where significant effects are predicted have mitigation measures been proposed, although it should be noted that a number of precautionary measures have been included and these are detailed within this document for completeness.

2.20 The potential for mitigation and enhancement measures were then considered to avoid, reduce or compensate for any significant adverse effects, where possible.

2.21 The current guidelines identify various characteristics that can be used to identify ecological resources or features likely to be important in terms of biodiversity. These include:

- naturalness;
- animal or plant species, sub-species or varieties that are rare or uncommon, either internationally, nationally or more locally, including those that may be seasonally transient;
- ecosystems and their component parts, which provide the habitats required by important species, populations and/or assemblages;
- endemic species or locally distinct sub-populations of a species;
- habitats that are rare or uncommon;
- habitats that are effectively irreplaceable;
- habitat diversity;
- size of habitat or species population;
- habitat connectivity and/or synergistic associations;
- habitats and species in decline;
- rich assemblages of plants and animals;
- large populations of species or concentrations of species considered uncommon or threatened in a wider context;
- plant communities (and their associated animals) that are considered to be typical of valued natural / semi-natural vegetation types, including examples of naturally species-poor communities; and
- species on the edge of their range, particularly where their distribution is changing as a result of global trends and climate change.

Significance Criteria

2.22 Current guidelines propose the following frame of reference for defining geographic context, which should be adapted to suit local circumstances:

- International and European;
- National;
- Regional;
- Metropolitan, County, vice-county or other local authority-wide area;
- Local.

3. BASELINE CONDITIONS

Designated Sites

3.1 Notton Wood Local Nature Reserve (LNR) was the only designated wildlife site within 2km of the Site. The LNR is an area of mixed woodland attracting a varied amount of wildlife located approximately 0.3km northwest of the Site.

3.2 The Site is also within a Special Site of Scientific Interest (SSSI) Risk Zone, but the development type is not included within a risk category.

3.3 There were no European Sites within 5km of the Site.

Habitats and Botanical Species

3.4 The Extended Phase 1 Habitat Survey Results map is provided in **Appendix 2**. Relevant photographs are shown in **Appendix 3**. Botanical species nomenclature follows Stace (2019).

Arable

3.5 The majority of the habitats on-site comprised an arable field which had become encroached upon by grass and tall ruderal species. As well as cereal crop, species present were false oat grass *Arrhenatherum elatius*, poppy *Papaver* sp., daisy *Bellis perennis*, common ragwort *Jacobaea vulgaris*, plantain Plantago sp., broadleaved dock *Rumex angustifolium*, common nettle *Urtica dioica*, creeping thistle *Cirsium arvense* and cock's foot grass *Dactylis glomerata*.

Tall Ruderal

3.6 An area of tall ruderal was present towards the northeast corner of the site including rosebay willowherb *Epilobium angustifolium*, mugwort *Artemisia vulgaris*, common nettle and bracken *Pteridium* sp. Scattered scrub species were present within the tall ruderal including hawthorn *Crataegus monogyna*, oak *Quercus* sp. and bramble *Rubus fruticosus*.

Mature Trees

3.7 Numerous mature trees were present within the hedgerows including ash *Fraxinus excelsior*, oak *Quercus* sp. and willow *Salix* sp. Additionally, three stand-alone mature oak and a single ash tree were present within the arable field.

Boundaries

3.8 Boundary features are described below; numbering referrers to the map in **Appendix 2**.

B1 – Gappy hedgerow comprising ash, silver birch *Betula pendula*, snowberry *Symphoricarpos* sp., hawthorn, elder *Sambucus nigra*, ash, oak, hazel *Corylus avellana*, dog rose *Rosa canina* and beech *Fagus sylvatica*. Associated grown flora included

rosebay willowherb, mugwort, common nettle and bracken. This hedgerow continued on the opposite side of a track towards the northeast corner of the site (see map in **Appendix 2**). The track itself comprised bare earth with ephemeral/short perennial vegetation including white clover *Trifolium repens*, plantain, vetch *Vicia* sp. and meadow grass *Poa* sp., The hedgerow measured up to 4m tall and 3m wide.

B2 – Hedgerow comprising of oak, dog rose, ash, hazel, elder, field maple *Acer campestre* and holly *Ilex aquifolium,* measuring up to 4m tall and 3m wide.

B3 – Hedgerow comprising of oak, blackthorn *Prunus spinosa*, hawthorn holly and bramble, measuring up to 4m tall and 3m wide.

B4 – Hedgerow comprising of blackthorn, willow, bramble, hawthorn and elder. A dry ditch was present within the hedgerow. The hedgerow measured up to 4m tall and 3m wide.

B5 – Hedgerow comprising of willow, oak, dog rose, hedge bindweed *Calystegia sepium*, silver birch and hawthorn. A dry ditch was present within the hedgerow. The hedgerow measured up to 4m tall and 3m wide.

Protected / Notable Species

Amphibians

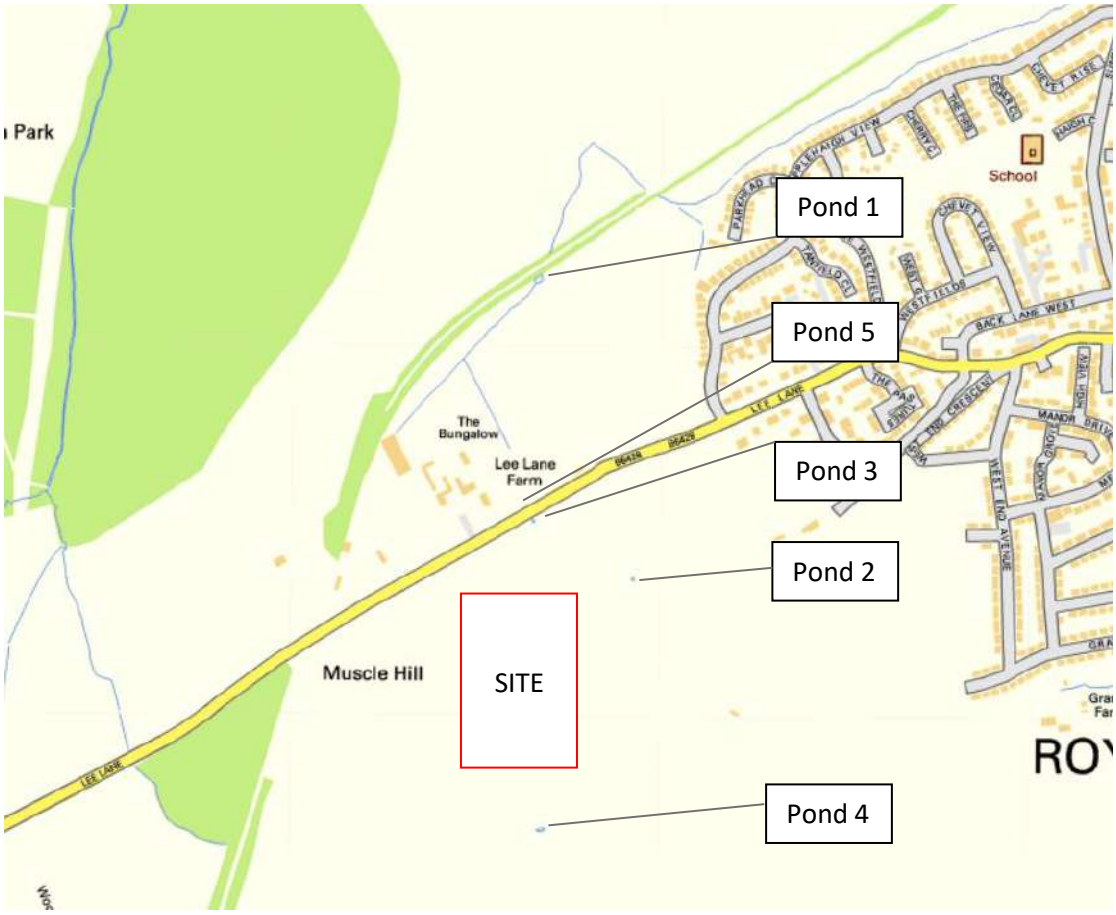
3.9 The Site provided suitable terrestrial habitat for amphibians including great crested newts (GCN) *Triturus cristatus* providing suitable vegetative cover and foraging areas, particularly within the boundaries. A search of aerial photography and OS maps highlighted the presence of five ponds within 500m of the Site as indicated on **Figure 2**.

3.10 Ponds 1 and 2 were within/on the boundaries of the land covered by the previous survey conducted by RSK. Pond 1 was not recorded by RSK and therefore it is assumed to not be present. Pond 2 was recorded by RSK and found to be ephemeral and unsuitable to support GCN. Ponds 3 and 4 were visited as part of the current application. Pond 4 was found not to be present. Pond 3 was also found to be ephemeral and therefore unlikely to support GCN.

3.11 Pond 5 is present and on the opposite side of Lee Lane. However, based on historical aerial imagery, it does not appear to be present at the time of the RSK survey being conducted in 2012. No additional ponds were recorded from aerial imagery within 500m of Pond 5 and there were no desk study records of GCN within 2km of the Site. Therefore, it was considered highly unlikely that this pond would have been colonised by GCN since it's construction in 2012. Additionally, Lee Lane itself is a busy road with kerb stones along much of its length and is therefore likely to act as a dispersal barrier to GCN.

3.12 GCN were considered unlikely to be present on-site and are not considered further within this report.

Figure 2: Pond Locations



Badgers

3.13 No evidence of badgers was found on-site such as hairs, latrines, footprints or setts. The habitats did provide suitable foraging habitat for badgers and it cannot be ruled out that they may cross the Site periodically. There were no desk study records of this species.

Bats

3.14 Several of the mature trees on-site contained features potentially suitable to support roosting bats including cracks and rot holes and were subsequently categorised as low-moderate potential to support roosting bats as indicated on the plan in **Appendix 2**.

3.15 The Site offered potential for foraging and commuting bats along the hedgerows but was generally considered to be of low habitat quality for bats; the arable land unlikely to attract a large abundance of insect prey.

3.16 There were only 18 desk study records of bats from within 2km of the Site within the past ten years. The closest record was returned by South Yorkshire Bat Group and comprised of common pipistrelle *Pipistrellus pipistrellus* from approximately 0.85km east of the Site. The only other species recorded were two records of whiskered bats *Myotis mystacinus* over 1km from the Site.

Birds

3.17 Blackbird *Turdus merula* was the only bird species recorded on-site and is listed as green on the latest Birds of Conservation Concern List (Eaton et al, 2015).

3.18 The Site offered foraging and nesting opportunities for birds, although the Site was unlikely to support an important assemblage of birds. The best opportunities for foraging and nesting were within the hedgerows and mature trees, although there were also opportunities for ground nesting species.

3.19 **Table 1** lists Desk Study records of birds within 2km of the Site.

Table 2: Desk Study Bird Records

Species	Common Name
Accipiter nisus	Sparrowhawk
Alauda arvensis	Skylark
Anas platyrhynchos	Mallard
Anthus pratensis	Meadow Pipit
Apus apus	Swift
Aythya fuligula	Tufted Duck
Buteo buteo	Buzzard
Carduelis cannabina	Linnet
Carduelis carduelis	Goldfinch
Carduelis flammea	Redpoll
Certhia familiaris	Treecreeper
Columba oenas	Stock Dove
Delichon urbica	House Martin
Dendrocopos major	Great Spotted Woodpecker
Emberiza citrinella	Yellowhammer
Emberiza schoeniclus	Reed Bunting
Falco peregrinus	Peregrine
Falco tinnunculus	Kestrel
Fringilla coelebs	Chaffinch
Hirundo rustica	Swallow
Larus argentatus	Herring Gull
Larus fuscus	Lesser Black-Backed Gull
Larus ridibundus	Black-Headed Gull
Locustella naevia	Grasshopper Warbler
Milvus milvus	Red Kite
Motacilla alba	Pied Wagtail
Motacilla alba	White Wagtail

Species	Common Name
Motacilla flava	Yellow Wagtail
Oenanthe oenanthe	Wheatear
Passer domesticus	House Sparrow
Phylloscopus collybita	Chiffchaff
Phylloscopus trochilus	Willow Warbler
Prunella modularis	Dunnock
Pyrrhula pyrrhula	Bullfinch
Regulus regulus	Goldcrest
Sitta europaea	Nuthatch
Sturnus vulgaris	Starling
Sylvia atricapilla	Blackcap
Sylvia borin	Garden Warbler
Sylvia communis	Whitethroat
Sylvia curruca	Lesser Whitethroat
Tachybaptus ruficollis	Little Grebe
Turdus iliacus	Redwing
Turdus philomelos	Song Thrush
Turdus pilaris	Fieldfare
Turdus viscivorus	Mistle Thrush
Vanellus vanellus	Lapwing

Reptiles

3.20 No reptiles or evidence of reptiles was recorded on-site. The habitats on-site were sub-optimal comprising homogenous, heavily managed vegetation lacking in refugia or hibernacula. Furthermore, there were no desk study records of reptiles within 2km of the Site. Reptiles were considered highly unlikely to be present on-site and are not considered further within this report.

Other Species

3.21 The site provided opportunities for hedgehogs *Erinaceus europaeus*. The site was considered unlikely to support any other protected species.

4. NATURE CONSERVATION EVALUATION

4.1 The valuation of the nature conservation interest of the ecological features present on the Site and whether or not they are subject to detailed impact assessment is summarised in **Table 3**.

