

ENVIRONMENT

Bellway Homes Ltd (Yorkshire Division)
Lee Lane Royston
Barnsley
Ecological Impact Assessment

ENVIRONMENT

Bellway Homes Ltd (Yorkshire Division)
Lee Lane Royston
Barnsley
Ecological Impact Assessment

Birmingham
Livery Place, 35 Livery Street, Colmore Business District, Birmingham, B3 2PB
T: 0121 233 3322

Cambridge
14-16 High Street, Histon, Cambridge
CB24 9JD
T: 01223 235 173

Leeds
Whitehall Waterfront, 2 Riverside Way, Leeds
LS1 4EH
T: 0113 233 8000

London
11 Borough High Street
London, SE1 9SE
T: 0207 407 3879

Manchester
11 Portland Street, Manchester, M1 3HU
0161 233 4260

Market Harborough
12a Woodcock House, Compass Point Market Harborough, Leicestershire, LE16 9HW
T: 01858 455020

Nottingham
Waterfront House, Station Street, Nottingham NG2 3DQ
T: 0115 924 1100

October 2021

DOCUMENT ISSUE RECORD

Document Number:	LLR-BWB-ZZ-XX-RP-LE-0002_Ecological Impact Assessment
BWB Reference:	LDP-2222_Ecological Impact Assessment

Revision	Date of Issue	Status	Author:	Checked:	Approved:
P01	25.10.2021	S2	Joe McLaughlin BSc (Hons) MCIEEM	Chris Grocock MSc BSc (Hons) ACIEEM	Darren Harvey BEng (Hons)

Notice

All comments and proposals contained in this report, including any conclusions, are based on information available to BWB Consulting during investigations. The conclusions drawn by BWB Consulting could therefore differ if the information is found to be inaccurate or misleading. BWB Consulting accepts no liability should this be the case, nor if additional information exists or becomes available with respect to this scheme.

Except as otherwise requested by the client, BWB Consulting is not obliged to and disclaims any obligation to update the report for events taking place after: -

- (i) The date on which this assessment was undertaken, and
- (ii) The date on which the final report is delivered

BWB Consulting makes no representation whatsoever concerning the legal significance of its findings or the legal matters referred to in the following report.

This document has been prepared for the sole use of the Client in accordance with the terms of the appointment under which it was produced. BWB Consulting Limited accepts no responsibility for any use of or reliance on the contents of this document by any third party. No part of this document shall be copied or reproduced in any form without the prior written permission of BWB

EXECUTIVE SUMMARY

Following commission by Bellway Homes Ltd Yorkshire Division (the Client), an update Extended Phase 1 Habitat Survey and Protected Species Scoping including Preliminary Bat Roost Assessment were complete in September 2021, with the results compiled within this Ecological Impact Assessment. This report is required in support of a residential planning application and follows an extensive body of work completed by BWB between 2018 and 2020 in support of a refused planning application and failed appeal for residential development of the Site; all of which is referenced throughout this report as appropriate. Below is a summary of key findings detailed within this report.

The development footprint comprises mostly arable land which is of little ecological value. Peripheral hedgerows which were considered priority habitats under the NERC Act (2006) are proposed for retention with only minor losses to a small number of their associated trees proposed.

To account for the losses of arable land, some mature trees and two very small sections of Hedgerow 4 and 7 on Site, a separate Biodiversity Net Gain Assessment Report has been produced for the scheme which should be read in conjunction with this report. Furthermore, a Biodiversity Enhancement Management Plan is recommended to give details on mitigation, enhancement and management of such features for the construction phase and beyond.

A two-step strategic clearance of vegetation is recommended to reduce risk of harm to common herpetiles. Mitigation measures are also provided to reduce risk to these animals as well as badger and hedgehog accessing the construction Site and becoming trapped or injured.

Overnight work during construction should be avoided where it is practicable to reduce risk of foraging bat disturbance. Furthermore, a lighting strategy sympathetic to nocturnal fauna is also recommended for the Site.

Trees 1, 43, 47, 49 and 60 were assessed as having 'Moderate' potential to support roosting bats and are proposed for removal as part of the development. Tree 56 was assessed as having 'High' potential to support roosting bats and is proposed for removal as part of the development. At the time of drafting this report nocturnal surveys on these features had not been completed. As such this report is provided in advance of this data which will be gathered in accordance with best practice between May and August 2022 within an addendum report to this EclA to be provided. Additionally, Trees 61, 62 and 63 were assessed as having 'Low' potential to support roosting bats and are proposed for removal and as such will require some mitigation to facilitate their removal in accordance with best practice; similarly full details will be included within the eventual bat addendum report.

Some habitats proposed for losses are suited to nesting birds. It is advised this vegetation is cleared outside of the breeding bird season of March to August (inclusive). If it is necessary to conduct Site clearance within this period, it should be preceded by a nesting bird check conducted by an ecologist. Active nests found at any time will remain unaffected until all chicks have fledged.

Other features proposed for the Site as compensation/enhancements include the provision of bat and bird boxes, brash piles for refuge, gully pots with faunal escape routes and strategically located hedgehog holes in garden fencing proposed for the Site.

CONTENTS

EXECUTIVE SUMMARY	III
1. INTRODUCTION.....	1
Instruction	1
Site Description	1
The Project	2
Objectives	2
Scope of Works	2
Legislation and Planning Policy	2
2. METHODS	6
Zone of Influence (ZOI)	6
Consultation	6
Extended Phase 1 Habitat Survey	7
Survey Comments	8
Assessment	8
Significance Criteria	9
3. BASELINE CONDITIONS	10
Designated Sites	10
Statutory Sites	10
Non-Statutory Sites	10
Habitats and Botanical Species	10
Overview.....	10
Scattered Trees	10
Improved Grassland.....	10
Arable	10
Boundaries.....	11
Protected / Notable Species	11
Amphibians	11
Badgers.....	14
Roosting Bats	14
Foraging Bats.....	16
Birds	16
Reptiles.....	18
Water Vole, Otter and White-Clawed Crayfish	18
Other Species.....	18

4.	ASSESSMENT OF EFFECTS	19
	Designated Sites	19
	Habitats.....	19
	Protected Species	19
	Amphibians	19
	Badgers.....	20
	Foraging Bats.....	20
	Birds	20
	Reptiles.....	20
	Other Species.....	20
	Nature Conservation Evaluation	21
5.	MITIGATION MEASURES.....	24
	Habitats.....	24
	Species.....	24
	Herptiles	24
	Badgers.....	24
	Bats	25
	Birds	25
	Hedgehog	25
6.	RESIDUAL EFFECTS AND CUMULATIVE EFFECTS	26
7.	COMPENSATION AND ENHANCEMENT MEASURES	27
	General.....	27
	Biodiversity Net Gain	27
	Herptiles/Hedgehogs	27
	Bats	27
	Birds	27
	Hedgehogs.....	28
8.	SUMMARY	29
9.	REFERENCES	33

FIGURES

Figure 1.1: Site Location Plan
Figure 3.1: Pond Location Plan

TABLES

Table 2.1: Outcome of Consultations
Table 3.1: GCN eDNA Survey Summary
Table 3.2: Trees with Bat Roosting Potential
Table 3.4: Bird Species Records
Table 4.1: Nature Conservation Evaluation
Table 8.1: Summary

APPENDICES

Appendix 1: Relevant Legislation
Appendix 2: Extended Phase 1 Habitat Plan
Appendix 3: Site Photographs

1. INTRODUCTION

Instruction

- 1.1 This Ecological Impact Assessment (EclA) has been undertaken on behalf of Bellway Homes Ltd in respect of the Site at Lee Lane, Royston, Barnsley. It has been produced to accompany a planning application for residential re-development of the Site.
- 1.2 This follows a suite of ecology work completed at the Site historically by BWB between 2018 and 2020 (BWB 2018, 2019, 2020) which included Preliminary Ecological Appraisal, Preliminary Bat Roost Assessment, aerial tree bat survey and great crested newt *Triturus cristatus* eDNA survey. All of which informed a recent and refused planning application (REF:2019/0239) and failed appeal (REF: APP/R4408/W/19/3242646) at the Site and is referred throughout this report as appropriate.

