



Preliminary Ecological Appraisal

Bush Close, Comberton, Cambridgeshire

On Behalf of:

Hopkins Homes Ltd.

January 2026

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Site assessments / surveys (where required) have been restricted to a level of detail required to achieve the stated objectives of the work.

Due to the temporal nature of ecology, the findings of this report should not be relied upon if a significant amount of time has passed, as defined by the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines.

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Executive Summary

1. This report presents the results of a Preliminary Ecological Appraisal (PEA) undertaken at the land off Bush Close, Comberton, Cambridgeshire (centred at ordnance survey grid reference: TL 38759 56056). It is understood that the client seeks the allocation of the land for residential development.
2. The site comprised a large field of modified grassland, bounded by hedgerows on the southern and western edges and managed bramble scrub with a section of hawthorn hedgerow along the northern boundary. The eastern edge of the site comprised a stretch of Long Road, including hedgerow with trees on either side of the road.
3. Designated sites located within the Zone of influence of the site included Eversden and Wimpole Woods SAC 4.57km south-west of the site, for which the site also falls within the Impact Risk Zone (IRZ). A Habitats Regulations Assessment (HRA) and a Designated Sites Assessment is recommended for any future planning submission.
4. The grassland habitat dominating much of the site was considered to be of low ecological value and hence more suitable for development than the valuable boundary habitats comprising the hedgerows and associated ditch/trees. These habitats should be retained, buffered and enhanced through the development of the site.
5. The preliminary survey identified potential for the site to support a number of protected and notable species, as such recommended further surveys and assessments, to be undertaken at the appropriate time of year include:
 - Pre-construction badger walkover three to six months prior to groundworks;
 - Seasonal bat activity and static surveys - April to October;
 - Aerial tree inspection for roosting bats – May to August;
 - Breeding bird surveys – March to July;
 - Application to Great Crested Newt (GCN) District Level Licence (DLL) (no further surveys required) or eDNA surveys for GCN within waterbodies - mid April to end of June;
 - Seven presence/likely absence visits for reptiles (May to September);
 - Water vole (two visits, one between April and June, and the second between July and September);
 - Habitats Regulations Assessment (HRA);
 - Designated sites assessment; and,
 - Biodiversity Net Gain (BNG) assessment– on receipt of proposals for the site.
6. Proposals should aim to follow the mitigation hierarchy; avoid, mitigate, compensate and enhance along with South Cambridgeshire Local Plan and the National Planning Policy Framework (MHCLG, 2024).

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1.0 Introduction

- 1.1 Southern Ecological Solutions Ltd. (SES) were commissioned by Hopkins Homes (the client) to undertake a Preliminary Ecological Appraisal (PEA) of the land off Bush Close, Comberton, Cambridgeshire (referred to as 'the site'). The site is approximately 4.88ha in extent and located at central point Ordnance Survey (OS) Grid Reference TL 38759 56056. This report presents the findings of the UK Habitat Classification survey and recommends further ecological surveys where appropriate.
- 1.2 The site comprised a large field of modified grassland, bounded by hedgerows on the southern and western edges and managed bramble scrub with a section of hawthorn hedgerow along the northern boundary. The eastern edge of the site comprised a c.470m stretch of the Comberton 7 byway, including hedgerow with trees on either side of the road. A small area of mixed scrub was present in the south-western corner. The southern boundary of the site lies parallel with Tit Brook, a drainage stream flowing south-west to north-east. The south-eastern boundary lies adjacent to Watts Wood, a small area of broadleaf woodland. The site was in a wider arable mosaic with the residential area of Comberton to the north and west of the site. The Site Location Plan is provided in Appendix 1.
- 1.3 It is understood that the client intends to bring the site forward for residential development. At the time of writing, no proposed site layout has been provided.
- 1.4 The objectives of this report are to set out the ecology baseline for the surveyed area, assess constraints and opportunities for development across the surveyed area and provide options for enhancements of both habitats and species. This information will also help to identify the most appropriate form and scale of development to be accommodated within the site and to subsequently promote that development through the local plan process.
- 1.5 The objectives of this appraisal were to:
- Map the main ecological features within the surveyed area and compile a plant species list for each habitat type;
 - Make an initial assessment of the presence or likely absence of species of conservation concern;
 - Identify any legal and planning policy constraints relevant to nature conservation which may affect the development proposals;
 - Determine any potential further ecological issues;
 - Determine the possible need for further surveys and mitigation; and
 - Make recommendations for minimising impacts on biodiversity and providing net gains in biodiversity where possible in accordance with Chapter 15: *Conserving and Enhancing the Natural Environment*, of the National Planning Policy Framework (NPPF) (MHCLG, 2024), South Cambridgeshire Local Plan (South Cambridgeshire District Council, 2018), and South Cambridgeshire Biodiversity SPD (South Cambridgeshire District Council, 2009). The Draft Greater Cambridge Local Plan and accompanying Habitats Regulations Assessment, and Green Infrastructure Strategy were also considered; the draft plan is proposed for public consultation in December 2025 – January 2026.