Table 3: Nature Conservation Evaluation

Receptor	Important Ecological Feature	Value of Receptor or Value of Site to Receptor	Potential for Impact	Subject to Detailed Assessment
Designations				
Notton Woods	Yes – LNR	National	No – distance and lack of connectivity.	No
Habitats				
Arable Land, Tall Ruderal and Ephemeral/Short-perennial	No - Species are common and widespread. Not listed as Priority Habitat under the Natural Environment and Rural Communities (NERC) Act 2006.	Less than Local	Yes – direct habitat loss	No
Boundary hedgerows	Yes – Hedgerows comprising over 80% native species are included as Priority Habitats under the NERC Act 2006.	Local	No – based on the latest masterplan it is understood that boundary habitats are to be retained within the development.	No
Species				
Badger	Yes – protected under Protection of Badgers Act 1992	Local	Yes – may cross the Site periodically	Yes

Receptor	Important Ecological Feature	Value of Receptor or Value of Site to Receptor	Potential for Impact	Subject to Detailed Assessment
Bats	Yes – legally protected under the Conservation of Habitats and Species Regulations 2019 (as amended) and the Wildlife and Countryside Act 1981 (as amended).	Local	Yes – tree removal has the potential to impact upon roosting bats and lighting schemes associated with the project have the potential to disturb commuting/foraging bats. However, given the low quality of the habitats present and the low number of desk study records, a significant abundance of bats was considered unlikely.	Yes
Great Crested Newt	Yes – legally protected under the Conservation of Habitats and Species Regulations 2019 (as amended) and the Wildlife and Countryside Act 1981 (as amended).	Not applicable	No – highly unlikely to be present	No
Birds	Yes – legally protected under the Wildlife and Countryside Act 1981 (as amended).	Local	Yes – Potential loss of habitat for ground nesting species	Yes
Reptiles	Yes – legally protected under the Wildlife and Countryside Act 1981 (as amended).	Not applicable	No – highly unlikely to be present	No
Hedgehog	Yes - listed as Priority Species under the Natural Environment and Rural Communities (NERC) Act 2006.	Local	Potential for harm during construction phase	Yes

4.2 Therefore, the ecological receptors which are taken forward for further assessment are as follows:

- Badgers;
- Bats;
- Birds;
- Hedgehogs.

5. ASSESSMENT OF EFFECTS

Badgers

5.1 It cannot be ruled out that badgers may cross the Site periodically which have the potential to become trapped in excavations or open pipework. In the absence of mitigation, the operational phase has the potential to result in a temporary adverse effect of low magnitude of significance at the less than local level.

Bats

5.2 A mature tree within the arable field, which was highlighted as having low potential to support roosting bats, is to be felled; there is a small possibility that this work could result in the disturbance or injury of roosting bats and the destruction of a roost. It is understood that all other mature trees with the potential to support roosting bats are to be retained and protected during the works. In the absence of mitigation, the construction phase has the potential to result in a permanent adverse effect of low magnitude of significance at the less than local level.

5.3 Any new lighting associated with the development has the potential to disturb foraging and commuting bats along boundaries hedgerows. In the absence of mitigation, the operational phase has the potential to result in a permanent adverse effect of low magnitude of significance at the less than local level.

Birds

5.4 The boundaries trees and woodland which offered the best opportunities for birds are to be retained. The Site may support low breeding populations of common bird species within arable land also. There will be a loss of this nesting habitat and potential disturbance to nesting birds during the construction phase.

5.5 The construction phase will result in direct permanent nesting habitat loss for these species, resulting in a minor adverse effect of significance at the less than local level.

Hedgehogs

5.6 The Site may support low numbers of foraging hedgehogs. Ground clearance during the construction phase could result in harm to the animals if hedgehogs become trapped in open excavations. Given the small number of animals likely to use the Site, the impacts are considered to be of low magnitude. In the absence of mitigation, this is considered to be a temporary adverse impact with significance being at the local level.

6. MITIGATION MEASURES

Badgers

6.1 As a matter of good practice, any trenches dug as part of construction work will be covered over at night, or left with a ramp or sloping end, to prevent mammals from falling in and becoming trapped. Similarly, any pipes over 200mm in diameter will be capped off at night.

Bats

6.2 In line with best practice guidelines, no further survey work or mitigation is required for trees with low potential to support roosting bats. However, as a precaution, the tree within the arable field are to be soft felled i.e. they well be felled in sections with the arisings lowered to the ground and left in situ for 24 hours to allow roosting bats, in the unlikely event that they are present, to find alternative roosting provisions.

6.3 Additionally, to prevent disturbance to foraging and commuting bats, a sensitive lighting scheme will be implement following the latest guidance (i.e. Bats and artificial lighting in the UK, 2018).

Birds

6.4 As all species receive legal protection during nesting, any vegetation clearance including ground clearance will be conducted outside of the breeding bird season of March to August (inclusive). Vegetation clearance/ground clearance outside of this period will still be preceded by a nesting bird survey carried out by contractors, as some species can nest all year round. Vegetation clearance/ground clearance within this period will be preceded by a nesting bird check conducted by an ecologist. Any active nests, including those of ground-nesting species, will remain unaffected until all chicks have fledged.

6.5 Bird boxes will be incorporated into the new development to mitigate for the loss of this small areas of nesting habitat. Further details are provided in **Section 7**.

Hedgehogs

6.6 As a matter of good practice, any trenches dug as part of construction work will be covered over at night, or left with a ramp or sloping end, to prevent mammals from falling in and becoming trapped. Similarly, any pipes over 200mm in diameter will be capped off at night.

7. RESIDUAL EFFECTS

7.1 With the mitigation measures suggested and outlined above, no residual effects are envisaged.

8. COMPENSATION AND ENHANCEMENT MEASURES

General

8.1 Biodiversity Net Gain was written into the NPPF in 2019, is currently being written into a number of Local Plans and will be mandated by the government as part of the Environment Bill. The landscaping scheme should be designed to maximise the biodiversity present on the Site post-development, through the use of native plant species and a variety of habitat types, with the area of green space maximised within the constraints of the development. Where net gain cannot be achieved on Site, it may be necessary to also allow for off-site mitigation on other areas of land within the client's ownership and/or financial contribution to a third party such as the Environment Bank to fund off-site mitigation.

Bats

8.2 Opportunities for roosting bats should be incorporated into the final masterplan. These should be integrated into the new buildings. These should be positioned as close to the eaves as possible and comprise of *Schwegler type F1 tubes*. They should be positioned in locations sheltered from strong winds and away from direct sunlight for a significant proportion of the day, usually south to south-west.

Birds

8.3 Opportunities for nesting birds should be incorporated into the final masterplan. These should be integrated into new buildings. Bird boxes should be installed two to four metres above ground on the buildings and should offer unobstructed fly-in access. The boxes should face between north and east, thus avoiding full sun and prevailing wind.

8.4 Boxes for sparrows *Passer domesticus* and swifts *Apus apus* should be installed, focussing on those species whose populations are declining and are most likely to be associated with the built environment, as well as a number of general purposes boxes.

8.5 The following should be installed:

- Open fronted nest boxes such as Schwegler 26 Brick Box Nests which are designed to support a range of species. These can be sourced from the link below:

  https://www.wildcare.co.uk/schweglar-brick-box-type-26.html

- Sparrow terraces. These can be sourced from the link below:

  https://www.wildcare.co.uk/sparrow-terrace.html

- Manthorpe Swift bricks. These can be sourced from the link below:

  https://www.nhbs.com/manthorpe-swift-brick

9. CUMULATIVE EFFECTS

9.1 The outcome of the Ecological Impact Assessment is that there will be no Residual Effects. Therefore the proposed works will not contribute to any impacts from related/nearby proposed developments and Cumulative Effects are not relevant.

10. SUMMARY

10.1 **Table 4** contains a summary of the likely significant effects of the Development relating to the construction phase, the completed development and cumulative effects.

Table 4: Significance

Receptor	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L	
Construction											
Wildlife Designations	None envisaged	Not applicable									
Habitats	Natural habitats on-site are generally of low ecological value. Hedgerows would qualify as Priority habitats under the NERC Act 2006 but are to be retained and protected.	Not applicable									
Amphibians	None envisaged	Not applicable									
Badger	None envisaged	Not applicable									
Bats	Two trees identified as having low potential to support roosts to be felled.	Minor adverse effect at less than local level	Precautionary soft felling.							*	Negligible
Birds	Potential for disturbance during construction phase	Minor adverse effect at less than local level	Precautionary working methods/timing.							*	Negligible
Reptiles	None envisaged	Not applicable									
Hedgehogs	Potential for animals to fall into/become trapped in open excavations.	Minor adverse effect at less than local level	Precautionary working methods.							*	Negligible
Operational											
Bats	Potential for disturbance from lighting	Minor adverse effect at less than local level	Lighting scheme to follow best practice guidance.							*	Negligible

* Geographical Level of Importance
I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

11. REFERENCES

11.1 Bat Conservation Trust (2018) Bats and Artificial Lighting in the UK – Guidance Note 08/18

11.2 British Standards Institution (2013) BS42020:2013 Biodiversity – code of practice for planning and development. BSI Standards Ltd, London

11.3 Chartered Institute of Ecology and Environmental Management (2019) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. CIEEM, Winchester

11.4 Chartered Institute of Ecology and Environmental Management (2017) Guidelines for Ecological Report Writing. CIEEM, Winchester.

11.5 Chartered Institute of Ecology and Environmental Management (2017) Guidelines for Preliminary Ecological Appraisal. CIEEM, Winchester

11.6 Collins J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust, London.

11.7 Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746.

11.8 Joint Nature Conservation Committee (2010) Handbook for Phase 1 Habitat Survey: a technique for environmental audit. JNCC, Peterborough.

11.9 Ministry of Housing, Communities and Local Government (July 2018) National Planning Policy Framework. ISBN: 978-1-4098-5302-2

11.10 Multi-Agency Geographic Information for the Countryside Website.

http://www.magic.gov.uk/

11.11 Stace, C.S. (2019) New Flora of the British Isles, 4th edition. University Press, Cambridge

APPENDICES

APPENDIX 1: Relevant Legislation

European Protected Species

All British bat species, great crested newt and otters are fully protected through The Conservation of Habitats and Species Regulations 2019 (as amended) as a European Protected Species (EPS). They also receive some protection through inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

Under the legislation, it is an offence to deliberately capture, injure or kill these species. It is an offence to damage or destroy a breeding site or resting place of these species; or obstruct access to any structure or place which they use for that purpose.

It is also an offence to deliberately disturb these species. Disturbance of animals includes in particular any disturbance which is likely (a) to impair their ability (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or (b) to affect significantly the local distribution or abundance of the species to which they belong.

The 'appropriate authority' (Natural England in England) has powers to issue licences for various purposes including - (a) scientific or educational purposes… and (b) preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment. The appropriate authority shall not grant a licence under this regulation unless they are satisfied - (a) that there is no satisfactory alternative, and (b) that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range. It is an offence for any person authorised by virtue of a licence to which this paragraph applies to contravene or fail to comply with any condition which the licence requires him to comply with.

Nesting birds

All wild birds in the UK are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy the nest (whilst being built or in use) or its eggs. Bird species listed in Schedule 1 of the 1981 Act, receive further protection which makes it an offence to intentionally or recklessly disturb these species while building a nest or in, on or near a nest containing eggs or young; or to disturb dependent young of such a bird.

Badgers

The Protection of Badgers Act 1992 was introduced in recognition of the additional threats that badgers face from illegal badger digging and baiting. Under the Act, it is an offence inter alia to:

- Wilfully kill, injure or take a badger, or to attempt to do so;
- Cruelly ill-treat a badger; or
- Intentionally or recklessly interfere with a badger sett by:
- damaging a sett or any part of one;
- destroying a sett;
- obstructing access to or any entrance of a sett;
- causing a dog to enter a sett; or
- disturbing a badger when it is occupying a sett.

Reptiles

Four species of reptile, the adder *Vipera berus*, grass snake *Natrix helvetica*, slow worm *Anguis fragilis* and common lizard *Lacerta vivipara* are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) as well as being listed on the UK Post-2010 Biodiversity Framework (formerly UK BAP).

In net effect, it is an offence to deliberately capture, injure or kill common lizard, adder, grass snake or slow worms.

Two reptiles, the sand lizard *Lacerta agilis* and the smooth snake *Coronella austrica*, are European Protected Species under The Conservation of Habitats and Species Regulations 2019 (as amended). They are also listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are protected by Parts 4(b), 4(c) and 5 of Section 9 of that Act.

APPENDIX 2: Extended Phase 1 Habitat Map

B5
B6428
B4
B3
B1
B2
Notes
1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.
Key
Mature Tree - Low Bat Potential
Mature Tree - Moderate Bat Potential
Scattered Scrub
Mature Tree
Hedgerow
Ephemeral
Tall Ruderal
Arable
Birmingham | 0121 233 3322
Leeds | 0113 233 8000
London | 0207 407 2879
Manchester | 0161 233 4260
Nottingham | 0115 924 1100
www.bwbconsulting.com
Client
Bellway Homes Ltd
Project Title
Lee Lane Royston
Drawing Title
Preliminary Ecological Appraisal
Drawn: CCI
Reviewed: KC
BWB Ref: LDP2222
Date: 26.09.19
Scale@A3: 1:2750
Drawing Status
Final
Project - Originator - Zone - Level - Type - Role - Number
LLR-BWB-ZZ-XX-DR-EN-0001
Status: S2
Rev: P01

APPENDIX 3: Site Photographs

Arable	
Track with adjacent tall ruderal	
Example hedgerow with mature trees	

Example tree with bat roosting potential	

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ENVIRONMENT

Bellway Homes Ltd (Yorkshire Division)

Lee Lane, Royston

Preliminary Ecological Appraisal

LDP2222

ENVIRONMENTAL

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EXECUTIVE SUMMARY

This Preliminary Ecological Appraisal has been produced to inform a proposed development at land off Lee Lane, Royston. The findings are summarised in the table below.