Site Description

- 1.3 The Site is located off Lee Lane, Royston, Barnsley. The Site itself comprises an arable field bound by hedgerows with trees. The Site is approximately 8.5 hectares (ha) in extent and is centred on grid reference (SE 3486 1104).
- 1.4 The location of the Site is shown below in **Figure 1.1**

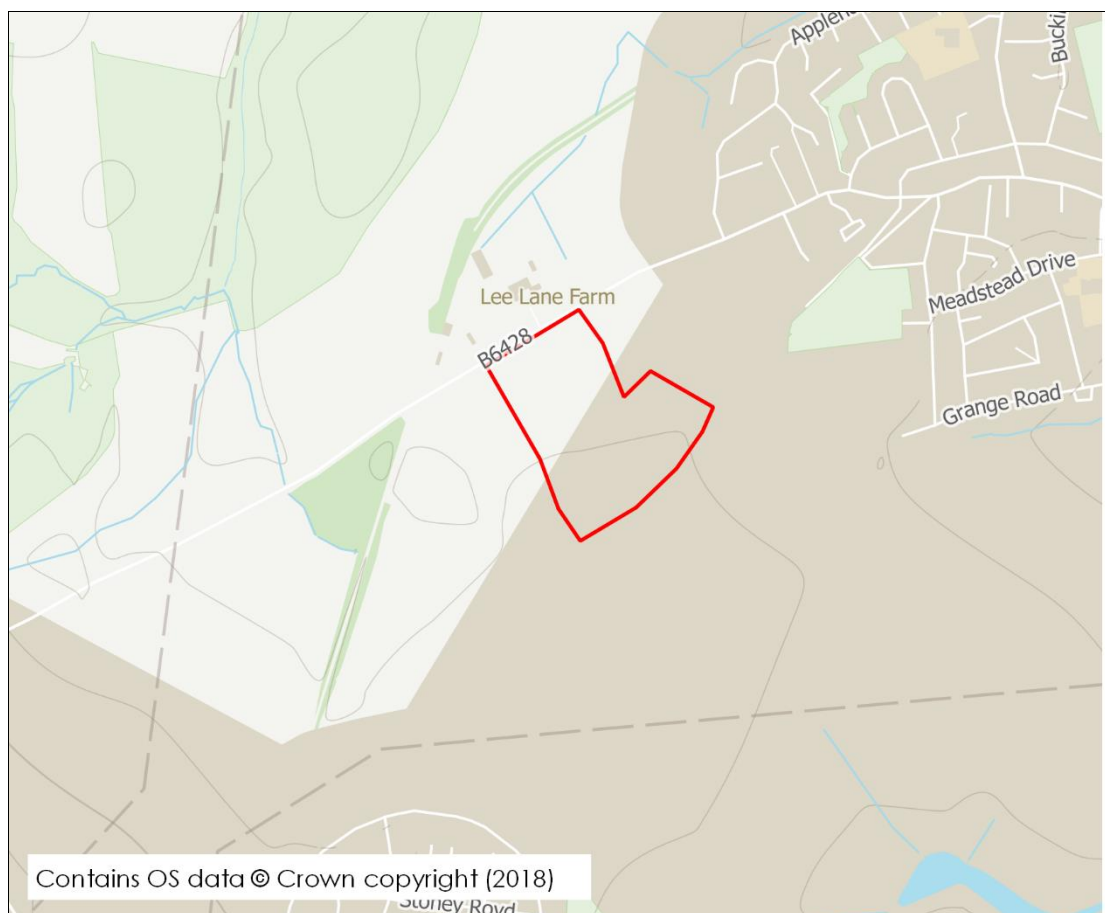


Figure 1.1: Site Location Plan

The Project

- 1.5 The proposals include the creation of residential properties, gardens and associated infrastructure such as roads and public open space.
- 1.6 The Site also forms a part of the local MU5 allocation for housing within the Local Plan¹. The Site therefore forms a strategic component of the local authority's aspiration for much needed new housing.

Objectives

- 1.7 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

- 1.8 The ecological appraisal was informed by a desk-based study and a Site survey. The approach to this EclA 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

- 1.9 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 (EU Exit) (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.
- 1.10 Further information on the legislation relevant to this Site is provided in **Appendix 1**.
- 1.11 Consideration has also been given in this report to relevant National and Local Planning Policy as summarised below.
- 1.12 The National Planning Policy Framework (NPPF, 2021) guides Local Planning Authorities (LPAs) when developing their planning policies and considering planning applications affecting protected habitats, sites and species.

¹ Barnsley Metropolitan Borough Council Local Plan Adopted January 2019.

1.13 In respect of the natural environment, the NPPF states under Paragraph 174 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”.*

1.14 The NPPF also states under Paragraph 179 that:

“To protect and enhance biodiversity and geodiversity, plans should:

- a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity⁶¹; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and*
- b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity”.*

1.15 Paragraph 180 also states:

“When determining planning applications, local planning authorities should apply the following principles:

- a) *if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- b) *development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
- c) *development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons⁶³ and a suitable compensation strategy exists; and*
- d) *development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate".*

1.16 Additionally, Policy BIO1 of the Barnsley Local Plan² states the following:

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

- a) *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 via Section 41 of the Natural Environment & Rural Communities Act 2006 (for list of the species and habitats of principal importance) and in the Barnsley Biodiversity Action Plan.*
- b) *Maximising biodiversity and geodiversity opportunities in and around new developments. Conserving and enhancing the form, local character and distinctiveness of the boroughs natural assets such as the river corridors of the Don, the Dearne and Dove as natural floodplains and important strategic wildlife corridors.*
- c) *Proposals will be expected to have followed the national mitigation hierarchy (avoid, mitigate, compensate) which is used to evaluate the impacts of a development on biodiversity interest.*
- d) *Protecting ancient and veteran trees where identified.*
- e) *Encouraging provision of biodiversity enhancements.*

² Barnsley Metropolitan Borough Council Local Plan Adopted January 2019.

- f) *Development which may harm a biodiversity or geological feature or habitat, including ancient woodland and aged or veteran trees found outside ancient woodland, will not be permitted unless effective mitigation and/or compensatory measures can be ensured.*
- g) *Development which adversely effects a European Site will not be permitted unless there is no alternative option and there are imperative reasons of overriding public interest (IROPI.)*

1.17 Alongside this the Supplementary planning documents for Biodiversity and geology in Barnsley³ and for trees and hedgerows⁴ were also considered as part of the Site's assessment.

³ Supplementary Planning Document for Barnsley: Biodiversity and Geology; Adopted 2019

⁴ Supplementary Planning Document for Barnsley: Hedgerows and Trees; Adopted 2019

2. METHODS

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:
- 10km 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 project, the zone of influence was unlikely to extend beyond the Site boundaries.

Consultation

- 2.3 Barnsley Biological Record Centre and West Yorkshire Ecology were 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.
- 2.4 The survey and report for the Site follows a suite of ecology work completed at the Site historically by BWB between 2018 and 2020 (BWB 2018, 2019, 2020) which included Preliminary Ecological Appraisal, Preliminary Bat Roost Assessment, aerial tree bat survey and great crested newt eDNA survey. All of which informed a recent and refused planning application and appeal at the Site and is referred throughout this report as appropriate.
- 2.5 The Site was also 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 historic 2019 survey concurred 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 using Google Maps – imagery dated 2021.

2.7 A summary of these consultations is contained in

2.8 **Table 2.1.**

Table 2.1: Outcome of Consultations

Consultee and Date of Correspondence	What was the Consultation Regarding	Outcome of Consultation	Method of Communication
Local Planning Authorities Ecologist 2019-2020	Site Constraints relating to roosting bats and great crested newt	Consultee would like to see further survey results to determine great crested newt presence/likely absence in respect of ponds within 500m of Site and further assessment of trees with bat roosting potential that are proposed for impacts.	Earlier planning application consultee comments
Barnsley Biological Record Centre and West Yorkshire Ecology- September 2021	The location of non-statutory and statutory sites and the presence of protected and notable species within 2km radius	Identification of non-statutory Sites within 2km. A number of protected species records were returned within this search as detailed later in the report.	Email and Telephone
West Yorkshire Bat Group- 2019	Locations of bat data within 2km of Site	Data was provided.	Email
Multi Agency Geographic Information for the Countryside (MAGIC) – October 2021	The location of statutory sites	Identification of nationally designated Sites within 2km and international Sites within 10km. Identification of priority habitats within 1km.	Website

Extended Phase 1 Habitat Survey

2.9 An updated Site survey (including Preliminary Bat Roost Assessment) was undertaken on the 16th September 2021 by Joe McLaughlin BSc (Hons) MCIEEM. Joe 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). Joe is also registered to use personal class licences (level 2) to survey for bats

(2016-26529-CLS-CLS) and great crested newt (2015-16947-CLS-CLS). Joe is also a registered consultant under the Bat Mitigation Class Licence scheme (Annex B).

- 2.10 The visit was completed using Phase 1 habitat survey techniques as defined in the standard methodology (JNCC, 2016).
- 2.11 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.
- 2.12 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 newts (GCN);
 - Reptiles;
 - Badgers *Meles meles*; and
 - Priority Species, such as hedgehog *Erinaceus europaeus*.
- 2.13 Standard methodologies were used where applicable.
- 2.14 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

- 2.15 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; and
 - Local.

