

ENVIRONMENT

Avant Homes (England) Ltd
Calver Close
Dodworth
Ecological Impact Assessment

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Ecological Impact Assessment

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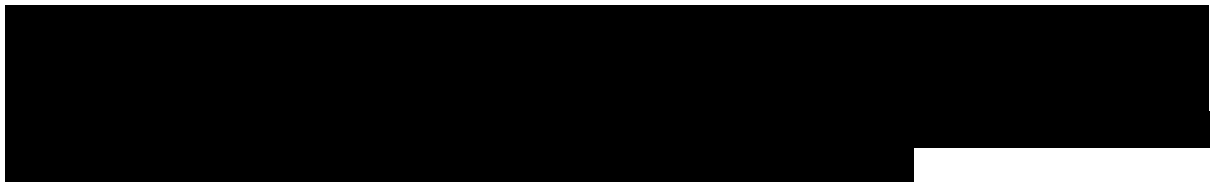
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EXECUTIVE SUMMARY

This Ecological Impact Assessment (EclA) has been undertaken on behalf of Avant Homes (England) Ltd in respect of the Site at Calver Close, Dodworth. It has been produced to accompany a planning application for a residential development.

The habitats on-site primarily comprised improved grassland and arable fields of low ecological value likely to be common in the wider area. No rare or notable habitats or botanical species were noted and there were no habitats of principle importance recorded with the exception of two short lengths of native hedgerow along the boundary of the Site which are to be retained.

There were limited opportunities for amphibians on-Site including great crested newt (GCN). Suitable ponds within 500m were surveyed for the presence of GCN environmental DNA and provided a negative result.



Only common bird species were recorded during the Extended Phase 1 Habitat Survey. Given the small area and the habitats, an important assemblage was considered unlikely to be present. Other than best practice working methods such as conducting vegetation clearance outside of the breeding bird season, no mitigation work is recommended with respect to breeding birds. Bird boxes should be included in the final scheme.

The habitat on-Site was small in area, homogenous in nature, and lacked in refugia, hibernacula, egg laying material or areas of open undisturbed ground suitable for reptiles. No mitigation work or compensation is recommended with respect to reptiles.

Potential roosting opportunities for bats were recorded within boundary mature trees which are understood to be retained and protected. A suite of bat activity surveys highlighted low numbers of common species utilising the boundary habitats for foraging and commuting. The boundary habitats will be retained and protected.

The boundary vegetation in the northeast corner of the site offered some opportunities for roosting, foraging and commuting bats. However, it is understood that this area will be retained, and a buffer will be maintained.

Any new lighting associated with the development should follow best practice guidelines outlined in Bats and Artificial Lighting in the UK (Bat Conservation Trust, 2018) to maintain suitable foraging habitats, particularly along the woodland edge to the south of the Site.

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1. INTRODUCTION

Instruction

- 1.1 This Ecological Impact Assessment (EclA) has been undertaken on behalf of Avant Homes (England) Ltd in respect of the Site at Calver Close, Dodworth. It has been produced to accompany a planning application for a residential development.

Site Description

- 1.2 The Site comprised two parcels of land located off Calver Close, Dodworth and is centred on grid reference SE3224404387 as shown in **Figure 1.1**.