Ecological Receptor	Results & Discussion	Recommendations
Designated Sites	Notton Wood Local Nature Reserve (LNR) was the only designated wildlife site within 2km of the Site.	Not Applicable
Habitats	Habitats on-site largely comprises arable land of low ecological value. However, boundary hedgerows contained over 80% native species and would therefore qualify as a Priority Habitat.	The boundary hedgerows should be retained and adequately protected during the works.
Amphibians	The Site provided suitable terrestrial habitat for amphibians including great crested newts (GCN) *Triturus cristatus* providing suitable vegetative cover and foraging areas, particularly within the boundaries. A single pond was present within 500m of the Site which may have the potential to support GCN. However, it is understood that this is a relatively new pond and unlikely to have been colonised by GCN.	Not Applicable
Badgers and Hedgehogs	No evidence of badgers or hedgehogs was found on-site but it cannot be ruled out that they may cross the Site periodically.	As a matter of good practice, any trenches dug as part of construction work should be covered over at night, or left with a ramp or sloping end, to prevent mammals from falling in and becoming trapped. Similarly, any pipes over 200mm in diameter should be capped off at night. These good practices should be included within the CEMP.
Bats	Several of the mature trees on-site contained features potentially suitable to support roosting bats including cracks and rot holes and were subsequently categorised as low-moderate potential to support roosting bats The boundary hedgerows offered the best opportunities for foraging and commuting bats. It is understood these habitats will be retained within the development. Any new lighting associated with the development has the potential to disturb foraging and commuting bats in these areas.	Trees identified as having low potential to support bats should be soft felled as a precautionary measure i.e. the trees should be section-felled, and the arisings lowered to the ground and left in situ for 24 hours. Trees identified as having moderate potential to support roosting bats should be subjected to an aerial inspection by a licenced ecologist to assess the features identified from ground level with high powered torches. The hedgerow should be retained and adequately protected during the works. Additionally, a dark corridor should be maintained along the boundary hedgerows both during construction and operational phases.

Ecological Receptor	Results & Discussion	Recommendations
Birds	The Site offered foraging and nesting opportunities for birds, although the Site was unlikely to support an important assemblage of birds. The best opportunities for foraging and nesting were within the hedgerows and mature trees.	As all species receive legal protection during nesting, it is advised to complete any vegetation clearance and building works outside of the breeding bird season of March to August (inclusive). Vegetation clearance outside of this period should still be preceded by a nesting bird carried out by contractors, as some species can nest all year round. Any active nests would need to remain unaffected until all chicks had fledged.
Reptiles	No reptiles or evidence of reptiles was recorded on-site. The habitats on-site were sub-optimal comprising homogenous, heavily managed vegetation lacking in refugia or hibernacula. Furthermore, there were no desk study records of reptiles within 2km of the Site. Reptiles were considered highly unlikely to be present on-site	Not applicable.

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1. INTRODUCTION

Appointment & Background

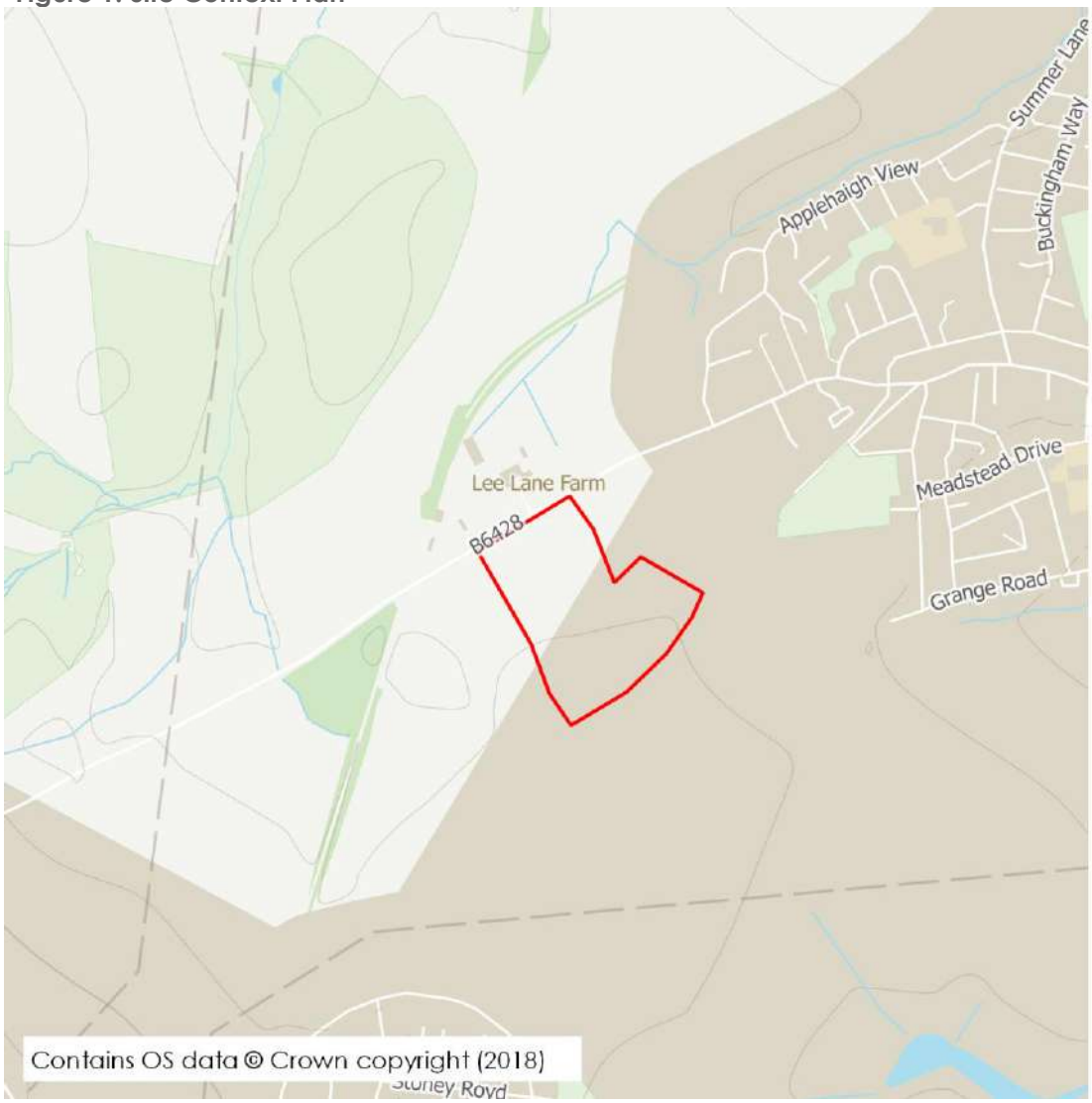
1.1 BWB Consulting Ltd was appointed by Bellway Homes Ltd (Yorkshire Division) to undertake a Preliminary Ecological Appraisal for a proposed development at land off Lee Lane, Royston.

Site Setting

1.2 The Site is located off Lee Lane, Royston (SE34861104) and comprised an arable field which was itself surrounded by agricultural land.

1.3 **Figure 1** shows the Site location.

Figure 1: Site Context Plan



Aims

1.4 The primary purpose of this appraisal is to provide a baseline of all ecological considerations relating to any future development proposals. This will include the identification of any potential ecological constraints.

Scope of Works

1.5 The ecological appraisal was informed by a desk-based study and a site survey. The approach to this ecological appraisal follows best practice published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017) and the British Standards Institution (BSI, 2013). Further details are provided later in this report.

Legislation and Planning Policy

1.6 The following legislation relates to species and habitats that could potentially occur in association with the Site:

- The Conservation of Habitats and Species Regulations 2017;
- The Wildlife and Countryside Act 1981 (as amended);
- The Countryside and Rights of Way (CRoW) Act 2000;
- Natural Environment and Rural Communities (NERC) Act 2006;
- The Protection of Badgers Act 1992;
- Wild Mammals (Protection) Act 1996; and
- The Hedgerow Regulations 1997.

1.7 Further information on the legislation relevant to this Site is provided in **Appendix 1**.

1.8 Consideration has also been given in this report to relevant National and Local Planning Policy as summarised below.

1.9 The National Planning Policy Framework (NPPF) guides Local Planning Authorities (LPAs) when developing their planning policies and considering planning applications affecting protected habitats, sites and species.

1.10 In respect of the natural environment, the NPPF states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic

and other benefits of the best and most versatile agricultural land, and of trees and woodland;

c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;

d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

f) *remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.*"

1.11 Additionally, Policy 36 of the Barnsley Core Strategy states the following:

"Development will be expected to conserve and enhance the biodiversity and geological features of the borough by: protecting and improving habitats, species, sites of ecological value and sites of geological value with particular regard to designated wildlife and geological sites of international, national and local significance, ancient woodland and species and habitats of principal importance identified in Section 74 of the Countryside and Rights of Way Act 2000 and in the Barnsley Biodiversity Action Plan maximising biodiversity and geodiversity opportunities in and around new developments conserving and enhancing the form, local character and distinctiveness of the river corridors of the Dearne and Dove as natural floodplains and important strategic wildlife corridors Development which may harm a biodiversity or geological feature will not be permitted unless effective mitigation and/or compensatory measures can be ensured."

2. METHODS

Desktop Study

2.1 Leicestershire and Rutland Environmental Records Centre (LRERC) was contacted to request records of any locally designated sites and/or protected species from the Site and land within a 2km radius. Records more than ten years old have been largely disregarded.

2.2 The Site was surveyed, as part of a larger proposal which included additional land to the north and east, by RSK in 2012 (RSK, 2012). This report was also available for review.

2.1 In addition, the data sources listed below were also searched to gather additional ecological data of relevance to the project, including the identification of non-designated ecologically sensitive habitats such as vegetation corridors, woodlands, watercourses and standing water.

- Multi-Agency Geographic Information for the Countryside (MAGIC);
- Ordnance Survey 1:25,000 mapping; and
- Aerial imagery.

Extended Phase 1 Habitat Survey

2.2 A site survey was undertaken on 12th July 2018 by Chris Grocock MSc BSc (Hons) GradCIEEM. Chris has extensive experience in survey and site assessment for protected species and is appropriately qualified for the surveys based on the CIEEM competencies for species surveys (CIEEM, 2017).

2.3 The visit was completed using Phase 1 habitat survey techniques as defined in the standard methodology (JNCC, 2010).

2.4 The aim of the visit was to gather sufficient baseline information on the habitats within the Site in order to allow an interpretation of the ecological value of the land.

2.5 In addition, the methodology was extended to include a search for incidental evidence of protected / notable fauna and an assessment of the Site's potential to support protected/notable fauna. Specific consideration was given to the following species:

- Birds;
- Bats;
- Amphibians, including great crested newt (GCN) *Triturus cristatus*;
- Reptiles;
- Badgers *Meles meles*; and
- Priority Species, such as hedgehog *Erinaceus europaeus*.

2.6 Standard methodologies were used where applicable.

2.7 Habitats adjacent to the Site were viewed, where possible, from the Site boundaries in order to assess their potential to support protected species that could be utilising the survey Site.

Survey Comments

2.8 The survey methodology highlights habitats and features with potential for protected/notable species but is not designed to provide a comprehensive presence/absence survey. Any species-specific surveys recommended as a result of this appraisal must be read in conjunction with this report to gain a full understanding of potential ecological constraints to the development.

3. RESULTS

Designated Sites

3.1 Notton Wood Local Nature Reserve (LNR) was the only designated wildlife site within 2km of the Site. The LNR is an area of mixed woodland attracting a varied amount of wildlife located approximately 0.3km northwest of the Site.

3.2 The Site is also within a Special Site of Scientific Interest (SSSI) Risk Zone but the development type is not included within a risk category.

Habitats and Botanical Species

3.3 The Extended Phase 1 Habitat Survey Results Map is provided in **Appendix 2** with accompanying habitat descriptions below. Relevant photographs are shown in **Appendix 3.** Botanical species nomenclature follows Stace (2010).

Arable

3.4 The majority of the habitats on-site comprised an arable field which had become encroached upon by grass and tall ruderal species. As well as cereal crop, species present were false oat grass *Arrhenatherum elatius*, poppy *Papaver* sp., daisy *Bellis perennis*, common ragwort *Jacobaea vulgaris*, plantain Plantago sp., broadleaved dock *Rumex angustifolium*, common nettle *Urtica dioica*, creeping thistle *Cirsium arvense* and cock's foot grass *Dactylis glomerata*.

Tall Ruderal

3.5 An area of tall ruderal was present towards the northeast corner of the site including rosebay willowherb *Epilobium angustifolium*, mugwort *Artemisia vulgaris*, common nettle and bracken *Pteridium* sp. Scattered scrub species were present within the tall ruderal including hawthorn *Crataegus monogyna*, oak *Quercus* sp. and bramble *Rubus fruticosus*.