3. BASELINE CONDITIONS

Designated Sites

Statutory Sites

- 3.1 There is one statutory designated site present within 2km of the Site boundary, the Notton Wood LNR which is approximately 350m north of the Site.
- 3.2 Additionally there is one European designated site within 10km of the Site; the Denby Grange Colliery Ponds SAC and SSSI which is approximately 8.5km north west.
- 3.3 The Site is within a SSSI risk zone. The development type is not included within a risk category however.

Non-Statutory Sites

- 3.4 There is one Local Wildlife Site within 2km of the Site. The Notton Wood LWS (and LNR) 350m north of the Site. Local Wildlife Sites are non-statutory sites and are a material consideration in the planning process.

Habitats and Botanical Species

Overview

- 3.5 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 (2019).

Scattered Trees

- 3.6 Four mature scattered trees were located in the centre of the Site. These included one ash *Fraxinus excelsior* and three oak *Quercus* sp. Additionally, a number of immature to mature trees were located within the hedgerows located at the Site boundaries and are described under the relevant headings below.

Improved Grassland

- 3.7 A small patch of improved grassland was located in the south-western corner of the Site. Species included dominant Italian ryegrass *Lolium multiflorum*, abundant cock's-foot *Dactylis glomerata* and forbes including occasional creeping buttercup *Ranunculus repens* and ribwort plantain *Plantago lanceolata*.

Arable

- 3.8 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 a potato crop, species present were false oat grass *Arrhenatherum elatius*, poppy *Papaver* sp., shepherd's purse *Capsella bursa-pastoris*, daisy *Bellis perennis*, common ragwort *Jacobaea*

vulgaris, plantain *Plantago* sp., broadleaved dock *Rumex angustifolium*, knotgrass *Polygonum aviculare*, common nettle *Urtica dioica*, creeping thistle *Cirsium arvense* and cock's-foot grass.

Boundaries

3.9 Boundary features are described below; numbering refers to the map in **Appendix 2**

- H1 – Hedgerow comprised ash, silver birch *Betula pendula*, cherry *Prunus* sp., 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 *Chamerion angustifolium*, mugwort and common nettle. The hedgerow measured up to 4m tall and 3m wide and supported numerous mature trees.
- H2 - Hedgerow comprised hawthorn, oak, hazel, ash, blackthorn and dog rose. The associated verge included ruderal species as per those listed above under H1. This hedgerow was 2-4m tall, 2m wide and supported numerous mature trees.
- H3 – Defunct hedgerow comprised oak, dog rose, ash, hazel, elder *Sambucus nigra*, field maple *Acer campestre* and holly *Ilex aquifolium*, measuring up to 4m tall and 3m wide with numerous mature trees.
- H4 – Hedgerow comprising of oak, blackthorn *Prunus spinosa*, hawthorn holly and bramble, measuring up to 4m tall and 3m wide with several semi-mature/mature scattered trees.
- H5 - Hedgerow supporting dominant hawthorn and abundant bramble *Rubus fruticosus* climbing. This hedgerow was recently felled and was 2m tall and 1.5m wide.
- H6 – Hedgerow comprised blackthorn, willow *Salix* sp., bramble, hawthorn and elder. A dry ditch was present within the hedgerow. The hedgerow measured up to 4m tall and 3m wide with several associated semi-mature/mature standards including oak, willow and silver birch.
- H7 – Hedgerow comprised 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 with a number of mature native trees.

3.10 All of the hedgerows on Site were dominated by native woody species and over 20m and therefore were considered priority habitats under the NERC Act (2006). None of the hedgerows were considered important under the Hedgerow Regulations (1997).

Protected / Notable Species

Amphibians

3.11 A search of aerial photography and OS maps showed six ponds within 500m of the Site (see P1-6 in **Figure 3.1**). Whilst no records of GCN was identified within desk study data the peripheral hedgerows were considered suited to the species.



Figure 3.1: Ponds Within 500m of the Site

3.12 In consideration of this and in accordance with historic requests from the Local Authority's ecologist, further assessment was complete including an eDNA survey where possible in spring 2020. The results of which are provided in **Table 3.1** below. Full methodology for GCN eDNA survey and Technical Report by SureScreen Scientific is provided in the previously issued report referenced at the end of this document (BWB, 2020).

Table 3.1: GCN eDNA Survey Summary

Pond Number	Approximate Distance from Site	Description	eDNA Survey result ⁵
1	300m north	Across Lee Lane from Site, a well-used single carriageway road with kerb stones and gully pots, very likely to provide a partial barrier to amphibians from this pond accessing the Site. Pond appears to be dry for the majority of the time. Was found to	Pond dry no eDNA survey complete.

⁵ eDNA Survey for GCN complete on 16th April 2020

Pond Number	Approximate Distance from Site	Description	eDNA Survey result ⁵
		be dry by Brooks Ecological in Oct 2016 and dry during 2012 survey work. It is therefore unlikely to provide suitability for GCN during their main breeding season. Pond was also dry on visit in April 2020	
2	40m east	Visited in January and April 2020, after several months of above average rainfall and found to be mostly dry, with the exception of a small pool of water in January 2020. This was also found to be the situation during survey work by RSK in June 2012. Heavily shaded and lacking aquatic or marginal vegetation. When visited in April 2020 for eDNA this pond was dry	Pond dry no eDNA survey complete.
3	On Site boundary	Dry during ecology survey in July 2018. Wet after period of heavy rain in Oct 2019 and Jan 2020. However, the volume of water was considered to be atypical due to the blockage of a drainage route within the wider landscape. Pond was dry during Site visit in 2021. Heavily shaded, occurring in the corner of the adjacent grazing pasture field, immediately adjacent to the road.	eDNA survey complete. Results were negative for GCN DNA.
4 Absent	N/A	Pond was visited in 2018, 2019, 2020 and during the 2021 survey which informed this report and was found to be dry.	N/A
5	20m north	Across Lee Lane from Site, a well-used single carriageway road with kerb stones and gully pots, which is very likely to provide a partial barrier to amphibians from this pond accessing the Site. Pond appears newly constructed and has not been picked up in any previous survey work. Ornamental pond, with the potential to contain fish and lacking aquatic vegetation likely to be used by breeding GCN.	eDNA survey complete. Results were negative for GCN DNA.
6	150m north	Pond almost completely dry in April 2020, with the exception of a very shallow area of water, less than 10cm deep and only present in less than 50% of the pond area, no aquatic vegetation was found. Extremely unlikely to support GCN.	No-water not deep enough for eDNA sampling. Considered highly likely to be dry throughout periods of spring.

- 3.13 As all ponds within 500m were either dry or did not support GCN DNA it is assumed the species are likely absent and present no further constraint to proposals. It is however acknowledged other common amphibians such as common toad *Bufo bufo* may

readily occupy the Site's peripheral vegetation, which is a species of principal importance under the NERC Act (2006).

Badgers

- 3.14 No evidence of badger *Meles meles* 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.
- 3.15 There were no desk study records of this species identified within the data.

Roosting Bats

- 3.16 All trees on Site were assessed for their potential to support roosting bats from ground level during the most recent Site visit. **Table 3.2** below provides a summary of all trees identified on Site with potential to support roosting bats. For consistency the numbering from the associated arboriculture report is used throughout (BWB, 2020).