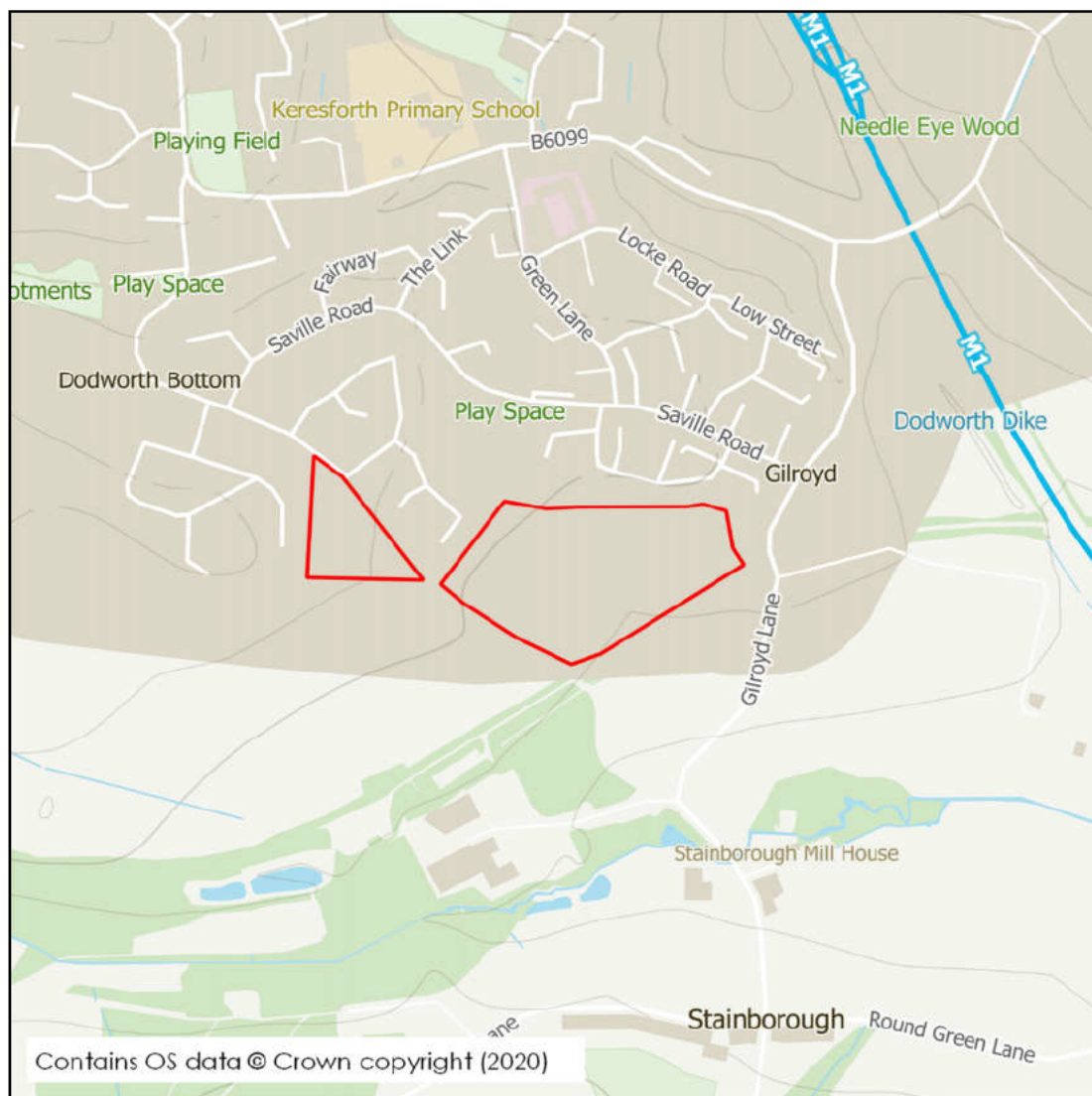


Figure 1.1: Site Location Plan

The Project

- 1.3 The proposals are understood to comprise of a residential development with associated roads and open greenspace.

Objectives

- 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 with a number of protected species surveys also recommended. 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

- 1.6 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;
 - [REDACTED]
 - 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, 2021) 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 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”.*

1.11 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”.*

1.12 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"

1.13 Additionally, the Barnsley Local Plan Supplementary Planning Document on Biodiversity and Geodiversity (Adopted May 2019) supplements the following Local Plan Policies:

"Policy BIO1 Biodiversity and Geodiversity

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 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.
- 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.
- 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.
- Protecting ancient and veteran trees where identified.
- Encouraging provision of biodiversity enhancements.

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.

Development which adversely affects a European Site will not be permitted unless there is no alternative option and imperative reasons of overriding public interest (IROPI).

Policy GI1 Green Infrastructure

We will protect, maintain, enhance and create an integrated network of connected and multi-functional Green Infrastructure assets that:

- Provides attractive environments where people want to live, work, learn, play, visit and invest.
- Meets the environmental, social and economic needs of communities across the borough and the wider City Regions.
- Enhances the quality of life for present and future residents and visitors; •Helps to meet the challenge of climate change.
- Enhances biodiversity and landscape character.
- Improves opportunities for recreation and tourism.
- Respects local distinctiveness and historical and cultural.
- Maximises potential economic and social benefits.
- Secures and improves linkages between green and blue spaces.

At a strategic level Barnsley's Green Infrastructure network includes the following corridors:

- River Dearne Valley Corridor.
- River Dove Valley Corridor.
- River Don Valley Corridor.
- Dearne Valley Green Heart Corridor.
- Historic Landscape Corridor.

The network of Green Infrastructure will be secured by protecting open space, creating new open spaces as part of new development, and by using developer contributions to create and improve Green Infrastructure We have produced a Green Infrastructure Strategy for Barnsley which is informed by the Leeds City Region and South Yorkshire Green Infrastructure Strategies.

Policy GS1 Green Space

We will work with partners to improve existing green space to meet the standards in our Green Space Strategy. Green Spaces are green open areas which are valuable for amenity, recreation, wildlife or biodiversity and include types such as village greens, local open spaces, country parks, formal gardens, cemeteries, allotments, woodlands, recreation grounds, sports pitches and parks.

Proposals that result in the loss of green space, or land that was last used as green space, will not normally be allowed unless:

- An assessment shows that there is too much of that particular type of green space in the area which it serves, and its loss would not affect the existing and potential greenspace needs of the borough; or
- The proposal is for small scale facilities needed to support or improve the proper function of the green space; or
- An appropriate replacement green space of equivalent or improved quality, quantity and accessibility is provided which would outweigh the loss.

In order to improve the quantity, quality and value of green space provision we will require qualifying new residential developments to provide or contribute towards green space in line with the standards set out in the Green Space Strategy and in accordance with the requirements of the Infrastructure and Planning Obligations Policy. The

Supplementary Planning Document 'Open Space Provision on New Housing Developments' offers guidance to developers on what will be expected in terms of open space provision in order to achieve those standards.

- 1.14 *Where there is a requirement to provide new green space an assessment will be carried out to determine the most appropriate provision, taking into account site characteristics and constraints. In cases where it is deemed unsuitable to make provision for open space within or adjacent to a development site, suitable off-site open space facilities may be acceptable either as new facilities or improvements to those existing. Where appropriate new green space should secure access to adjacent areas of countryside."*

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 Records Centre 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.
- 2.4 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 2021).
- 2.5 A summary of these consultations is contained in **Table 2.1**.

Table 2.1: Outcome of Consultations

Consultee and Date of Correspondence	Non-Statutory or Statutory	What was the Consultation Regarding	Outcome of Consultation	Method of Communication
Barnsley Biological Records Centre – February 2021	Non-Statutory	The location of non-statutory and statutory sites and the presence of protected and notable species within 2km radius	Identification of 6 within 2km. A number of protected species records were returned as detailed later in the report.	Via website and emails
Multi Agency Geographic Information for the Countryside (MAGIC) – October 2021]	Statutory	The location of statutory sites	Identification of 2 Sites within 2km.	Website

Extended Phase 1 Habitat Survey

- 2.6 A Site survey was undertaken on 12th March 2021 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).
- 2.7 The visit was completed using Phase 1 habitat survey techniques as defined in the standard methodology (JNCC, 2016).
- 2.8 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.
- 2.9 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) *Triturus cristatus*;
 - Reptiles;
 - [REDACTED];
 - Priority Species, such as hedgehog *Erinaceus europaeus*.
- 2.10 Standard methodologies were used where applicable.