1.6 The details of relevant wildlife legislation in addition to national and local planning policies related to nature conservation and biodiversity are provided in Appendix 2.

2.0 **Methods**

2.1 This report has been prepared with reference to British Standards Institution (BSI) BS 42020:2013 'Biodiversity – code of practice for planning and development' (BSI, 2013) and The Chartered Institute of Ecology and Environmental Management's (CIEEM) and Technical Guidance Series 'Ecological Report Writing' (CIEEM, 2017a) and Code of Professional Conduct (CIEEM, 2019a).

2.2 The following PEA follows guidance and methods as prescribed by the CIEEM Guidelines for Ecological Appraisal 2nd edition (2017b) and the Guidelines for Ecological Impact Assessment (2019b). Following these methods, a baseline of rare and/or noted ecological receptors (species and habitats) was established and valued. Predicted significant impacts upon these receptors have been identified and constraints and opportunities identified. This step-wise assessment process has informed likely mitigation and enhancement measures. These surveys will fully inform the predicted impacts of the scheme in accordance with the NPPF (MHCLG, 2024), South Cambridgeshire Local Plan (South Cambridgeshire District Council, 2018) and relevant wildlife legislation.

Desk Study

2.3 SES commissioned a data search from Cambridgeshire and Peterborough Environmental Records Centre (CPERC) for records of protected and notable species and for data on non-statutory designated sites. The data search encompassed the study area, and up to 2km from the boundary. Data were received on 21st November 2025.

2.4 A web-based search for statutory designated sites via the Multi Agency Geographic Information for the Countryside (MAGIC) spatial data resource magic.defra.gov.uk was undertaken on 21st November 2025 for the following statutory designated sites: European (up to 10km from the site boundary), National (5km from the site boundary) and Local (up to 2km from the site boundary). A search was also conducted for European Protect Species (EPS) Licence returns within 2km of the site boundary and for Priority Habitats within 1km of the site boundary.

2.5 A search of the Natural England GCN Risk Map was accessed on the 21st November 2025 to determine the GCN Risk Zone the site falls into.

2.6 An online search was undertaken for waterbodies within 250m utilising MAGIC online spatial data resource (<https://magic.defra.gov.uk/>) on 21st November 2025.

2.7 Hazel dormouse *Muscardinus avellanarius* records were sought existing publicly available resources and local knowledge. As dormouse are particularly under-recorded and often given to low precision, the search for this species encompassed an area of up to 10km from the site boundary.

UK Habitat Classification

- 2.8** A UK Habitat Classification (UKHab) Survey was carried out on 30th September 2025 by suitably qualified Ecologist Kelly Griffiths during appropriate weather conditions (fine and dry). UKHab survey methods are set out in the UK Habitat Classification User Manual – Version 2.01 (Butcher et al. 2023). UKHab is a comprehensive habitat classification system designed for the UK and is intended for ecologists to identify and map habitats to provide outputs that are suitable for ecological impact assessment. Habitat mapping was undertaken using the standard classification to indicate habitat types.
- 2.9** The dominant and readily identifiable higher plant species identified in each of the various habitat parcels were recorded and their abundances assessed on the DAFOR scale:
- D - Dominant
 - A - Abundant
 - F - Frequent
 - O - Occasional
 - R - Rare
- 2.10** These scores represent the abundance within the defined area only and do not reflect national or regional abundances. Plant species nomenclature follows Stace (2019).
- 2.11** All impacts upon ecological features have been considered for the purposes of this survey following industry best practice guidance. Only relevant protected and notable species have been discussed within this report to keep its contents concise and relevant to the works being undertaken and for ease of application.