Mature Trees

3.6 Numerous mature trees were present within the hedgerows including ash *Fraxinus excelsior*, oak *Quercus* sp. and willow *Salix* sp. Additionally, three stand-alone mature oak and a single ash tree were present within the arable field.

Boundaries

3.7 Boundary features are described below, numbering referrers to the map in Appendix 2.

B1 – Gappy hedgerow comprising ash, silver birch *Betula pendula*, snowberry *Symphoricarpos* sp., hawthorn, elder *Sambucus nigra*, ash, oak, hazel *Corylus avellana*, dog rose *Rosa canina* and beech *Fagus sylvatica*. Associated grown flora included rosebay willowherb, mugwort, common nettle and bracken. This hedgerow

continued on the opposite side of a track towards the northeast corner of the site (see map in Appendix 2). The track itself comprised bare earth with ephemeral/short perennial vegetation including white clover *Trifolium repens*, plantain, vetch *Vicia* sp. and meadow grass *Poa* sp. Up to 4m tall and 3m wide.

B2 – Hedgerow comprising of oak, dog rose, ash, hazel, elder, field maple *Acer campestre* and holly *Ilex aquifolium*. Up to 4m tall and 3m wide.

B3 – Hedgerow comprising of oak, blackthorn *Prunus spinosa*, hawthorn holly and bramble. Up to 4m tall and 3m wide.

B4 – Hedgerow comprising of blackthorn, willow, bramble, hawthorn and elder. A dry ditch was present within the hedgerow. Up to 4m tall and 3m wide.

B5 – Hedgerow comprising of willow, oak, dog rose, hedge bindweed, silver birch and hawthorn. A dry ditch was present within the hedgerow. Up to 4m tall and 3m wide.

Protected / Notable Species

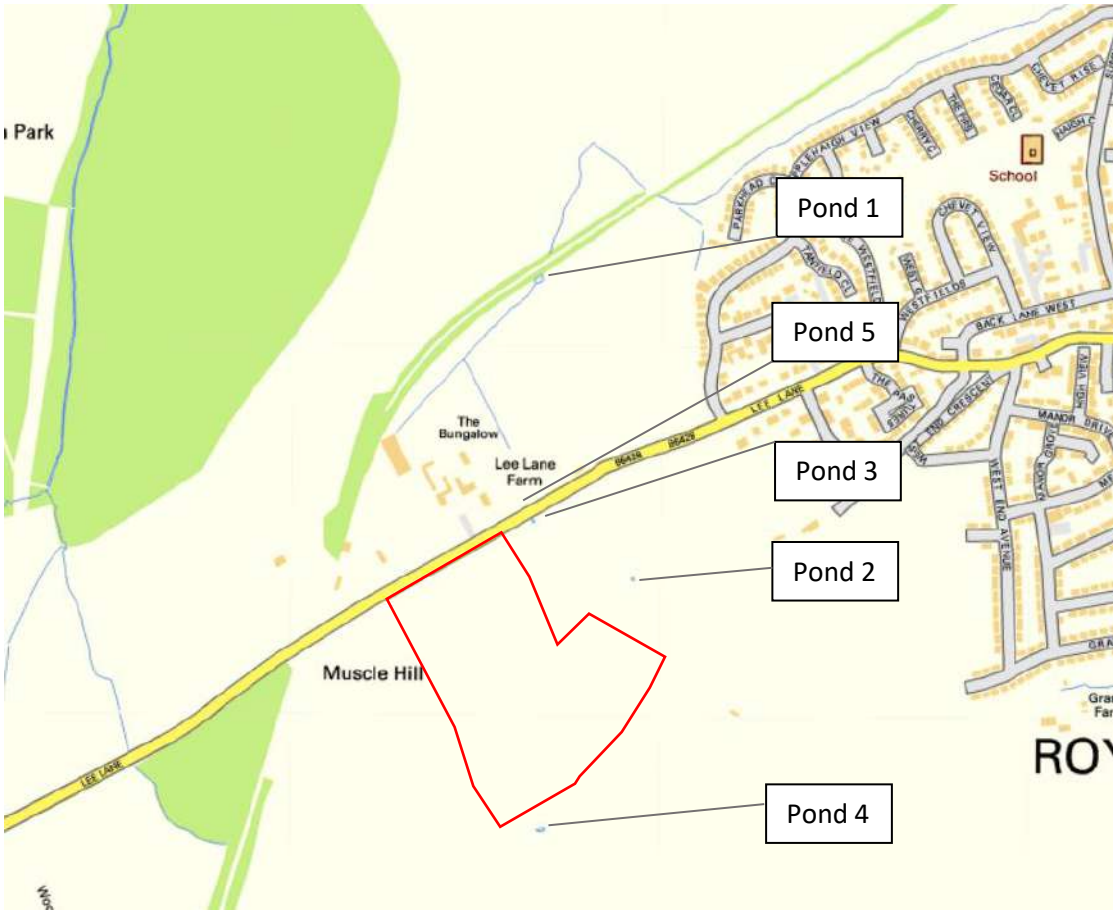
Amphibians

3.8 The Site provided suitable terrestrial habitat for amphibians including great crested newts (GCN) *Triturus cristatus* providing suitable vegetative cover and foraging areas, particularly within the boundaries. A search of aerial photography and OS maps highlighted the presence of five ponds within 500m of the Site as indicated on **Figure 2**.

3.9 Ponds 1 and 2 were within/on the boundaries of the land covered by the previous survey conducted by RSK. Pond 1 was not recorded by RSK and therefore is assumed to not be present. Pond 2 was recorded by RSK and found to be ephemeral and unsuitable to support GCN. Ponds 3 and 4 were visited as part of the current application and were found not to be present.

3.10 It is understood that Pond 5 is present. However, based on historical aerial imagery, it does not appear to be present at the time of the RSK survey being conducted in 2012. No additional ponds were recorded from aerial imagery within 500m of Pond 5 and there were no desk study records of GCN within 2km of the Site. Therefore, it was considered highly unlikely that this pond would have been colonised by GCN since it's construction in 2012. GCN were considered unlikely to be present on-site and are not considered further within this report.

Figure 2: Pond Locations



Badgers

3.11 No evidence of badgers was found on-site such as hairs, latrines, footprints or setts. The habitats did provide suitable foraging habitat for badgers and it cannot be ruled out that they may cross the Site periodically. There were no desk study records of this species.

Bats

3.12 Several of the mature trees on-site contained features potentially suitable to support roosting bats including cracks and rot holes and were subsequently categorised as low-moderate potential to support roosting bats as indicated on the plan in Appendix 2.

3.13 The Site offered potential for foraging and commuting bats along the hedgerows but was generally considered to be of low habitat quality for bats, the arable land unlikely to attract a large abundance of insect prey.

3.14 There was a total of one record of bats from within 2km of the Site within the past ten years comprising common pipistrelle *Pipistrellus* sp.

Birds

3.15 Blackbird *Turdus merula* was the only bird species recorded on-site which is listed as green on the latest Birds of Conservation Concern List.

3.16 The Site offered foraging and nesting opportunities for birds, although the Site was unlikely to support an important assemblage of birds. The best opportunities for foraging and nesting were within the hedgerows and mature trees.

3.17 Table 1 lists Desk Study records of birds within 2km of the Site.

Table 1: Desk Study Bird Records

Species	Common Name
Accipiter nisus	Sparrowhawk
Alauda arvensis	Skylark
Anas platyrhynchos	Mallard
Anthus pratensis	Meadow Pipit
Apus apus	Swift
Aythya fuligula	Tufted Duck
Buteo buteo	Buzzard
Carduelis cannabina	Linnet
Carduelis carduelis	Goldfinch
Carduelis flammea	Redpoll
Certhia familiaris	Treecreeper
Columba oenas	Stock Dove
Delichon urbica	House Martin
Dendrocopos major	Great Spotted Woodpecker
Emberiza citrinella	Yellowhammer
Emberiza schoeniclus	Reed Bunting
Falco peregrinus	Peregrine
Falco tinnunculus	Kestrel
Fringilla coelebs	Chaffinch
Hirundo rustica	Swallow
Larus argentatus	Herring Gull
Larus fuscus	Lesser Black-Backed Gull
Larus ridibundus	Black-Headed Gull
Locustella naevia	Grasshopper Warbler
Milvus milvus	Red Kite
Motacilla alba	Pied Wagtail
Motacilla alba	White Wagtail
Motacilla flava	Yellow Wagtail

Species	Common Name
Oenanthe oenanthe	Wheatear
Passer domesticus	House Sparrow
Phylloscopus collybita	Chiffchaff
Phylloscopus trochilus	Willow Warbler
Prunella modularis	Dunnock
Pyrrhula pyrrhula	Bullfinch
Regulus regulus	Goldcrest
Sitta europaea	Nuthatch
Sturnus vulgaris	Starling
Sylvia atricapilla	Blackcap
Sylvia borin	Garden Warbler
Sylvia communis	Whitethroat
Sylvia curruca	Lesser Whitethroat
Tachybaptus ruficollis	Little Grebe
Turdus iliacus	Redwing
Turdus philomelos	Song Thrush
Turdus pilaris	Fieldfare
Turdus viscivorus	Mistle Thrush
Vanellus vanellus	Lapwing

Reptiles

3.18 No reptiles or evidence of reptiles was recorded on-site. The habitats on-site were sub-optimal comprising homogenous, heavily managed vegetation lacking in refugia or hibernacula. Furthermore, there were no desk study records of reptiles within 2km of the Site. Reptiles were considered highly unlikely to be present on-site and are not considered further within this report.

Other Species

3.19 The site provided opportunities for hedgehogs *Erinaceus europaeus*. The site was considered unlikely to support any other protected species.

4. DISCUSSION AND ANALYSIS OF RESULTS

Designated Sites

4.1 Due to the distance of the Site from Notton Woods and the nature of the works, no impacts to the LNR are envisaged.

Habitats

4.2 The habitats on-site were generally of low ecological value.

4.3 The boundary hedgerow offered opportunities for biodiversity and would qualify as a Priority Habitat as it comprised over 80% native species. Hedgerows should there be retained or replaced with an equal or greater length of species rich native hedgerows. It is understood the hedgerow will be retained within the development.

Badgers

4.4 It cannot be ruled out that badgers may cross the Site periodically which have the potential to become trapped in open trenches or pipework if left uncovered overnight. Therefore, further consideration will be required as detailed in Section 5.

Bats

4.5 Works to mature trees on-site which were identified as having the potential to support roosting bats have the potential to disturb, injure or kill bats as we all damage or destroy roosting sites.

4.6 The boundary hedgerows offered the best opportunities for foraging and commuting bats. It is understood these habitats will be retained within the development. No significant impacts to foraging bats are envisaged as a result of the loss of the arable habitats on-site. Any new lighting associated with the development has the potential to disturb foraging and commuting bats.

Birds

4.7 No significant impacts to birds are envisaged as a result of the loss of the habitats present on-site as the best opportunities for nesting (boundary hedgerows) are to be retained. However, all bird species receive legal protection during nesting; there is the potential for any vegetation clearance to damage or destroy active nests, if undertaken during the nesting season. Sensitive timing of vegetation works will be needed. Further information is provided in Section 5.

Hedgehogs

4.8 It cannot be ruled out that hedgehogs may forage within or cross the Site which have the potential to become trapped in open trenches or pipework if left uncovered overnight. Therefore, further consideration will be required as detailed in Section 5.

5. RECOMMENDATIONS

Habitats

5.1 The boundary hedgerows and mature trees which are to be retained should be adequately protected during the works i.e. root protection zones should be established and materials should not be stored under the canopy of trees.

5.2 The NPPF states that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity. Any new planting associated with the development should comprise predominantly native species, or those with a known biodiversity benefit (such as a high nectar yield).

Badgers

5.3 As a matter of good practice, any trenches dug as part of construction work should be covered over at night, or left with a ramp or sloping end, to prevent mammals from falling in and becoming trapped. Similarly, any pipes over 200mm in diameter should be capped off at night.

Bats

5.4 Trees identified as having low potential to support bats should be soft felled as a precautionary measure i.e. the trees should be section-felled, and the arisings lowered to the ground and left in situ for 24 hours. Trees identified as having moderate potential to support roosting bats should be subjected to an aerial inspection by a licenced ecologist to assess the features identified from ground level with high powered torches. In the event that a likely absence of roosting bats cannot be concluded, additional nocturnal surveys would be required which can only be undertaken on warm, dry evenings between May and August.

5.5 The hedgerow should be retained and adequately protected during the works. Additionally, a dark corridor should be maintained along the boundary hedgerows both during construction and operational phases.

5.6 Opportunities for bats should be incorporated into the final masterplan. This could include integrated bat boxes on buildings or attached to any trees included in the final masterplan.

Birds

5.7 As all species receive legal protection during nesting, it is advised to complete any vegetation clearance and building works outside of the breeding bird season of March to August (inclusive). Vegetation clearance outside of this period should still be preceded by a nesting bird carried out by contractors, as some species can nest all year round. Any active nests would need to remain unaffected until all chicks had fledged.

5.8 Opportunities for nesting birds should be incorporated into the final masterplan. This could include integrated nest boxes on buildings or attached to any trees included in the final masterplan.

Other

5.9 As a matter of good practice, any trenches dug as part of construction work should be covered over at night, or left with a ramp or sloping end, to prevent mammals from falling in and becoming trapped. Similarly, any pipes over 200mm in diameter should be capped off at night.