- 2.11 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.

Amphibian Survey

- 2.12 An Environmental DNA (eDNA) Survey to identify the presence/absence of GCN was carried out on a number of pond within 500m of the Site.
- 2.13 Timescales for eDNA are very specific with a single visit to the target pond made between mid-April and end-June, inclusively, during the newt breeding season. eDNA samples can be collected at any time of day and in any reasonable weather conditions, including light rain. Field data was recorded on standard survey forms at the point of sampling. Samples were analysed by SureScreen Scientifics Division Ltd in accordance with approved laboratory protocols.
- 2.14 A daytime site visit was made to the ponds on 15th April 2020 by Chris Grocock MSc BSc (Hons) ACIEEM. Using a sterile sampling kit provided by the analysis laboratory (SureScreen Scientifics Division Ltd), six water samples were taken from each pond. The samples were taken to the laboratory on the same day. Water sampling and the storage of the samples followed the approved field protocol.

Bat Activity - Transects

- 2.15 In line with current industry standards (Collins, 2016) for a Site assessed with moderate potential to support foraging and commuting bats, one transect per month was conducted each lasting at least 2 hours. Dusk surveys began at sunset and dawn surveys ended at sunrise as detailed in **Table 2.2**. The transect Route and five-minute point count locations are shown in **Figure 2.1**.
- 2.16 Each transect was walked by two surveyors with either an AnaBat Express or Elekon Batlogger. Sound files were analysed using AnalookW or Bat Explorer software. In line with standard guidance, one transect visit comprised a dusk and a dawn survey in one night. Surveys were led by either Chris Grocock (2016-24827-CLS-CLS) or Ben McClean (2016-24500-CLS-CLS) and assisted by Amy Dowers BSc (Hons) ACIEEM and Phillipa Mahalski MSc BSc (Hons). All surveyors were appropriately qualified for surveys in line with CIEEM competences for species surveys (CIEEM, 2017).

Table 2.2: Transect Survey Dates and Conditions

Survey Visit	Date	Start Time	End Time	Sunset / Sunrise	Weather Conditions		
						Start:	Finish:
April	28.04.2021	20:30	22:30	20:30	Temperature:	10°C	7°C
					Wind:	2	2
					Cloud cover:	10%	80%
May	17.05.2021	21:03	23:03	21:03		Start:	Finish:
					Temperature:	14°C	11°C
					Wind:	1	1
June	02.06.2021	21:26	23:26	21:26	Cloud cover:	10%	10%
						Start:	Finish:

Survey Visit	Date	Start Time	End Time	Sunset / Sunrise	Weather Conditions		
					Temperature:	16.5°C	15°C
					Wind:	3	3
					Cloud cover:	50%	100%
July	26.07.2021	21.13	23.13	21.13		Start:	Finish:
					Temperature:	21°C	19°C
					Wind:	0	1
August	18.08.2021	20.28	22.28	20.28		Start:	Finish:
					Temperature:	16°C	16°C
					Wind:	3	3
September	22.09.2021	19.06	21.06	19:06		Start:	Finish:
					Temperature:	15°C	13°C
					Wind:	0-1	0-1
October (Dusk)	12.10.2021	18.16	20.16	18.16		Start:	Finish:
					Temperature:	13°C	12°C
					Wind:	01-Feb	01-Feb
October (dawn)	13.10.2021	05.28	07.28	07.28		Start:	Finish:
					Temperature:	11°C	9°C
					Wind:	2	2
					Cloud cover:	100%	100%