Protected and Notable Species

- 2.12** The site was assessed during the UKHabs survey for its suitability for protected and notable species that are likely to occur in the area. Considering the results of the desk study, the location and habitats in the surveyed area, an assessment was carried out for:
- Flora;
 - Badger *Meles meles*;
 - Bats (roosting, foraging and commuting);
 - Breeding and over-wintering birds;
 - Great crested newt *Triturus cristatus*;
 - Hazel dormouse;
 - Rare or notable invertebrates;
 - Water voles *Arvicola amphibius*;
 - Otters *Lutra lutra*;
 - Reptiles; and
 - Other notable species.

2.13 Further detail of methods is provided in Appendix 3.

Assessment of Nature Conservation Value

2.14 CIEEM guidelines for Ecological Impact Assessment in the United Kingdom (2019) have been utilised to assess the impacts upon habitats within the ZOI of the site. CIEEM suggests that it is best to use the geographical scale (i.e., International, National, Regional etc.) at which a feature (i.e. a habitat, species or other ecological resource) may or may not be important as the appropriate measure of value. As such, data from the data search and UKHabs survey have been reviewed and the likely occurrence of protected and notable species/species groups assessed. This has allowed predictions of impacts to be made along with recommendations for mitigation, compensation and enhancement. Further targeted survey will refine the evaluation and associated recommendations.

Constraints

2.15 Desktop data searches are a valuable tool in evaluating a site's potential to hold rare and protected species, it is not however an absolute in confirming presence or absence of notable species due to the nature of how the records are collected.

2.16 Where any data supplied by the client, or any other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by SES for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.

2.17 All the plant species that occur in each habitat would not necessarily be detectable during survey work carried out at any given time of the year, since different species are apparent at different seasons. The initial assessment of the site was undertaken in September 2025, which falls within the optimal plant growing season. Therefore, an accurate characterisation of the habitats was made.

3.0 **Baseline Ecological Conditions**

Statutory Designated Sites

European Designated Sites

- 3.1** One European designated site was returned within 10km of the site boundary; Eversden and Wimpole Woods Special Area of Conservation (SAC) which was located 4.57km south-west. Details of the SAC including qualifying features are summarised in Table 1.
- 3.2** This site is designated under the Conservation of Habitats and Species Regulations 2017 (as amended) and is of **International** importance.

Nationally Designated Sites

- 3.3** There were five Sites of Special Scientific Interest (SSSI), considered to be of **National** importance. The closest being Madingley Wood SSSI located 3.26km north-east and was designated for biological reasons. The site resides within the impact risk zone (IRZ) for Eversden and Wimpole Woods, the underpinning SSSI for the SAC discussed above. The IRZ indicates there may be a harmful effect caused by any planning application where the proposed development is outside or extends outside existing settlements/urban areas and will increase lighting levels or affect trees/woodland, waterbodies, rural buildings/structures or linear landscape features such as hedgerows, streams and rivers through direct loss, fragmentation or change of use. It additionally notes that proposals for any net increase in residential units may affect the notified features of the SSSI through increased recreational pressure.

Locally Designated Sites

- 3.4** There were two locally designated sites within 5km of the site boundary of **National** importance. The closest being Kingston and Bourn Old Railway Local Nature Reserve (LNR) located 4.26km west.

Non-statutory Designated Sites

- 3.5** There were three non-statutory designated sites within 2km of the site. The closest was Westfield Farm County Local Wildlife Site (CWS), located 1.47km south.
- 3.6** County Wildlife Sites are considered important at a **County** Level.

Table 1: Statutory and non-statutory designated sites within the vicinity of the site