6. SUMMARY

Ecological Receptor	Results & Discussion	Recommendations
Designated Sites	Notton Wood Local Nature Reserve (LNR) was the only designated wildlife site within 2km of the Site.	Not Applicable
Habitats	Habitats on-site largely comprises arable land of low ecological value. However, boundary hedgerows contained over 80% native species and would therefore qualify as a Priority Habitat.	The boundary hedgerows should be retained and adequately protected during the works.
Amphibians	The Site provided suitable terrestrial habitat for amphibians including great crested newts (GCN) *Triturus cristatus* providing suitable vegetative cover and foraging areas, particularly within the boundaries. A single pond was present within 500m of the Site which may have the potential to support GCN. However, it is understood that this is a relatively new pond and unlikely to have been colonised by GCN.	Not Applicable
Badgers and Hedgehogs	No evidence of badgers or hedgehogs was found on-site but it cannot be ruled out that they may cross the Site periodically.	As a matter of good practice, any trenches dug as part of construction work should be covered over at night, or left with a ramp or sloping end, to prevent mammals from falling in and becoming trapped. Similarly, any pipes over 200mm in diameter should be capped off at night. These good practices should be included within the CEMP.
Bats	Several of the mature trees on-site contained features potentially suitable to support roosting bats including cracks and rot holes and were subsequently categorised as low-moderate potential to support roosting bats The boundary hedgerows offered the best opportunities for foraging and commuting bats. It is understood these habitats will be retained within the development. Any new lighting associated with the development has the potential to disturb foraging and commuting bats in these areas.	Trees identified as having low potential to support bats should be soft felled as a precautionary measure i.e. the trees should be section-felled, and the arisings lowered to the ground and left in situ for 24 hours. Trees identified as having moderate potential to support roosting bats should be subjected to an aerial inspection by a licenced ecologist to assess the features identified from ground level with high powered torches. The hedgerow should be retained and adequately protected during the works. Additionally, a dark corridor should be maintained along the boundary hedgerows both during construction and operational phases.

Ecological Receptor	Results & Discussion	Recommendations
Birds	The Site offered foraging and nesting opportunities for birds, although the Site was unlikely to support an important assemblage of birds. The best opportunities for foraging and nesting were within the hedgerows and mature trees.	As all species receive legal protection during nesting, it is advised to complete any vegetation clearance and building works outside of the breeding bird season of March to August (inclusive). Vegetation clearance outside of this period should still be preceded by a nesting bird carried out by contractors, as some species can nest all year round. Any active nests would need to remain unaffected until all chicks had fledged.
Reptiles	No reptiles or evidence of reptiles was recorded on-site. The habitats on-site were sub-optimal comprising homogenous, heavily managed vegetation lacking in refugia or hibernacula. Furthermore, there were no desk study records of reptiles within 2km of the Site. Reptiles were considered highly unlikely to be present on-site	Not applicable.

7. REFERENCES

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APPENDICES

APPENDIX 1: Relevant Legislation

European Protected Species

All British bat species, great crested newt, hazel dormice and otters are fully protected through The Conservation of Habitats and Species Regulations 2017 as a European Protected Species (EPS). They also receive some protection through inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

Under the legislation, it is an offence to deliberately capture, injure or kill these species. It is an offence to damage or destroy a breeding site or resting place of these species while it is occupying a structure or place which it uses for shelter or protection; or obstruct access to any structure or place which it uses for that purpose.

It is also an offence to deliberately disturb these species. Disturbance of animals includes in particular any disturbance which is likely (a) to impair their ability (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or (b) to affect significantly the local distribution or abundance of the species to which they belong.

The 'appropriate authority' (Natural England in England) has powers to issue licences for various purposes including - (a) scientific or educational purposes… and (b) preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment. The appropriate authority shall not grant a licence under this regulation unless they are satisfied - (a) that there is no satisfactory alternative, and (b) that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range. It is an offence for any person authorised by virtue of a licence to which this paragraph applies to contravene or fail to comply with any condition which the licence requires him to comply with.

Nesting birds

All wild birds in the UK are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy the nest (whilst being built or in use) or its eggs. Bird species listed in Schedule 1 of the 1981 Act, receive further protection which makes it an offence to intentionally or recklessly disturb these species while building a nest or in, on or near a nest containing eggs or young; or to disturb dependent young of such a bird.

Badgers

The Protection of Badgers Act 1992 was introduced in recognition of the additional threats that badgers face from illegal badger digging and baiting. Under the Act, it is an offence inter alia to:

- Wilfully kill, injure or take a badger, or to attempt to do so;
- Cruelly ill-treat a badger; or
- Intentionally or recklessly interfere with a badger sett by:

- damaging a sett or any part of one;
- destroying a sett;
- obstructing access to or any entrance of a sett;
- causing a dog to enter a sett; or
- disturbing a badger when it is occupying a sett.

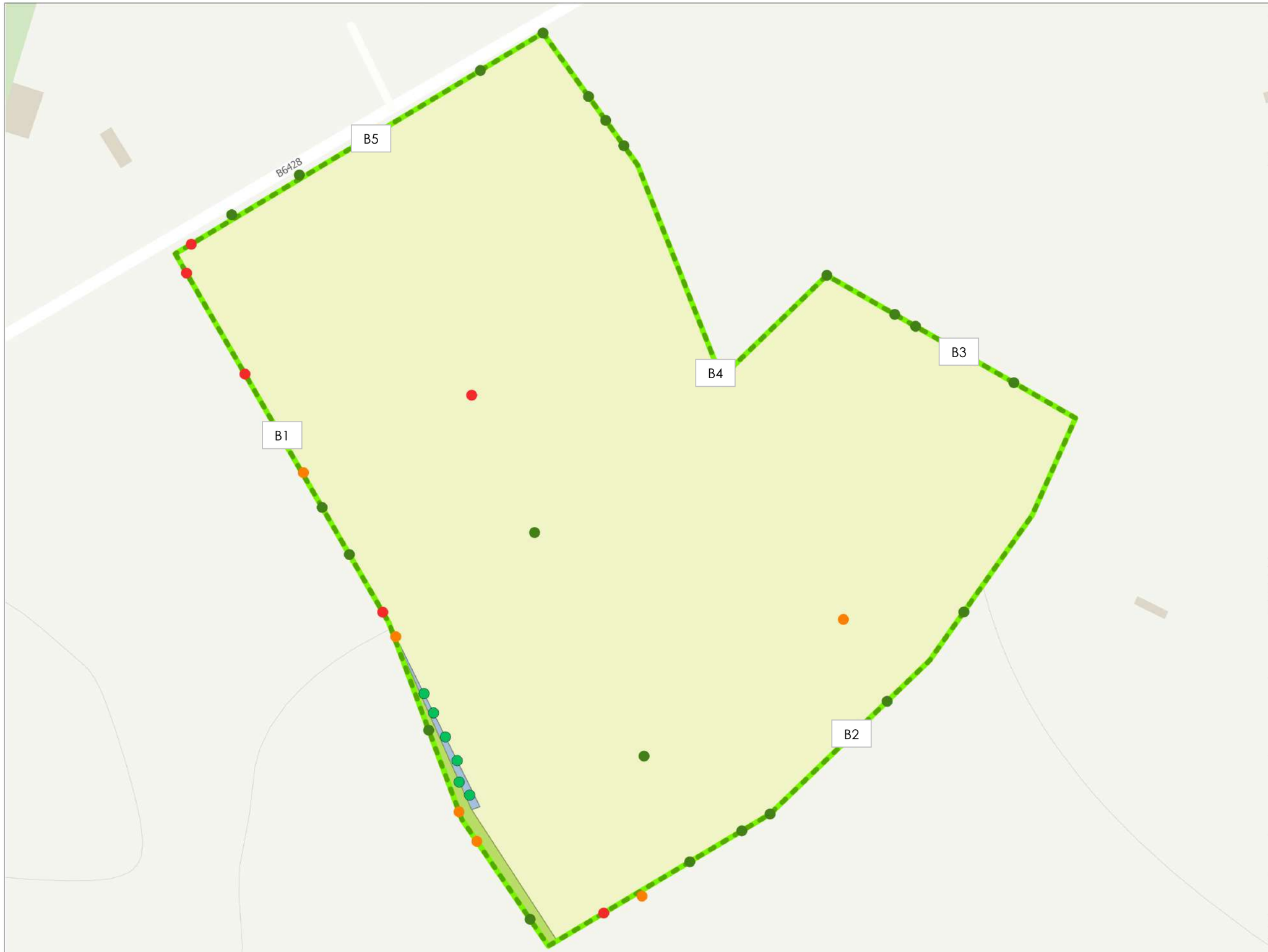
Reptiles

Four species of reptile, the adder *Vipera berus*, grass snake *Natrix natrix*, slow worm *Anguis fragilis* and common lizard *Lacerta vivipara* are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) as well as being listed on the UK Post-2010 Biodiversity Framework (formerly UK BAP).

In net effect, it is an offence to deliberately capture, injure or kill common lizard, adder, grass snake or slow worms.

Two reptiles, the sand lizard *Lacerta agilis* and the smooth snake *Coronella austrica*, are European Protected Species under The Conservation of Habitats and Species Regulations 2010 (as amended). They are also listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are protected by Parts 4(b), 4(c) and 5 of Section 9 of that Act.

APPENDIX 2: Extended Phase 1 Habitat Map



Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.

2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.

3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.

4. Any discrepancies noted on site are to be reported to the engineer immediately.

Key

- Mature Tree - Low Bat Potential
- Mature Tree - Moderate Bat Potential
- Scattered Scrub
- Mature Tree
- Hedgerow
- Ephemeral
- Tall Ruderal
- Arable

Rev	Date	Details of issues/ revision	Drw	Rev
P01	25.09.18	FINAL	OG	KC

Issues & Revisions

Birmingham | 0121 233 3322
Leeds | 0113 233 8000
London | 0207 407 2879
Manchester | 0161 233 4260
Nottingham | 0115 924 1100
www.bwbconsulting.com

Client
Bellway Homes Ltd

Project Title
Lee Lane Royston

Drawing Title
Preliminary Ecological Appraisal

Drawn	OG		Reviewed	KC	
BWB Ref	LDP2222	Date	25.09.18	Scale@A3	1:2750

Drawing Status
Final

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
LLR-BWB-ZZ-XX-DR-EN-0001	S2	P01

APPENDIX 3: Site Photographs

Arable	
Track with adjacent tall ruderal	
Example hedgerow with mature trees	

Example tree with bat roosting potential	

BWB

BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

R-2722-01 Lee Lane, Royston. Report Addendum in Respect of Additional Land

Site Inspection reference	SI-2722-01	**Date of inspection**	29.11.16
Inspected by	Victoria Baker BSc (Hons) MSc		

Task description

Brooks Ecological Ltd. was commissioned by Barratt and David Wilson Homes Ltd to carry out a Preliminary Ecological Appraisal of land off Lee Lane, Royston, Barnsley, South Yorkshire- report reference R-2722-01, issued October, 2016. This area is highlighted in figure 1 in red.

Subsequent to this report, an additional area of land to the northeast, was highlighted as being included within the new site area. This additional area of land is described in detail below, with assessment made as to any potential ecological constraints and opportunities.

Report

The site is found c.60m to the northeast of the existing site, separated by a paddock field. A wooded dismantled railway-line runs along the northern boundary, with a drainage ditch along the southern and western and a paddock field to the east.

No further waterbodies other than those identified within the original report are found on mapping within a 500m radius of the Site.

The site is comprised almost entirely of improved neutral grassland, currently used for grazing horses- comparable to that of the main site. Species include perennial rye (Lolium perenne),

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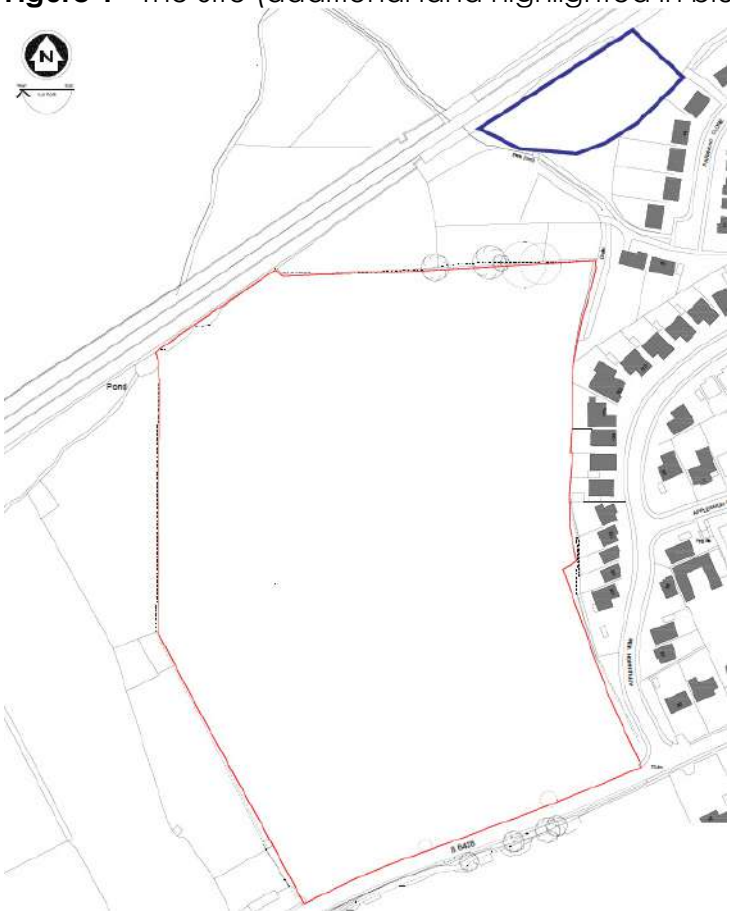
Yorkshire fog (Holcus lanatus), common sorrel (Rumex acetosa), creeping buttercup (Ranunculus repens) and nettle (Urtica dioica). A small amount of bramble was beginning to encroach onto the site along the southern boundary.