Table 3.2: Trees with Bat Roosting Potential

Tree number	Species	Description	Bat Roosting Potential	Outcome as a Result of Proposal
1	Ash	12m tall, 0.75m Diameter at Breast Height (DBH). Callus roll 4m and deep branch cavity 3m southern aspect.	Moderate	Removed
3	Oak	14m tall 1m DBH. Tree is mature, large and healthy but densely clad in Ivy. Which could provide some suitability to roosting. Retention is advantageous.	Low	Retained
36	Oak	12m tall, 0.75m DBH. Mature oak with gnarly growth which has resulted in the formation of a hazard beam on the northern aspect 2m high. The hazard beam has led to rot through to the heartwood and the resulting feature extends upwards into the tree in a wedge shape 20cm.	Moderate	Retained
41	Oak	10m tall and 0.75m DBH. Mature oak tree with numerous split limbs around the canopy. No specific roosting features noted but some scope for individual opportunistic bats in the minor crevices created by splits.	Low	Retained
43	Oak	10m tall and 0.5m DBH. Large fracture in trunk on northern aspect with suitability to roosting bats at 3.5m.	Moderate	Removed
47	Ash	12m tall and 0.75m DBH. Two callus roles on eastern aspect of tree 4 and 7m high. Both appear to extend inwards and could support roosting bats.	Moderate	Removed

Tree number	Species	Description	Bat Roosting Potential	Outcome as a Result of Proposal
49	Oak	8m tall and 0.75m DBH. Tree supports a deep trunk cavity 4m high on the eastern aspect.	Moderate	Removed
56	Ash	14m tall and 0.75m DBH. Tree in poor vigour with failed limbs and crevices at fractures. Other features include a callus roll on eastern limb 4m high, callus roll on northern limb 4m high and a branch cavity on southern aspect 4m high.	High	Removed
57	Ash	17m tall and 1m DBH. Supported four callus roles on the eastern aspect 6-9m high.	High	Retained
60	Oak	12m tall and 0.5m DBH. Tree supported trunk cavity which had rotten through to the heartwood. This feature was on the south western aspect 4-5m high. This tree was also historically subject to an aerial inspection by BWB in 2019. This assessment confirmed this tree's 'Moderate' suitability to bats, but found no evidence of bats.	Moderate	Removed
61	Oak	12m tall and 0.75m DBH. Cavity in the base on the western aspect. Extended up into the tree 10cm in a spire shape. As entrance was 30cm tall and up to 10cm wide the feature was considered exposed; however, use by transient solitary bats cannot be entirely ruled out.	Low	Removed
62	Oak	13m tall and 0.75m DBH. Cavity in the base on the western aspect. Extended up into the tree 15cm in a spire shape. As entrance was 25cm tall and up to 8cm wide the feature was considered exposed; however, use by transient solitary bats cannot be entirely ruled out.	Low	Removed
63	Ash	10m tall and 0.5m DBH. Two minor callus roll features 4-5m high on southern side. Both were upturned and didn't look to extend into the tree. Based on the tree's apparent good health extensive rot in association with these features was considered extremely unlikely.	Low	Removed

3.17 Trees 1, 43, 47, 49 and 60 were assessed as having 'Moderate' potential to support roosting bats and are proposed for removal as part of the development. Tree 56 was assessed as having 'High' potential to support roosting bats and is proposed for removal as part of the development. At the time of drafting this report nocturnal surveys on these features had not been complete. As such this report is provided in advance of this data which will be gathered in accordance with best practice between May and August

2022 within an addendum report to this EclA. As such, these trees will not be discussed with regards to impact assessment further in this report.

- 3.18 Trees 61, 62 and 63 were assessed as having 'Low' potential to support roosting bats and are proposed for removal and as such will require some mitigation to facilitate their removal in accordance with best practice; full details will be included within the eventual bat addendum report.
- 3.19 Several additional trees historically assessed as having 'Low' potential to support roosting bats were downgraded to 'Negligible' potential or were no longer present at the time of the updated assessment. As such they have not been detailed above and will not be discussed further in this report.
- 3.20 There were only 17 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 1 km from the Site.

Foraging Bats

- 3.21 The peripheral hedgerows and associated trees provide well connected linear features suited to bat foraging and commuting; all of which were well connected to the network of surrounding off Site linear features typical of a rural landscape.

Birds

- 3.22 During the Site visit surveyors recorded incidental sightings of common buzzard *Buteo buteo*, kestrel *Falco tinnunculus*, blackbird *Turdus merula* and magpie *Pica pica*. All of which were foraging or commuting, and none were recorded as nesting or exhibiting nesting behaviours.
- 3.23 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 such as skylark *Alauda arvensis*; however, in the context of the rural landscape the Site would likely form a very small component of functional breeding habitat for such species.

Table 3.3: Bird Species Records

Species	Common Name	Nearest Record to Site	Conservation Status
<i>Alauda arvensis</i>	Skylark	0.7 km NE	WCA ⁶ , BoCCRed ⁷ NERC ⁸

⁶ Protection when nesting under the Wildlife and Countryside Act 1981 (As amended)

⁷ Bird of Conservation Concern-Red list species (highest priority)

⁸ Section 41 species of principal importance for conservation under the NERC Act (2006)

Species	Common Name	Nearest Record to Site	Conservation Status
<i>Anthus pratensis</i>	Meadow Pipit	0.8 km SE	WCA, BoCCAmber ⁹
<i>Anas crecca</i>	Teal	0.8 km SE	WCA, BoCCAmber
<i>Apus apus</i>	Swift	0.7 km NE	WCA, BoCCAmber
<i>Buteo buteo</i>	Buzzard	Seen foraging in field adjacent to site during survey in 2021.	WCA
<i>Carduelis cannabina</i>	Linnet	0.7 km NE	WCA, BoCCRed, NERC
<i>Carduelis flammea</i>	Redpoll	0.8 km SE	WCA, BoCCAmber
<i>Columba oenas</i>	Stock Dove	0.7 km NE	WCA, BoCCAmber
<i>Cuculus canorus</i>	Common Cuckoo	0.7 km NE	WCA, BoCCRed, NERC
<i>Delichon urbica</i>	House Martin	0.7km NE	WCA, BoCCAmber
<i>Dendrocopos major</i>	Great Spotted Woodpecker	0.7 km NE	WCA
<i>Emberiza citrinella</i>	Yellowhammer	0.7 km NE	WCA, BoCCRed, NERC
<i>Emberiza schoeniclus</i>	Reed Bunting	0.7km NE	WCA, BoCCAmber, NERC
<i>Falco tinnunculus</i>	Kestrel	Seen foraging on Site during survey in 2021.	WCA, BoCCAmber
<i>Hirundo rustica</i>	Swallow	0.7 km NE	WCA
<i>Larus argentatus</i>	Herring Gull	0.7 km NE	WCA, BoCCRed, NERC
<i>Larus canus</i>	Common Gull	0.8 km SE	WCA, BoCCAmber
<i>Larus fuscus</i>	Lesser Black-Backed Gull	0.7 km NE	WCA, BoCCAmber
<i>Larus ridibundus</i>	Black-Headed Gull	0.7 km NE	WCA, BoCCAmber
<i>Passer domesticus</i>	House Sparrow	0.7 km NE	WCA, BoCCRed, NERC

⁹ Bird of Conservation Concern-Amber list species (moderate priority)

Species	Common Name	Nearest Record to Site	Conservation Status
<i>Perdix perdix</i>	Grey Partridge	0.7km NE	WCA, BoCCRed, NERC
<i>Prunella modularis</i>	Dunnock	0.7 km NE	WCA, BoCCAmber
<i>Pyrrhula pyrrhula</i>	Bullfinch	0.7 km NE	WCA, BoCCAmber, NERC
<i>Regulus regulus</i>	Goldcrest	0.7 km NE	WCA
<i>Sturnus vulgaris</i>	Starling	1.61 km SW	WCA, BoCCRed, NERC
<i>Turdus iliacus</i>	Redwing	0.8 km SE	WCA, BoCCRed
<i>Turdus philomelos</i>	Song Thrush	0.7 km NE	WCA, BoCCRed, NERC
<i>Turdus pilaris</i>	Fieldfare	0.7 km NE	WCA, BoCCRed
<i>Turdus viscivorus</i>	Mistle Thrush	0.7km NE	WCA, BoCCRed

Reptiles

- 3.24 No reptiles or evidence of reptiles was recorded on Site. The habitats on Site were mostly 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 are therefore considered highly unlikely to be present on Site with suitability limited to the peripheral hedgerows.

Water Vole, Otter and White-Clawed Crayfish

- 3.25 No habitat suited to these species was present on Site or in close proximity, as such these species are considered likely absent and will not be discussed further.

Other Species

- 3.26 The Site provided opportunities for hedgehogs *Erinaceus europaeus*. The Site was considered unlikely to support any other protected species.

4. ASSESSMENT OF EFFECTS

- 4.1 This section identifies the effects on habitats and species during different stages of the development, prior to any mitigation measures.

Designated Sites

- 4.2 Impacts to Designated sites are considered extremely unlikely due to the lack of connectivity, relatively small scale of the development and distance between the Site and both the Notton Woods LNR/LWS (0.35km N) and the Grange Colliery Ponds SAC and SSSI (8.5km NW). As such effects even in the absence of mitigation are considered negligible.

Habitats

- 4.3 The development will result in the extensive loss of arable land which is of little ecological value. The proposals also include the retention of peripheral hedgerows and the majority of their associated trees which is highly advantageous as all hedgerows (H1-7) were considered Habitats of Principal Importance under Section 42 of the NERC Act (2006) with associated trees providing a notable addition to the Site floristically and in respect of potential value to fauna.
- 4.4 Some losses of mature trees are anticipated in respect of the four scattered trees in the centre of the Site as well as a small number of peripheral trees to facilitate development; all of which provide some inherent value to wildlife. In the absence of mitigation these losses would represent a minor adverse effect at the local level.