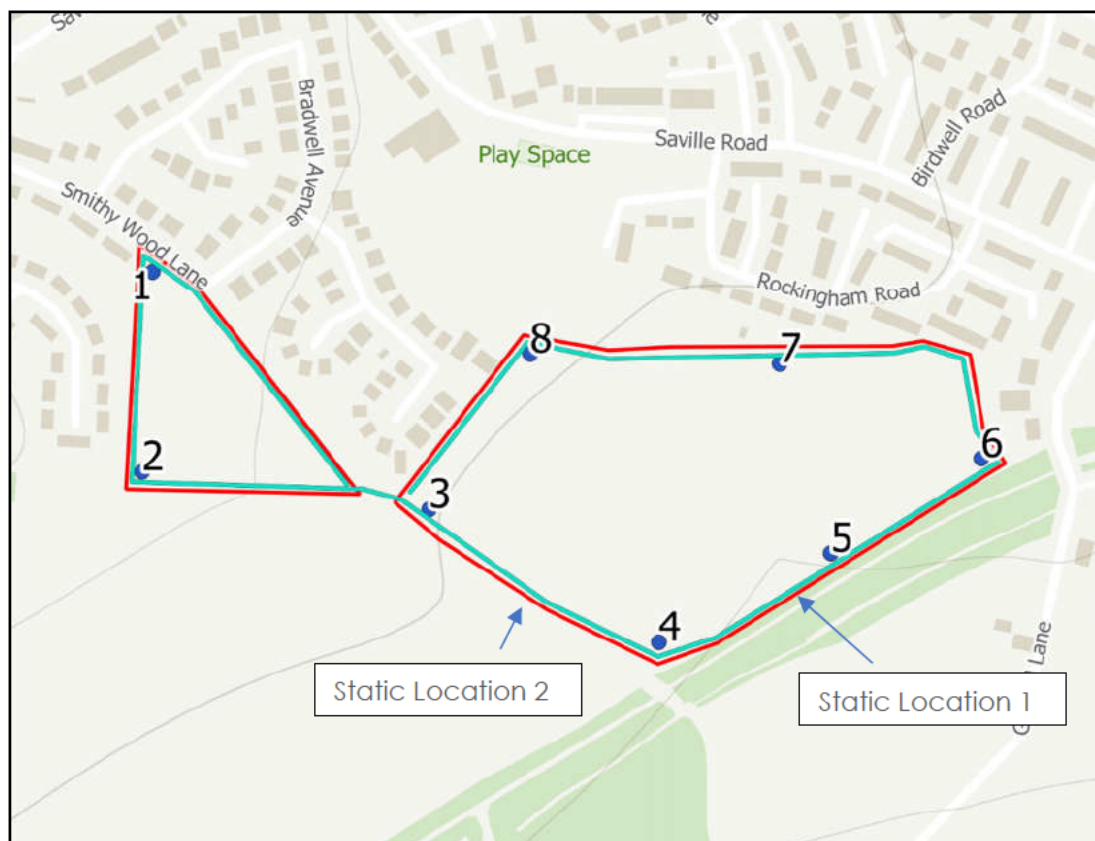


Figure 2.1: Transect Route and Point Counts

Bat Activity – Static Monitoring

- 2.17 Two Anabat Express passive static bat detectors were deployed at Location 1 and Location 2 as shown in **Figure 2.1**. Both locations comprised of woodland edge. All other locations were considered unsuitable due to the likelihood of the detectors to be found by local residents; however, the locations in which the detectors were deployed offered the most suitable habitat for foraging and commuting. The detectors were deployed for a minimum of five consecutive nights each month between April and October 2020. All detectors were left in situ for the same period of time and therefore allow direct comparison between each month's recordings.

Survey Comments

- 2.18 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.
- 2.19 All surveys were conducted in line with standard guidance at the optimal times of year. One pond was inaccessible; this was not considered to be a significant constrain as detailed within the **Section 3: Amphibians**.

Assessment

- 2.20 The Ecological Impact Assessment has been undertaken following guidelines provided by CIEEM (CIEEM, 2019).
- 2.21 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).
- 2.22 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).
- 2.23 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.
- 2.24 The potential for mitigation and enhancement measures were then considered to avoid, reduce or compensate for any significant adverse effects, where possible.
- 2.25 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

2.26 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

- 3.1 There are two statutory designated sites present within 2km of the Site boundary:
- 3.2 Dearne Valley Wetlands Site of Special Scientific Interest (SSSI) comprises large areas of open water and associated wetland and woodland habitat within the catchment of the River Dearne. It is of special interest for its nationally important numbers and assemblages of breeding and non-breeding birds. It is located approximately 1.5km southeast of the Site.
- 3.3 Worsborough Country Park Local Nature Reserve (LNR) includes a reservoir, willow carr, managed grassland, reed bed and woodland. It is located approximately 1.5km southeast of the Site.
- 3.4 The Site is within a SSSI risk zone. The development type is not included within a risk category. There are no European designations within 10km of the Site boundary.
- 3.5 **Table 3.1** lists the Local Wildlife sites located within 2km of the Site. Local Wildlife sites are non-statutory sites and are a material consideration in the planning process.

Table 3.1: Non-Statutory Sites

Site Name	Approximate Distance and Direction from Site
Faithwaite and Lowe Wood	0.2km southwest
Stainbrough Park	0.6km south
Hood Green Pastures	1.25km southwest
Kendal Green Scrub	1.5km southeast
Worsborough Reservoir	1.5km southeast
Silkstone Fall Wood	1.75km northwest

Habitats and Botanical Species

- 3.6 The Extended Phase 1 Habitat Survey Results Map with is provided in **Appendix 2** with accompanying habitat descriptions below. Relevant photographs are shown in **Appendix 3**. Botanical species nomenclature follows Stace (2019).
- 3.7 The Site comprised two improved grassland fields with a sward height of up to 15cm having previously been utilised for arable farming (unknown crop). Vegetation was dominated by perennial ryegrass *Lolium perenne* with some cock's-foot *Dactylis glomerata*, Timothy *Phleum pratense*, occasional creeping buttercup *Ranunculus repens* and broadleaved dock *Rumex angustifolium*.

- 3.8 A short length of dry ditch was present adjacent to the northern boundary which supported the same species as the grassland as well as rosebay willowherb *Chamerion angustifolium*.
- 3.9 Site boundaries largely comprised fences and non-native hedges associated with gardens with some short lengths of dilapidated dry-stone wall. There were two short lengths of hawthorn *Crataegus monogyna* dominated hedgerows up to 2m high and 1m wide.
- 3.10 To the immediate south of the Site was a linear block of semi-natural broadleaved woodland associated with public footpaths.
- 3.11 Several mature trees were present within the Site boundaries comprising ash *Fraxinus excelsior* and oak *Quercus* sp. Along the western boundary of the larger field were areas of scattered scrub, primarily comprising bramble *Rubus fruticosus* but also including some ornamental garden escapees.
- 3.12 No species listed as Invasive Species on the Wildlife and Countryside Act 1981 (as amended) were recorded.

Amphibians

- 3.13 The habitats were largely sub-optimal to support amphibians as they lacked in refugia, hibernacula or aquatic habitat. However, the grassland, scattered scrub and the dry ditch did provide suitable foraging habitat and vegetative cover. There were no desk study records of amphibians within 500m of the Site within the last ten years.
- 3.14 A search of OS maps and aerial photography revealed seven ponds within 500m of the Site as shown in **Figure 3.1**. Ponds 1-2 were discounted as Stainbrough Dyke, a significant dispersal barrier, flowed between the ponds and the Site. Ponds 3-5 and 7 were surveyed for GCN using eDNA sampling, all of which returned a negative result as shown in **Appendix 4**. It was not possible to access Pond 6; Pond 6 was within a water treatment works and fenced to prevent people accessing it due to the hazardous water quality. It was considered due to the quality of the water, and the fact that none of the adjacent ponds with better water quality supported GCN, it was reasonable to assume that Pond 6 was also highly unlikely to support GCN.
- 3.15 GCN were considered highly unlikely to be present on-site and are not considered further within this report.