Figure 1 The Site (additional land highlighted in blue)



The site is surrounded to the north, south and west by trees including that of oak (Quercus Sp.) and birch (Betula sp.). Evidence of past bird nesting was apparent within the trees which fall over the site boundary.

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Figure 2 General view of the additional land

Issues/further actions

The habitats on site are found to be of low ecological value, and do not present any constraint to development. This appraisal of the Site conforms with that of the original assessment made in R-2722-01, and no further surveys are necessary.

However, precaution is required in regards to the wooded railway-line to the north of the site, and of the trees which border the site to the south and west. All trees should be protected under BS:5837:2012 throughout development.

Whilst specific proposals for the site are currently unavailable, the land has been set aside to hold a drainage tank to support the main development in the southwest. This provides the opportunity for the development to have an ecological net gain. The area surrounding the drainage tank could be planted with a selection of native trees, as well as sown with a wildflower woodland mixture such as Emorsgate EW1F.

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Bat Survey

Land off Lee Lane, Royston

Report reference: R-2722-02

November 2016

Report Title:	Bat Survey Land off Lee Lane, Royston
Report Reference:	R-2722-02
Written by	Victoria Baker BSc (Hons) MSc Graduate Ecologist
Technical review:	Rob Weston BSc MSc MCIEEM Technical Director
QA review:	Christopher Shaw BSc (Hons) ACIEEM Ecologist
Approved for issue	Rob Weston BSc MSc MCIEEM Technical Director
Date	30.11.16

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Summary Statement

Bat activity is found to be relatively low across the Site, with a maximum of four bat species being recorded; the majority of activity attributed to common pipistrelle.

Remote monitoring found the woodland that borders the Site to the north, to be of higher value and its protection during and post-development is recommended.

Introduction

1. Subsequent to the recommendations made in Brooks Ecological's report (R-2722-01) detailed bat survey was commissioned at land off Lee Lane, Royston, Barnsley, South Yorkshire, Grid Ref SE 349 114. The need for survey and the scale of study applied to the site is discussed in our previous report (R-2722-01) and not repeated here, these two reports should therefore be read in conjunction for full context.

Box 1 *Legal background*

Bats are afforded full protection under The Wildlife and Countryside Act (1981) plus amendments, and the Conservation of Habitats and Species Regulations 2010. Under these Acts it is an offence among others, to recklessly kill, injure or disturb bats. It is also an offence to destroy or obstruct a roost even if bats are not in occupancy at the time of the action.

There are no defences against contravention of the Conservation of Habitats and Species Regulations 2010 which means that it is important for detailed and well designed bat surveys to be carried out, prior to carrying out activities that may impact upon bat roosts such as demolition of buildings or removal of trees.

Where bats are found within a potential development site, a license from Natural England may need to be secured if works that could otherwise contravene legislation are to be carried out. These licences are only issued where Natural England is satisfied that works are unavoidable and would not have a negative impact on the favourable conservation status of bats. A Natural England license requires that the potential development site has full planning permission and that bats were a material consideration of the planning permission.

Box 2 *Bat roosts*

Bats roost in buildings and trees in different locations depending upon time of year and environmental factors such as position of the sun, proximity to heat sources and feeding grounds. The following types are commonly referred to:

Transitional roosts:

Bats frequently gather early in the season (March to April) before dispersing to summer roosts. Bats can be found in high numbers in these roosts for a very short period. Transitional roosts can also be found shortly before hibernation in August to October when bats (depending upon species) can gather in roosts not used earlier in the season.

Maternity roosts:

These are among the most important roosts and are normally occupied from May to August. Depending on the species involved, some maternity roosts can contain a very significant proportion of the local population.

Summer (non-breeding) roosts

Small groups of non-breeding female and male bats can gather in these roosts or bats from a local population may choose to roost individually. There are normally a large number of suitable locations for summer non-breeding roosts and these may be routinely used or used only on an occasional basis. Irregularly used summer roosts can be very hard to find without unreasonable survey effort.

Mating roosts

Around September bats will gather in roost to mate; these are often in different locations than summer or breeding roosts.

Hibernation roosts

As bats in hibernation roosts are highly vulnerable to disturbance and bats can be present in large numbers these are considered to be among the most important bat roosts. Many species of bats roost in large and nationally important hibernation roosts associated with underground sites, many of which are well known and protected. However, the most common bat in the UK (the common pipistrelle) is largely unaccounted for in winter but thought to disperse and roost individually or in small groups in thermally stable cracks and crevices in thick walls or trees.

Local Status

2. The application site is within the natural range of species of bats listed in Table 1.

Table 1: Bat species recorded within 100km of the application site

Species	National status
Pipistrelles (*Pipistrellus pipistrellus* and *P. pygmaeus*)	widespread/common
Nathusius' Pipistrelle (*Pipistrellus nathusii*)	widespread/rare
Noctule (*Nyctalus noctula*)	widespread/frequent
Leisler's (*Nyctalus leisleri*)	widespread/rare
Brown long-eared (*Plecotus auritus*)	widespread/common
Natterer's (*Myotis nattereri*)	widespread/frequent
Daubenton's (*Myotis daubentonii*)	widespread/common
Whiskered/Brandt's (*Myotis mystacinus* and *M. brandtii*)	widespread/scarce
Alcathoe's (*Myotis alcathoe*)	local/unknown
Serotine (*Eptesicus serotinus*)	south restricted/uncommon

Method

3. The objective of the survey was to characterise how local bat populations currently make use of the site, so that an accurate assessment of the potential impacts of development on the site could be made. Transect and remote monitoring surveys were carried out to collect the following data (BCT survey guidelines 2016):

- The assemblage of bat species using the site;
- The relative frequency with which the site is used by different species;
- The nature of activity for different bat species, for example foraging, commuting and roosting.

4. The transect began around sunset and continued up to 2 hours after when all bats were thought to have emerged, and thus were actively foraging and commuting. Conditions and dates are summarised in table 2 below.

5. The transect was walked by two surveyors, equipped with a heterodyne detector as well as a Titley Scientific Anabat Express, used to track the transect route and aid species identification. Notes taken during the survey were then used to produce the activity 'heat map' seen in the below figure. Activity was split into three categories; low irregular, low regular and medium regular. Low activity was classified as up to 2 individual bats, with medium being anything over 2.

Table 2 Survey summary

Date	Sunset	Weather	Invertebrate activity
20.10.16	17:59	10°C, 50% cloud, light breeze, dry	Low

6. To supplement data collected during transects, a static monitoring device (Wildlife Acoustic SM2) equipped with two microphones was deployed in a strategic location within the site. This was then left to run for a minimum of 5 nights.

7. Static monitoring can only reliably provide information on what species of bat are regularly making use of a site. More detailed information on bat activity, such as frequency of bats, nature of activity (foraging, commuting, flight path), etc. can only be gleaned through walked transects. The frequency of calls recorded can, to some extent, suggest whether activity on site is low, moderate or high, by comparing data collected with that of similar sites that have been surveyed.

8. A single registration accounts for up to 15 seconds of continuous bat call. Large batches of registrations can be interpreted in several different ways, i.e. a single bat foraging continuously for only an hour can result in many hundreds of registrations being logged; similarly many hundreds of bats commuting quickly past the detector can result in the same number of registrations.

9. The data collected during the period of remote monitoring was run through Kaleidoscope Pro software, which is able to identify bat calls down to species level (with the exception of myotid). Identification is generally correct when using this software; however results are double checked to ensure accurate data analysis.

10. Surveys were directed by Rob Weston BSc (Hons) MSc MIEEM. Rob is a Registered Consultant (RC065) under the Bats Low Impact Class License and is registered to use the Class Survey Licence WML CL18 (Level 2).

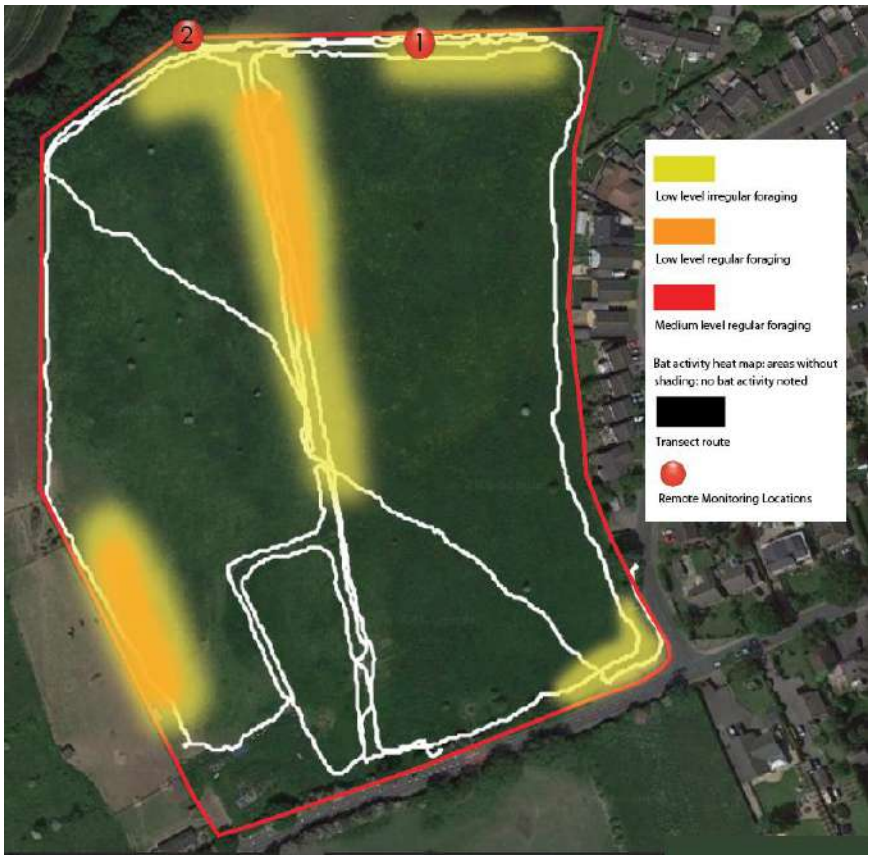
Results

11. The transect began in the south of the Site and continued north to reach the northern boundary. Following this, the transect followed an anti-clockwise route around the Site, whilst making several passes across it. The first bat contact was made along the southwestern boundary, this being of two soprano pipistrelles foraging above the grassland.

12. Multiple passes of the northern boundary were made during the course of the survey. Each time, foraging by pipistrelle bats was observed above the trees within the Site, and along the adjoining woodland offsite, consisting of both soprano and common pipistrelles; a maximum of two bats were seen at any one time. Constant foraging of common pipistrelle bats was also noted, extending along the central field margin (a fence-line), again with a maximum of two bats present. Finally, brief foraging was noted in the south-eastern corner of the Site by a single common pipistrelle.

13. Bat activity in general was found to be low, with a maximum of two bats seen at any one time. All activity was attributed to common or soprano pipistrelle bats.

Figure 1 Bat activity recorded during transect



Static Monitoring

14. A single SM2 device was deployed along the Site boundary, attached to a tree on the edge of the woodland which borders the dismantled railway (location 2 on figure 1). A second microphone was attached to a tree along the northern boundary, further east (location 1). The device was deployed on the 14th October 2016 and left to run for 6 nights.

15. During this period, only a relatively low number of bat species were recorded, comprising largely of common pipistrelle with a smaller proportion of soprano pipistrelle and myotid bats. Analysis of the sonograms suggests the myotid species are likely to be that of whiskered, with occasional Brandt's bats.

Table 3 Total number of registrations – Location 1 (onsite)

	14th Oct	15th Oct	16th Oct	17th Oct	18th Oct	19th Oct	20th Oct
Common Pipistrelle	38	26	402	207	38	22	7
Soprano Pipistrelle	2	-	9	3	3	6	-
Myotid Spp.	-	-	-	-	-	-	1

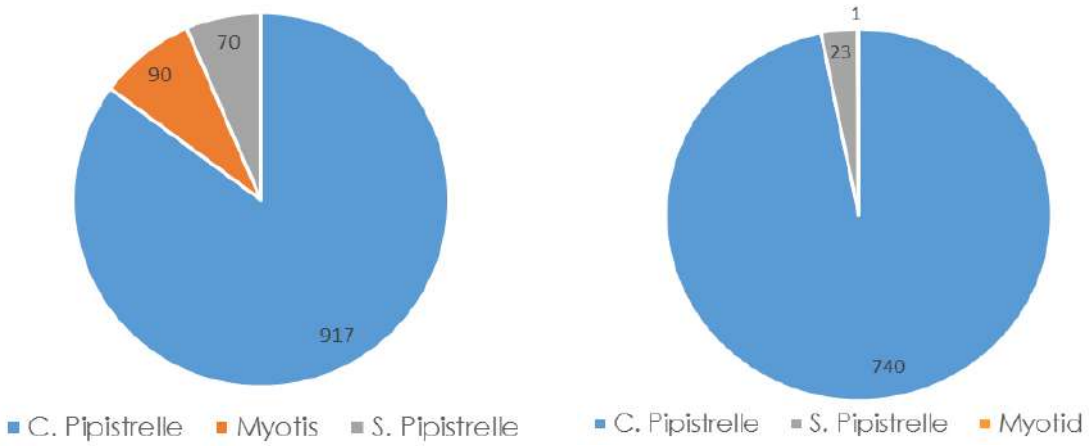
Table 4 Total number of registrations – Location 2 (offsite)

	14th Oct	15th Oct	16th Oct	17th Oct	18th Oct	19th Oct	20th Oct
Common Pipistrelle	63	161	108	57	51	358	119
Soprano Pipistrelle	35	2	1	2	7	23	-
Myotid Spp.	1	-	-	-	1	24	66

16. Overall, the results present a picture of relatively low bat activity. Recordings made in location 1 (onsite) corroborate the findings of the transect survey, with the majority of registrations relating to common and soprano pipistrelle. This pattern of activity is better visualised in figure 2 below.