Protected Species

Amphibians

- 4.5 Whilst all ponds within 500m were either dry or tested negative for GCN eDNA, the Site does still provide some suitability to common amphibians such as common toad. However, as the development will result in losses to regularly tilled arable land which is sub-optimal for amphibians and the majority retention of those peripheral hedgerow features better suited to such species, it is felt in the absence of mitigation risks to these animals would be limited to risks associated with small sections of hedgerow removal in Hedgerows 4 and 7. In the absence of mitigation for such work, there remains the risk of injury or killing of individual amphibians; this would be a minor effect at a local level.
- 4.6 Additionally, in the absence of mitigation, minor adverse effects are envisaged during the operational phase if common toad or other common amphibians aren't able to translocate across Site or risks becoming trapped in any associated or newly installed drainage.

Badgers

- 4.7 It cannot be ruled out that badgers may periodically cross the Site and become injured in open excavations during the construction phase. This would be a minor effect at the local level.

Foraging Bats

- 4.8 As peripheral vegetation including hedgerows and trees is to be retained a suite of activity surveys is considered disproportionate.
- 4.9 However minor impacts to foraging/commuting bats cannot be ruled out. Any lighting implemented as part of construction or operational phase has the potential to disturb bats which may forage or commute along boundary habitats. This would be a minor effect at the local level.

Birds

- 4.10 Loss of the arable field and a small number of trees on Site will result in a reduction in the available nesting and foraging habitat for common farmland and ground nesting birds. However, these habitats are common and widespread within the context of the Site. As such this would be a minor effect at a local level only
- 4.11 There is also the potential for birds to be disturbed or harmed during vegetation clearance, including ground clearance, should the habitats remain suitable to support ground nesting birds between now and the construction phase. This would be a minor effect at the local level.

Reptiles

- 4.12 The majority retention of peripheral hedgerows is considered advantageous for any potential reptiles present in the vicinity of the Site in terms of refuge and commuting potential.
- 4.13 As the development will result in losses to regularly tilled arable land which is sub-optimal for common reptiles and the majority retention of those peripheral hedgerow features better suited to such species, it is felt in the absence of mitigation, risks to these animals would be limited to risks associated with small sections of hedgerow removal in Hedgerows 4 and 7. In the absence of mitigation for such work, there remains the risk of injury and killing of individual reptiles; this would be a minor effect at a local level.

Other Species

- 4.14 The retention of peripheral vegetation is considered largely beneficial for hedgehogs as it will allow the species to disperse between the Site and the surrounding landscape via hedgerows which also provide optimal refuge for this species.
- 4.15 The peripheral vegetation provides optimal habitat for hedgehogs.

- 4.16 In the absence of mitigation, proposed removal of small sections of H4 and H7 could result in the killing or injury of individual hedgehogs. This would be a minor effect at the local level. Furthermore, it cannot be ruled out that hedgehogs may periodically cross the Site and become injured in open excavations during the construction phase. This would be a minor effect at the local level.

Nature Conservation Evaluation

- 4.17 The valuation of the nature conservation interest of the ecological features present on the Site and whether or not they require consideration of mitigation measures and further assessment is summarised in **Table 4.1**.

Table 4.1: Nature Conservation Evaluation

Receptor	Important Ecological Feature	Potential for Impact	Scale of Potential Impact	Subject to Further Consideration
SITES				
Internationally Designated Sites	Yes	No 8.5km from Site, not well connected and development of relative small scale with impacts only likely at the Site.	No Impact	No
Nationally Designated and Non-Statutory Sites	Yes	No 0.35km from Site, not well connected and development of relative small scale with impacts only likely at the Site.	No Impact	No
HABITATS				
Arable Land	No	Yes-lost to facilitate development.	No Impact	No
Hedgerows with trees	Yes, priority habitat under NERC (2006) Act	Majority retained with two very small sections from H4 and H7 proposed to facilitate access road creation. Losses will be easily offset by a scheme of enhancement.	Minor adverse effect at the local level	Yes within a separate Biodiversity Net gain Assessment report (BWB,2021)
Scattered trees	Yes, notable botanical feature on Site	Yes trees 60-63 lost to facilitate proposals. Will be offset with new planting and enhancement strategy.	Minor adverse effect at the local level	Yes within a separate Biodiversity Net gain Assessment report

Receptor	Important Ecological Feature	Potential for Impact	Scale of Potential Impact	Subject to Further Consideration
SPECIES				
Common Amphibians	Yes-partial protection under Wildlife and Countryside Act 1981 (as amended) and common toad listed as a species of principal importance under the NERC (2006) Act	Majority of the development's construction footprint is largely sub-optimal for these species. However, small sections of hedgerow removal could result in killing and injury. Operational phase could result in trapping and hindered migration across Site.	Minor adverse effect at the local level	Yes
Badgers	Yes - legally protected under the Protection of Badgers Act (1992)	Yes – May become trapped or injured by stored materials.	Minor adverse effect at the local level	Yes
Foraging Bats	Yes - legally protected under the Conservation of Habitats and Species Regulations 2019 (as amended) and the Wildlife and Countryside Act 1981 (as amended)	No – Site unlikely to be a significant resource to foraging or commuting bats and key peripheral vegetation for the most part retained. Residual risk of impacts if any artificial lighting installed.	Minor adverse effect at the local level	Yes
Birds	Yes - legally protected under the Wildlife and Countryside Act 1981 (as amended)	Yes- risk to common garden and farmland nesting bird during vegetation clearance	Minor adverse effect at the local level	Yes

Receptor	Important Ecological Feature	Potential for Impact	Scale of Potential Impact	Subject to Further Consideration
Reptiles	Common reptiles protected from injury and killing under the Wildlife and Countryside Act (1981) as amended	Majority of the development's construction footprint is largely sub-optimal for these species with optimal peripheral vegetation retained and protected. However, small sections of hedgerow removal could result in killing and injury.	Minor adverse effect at the local level	Yes
Other Species	Hedgehog a priority Species under NERC Act (2006). legally protected from harm under the Protection of Wild Mammals Act 1996	Yes – Habitat loss and risk of injury during vegetation clearance. Garden fences could create a barrier to their dispersal.	Minor adverse effect at the local level	Yes

4.18 Therefore, the ecological receptors which require further consideration are as follows:

- Common amphibians
- Badger;
- Foraging bats
- Birds;
- Common reptiles and
- Hedgehog.

5. MITIGATION MEASURES

Habitats

- 5.1 Whilst habitats will be discussed in a separate net gain assessment it is considered important to note hedgerows and retained mature trees represent valuable floristic features on Site and as such they should be protected during construction. This should comprise stand-off fencing to avoid accidental encroachment defined via Heras fencing where practicable; ensuring root protection areas of trees are avoided in accordance with BS5837:2012. Details such as this should be compiled into a Biodiversity Enhancement Management Plan (BEMP). This document should detail prescriptions outlined below in respect of protected/notable species as well as for the creation and long-term management of required enhancement features; as detailed in **Section 7** and the separate biodiversity net gain assessment report.

Species

Herptiles

- 5.2 Whilst the majority of the development Site is regularly tilled arable land which is sub-optimal for herptiles (amphibians and reptiles) there is potential for these species in the peripheral hedgerows. As a small section of Hedgerows 4 and 7 are to be cleared to facilitate road creation some mitigation is recommended for clearance.
- 5.3 The sections of Hedgerow 4 and 7 within the construction boundary will be removed in a two-phase cut working from north to south. The initial phase will remove vegetation to approximately 20cm. This will then be left overnight, following which the vegetation can be removed to ground level. In both phases, all arisings must be removed from Site in order to prevent the creation of habitat piles. Vegetation clearance can only be undertaken in suitable weather conditions (temperatures between 9°C and 18°C, no rain, no strong winds).
- 5.4 If in the extremely unlikely event, during the initial cut, an abundance of amphibians or reptiles are found; particularly common toad, works should stop and BWB should be contacted for further advice. Contractors should not attempt to move any such fauna.

Badgers

- 5.5 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.
- 5.6 As badgers are highly transient, if development does not proceed within the next 12 months a badger update survey will be required in advance of development starting.

Bats

- 5.7 Any new lighting associated with the development should follow best practice guidelines outlined in Bats and Artificial Lighting in the UK (2018) to maintain suitable foraging habitats, particularly along the peripheral hedgerows which are likely valuable commuting routes for bat species (on or off-Site).
- 5.8 Additionally, overnight work should be avoided where possible during construction as such work often requires floodlighting and presents a potential disturbance pressure on bat species.
- 5.9 New roosting features will be installed on Site as part of the development to provide a measurable gain for such species; full details are provided in **Section 7**.