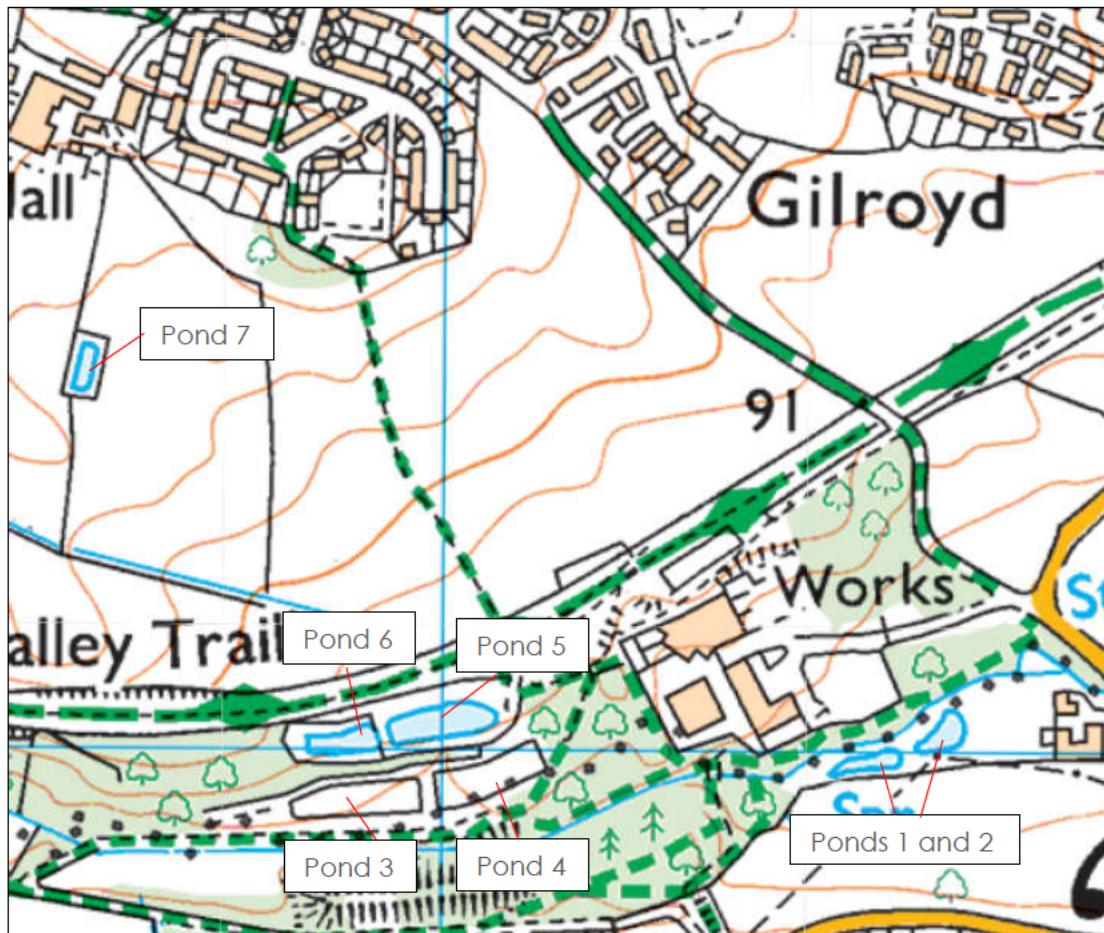


Figure 3.1: Pond Locations

3.16

Bats

- 3.17 No man-made structures were present on-Site such as buildings. However, the trees within and adjacent to the Site boundaries contained features such as cracks, lifted bark and rot holes which could support roosting bats. These were classed as having high potential to support roosts.
- 3.18 Whilst the grassland on-Site was unlikely to attract a large abundance of insect prey, the Site boundaries, particularly the woodland to the south, offered opportunities for foraging and commuting bats due to the presence of both linear features and edge

habitat currently not affected by artificial lighting. Overall, the Site was considered to provide moderate potential for foraging and commuting bats (Collins, 2016) and was subject to monthly walked transects and static monitoring in line with current industry standards. The results of the static monitoring and transects are outlined below.

Bats – Activity - Static Monitoring

- 3.19 A total of 2,994 bat passes were recorded during the survey period, comprising at least six species. Bats of the *Myotis* genus have been grouped together owing to difficulties in identifying calls to species level. The three large bat species, noctule *Nyctalus noctula*, Leisler's *Nyctalus leisleri* and serotine *Eptesicus serotinus* have been grouped together as 'big bats' for similar reasons. Other bats recorded were brown long-eared *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*. The results are summarised in **Table 3.2**.

Table 3.2: Total number of bat recordings by species across the Site

Bat Species	Total No. of Passes per Species	% Total Bat Passes per Species
Big bat	23	0.77
Brown long-eared	4	0.13
Common pipistrelle	2363	78.92
<i>Myotis</i> species	154	5.14
Pipistrelle species	66	2.20
Soprano pipistrelle	384	12.83

- 3.20 Overall, common pipistrelles were the most frequently recorded bat species, accounting for approximately 79% of the total recordings closely followed by soprano pipistrelle accounting for approximately 13% of the total recordings. Pipistrelle species combined accounted for nearly 94% of the total bat recordings for the Site. When reviewing the data broken down over the two locations it is clear that there was a larger volume of activity at Location 2 as shown in **Table 3.3**.

Table 3.3: Summary of the Total & Percentage of Passes per Species, per Location

Species	Location 1		Location 2	
	Passes	%	Passes	%
Big bat	16	1.48	7	1.48
Brown long-eared	4	0.37	0	0.37
Common pipistrelle	872	80.44	1491	80.7
<i>Myotis</i>	36	3.32	118	3.32
Pipistrelle sp.	7	0.65	59	0.65

Soprano pipistrelle	149	13.75	235	13.75
Total Passes	1084		1910	

- 3.21 The total number of bat passes recorded in each month in both Locations is shown in **Table 3.4: Bat passes by month**. Over half of the calls recorded in Location 1 were recorded in April whereas the vast majority calls recorded in Location 2 were recorded in September and October.