17. A number of myotid species registrations were also recorded at location 2, the majority of which are attributable to whiskered bats, based upon inter-pulse interval, call duration, slope and maximum / minimum / peak call frequency. In addition, three registrations more closely attributable to the parameters of Brandt's bats were recorded. These recordings of mytoid bats in location 2 indicate the use of the dismantled railway line as a foraging/ commuting feature, with the majority of the registrations recorded over the night/ morning of the 19th and 20th October 2016 Only one whiskered registration was recorded in location 1, indicating the low value of the Site to Myotid bat species.

Figure 2 Proportion of each bat species recorded in location 1 (right) and location 2 (left)



Evaluation and Recommendations

18. Bat activity is found to be relatively low, with a maximum of 4 species of bats recorded - with the majority of activity attributed to common pipistrelle.

19. Limited activity recorded during the transect, and through remote monitoring (covering the highest value area within the Site), suggests the Site is not of high value to local bat populations. Monitoring just offsite in location 2 indicates the use of the woodland as a commuting/ foraging feature and standard protection measures are advised on this bordering area of woodland.

20. The proposals are unlikely to result in significant impacts on local bat populations, provided standard protection measures are implemented. These would include:

    - Standard protection of the woodland edge during construction, including the erection of BS5837:2012 Tree Protection fencing and safe storage of hazardous chemicals.
    - A suitable lighting scheme, which directs all artificial lighting (i.e. flood lighting used during the construction phase, new street lighting, security lights) away from the woodland. Any permanent lighting installed within close proximity to the woodland would ideally be motion activated and set to a short timer. No lighting should be installed within the woodland.

Enhancement

21. UK government's guidance on nature conservation in relation to development (NPPF) makes it clear that opportunities should be sought through their planning system to use development as an opportunity to enhance sites for wildlife where possible.

- Landscape plans could incorporate native planting schemes such as hedgerows which would link to the northern boundary and adjoining woodland.
- To further enhance the Site, bat boxes could be erected on new buildings. These should be focused around the peripheries of the Site, specifically along the northern and eastern boundaries. At least 7 are recommended, these being Ibstock Bat Bricks C.
- Landscaping should also consider the use of night flowering plants such as honeysuckle (Lonicera periclynum).

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Extended Phase 1 Habitat Survey Report

Lee Lane, Royston

Project No. 855168

AUGUST 2013

RSK GENERAL NOTES

Project No.: 855168

Title: Extended Phase 1 Habitat Survey Report – Lee Lane, Royston

Client: Strategic Land Group Ltd

Date: August 2013

Office: Helsby

Status: Final

Author	Suzannah Forshaw	**Technical reviewer**	Sarah Harmer
Signature		**Signature**	
Date:	15th August 2013	Date:	15th August 2013

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK ENVIRONMENT.

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1 EXECUTIVE SUMMARY

1. This report presents the results of ecological surveys carried out at land off Lee Lane, Royston, Barnsley (OS Grid Reference SE 348 113). The survey was carried out on 8th August, 2013 by Anna Davies and Suzannah Forshaw of RSK Environment Ltd., and comprised an extended Phase 1 Habitat Survey and an assessment of the habitat for protected species.
2. The site comprises several fields, of improved grassland with field boundaries composed of fence-lines and lines of trees. The site is bordered to the north by a dismantled railway in woodland and agricultural farmland. To the east are residential properties and gardens and to the south and west is agricultural farmland. Lee Lane is to the south of the site.
3. Taking into consideration the geographical region and the habitat types, protected animals that could be encountered are:
    - Badgers (*Meles meles*);
    - bats;
    - Great Crested Newts (*Triturus cristatus*);
    - Water Voles (*Arvicola amphibius*);
    - nesting birds; and
    - common reptiles.
4. The site is located in a green area to the south west of Royston, and green space extends to the north, south and west of the site. The site does not have any 'ancient habitats' (in the sense of Rackham, 1980), and the habitats on the site are generally common in the wider landscape and are not of high ecological value.
5. The survey was sufficient to conclude that Badger setts are not present on the site, but Badgers are probably using the site for foraging or commuting. Should work not commence within the next 6 months a repeat survey would be needed to check that the situation has not changed because they are a highly mobile species.
6. The pond on the site and pond within 500m of the site are unsuitable for breeding Great Crested Newts (*Triturus cristatus*) it is not anticipated that Great Crested Newts are present on site. No further surveys are required.
7. The ditches around the site are dry and heavily shaded with no aquatic vegetation and are unsuitable for Water Voles (*Arvicola amphibius*). No signs of Water Voles (*Arvicola amphibius*) were recorded; therefore no further surveys are required.
8. To ensure compliance with legislation protecting nesting birds, removal of vegetation or structures that might be used by nesting birds should only be carried out outside the nesting season (March to August inclusive). If this is not possible, then the vegetation should be checked for nests by an ecologist immediately prior to removal.

9. The site does not have any suitable habitat for reptiles, there is a record of a Grass snake (*Natrix natrix*) some distance from the site, but no further surveys are required.
10. Subject to the recommendations made in this report for further surveys, which are dependant upon the final site plan and layout; there are no other ecological constraints to proceeding with developing the site.

2 INTRODUCTION

2.1 Purpose of this Report

This report presents the results of ecological surveys carried out at land off Lee Lane, Royston, Barnsley (OS Grid Reference SE 348 113). The survey was carried out on 8th August, 2013 by Anna Davies and Suzannah Forshaw of RSK Environment Ltd, and comprised an extended Phase 1 Habitat Survey and an assessment of the habitat for protected species. The site location is shown in *Figure 1.*

2.2 Ecological Context

The site comprises several fields of improved grassland, with field boundaries comprising fence-lines and lines of trees. The site is bordered to the north by a dismantled railway and agricultural farmland, to the east by residential properties and gardens, and to the south and west by agricultural farmland. Lee Lane passes along the south of the site. The surrounding landscape is similarly composed of agricultural grassland and field boundaries formed by hedgerows. Residential and small commercial properties in the town of Royston are located approximately 0.75 km east of the site.

2.3 Structure of this Report

The remainder of the report is structured as follows:

- *Section 3* describes the survey methods;
- *Section 4* contains the results;
- *Section 5* details the ecological evaluation and recommendations for the site; and
- *Section 6* lists the documents referred to in this report.

3 METHODS

3.1 Background Data Search

Background sources were consulted for records of statutory and non-statutory designated sites and protected and notable species within 2 km of the site boundary. The sources contacted were:

- Barnsley Biological Records Centre; and
- Multi-Agency Geographic Information for the Countryside (MAGiC).

3.2 Phase 1 Habitat Survey

Anna Davies and Suzannah Forshaw of RSK Environment Ltd. undertook the Phase 1 Habitat Survey on the 8th August, 2013. Phase 1 Habitat Survey is the most widely-used UK methodology for cataloguing and mapping wildlife habitat resources over extensive areas. All habitats in the survey area were mapped using standard colour codes. Target Notes describe habitats and ecological features of interest. The methodology for this survey follows guidance given in the *Handbook for Phase 1 Habitat Survey: A technique for environmental audit* (JNCC, 2003).

3.3 Habitat Assessment for Protected Species

3.3.1 General

The site was assessed for its suitability for protected species. Obvious signs and incidental sightings of protected species would have been noted if found, although a single visit cannot usually confirm a species' presence or absence. Details of the survey methodology for each species are given below.

Taking into consideration the geographical region and the habitat types, protected animals that could be encountered are:

- Badger (*Meles meles*);
- bats;
- Great Crested Newt (*Triturus cristatus*);
- Water Vole (*Arvicola amphibius*);
- nesting birds; and
- common reptiles.

Other species listed on the UK or Yorkshire Biodiversity Action Plan were also considered. A summary of the legal protection of the relevant animals is provided in Appendix B. Details of survey methods for each species are given below.

3.3.2 Badger

The surveyor looked for habitats that might be used by Badger (*Meles meles*) for foraging and sett building, and also for signs of activity such as paths, snuffle holes and latrines.

3.3.3 Bats

Habitats were assessed for their suitability for roosting, foraging and commuting bats. Suitable trees were assessed for their potential to support roosting bats. These include suitable cracks, splits and fissures. Structures on site where assessed from ground level for their suitability for roosting bats. Areas of particular interest for foraging and commuting vary between species, but generally include sheltered areas and those habitats with good numbers of insects, such as woodland, scrub, hedges, watercourses, ponds, lakes and more species-rich or rough grassland.

3.3.4 Great Crested Newt

The suitability of aquatic and terrestrial habitat on the site and in the immediate vicinity (up to 500m where access allowed) was considered for suitability to support this species, together with the habitat-connectivity of between the site and suitable habitat areas outside the site boundary.

3.3.5 Water Vole

The suitability of both aquatic and terrestrial habitat on the site was considered, along with the habitat-connectivity between suitable habitat areas.

3.3.6 Nesting Birds

Habitat that might be used by nesting birds was identified. Habitat was searched for evidence of bird nests, although surveys cannot conclusively establish which birds nest here.

3.3.7 Reptiles

The site was assessed for reptiles, with particular attention paid to those features that provide suitable basking areas (e.g. south-facing slopes), hibernation sites (e.g. banks, walls, piles of rotting vegetation) and opportunities for foraging (rough grassland and scrub). Sightings of reptiles would have been recorded if encountered.

The site was assessed for its suitability for each of the four common reptile species. Specific habitat requirements differ between species. Common Lizards (*Zootoca vivipara*) use a variety of habitats from woodland glades to walls and pastures, although one of their favoured habitats is rough grassland. Slow-worms (*Anguis fragilis*) use similar habitats to Common Lizards, and are often found in rank grassland, gardens and derelict land. Grass Snakes (*Natrix natrix*) have broadly similar requirements to Common Lizards with a greater reliance on ponds and wetlands, where they prey on Common Frogs (*Rana temporaria*). Adders (*Vipera berus*) use a range of fairly open habitats with some cover, but are most often found in dry heath (Beebee & Griffiths 2000).

3.4 Survey Constraints

This data is relevant for a maximum of 12 months. If more than one year elapses prior to commencement of the development it may be advisable to conduct a further ecology survey to ensure up-to-date information.

4 RESULTS

4.1 Background Data Search

4.1.1 Designated Sites

There is one statutory designated site within 2 km - Notton Wood Local Nature Reserve (LNR) is approximately 230 m north-west of the site. There are no non-statutory designated sites within 2 km of the site.

No impacts as a result of the development are anticipated on the LNR due to the distance from the site.

4.1.2 Noteworthy Species Records

No records of protected species were returned for the site.

Records of Grass Snake (*Natrix natrix*) were returned approximately 1.8km from the site. In addition, three records of Water Vole (*Arvicola amphibius)* and a record of a bat were returned within 2km.

4.2 Habitat Types

4.2.1 Overview

A Phase 1 Habitat Plan is provided at *Figure 1*, which shows the location of Target Notes referred to in the text below and described within Appendix C.

4.2.2 Improved Grassland

The majority of the site is improved grassland (Target Note 1) that is heavily grazed by horses, resulting in a short, open sward with scattered semi-ruderal species. The grassland is dominated by the grasses *Lolium perenne* (Perennial Rye-grass) and *Poa trivialis* (Rough Meadow-grass) with scattered *Dactylis glomerata* (Cock's-foot) and *Elytrigia repens* (Common Couch). Broad-leaved herbs and semi-ruderal species scattered throughout the grassland include *Bellis perennis* (Daisy), *Calystegia sepium* (Hedge Bindweed), *Cirsium arvense* (Creeping Thistle), *Rumex obtusifolius* (Broad-leaved Dock), *Stellaria media* (Common Chickweed), and *Trifolium repens* (White Clover).

4.2.3 Trees

There is a belt of woodland to the north of the site mainly outside the site boundary, but slightly encroaching the site towards the west (*Target Note 5*). Species present in this woodland include the trees and shrubs *Betula pendula* (Silver Birch), *Corylus avellana* (Hazel), *Crataegus monogyna* (Hawthorn), *Fraxinus excelsior* (Ash) and *Quercus robur* (Pedunculate Oak), over *Rubus fruticosus agg.* (Bramble), together with the woodland herb *Geum urbanum* (Wood Avens). There are four early-mature *Quercus robur* (Pedunculate Oak) in the north-east of the site (*Target Note 2*).