Birds

- 5.10 As all species receive legal protection during nesting, any suitable vegetation clearance including ground clearance should be conducted outside of the breeding bird season of March to August (inclusive). Vegetation clearance/ground clearance outside of this period should 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 should be preceded by a nesting bird check conducted by an ecologist. Any active nests, including those of ground-nesting species, should remain unaffected until all chicks have fledged.
- 5.11 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**.

Hedgehog

- 5.12 The proposed systematic clearance of hedgerow sections should minimise the risk of harm to hedgehog to acceptable levels. Furthermore, measures, as outlined for badgers above will ensure hedgehogs don't become trapped in stored materials or excavations during the works.
- 5.13 Any hedgehogs found should be left in situ, all works should cease within the vicinity of the area and either a suitability qualified ecologist or the hedgehog preservation society should be contacted for further advice. In most cases the hedgehog can be moved by hand to a nearby off-Site place of safety. However, dependent on the time of year, i.e. if temperatures are low (below 5°C) and the hedgehog was found within the hedgehog hibernation season (from November to March) then it may be necessary to take the hedgehog to a wildlife sanctuary. Moving a pregnant hedgehog or hedgehog with young can also result in mortality.
- 5.14 If in doubt contractors should call the British Hedgehog Preservation Society (Tel: 01584 890801) for advice.

6. RESIDUAL EFFECTS AND CUMULATIVE EFFECTS

- 6.1 With the mitigation measures suggested and outlined above, no residual effects are envisaged. Furthermore, with a scheme of enhancement (as provided in **Section 7** and the separate biodiversity net gain assessment report) it is considered the proposed development will result in a biodiversity net gain for the Site.
- 6.2 Consequently, where suitable mitigation and enhancement is implemented, no adverse cumulative effects are envisaged either.
- 6.3 This conclusion is however, pending the results of bat emergence surveys on those trees outlined earlier in this report which will be impacted and reported upon separately at a later date as an addendum to this EclA.

7. COMPENSATION AND ENHANCEMENT MEASURES

General

Biodiversity Net Gain

- 7.1 Biodiversity Net Gain was written into the NPPF in 2019 and is currently being written into a number of Local Plans.
- 7.2 The landscaping scheme will 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. Details of landscaping and biodiversity net gain provision are provided in the separate biodiversity net gain assessment report.

Herptiles/Hedgehogs

- 7.3 Several brash piles will be created on Site in proximity to the peripheral hedgerows in areas of public open space.
- 7.4 Gully pots with small animal exclusion devices to prevent amphibians and reptiles falling into road drainage systems and becoming trapped will also be installed on Site.

Bats

- 7.5 Opportunities for roosting bats should be incorporated into 10% of all new properties at the Site. These should be integrated into the new buildings. Boxes should be positioned as close to the eaves as possible and comprise of Schwegler type F1 tubes (or similar). 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.
- 7.6 In addition, 10 bat boxes should be attached to retained mature trees on Site. These should be 3-5m high and south facing and away from artificial light. Specification for such boxes would be provided in the eventual BEMP for the Site and following completion of required nocturnal bat surveys to ensure they best serve the conservation interests of the Site.

Birds

- 7.7 Opportunities for nesting birds will be incorporated into the final masterplan. These should be integrated into 10% of new buildings. Bird boxes should be installed two to four metres above ground on the building and should offer unobstructed fly-in access. The boxes should face between north and east, thus avoiding full sun and prevailing wind.
- 7.8 A range of the following could be installed at the Site:
- 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>

Hedgehogs

- 7.9 Whilst the peripheral hedgerows provide good commuting and refuge potential for hedgehogs in all life stages, further effort should be made to reduce the risk of creating barriers to their dispersal. As such, a number of targeted garden fences should be installed with 'hedgehog holes' in the base of fences and gates (small holes around 13cm x 15cm) or planting of hedges or use of railing with suitable gaps to allow this species to access and forage freely across the gardens instead of fences. Recommended location of these holes should be provided within the BEMP.
- 7.10 In addition, all holes should have suitable 'hedgehog highway' signs to inform residents of their purpose and residents should be made aware of the importance of maintaining access to these holes, with leaflets provided with every new house explaining methods by which to help hedgehogs in the area provided in each new residence. Recommended suppliers and/or sources for the signs and leaflets should be provided within the BEMP.

8. SUMMARY

8.1 **Table 8.1** contains a summary of the likely significant effects of the development relating to the construction phase, the completed development and cumulative effects.

Table 8.1: Summary

Receptor	Potential Effect	Significance of Effect Without Mitigation	Mitigation Measures	Residual Effects
SITES				
Designated Sites	None	No Impact	N/A	No residual effect
HABITATS				
Hedgerows and trees	Some minimal losses of trees in poor health and small section of H4 and H7 to be removed to facilitate access road creation.	Minor adverse effect at the local level	Scheme of enhancement detailed in separate Biodiversity Net Gain Assessment report.	Likely positive effect at the local level
SPECIES				
Herptiles	Killing and injury during construction during hedgerows 4 and 7 minor clearance works. Risk of trapping individuals during operational phase in drainage.	Minor adverse effect at the local level	Systematic clearance of vegetation in appropriate weather conditions and temperatures. Herptile friendly gully pots to be installed Peripheral hedgerows to be retained and new brash piles to be installed on Site for further refuge.	Likely positive effect at the local level

Receptor	Potential Effect	Significance of Effect Without Mitigation	Mitigation Measures	Residual Effects
Badgers	Potential to become trapped in Site materials.	Minor adverse effect at the local level	Good working practice during construction recommended. If development does not proceed in next 12 months a re-survey for badger is recommended.	No residual effect
Bats	Night work during construction and Artificial lighting installation has potential to disturb foraging bats. Removal of trees with roosting potential reduces potential roosting provision on Site.	Minor adverse effect at the local level	Avoidance of nightwork where practicable. Lighting strategy sympathetic to nocturnal fauna required. Avoiding lighting towards the peripheral retained hedgerows and new roosting features installed across the Site. Widespread retention of optimal peripheral habitats.	No residual effect

Receptor	Potential Effect	Significance of Effect Without Mitigation	Mitigation Measures	Residual Effects
Birds	Minor loss of breeding bird habitat for common birds.	Minor adverse effect at the local level	<p>The removal of small hedgerow sections and trees should be undertaken outside of the nesting bird season (March to August inclusive). Despite this being outside the nesting season some species are known to nest all year round. As such, tree removal in this period should be preceded by a visual nonintrusive nesting check conducted by contractors.</p> <p>Where this is not possible, any works to suitable vegetation must be preceded by a nesting bird check undertaken by a Suitably Qualified Ecologist.</p> <p>Extensive new bird box provision proposed as part of development.</p>	No residual effect

Receptor	Potential Effect	Significance of Effect Without Mitigation	Mitigation Measures	Residual Effects
Hedgehogs	<p>Risk of injury during minor hedgerows 4-7 minor removal activities.</p> <p>Garden fences could result in barriers to hedgehog dispersal.</p>	Minor adverse effect at the local level	<p>Systematic clearance of suitable habitat in respect of herptiles and good working practices outlined for badger advantageous for this species.</p> <p>Hedgehog holes at base of fences to improve dispersal.</p> <p>Brash piles could provide additional refuge for this species.</p>	No residual effect

9. REFERENCES

- Bat Conservation Trust (2018) Bats and Artificial Lighting in the UK – Guidance Note 08/18.
- British Standards Institution (2013) BS42020:2013 Biodiversity – code of practice for planning and development. BSI Standards Ltd, London.
- BWB, (2021) LLR-BWB-ZZ-XX-RP-LE-0003_Biodiversity Net Gain Assessment Report
- BWB, (2020) JM/EP/LDP2222 eDNA Assessment Of Ponds Within 500m Of The Proposed Development Site to the South Of Lee Lane, Royston, South Yorkshire
- BWB, (2020) Arboricultural Impact Assessment. Land South of Lee Lane, Royston, Barnsley
- BWB, (2019) JM/EP/LDP222. Aerial Assessment Of Potential Roosting Features Of A Mature Oak In Land To The South Of Lee Lane, Royston, South Yorkshire
- BWB, (2018) Preliminary Ecological Appraisal Lee Lane, Royston LDP2222
- 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.
- Chartered Institute of Ecology and Environmental Management (2017) Guidelines for Ecological Report Writing. CIEEM, Winchester.
- Chartered Institute of Ecology and Environmental Management (2017) Guidelines for Preliminary Ecological Appraisal. CIEEM, Winchester.
- Chartered Institute of Ecology and Environmental Management (2020) Guidelines for accessing, using and sharing biodiversity data in the UK. CIEEM, Winchester.
- Collins J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust, London.
- 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.
- Joint Nature Conservation Committee (2016) Handbook for Phase 1 Habitat Survey: a technique for environmental audit. JNCC, Peterborough.
- Ministry of Housing, Communities and Local Government (2019) National Planning Policy Framework. ISBN: 978-1-4098-5302-2.
- Multi-Agency Geographic Information for the Countryside Website.
<http://www.magic.gov.uk/>
- Stace, C.S. (2019) New Flora of the British Isles, 4th edition. University Press, Cambridge.