Table 3.4: Bat passes by month

Species	Location 1		Location 2	
	Passes	%	Passes	%
April	616	56.83	61	3.19
May	46	4.24	27	1.41
June	90	8.30	32	1.68
July	35	3.23	49	7
August	155	14.30	21	1.10
September	39	3.60	657	34.40
October	103	9.50	1063	55.65

- 3.22 Across the monitoring periods bats were generally recorded throughout the whole night. No clear concentration of calls was identified which may highlight close proximity of a nearby roost.
- 3.23 It is assumed that given the habitats present on-Site, that the number of brown long-eared bat calls detected does not represent a true reflection of this species use of the Site given the very limited call detection range associated with this species. Brown long-eared bats are also known to not echolocate at times when commuting and foraging and therefore would not necessarily be recorded during the static monitoring periods.
- 3.24 Bat species identified during the monitoring period are considered to be typical for the area, with all species considered to be relatively common at the county level.
- 3.25 Calls recorded indicated both foraging and commuting behaviour during the monitoring periods and at times more than one bat as well as more than one species were recorded within the same file recording, however the majority of calls were indicative of a single bat in flight.
- 3.26 Activity levels were considered to be typical for the area given the range of habitats present within the Site. The Site boundaries comprise strong, linear features which clearly provide commuting routes for bats within the Site and wider area.

Bats – Activity – Transects

- 3.27 Bat Activity Transect results are summarised below. The majority of activity was recorded along the woodland edge (c. 66%) which is to be expected given the higher quality of the habitat for foraging and strong well defined edge habitat for commuting. As with the results of the static monitoring, the vast majority of the calls comprised of *Pipistrelle* sp.

Table 3.5: April Transect Results

Location on Site	Time	Species	Comments
Stop 6	21:09	Common pipistrelle	Single pass

Table 3.6: May Transect Results

Location on Site	Time	Species	Comments
Stop 1	21.08	Common pipistrelle	Heard not seen
Stop 3	21.25	Common pipistrelle	2 bats seen
Stop 4	21.33	Soprano pipistrelle	Heard not seen
Stop 7	21.55	Common pipistrelle	Heard not seen
Stop 2	22.15	Common pipistrelle	Several passes
Stop 3	22.24	Common pipistrelle	Heard not seen

Table 3.7: June Transect Results

Location on Site	Time	Species	Comments
Corridor 3	21.42	Common pipistrelle	Foraging
Corridor 3	21.44	Common pipistrelle	Foraging
Stop 4	21.52	Common pipistrelle	Heard not seen
Stop 5	21.56	Common pipistrelle	Heard not seen
Corridor 4	22.01	Noctule	Heard not seen
Stop 6	22.02	Myotis sp.	Heard not seen
Stop 8	22.17	Myotis sp.	Foraging
Stop 3	22.45	Common pipistrelle	Heard not seen
Stop 4	22.57	Myotis sp.	Heard not seen
Stop 5	23.00	Myotis sp.	Heard not seen

Stop 6	23.09	Myotis sp.	Heard not seen
Stop 8	23.26	Common pipistrelle	Heard not seen
Corridor 2	23.30	Common pipistrelle	Heard not seen

Table 3.8: July Transect Results

Location on Site	Time	Species	Comments
Corridor 1	21.38	Noctule	Heard not seen
Stop 3	21.40	Common pipistrelle	Heard not seen
Stop 4	21.53	Common pipistrelle	Heard not seen
Stop 5	21.54	Common pipistrelle	Heard not seen
Stop 6	22.02	Common and soprano pipistrelle	Several passes
Stop 8	22.17	Common pipistrelle	Heard not seen
Stop 2	22.33	Common pipistrelle	Heard not seen
Stop 5	22.50	Noctule	Heard not seen
Stop 6	22.56	Common pipistrelle	Heard not seen
Stop 7	22.03	Common pipistrelle	Heard not seen

Table 3.9: August Transect Results

Location on Site	Time	Species	Comments
Corridor 2	20.48	Common pipistrelle	Heard not seen
Stop 3	20.50	Common pipistrelle	Heard not seen
Corridor 3	20.58	Common pipistrelle	Heard not seen
Corridor 4	21.17	Soprano pipistrelle	Foraging, several passes
Corridor 5	21.52	Common pipistrelle and noctule	Foraging
Corridor 1	22.04	Soprano pipistrelle	Heard not seen
Corridor 4	22.16	Noctule	Heard not seen
Corridor 4	22.23	Common pipistrelle	Heard not seen

Table 3.10: September Transect Results

Location on Site	Time	Species	Comments
Corridor 2	19.29	Common pipistrelle	Heard not seen
Stop 3	19.38	Common pipistrelle	Heard not seen
Stop 4	19.46	Common pipistrelle	Heard not seen

Table 3.11: October Dusk Transect Results

Location on Site	Time	Species	Comments
Stop 5	22.17	Common pipistrelle	Foraging

Table 3.12: October Dawn Transect Results

October - Location on Site	Time	Species	Comments
No bats recorded			



Black numbers refer to Stopping Points. Red numbers indicate commuting/foraging corridors.

Figure 3.2: Commuting and Foraging Corridors and Stopping Points

Birds

- 3.28 Only common bird species were recorded on-Site during the initial preliminary ecological appraisal survey and included chaffinch *Fringilla coelebs* and wood pigeon *Columba palumbus*. Whilst the Site offered some opportunities for foraging and breeding birds, an important assemblage was considered unlikely given the habitats present and the size of the Site. Again, the boundary habitats offered the best opportunities including scattered scrub, mature trees and hedgerows.