4.2.4 Ponds

There is a pond in the east of the site (*Target Note 6*). There is no submerged vegetation and it is approximately 0.3m deep with a bed of bare earth. There are few species present around the pond including the woody species *Salix fragilis* (Crack-willow) and the waterside herb *Persicaria maculosa* (Redshank) and

4.2.5 Ditch

At the northern boundary of the site is a dry ditch, heavily shaded by the woodland. There is no vegetation in the ditch or along banks (*Target Note 9*).

4.2.6 Buildings

There are several sheds on the site (*Target Notes 7, 8 and 10*); all are single-storey, used for hay storage or horses.

4.3 Habitat Assessment for Protected Species

4.3.1 Badgers

The habitat on and surrounding the site is suitable for foraging Badger (*Meles meles*), particularly the improved grassland and woodland. As reported in a previous report by RSK Environment Ltd. in 2012, a Badger hair was found on a fence at the northern boundary of the site. However, no further evidence of Badgers and no Badger setts were recorded during the 2013 survey. The current survey effort was sufficient to conclude that Badgers are present in the local area, but no setts are present on site.

4.3.2 Bats

The two sheds on the western boundary of the site (*Target Note 7*) are small single-storey sheds with no bat roosting potential. The third shed is slightly larger and newly constructed (*Target Note 10*). This shed also contained no features suitable for roosting bats. The horse stable (*Target Note 8*) is a single-storey wooden structure with corrugated roof and lighting. No features suitable for roosting bats were identified.

The early-mature trees had no suitability for roosting bats, however, there are suitable areas for foraging; woodland, woodland edges, lines of trees.

4.3.3 Great Crested Newts

The pond (*Target Note 6*) is highly ephemeral with no aquatic vegetation and is not suitable for Great Crested Newts (*Triturus cristatus*). The ditch (*Target Note 9*) is unsuitable for Great Crested Newts, as there is no water or aquatic vegetation present. There was one other pond within 500 m of the site that is also unsuitable for Great Crested Newts. The terrestrial habitats on the site are sub-optimal foraging and commuting habitat for Great Crested Newts – open grazed grassland fields with no hedgerows and sheltering areas.

4.3.4 Water Vole

The ditch at the north of the site is not suitable for Water Voles. The ditch was dry and there is no aquatic or water-margin vegetation present. The survey was sufficient to conclude that Water Voles are not present on site.

4.3.5 Nesting Birds

The hedgerows and grassland on the site provide habitat suitable for nesting birds. Swallow (*Hirundo rustica*) nests where recorded in the horse stable to the south west of the site (*Target Note 8*).

4.3.6 Common Reptiles

The site is unsuitable for common reptiles as there is insufficient cover.

5 EVALUATION AND CONCLUSIONS

5.1 Botanical

5.1.1 Overall Value

Based on a review of aerial photography, the site is located in a green area to the south-west of Royston, where green space extends to the north, south and west of the site. The site does not have any 'ancient habitats' (in the sense of Rackham, 1980), and the habitats on the site are generally common in the wider landscape and therefore they are not of high ecological value.

5.1.2 Improved Grassland

The improved grassland is not particularly species-rich and is a common habitat in the local area and throughout the British Isles. It is only of site-level ecological value and no further botanical surveys are required.

5.1.3 Ponds

The pond is ephemeral, heavily shaded and have no aquatic vegetation and provides little ecological value.

5.1.4 Ditch

The ditch to the north of the site is heavily-shaded, dry and has no aquatic vegetation. It has ecological value at site level only. No further ecological surveys are required.

5.2 Protected Vertebrates

5.2.1 Badgers

The survey was sufficient to conclude that Badger setts are not present on the site. Should work not commence within the next 6 months a repeat survey should be undertaken to update these results as Badgers quickly dig new setts.

5.2.2 Bats

The trees and structures on site have negligible bat roosting potential. No further surveys are required.

The woodland and line of trees to the north of the site provides good foraging habitat for bats. This habitat should be retained, including the four early-mature oaks (Target Note 2), and ideally enhanced as part of the proposed re-development works. These areas should also be protected from any light-spill from the proposed development.

5.2.3 Great Crested Newts

As the ponds are unsuitable for breeding Great Crested Newts (*Triturus cristatus*) it is not anticipated that Great Crested Newts are present on site. In addition the terrestrial habitat is sub-optimal for Great Crested Newts. No further surveys are required.

5.2.4 Water Voles

The ditch to the north of the site is dry and heavily shaded with no aquatic vegetation and is not suitable for Water Voles (*Arvicola amphibius*). No further surveys are required.

5.2.5 Birds

To ensure compliance with legislation protecting nesting birds, removal of vegetation that might be used by nesting birds should only be carried out outside the nesting season (March to August inclusive). If this is not possible, then the vegetation should be checked for nests by an ecologist immediately prior to removal. This includes the buildings. If nests are found, they must be left undisturbed until the young have fledged. If these simple measures are implemented, then there will be no impacts on nesting birds.

5.2.6 Common Reptiles

The site does not provide habitat suitable for reptiles, therefore no further surveys are required.

5.3 Enhancing Site Ecology

Bird boxes could be installed to enhance local bird populations and encourage breeding on the development site. Typical garden bird boxes may be used to attract common species such as Blue Tit (*Cyanistes caeruleus*) and Great Tit (*Parus major*). Open-fronted boxes may attract species such as Robin (*Erithacus rubecula*), Pied Wagtail (*Motacilla alba*), Spotted Flycatcher (*Muscicapa striata*) and Wren (*Troglodytes troglodytes*). Boxes for Tit species are usually fixed to a tree or a wall at a height of 2-4 m to minimise predation and vandalism. All nests should face between north and east to avoid wet westerly winds and exposure to sunlight. They should also have a clear flight path in front of the entrance. To maximise the number of species of birds attracted, several different types of boxes can be placed in various locations across the site. It is not advisable to place many boxes with identical dimensions, because individuals of the same species would not tolerate each other's presence, especially in urban areas with limited food resources.

Bat boxes could be installed on the buildings or bat bricks set into the buildings to encourage the local bat population. Boxes should be placed in areas free from any vegetation that may obstruct the flight path to and from the boxes, and situated at least 3 m from the ground to reduce vandalism and predation pressures. Boxes should be placed facing south-east and south-west to provide varying temperatures for bats at

different times of the year. Ideally, the boxes should be installed away from bright external lighting. This recommendation contributes to the goals of the Barnsley Biodiversity Action Plan.

Artificial refugia could be placed to enhance the overall suitability for invertebrates in areas not used for development. These refugia or nests come in a variety of forms and purposes, such as plastic drainpipes filled with a tight bundle of bamboo canes, or wooden poles or blocks with numerous drilling holes. They should be positioned in a sunny, dry and sheltered place, preferably in or near natural features such as tree branches, hedges and shrubs. Wooden blocks can be hung to walls or fences. Invertebrate refuges are generally easy to make and can be built with cheap and natural materials.

6 REFERENCES

Joint Nature Conservation Committee (2003). *Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit* (revised reprint). Joint Nature Conservation Committee, Peterborough.

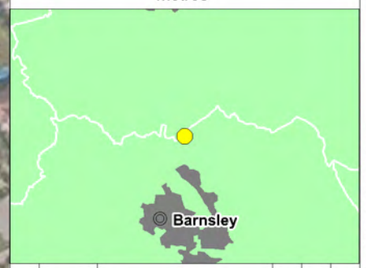
APPENDIX A: FIGURES

Figure 1 – Phase 1 Survey Map

Site boundary
Broad-leaved semi-natural woodland
Mature tree
Improved grassland
Standing water
Dry ditch
Hedge
Building
Target note

N
W E
S

0 75
metres



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Lee Lane, Royston

RSK

Figure 1

Phase 1 Survey Map

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APPENDIX B LEGISLATION

Badgers

Meles meles (Badger) is protected in Britain under the Protection of Badgers Act 1992 and Schedule 6 of the Wildlife and Countryside Act 1981 (as amended).

The legislation affords protection to Badgers and Badger setts, and makes it a criminal offence to:

- Wilfully kill, injure, take, possess or cruelly ill-treat a Badger, or to attempt to do so;
- interfere with a sett by damaging or destroying it;
- to obstruct access to, or any entrance of, a Badger sett; or
- to disturb a Badger when it is occupying a sett.

Bats

All species of British bat are protected by *The Wildlife and Countryside Act 1981* (as amended) extended by the *Countryside and Rights of Way Act 2000*. This legislation makes it an offence to:

- intentionally kill, injure or take a bat;
- possess or control a bat;
- intentionally or recklessly damage, destroy or obstruct access to a bat roost; and
- intentionally or recklessly disturb a bat whilst is occupies a bat roost.

Bats are also European Protected Species listed on *The Conservation of Habitats and Species Regulations 2010*. This legislation makes it an offence to:

- deliberately capture, injure or kill a bat;
- deliberately disturb bats, including in particular any disturbance which is likely (a) to impair their ability - (i) to survive, to breed or reproduce, or to rear or nurture their young; or (ii) hibernate or migrate, where relevant; or (b) to affect significantly the local distribution or abundance of the species to which they belong.
- damage or destroy a breeding site or resting place of a bat; and
- possess, control, transport, sell, exchange a bat, or offer a bat for sale or exchange.

All bat roosting sites receive legal protection even when bats are not present.

Birds

Birds general protection

All species of bird are protected under *Section 1* of the *Wildlife and Countryside Act 1981* (as amended). The protection was extended by the CRoW Act.

The legislation makes it an offence to intentionally:

- kill, injure or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- take or destroy an egg of any wild bird.

Birds (specially protected species)

Certain species of bird are listed on *Schedule 1* of the *Wildlife and Countryside Act 1981* (as amended) and receive protection under *Sections 1(4)* and *1(5)* of the Act. The protection was extended by the CRoW Act. The legislation confers special penalties where the above mentioned offences are committed for any such bird and also make it an offence to intentionally or recklessly:

- disturb any such bird, whilst building its nest or it is in or near a nest containing dependant young; or
- disturb the dependant young of such a bird.

APPENDIX C TARGET NOTES

Target Note 1. Improved grassland, heavily grazed by horses resulting in a short open sward with scattered semi- ruderal species. Species present comprise of *Agrostis capillaris* (Common Bent), *Anagallis arvensis* (Scarlet Pimpernel), *Artemisia vulgaris* (Mugwort), *Bellis perennis* (Daisy), *Betula pendula* (Silver Birch), *Calystegia sepium* (Hedge Bindweed), *Centaurea nigra* (Common Knapweed), *Cirsium arvense* (Creeping Thistle), *Crataegus monogyna* (Hawthorn), *Elytrigia repens* (Common Couch), *Heracleum sphondylium* (Hogweed), *Lolium perenne* (Perennial Rye-grass), *Lotus corniculatus* (Common Bird's-foot-trefoil), *Odontites vernus* (Red Bartsia), *Poa trivialis* (Rough Meadow-grass), *Prunella vulgaris* (Selfheal), *Quercus robur* (Pedunculate Oak), *Ranunculus repens* (Creeping Buttercup), *Reseda luteola* (Weld), *Rumex obtusifolius* (Broad-leaved Dock), *Sambucus nigra* (Elder), *Senecio jacobaea* (Common Ragwort), *Stachys sylvatica* (Hedge Woundwort), *Taraxacum agg.* (Dandelion), *Trifolium repens* (White Clover), *Urtica dioica* (Common Nettle).

Target Note 2. Four early mature *Quercus robur* (Pedunculate Oak). No bat roosting potential. Located in the north-east of the site.

Target Note 3. Trees and scrub containing species such as *Digitalis purpurea* (Foxglove), *Sambucus nigra* (Elder), *Senecio jacobaea* (Common Ragwort), *Stellaria media* (Common Chickweed), *Urtica dioica* (Common Nettle). Located in the north-east of the site.

Target Note 4. Early mature tree line containing *Betula pendula* (Silver Birch), *Fraxinus excelsior* (Ash), *Quercus robur* (Pedunculate Oak). Located on the north-east boundary.

Target Note 5. Broadleaf woodland belt, comprising of species such as *Anthriscus sylvestris* (Cow Parsley), *Betula pendula* (Silver Birch), *Chamerion angustifolium* (Rosebay Willowherb), *Corylus avellana* (Hazel), *Crataegus monogyna* (Hawthorn), *Dactylis glomerata (Cock's-foot), Digitalis purpurea* (Foxglove), *Fraxinus excelsior* (Ash), *Geum urbanum* (Wood Avens), *Heracleum sphondylium* (Hogweed), *Quercus robur* (Pedunculate Oak), *Rubus fruticosus agg.* (Bramble), *Urtica dioica* (Common Nettle). Located partly within the site to the west.

Target Note 6. Shallow pond with no submerged vegetation. Approximately 0.3m deep with a bed of bare earth. There are few species present around the pond including *Persicaria maculosa* (Redshank) and *Salix fragilis* (Crack-willow). Located in the west of the site.

Target Note 7. Two single storey sheds. No bat roosting potential. Located in the west of the site.

Target Note 8. Single storey horse stable shed. Corrugated roof, lights present. Swallow nests present. Located in the south of the site.

Target Note 9. Heavily shaded dry ditch, no vegetation in the ditch or along the ditch bank, however the top of the ditch is vegetated with scrub/ trees. Not suitable for Water Vole (*Arvicola terrestris*). Located in the north of the site.

Target Note 10. Recently constructed wooden shed. No features suitable for roosting bats. Located in the south of the site.