APPENDICES

Appendix 1: Relevant Legislation

The following text provides information on the key legislation, which is applicable to this survey.

The main wildlife legislation relevant in the UK is as follows:

European Legislation

The relevant sections of the EC Directives and international conventions are summarised below:

- EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitat Directive 1992) as amended (92/43/EEC)

The Directive requires Member States to introduce a range of measures including the protection of species listed in the Annexes. The 189 habitats listed in Annex I of the Directive and the 788 species listed in Annex II, are to be protected by means of a network of sites. Once adopted, these are designated by Member States as Special Areas of Conservation (SACs), and along with Special Protection Areas (SPAs) classified under the EC Birds Directive. The Habitats Directive introduces the precautionary principle; that disturbance to the designated sites can only be permitted having ascertained no adverse effect on the integrity of the Site.

- EC Directive on the Conservation of Wild Birds (Birds Directive 1979) as amended (79/409/EEC)

The main provisions of the Directive includes; the maintenance of the favorable conservation status of all wild bird species across their distributional range.

- Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979)

The Convention imposes legal obligations on contracting parties, protecting over 500 wild plant species and more than 1000 wild animal species.

UK Legislation

The sections of UK legislation considered to be of relevance include:

- The Conservation (Natural Habitats, and c.) Regulations (Amendment) (EU Exit) 2019 (as amended)

This transposes the Habitats Directive into national law. The Regulations provide for the designation and protection of 'European sites', and the protection of 'European protected species.

- The Wildlife and Countryside Act 1981 (as amended) (WCA)

This consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive) in Great Britain.

- The Countryside and Rights of Way Act 2000 (CRoW)

This act strengthens wildlife enforcement legislation.

- The Protection of Badgers Act 1992

This act affords protection to badgers and their setts including the destruction or obstructing access to a sett.

- Wild Mammals Protection Act 1996

This act provides protection to all wild species of mammal in the UK and is more related to mammal welfare but is directly applicable during any site clearance or other works to a site which could harm mammals.

- Natural Environment and Rural Communities Act 2006 (NERC Act)

This act formed Natural England which places a duty on all public authorities, including local planning authorities to consider biodiversity. This Act also requires a list of species of habitats composed by the Secretary of State to help provide specific conservation targets. These species are known as Priority Species or Species of Principal Importance (SPI). These habitats are known as Priority habitats or Habitats of Principal Importance (HPI). Both SPI and HPI are listed under Section 41 of this Act. The NPPF also affords protection to these HPI's and SPI's.

- UK Post-2010 Biodiversity Framework

In addition, species and habitats listed on the UK Post-2010 Biodiversity Framework (formally the UK BAP) are also considered. Details on these species and habitats can be found at: <http://jncc.defra.gov.uk/page-5705>.

Species-Specific Legislation

Species specific legislation is provided in the Table below:

Species-Specific Wildlife Legislation

Plants	Sch. 8 Wildlife and Countryside Act 1981 (as amended) Some species are SPI - Section 41 NERC Act.	<ul style="list-style-type: none"> • Pick; • Uproot; • Trade; • Possess (for trade) any wild plant listed.
Breeding birds	Wildlife and Countryside Act 1981 (as amended).	<ul style="list-style-type: none"> • Kill; • Injure; • Take; any wild bird, their eggs or nest (with the exception of those on Sch. 2).
Specially protected birds	Sch. 1 Wildlife and Countryside Act 1981 (as amended).	As above but includes: <ul style="list-style-type: none"> • Disturbing birds at their nest, or their dependent young.

Badgers	The Protection of Badgers Act 1992.	<ul style="list-style-type: none"> • Wilfully kill, injure, take, or cruelly ill-treat a badger, or attempt to do so; • Possess any dead badger or any part of, or anything derived from, a dead badger; • Intentionally or recklessly interfere with a sett by disturbing badgers whilst they are occupying a sett, damaging or destroying a sett, causing a dog to enter a sett, or obstructing access to it. <p>A badger sett is defined in the legislation as "any structure or place, which displays signs indicating current use by a badger".</p>
Bats	<p>Sch. 5 Wildlife and Countryside Act 1981 (as amended).</p> <p>Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019 (as amended).</p>	<ul style="list-style-type: none"> • Intentionally or deliberately kill, injure or capture (or take) bats; • Deliberately disturb bats (whether in a roost or not); • Recklessly disturb roosting bats or obstruct access to their roosts; • Damage or destroy bat roosts.
Common reptiles	<p>Sch. 5 Wildlife and Countryside Act 1981 (as amended).</p> <p>Countryside and Rights of Way Act 2000.</p>	<p>Deliberate or reckless:</p> <ul style="list-style-type: none"> • Killing; • Injuring • Sale.
Common amphibians	<p>Sch. 5 and Sch. 9 Wildlife and Countryside Act 1981 (as amended).</p> <p>Countryside and Rights of Way Act 2000.</p>	<ul style="list-style-type: none"> • Sell; • Transport; and • Advertise for sale.
Great crested newt	<p>Sch. 5 Wildlife and Countryside Act 1981 (as amended).</p> <p>Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019 (as amended).</p>	<ul style="list-style-type: none"> • Kill; • Injure; • Disturb • Destroy or obstruct access to any place used for rest or shelter.
Hedgehogs	SPI – Section 41 NERC Act Wild Mammals Protection Act 1996.	Protection from harm, injury Intent to harm.
Other mammals	Wild Mammals Protection Act 1996.	Protection from harm, injury Intent to harm.
Invasive species (animal and plant)	Sch. 9 Wildlife and Countryside Act 1981 (as amended).	<p>Release of any animal, plant or microorganism not native to the UK.</p> <p>Sale.</p> <p>Cause or allow to spread.</p>

Protected Sites

A network of protected sites, at varying levels, have been put in place across the UK. Further details are provided below;

International Importance

- Natura 2000

Natura 2000 is the name of the European Union-wide network of nature conservation-sites established under the EC Habitats and Birds Directives. This network will comprise Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

- Special Areas of Conservation (SAC)

SACs are designated under the EC Habitats Directive. The Directive applies to the UK and the overseas territory of Gibraltar. SACs are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs in terrestrial areas and territorial marine waters out to 12 nautical miles are designated under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). New and/or amended Habitats Regulations are shortly to be introduced to provide a mechanism for the designation of SACs and SPAs in UK offshore waters (from 12-200 nm).

National Importance

- Sites of Special Scientific Interest (SSSI)

The SSSI series has developed since 1949 as the national suite of sites providing statutory protection for the best examples of the UK's flora, fauna, or geological or physiographical features. Most SSSIs are privately-owned or managed; others are owned or managed by public bodies or non-government organisations. The SSSIs designation may extend into intertidal areas out to the jurisdictional limit of local authorities, generally Mean Low Water in England and Northern Ireland; Mean Low Water of Spring tides in Scotland. In Wales, the limit is Mean Low Water for SSSIs notified before 2002, and, for more recent notifications, the limit of Lowest Astronomical Tides, where the features of interest extend down to LAT. There is no provision for marine SSSIs beyond low water mark. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs have been renotified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and the Nature Conservation (Scotland) Act 2004.

Regional/Local Importance

- Wildlife Sites

Local authorities for any given area may designate certain areas as being of local conservation interest. The criteria for inclusion, and the level of protection provided, if any, may vary between areas. Most individual counties have a similar scheme, although they do vary.

These sites, which may be given various titles such as 'Listed Wildlife Sites' (LWS), 'County Wildlife Sites' (CWS), 'Local Nature Conservation-sites' (LNCS), 'Sites of Importance for Nature Conservation' (SINCs), or 'Sites of Nature Conservation Importance' (SNCIs), together with statutory designations, are defined in local and structure plans under the Town and Country Planning system and are a material consideration when planning applications are being determined.