Reptiles

- 3.29 The habitats on the Site were considered sub-optimal to support reptiles comprising homogenous habitats, well managed and largely lacking in suitable refugia, vegetative cover or undisturbed basking areas. Furthermore, there were no suitable egg laying

opportunities such as vegetation piles or compost heaps. The closest desk study record was a grass snake *Natrix helvetica* approximately 0.85km south of the Site. Reptiles were considered highly unlikely to be present on-Site and are not considered further within this report.

Hedgehogs

- 3.30 The Site provided opportunities for hedgehogs which may cross the Site and there were records of this species within 2km of the Site.

Other Species

- 3.31 Due to the habitats present, the Site was considered unlikely to support any other protected or notable 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 the designated sites are considered highly unlikely due to the nature of the works and the distance of the Site from the designations, the closest being approximately 200m from the Site.

Habitats

- 4.3 The habitats on-Site were largely of low ecological value and common in the wider area. No notable flora were recorded on-Site, and no Habitats of Principle Importance were recorded with the exception of the boundary hedgerows. The boundary hedgerows qualify as they comprise over 80% native woody species. However, it is understood that the boundary habitats including the mature trees will be retained and protected during the works in line with measures outlined in BS5837:2021 trees in relation to design, demolition and construction: recommendations. Therefore, no significant impacts are envisaged.

Protected Species

[REDACTED]

4.4

[REDACTED]

Bats

- 4.5 It is understood that all mature trees, including those identified as having potential to support roosting bats, will be retained and protected from both damage and disturbance including, for example, operational phase lighting.
- 4.6 All boundary habitats are to be retained and protected with a suitable buffer. Whilst the works have the potential to increase disturbance from lighting during operational phase, the bulk of the species recorded were common and relatively tolerant of light disturbance. Impacts to foraging and commuting bats would be considered a permanent minor adverse effect significant at the Local Level.

Birds

- 4.7 Whilst significant assemblages of breeding birds was considered unlikely to be present on-site, there is the potential for birds to be disturbed or harmed during vegetation clearance, including ground clearance. This would be a temporary minor adverse effect significant at the Local level.

Hedgehogs

- 4.8 Hedgehogs that may cross the Site could become injured in open excavations during the construction phase. This would be a temporary minor adverse effect significant at the Local level.

Nature Conservation Evaluation

- 4.9 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 – none present within 10km	NA	No
Nationally Designated Sites	Yes	No – due to the distance of the Site from the designations and the nature of the works.	NA	No
Non-statutory Sites	Yes	No - due to the distance of the Site from the designations and the nature of the works.	NA	No
HABITATS				

Receptor	Important Ecological Feature	Potential for Impact	Scale of Potential Impact	Subject to Further Consideration
Habitats	Yes – whilst the majority of habitats on-site were of low ecological value, boundary habitat comprised native hedgerows in some locations which would qualify as Habitats of Principal Importance.	No – notable habitats to be retained and protected during the works.	NA	No
SPECIES				
Amphibians	Yes - legally protected under the Conservation of Habitats and Species Regulations 2019 (as amended) and the Wildlife and Countryside Act 1981 (as amended).	No – protected amphibians highly unlikely to be present on-Site	NA	No
				
Bats - Activity	Yes - legally protected under the Conservation of Habitats and Species Regulations 2019 (as amended) and the Wildlife and Countryside Act 1981 (as amended).	Yes. Potential impact from increased lighting.	Permanent - Minor Adverse - Local	Yes
Bats - Roosts	Yes - legally protected under the Conservation of Habitats and Species Regulations 2019 (as amended) and the Wildlife and Countryside Act 1981 (as amended).	No – trees with the potential to support roosting bats to be retained and protected both during construction and operational phase.	NA	No

Receptor	Important Ecological Feature	Potential for Impact	Scale of Potential Impact	Subject to Further Consideration
Birds	Yes - legally protected under the Wildlife and Countryside Act 1981 (as amended).	Potential for disturbance or injury during Site clearance	Temporary – Minor – Adverse – Local	Yes
Reptiles	Yes - legally protected under the Wildlife and Countryside Act 1981 (as amended).	No unlikely to be present.	NA	No
Hedgehogs	Yes – Hedgehogs are a Species of Principal Importance	Yes - risk if injury during construction phase.	Temporary – Minor – Adverse – Local	Yes

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

- Bats;
- [REDACTED]
- Birds; and
- Hedgehogs.

5. MITIGATION MEASURES

5.1

5.2

Bats

- 5.3 Any new lighting associated with the development should follow best practice guidelines outlined in Bats and Artificial Lighting in the UK (Bat Conservation Trust, 2018). to maintain suitable foraging habitats, particularly along the woodland edge to the south of the Site.

Birds

- 5.4 As all species receive legal protection during nesting, it is advised to conduct vegetation clearance outside of the breeding bird season of March to August (inclusive). Work 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. 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.

Hedgehogs

- 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. 13cm by 13cm holes should be cut into the base of newly constructed fences to create a 'hedgehog highway'.

6. RESIDUAL AND CUMULATIVE EFFECTS

- 6.1 With the mitigation measures suggested and outlined above, no residual effects are envisaged. 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 also not relevant.

7. COMPENSATION AND ENHANCEMENT MEASURES

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. 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.

General

- 7.2 A specific Biodiversity Enhancement and Mitigation Plan (BEMP) should be produced for the development. The BEMP is recommended to detail measures by which to protect retained habitats, enhance and create habitats, provide an overview of habitat management as well as details of species-specific enhancements provided below.