Appendix 2: Extended Phase 1 Habitat Plan

Appendix 3: Site Photographs



Photograph 1: Pond 1 in 2020



Photograph 2: Pond 2 in 2020



Photograph 3: Pond 3 in 2020



Photograph 4: Pond 5 in 2020



Photograph 5: Pond 6 in 2020



Photograph 6: Site Context 2021



Photograph 7: Site Context 2021



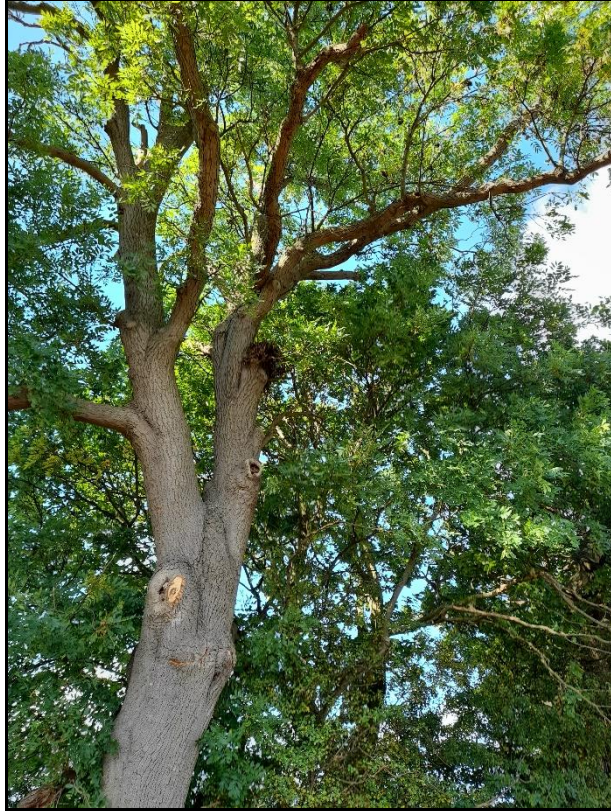
Photograph 8: Tree 1



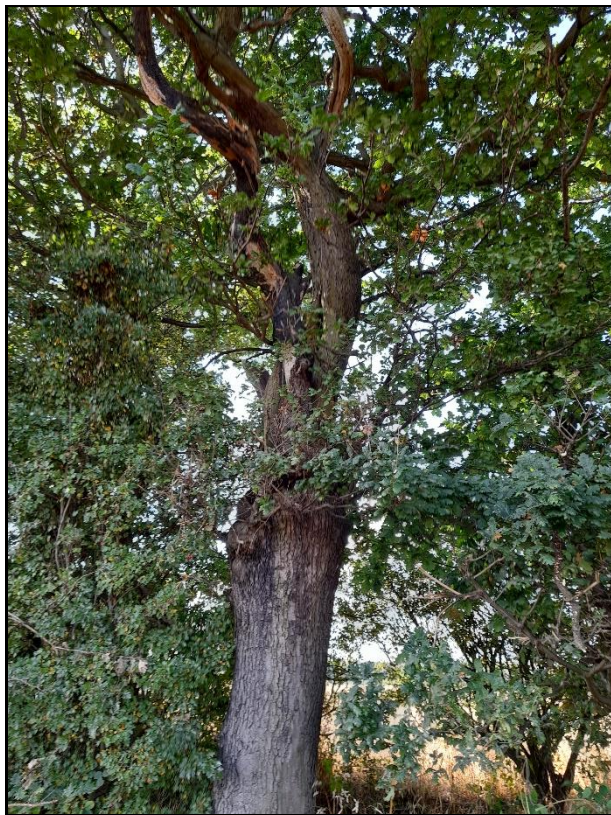
Photograph 9: Tree 43



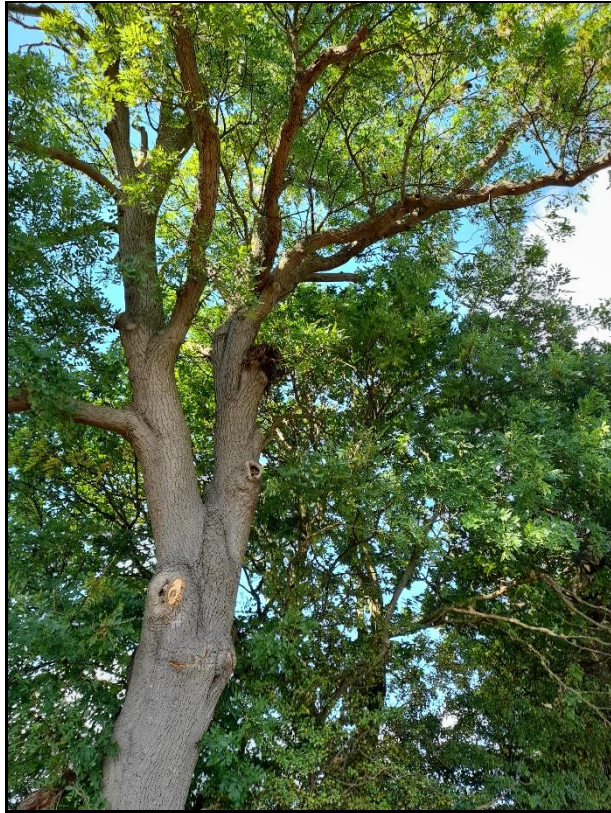
Photograph 10: Tree 56



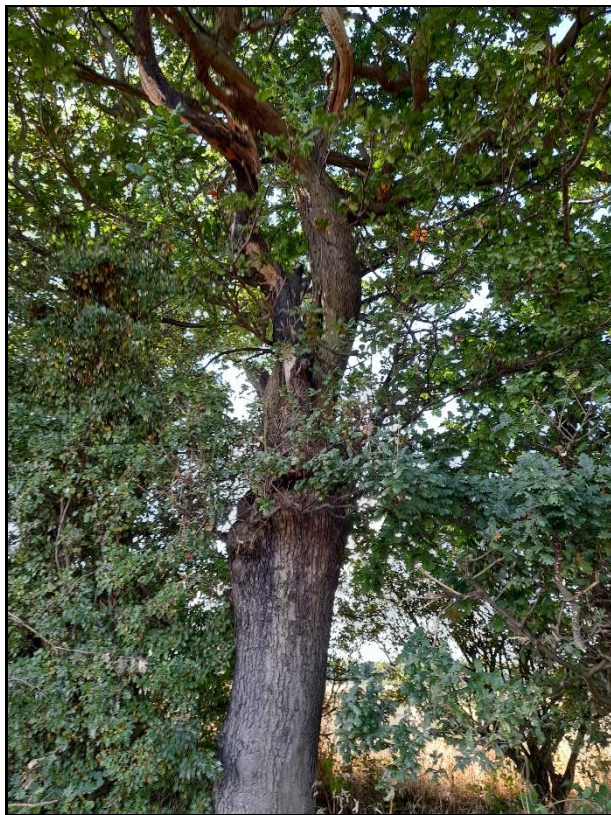
Photograph 11: Tree 47



Photograph 12: Tree 49



Photograph 11: Tree 47



Photograph 12: Tree 49



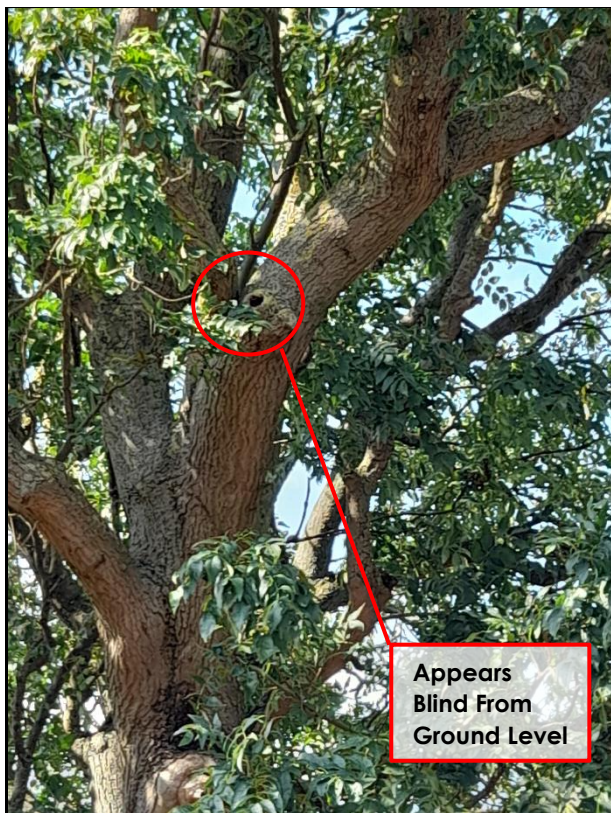
Photograph 13: Tree 60



Photograph 14: Tree 61



Photograph 15: Tree 62



Photograph 16: Tree 63