Habitats

- 7.3 To maximise opportunities for a range of species it is recommended that new species-rich hedgerows and tree belts are incorporated into the Site layout. This is recommended to be located along the north-eastern site boundary to provide a corridor for wildlife. The hedgerows and/or tree belts are recommended to contain at least seven native species. The following species are recommended (please note that this is not an exhaustive list and other native species can be used):

- Native honeysuckle *Lonicera periclymenum*
- Hawthorn
- Blackthorn *Prunus spinosa*
- Elder
- Hazel *Corylus avellana*
- Holly *Ilex aquifolium*
- Rowan *Sorbus aucuparia*
- Field maple *Acer campestre*
- Beech *Fagus sylvatica*
- Hornbeam *Carpinus betulus*
- Dog rose *Rosa canina*
- Crab apple *Malus sylvestris*

Bats

- 7.4 Opportunities for roosting bats should be incorporated into the final development. These should be integrated into at least 10% of the new buildings, wherever possible. These should be positioned as close to the eaves as possible positioned in locations sheltered from strong winds and away from direct sunlight for a significant proportion of the day, usually south to south-west.
- 7.5 The BEMP should provide specific details of the bat boxes including number, types and locations.

Birds

- 7.6 Opportunities for nesting birds should be incorporated into the final masterplan. These should be integrated into at least 10% of the 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.
- 7.7 A range of different bird boxes should be installed, including general purpose boxes as well as boxes focussing on those species whose populations are declining and are most likely to be associated with the built environment. The BEMP should provide specific details of the bird boxes including number, types and locations.

Invertebrates

- 7.8 In addition to the landscape planting for invertebrates, further opportunities for invertebrates can also be incorporated into the development by both integrated and standalone invertebrate houses. These houses are recommended to be placed within 1m of ground level and be located within a south or south-west facing, open sunny position and not obscured by any vegetation. Green and Blue bee blocks, integrated brick bug boxes or similar are all considered to be appropriate integrated features for invertebrates. Whereas insect towers or other similar boxes are considered to be appropriate to place within areas of landscaping or attached to trees/posts. Further details on the types and locations of the invertebrate houses is recommended to be provided within the BEMP.

Hedgehogs

- 7.9 To provide new habitats for hedgehogs and other species, it is recommended that a hedgehog friendly layout is achieved through the following provisions:
- Shrub planting along the edges/boundaries of the development to provide connectivity for hedgehogs and other species through and around the Site to the wider habitats
 - Creation of a hedgehog 'highway' - any fencing to have 13cm by 13cm holes cut in strategic places to allow hedgehogs and other species to move in and out of the Site. In addition, hedgerows or fencing with gaps at the bottom/railings could be used instead of close board fencing; and,

- Brash and log piles could be created in landscaped/planted areas to provide refuge and hibernation habitats for hedgehogs and other species.

7.10 It is recommended that further details of how the development will be hedgehog friendly is provided within the BEMP. The BEMP is recommended to include a plan showing suitable locations of the hedgehog highway holes and/or connectivity, brash/log piles, shrub planting and dropped kerbs.

8. SUMMARY

- 8.1 **Table 8.1** contains a summary of the likely significant effects of the development relating to the construction phase and the completed development and lists the mitigation measures to ensure that there are no residual effects.

Table 8.1: Summary

Receptor	Potential Impact	Significance of Effect Without Mitigation	Mitigation Measures	Residual Effects
Bats	Increased lighting could disturb foraging and commuting bats.	Minor - Adverse - Site	Best practice lighting scheme to be followed	Negligible
Birds	Potential for harm during construction phase.	Minor – Adverse - Site	Nesting bird checks prior to vegetation clearance.	Negligible
Hedgehogs	Potential for animals to become trapped overnight and harmed during vegetation clearance.	Minor - Adverse - Site	Good working practices to be followed.	Negligible

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.
 - 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.
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 - 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 (2021) National Planning Policy Framework. ISBN: 978-1-4098-5302-2.
- Multi-Agency Geographic Information for the Countryside Website. Found at: <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.

- [REDACTED]

- 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.	• Pick; • Uproot; • Trade; • Possess (for trade) any wild plant listed.
Breeding birds	Wildlife and Countryside Act 1981 (as amended).	• 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: • Disturbing birds at their nest, or their dependent young.

Bats	Sch. 5 Wildlife and Countryside Act 1981 (as amended). Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019 (as amended).	• 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	Sch. 5 Wildlife and Countryside Act 1981 (as amended). Countryside and Rights of Way Act 2000.	Deliberate or reckless: • Killing; • Injuring • Sale.
Common amphibians	Sch. 5 and Sch. 9 Wildlife and Countryside Act 1981 (as amended). Countryside and Rights of Way Act 2000.	• Sell; • Transport; and • Advertise for sale.
Great crested newt	Sch. 5 Wildlife and Countryside Act 1981 (as amended). Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019 (as amended).	• 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).	Release of any animal, plant or microorganism not native to the UK. Sale. Cause or allow to spread.

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



- 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
 - Badger Sett
 - Dry Ditch
 - Improved Grassland
 - Hedgerow

Issues & Revisions

Client

Avant Homes Ltd

Project Title

Calver Lane

Drawing Title

Phase 1 Habitat Survey

Drawn: CG

Date: March

Reviewed: CG

Scale: A3

1:5000

Drawing Status

Final

Project - Originator - Zone - Level - Type - Rate - Number

CLD-BWB-ZZ-XX-DR-YE-0001

Status

S2

Rev

P01

Appendix 3: Site Photographs

**Improved grassland
looking towards boundary
woodland**



Boundary hedgerow



Appendix 4: GCN eDNA Results

Folio No: E9201
Report No: 1
Purchase Order: PORO34189,
PORO34186,PORO34187,POR
O34188
Client: BWB CONSULTING
Contact: Chris Grocock

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: 15/04/2021

Date Reported: 20/04/2021

Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
2133	Calver Lane P1	SE31991 04015	Pass	Pass	Pass	Negative	0
2134	Calver Lane, Dodworth P3	SE31941 03965	Pass	Pass	Pass	Negative	0
2136	Calver Lane, Dodworth P5	SE31727 04291	Pass	Pass	Pass	Negative	0
2141	Calver Lane Pond 2	SE32032 203973	Pass	Pass	Pass	Negative	0

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

Reported by: Chris Troth

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.