Site name	Distance & direction	Size (ha)	Reason for designation
European Designated Sites within 10km			
Eversden and Wimpole Woods SAC	4.57km south-west	66.22	Annex II species barbastelle <i>Barbastella barbastellus</i> is the primary qualifying feature. The site supports a nationally important summer maternity roost for the species. The woodland habitat (including ancient coppice woodland) additionally supports six bat species recorded at this site, the other species being the pipistrelles <i>Pipistrellus pygmaeus</i> and <i>P.pipistrellus</i> , brown long-eared <i>Plecotus auritus</i> , Natterer's <i>Myotis nattereri</i> and noctule <i>nyctalus noctula</i> . Many herbs typical of old woodlands are present including yellow archangel <i>Galeobdolon luteum</i> , wood anemone <i>Anemone nemorosa</i> and the nationally scarce oxlip <i>Primula elatior</i> .
Nationally designated sites within 5km			
Madingley Wood SSSI	3.26km north-east	15.39	Madingley Wood is an example of the ash-maple woodland type characteristic of the chalky Boulder Clay of eastern England. The western sector of the wood is of ancient origin whilst the eastern half is of relatively recent origin. The older primary woodland holds standards of pedunculate oak <i>Quercus robur</i> with ash <i>Fraxinus excelsior</i> and field maple <i>Acer campestre</i> being common. Old hazel <i>Coryllus avellana</i> coppice, and hawthorn <i>Crataegus monogyna</i> dominate the shrub layer. The secondary woodland holds a mixture of elm <i>Ulmus sp.</i> and ash with a shrub layer of elm suckers and blackthorn <i>Prunus spinosa</i> . The ground flora is typically of dog's mercury <i>Mercurialis perennis</i> -bluebell <i>Hyacinthoides non-scripta</i> type. The woodland has also been noted for its moss flora.
Hardwick Wood SSSI	3.36km north-west	15.47	The ancient core of the site is ash-field maple woodland containing both oxlip <i>Primula elatior</i> and primrose <i>Primula vulgaris</i> , a woodland type which is nationally restricted in distribution to small parts of Cambridgeshire, Suffolk and Essex. The oldest parts of the wood have a canopy of pedunculate oak <i>Quercus robur</i> with an understorey of hazel <i>Coryllus avellana</i> , hawthorn <i>Crataegus spp.</i> and scattered field maple <i>Acer campestre</i> . The ground flora is largely dominated by dog's mercury <i>Mercurialis perennis</i> and bluebell <i>Hyacinthoides non-scripta</i> and contains interesting plants such as early-purple orchid <i>Orchis mascula</i> and yellow archangel <i>Lamiastrum galeobdolon</i> .
Caldecote Meadows SSSI	4.01km north-west	9.09	Designated for habitat: herb-rich grassland of a calcareous loam type, holding plant communities which are of nationally restricted origin. The grassland holds a range of plant species typical to the calcareous loam community including salad burnet <i>Sanguisorba minor</i> , quaking-grass <i>Briza media</i> , dropwort <i>Filipendula vulgaris</i> and cowslip <i>Primula veris</i> . This variety of plants has been retained as a result of traditional management by grazing and hay cutting.
Barrington Chalk Pit SSSI	4.13km south	97.07	Designated for geological reasons.
Eversden and Wimpole Woods SSSI	4.57km south-west	66.22	Underpinning SSSI of the SAC. Eversden Wood is an important ancient semi-natural woodland of a type now localised in extent, and rare in lowland England. The habitats present also support a nationally important summer maternity roost for the barbastelle bat, <i>Barbastella barbastellus</i> . A total of six bat species have been recorded at this site, the other species being the pipistrelles <i>Pipistrellus pygmaeus</i> and <i>P.pipistrellus</i> , brown long-eared <i>Plecotus avritus</i> , Natterer's <i>Myotis nattereri</i> and noctule <i>nyctalus noctula</i> . Many herbs typical of old woodlands are present including yellow archangel <i>Galeobdolon luteum</i> , wood anemone <i>Anemone nemorosa</i> and the nationally scarce oxlip <i>Primula elatior</i> .
Kingston and Bourn Old Railway LNR	4.26km west	1.92	This site includes unimproved grassland, scrub, wetland and woodland, providing important habitats for insects, birds and mammals.

Site name	Distance & direction	Size (ha)	Reason for designation
Byron's Pool LNR	4.77km south-east	4.36	This site comprises woodland next to the River Cam. Site management includes removing non-native species such as sycamore <i>Acer pseudoplatanus</i> and managing ponds for amphibians. Species recorded at this site include kingfisher <i>Alcedo atthis</i> , woodpecker <i>Picus sp.</i> , little grebe <i>Tachybaptus ruficollis</i> and the common frog <i>Rana temporaria</i> .
Non-statutory designated sites within 2km			
Westfield Farm CWS	1.47km south	43.67	This site qualifies for its outstanding assemblage of arable plant species.
Lord's Bridge Observatory CWS	1.74km south	33.88	Supports frequent numbers of at least 3 strong neutral grassland indicator species. Additionally it supports a population of a Nationally Scarce vascular plant species (<i>Vicia parviflora</i>).
Cambridge - Bedford Disused Railway (Harlton) CWS	2.0km south	2.63	Supports at least 0.05ha of the NVC community CG3 Upright Brome grassland.

Key: SAC=Special Area of Conservation, , SSSI=Site of Special Scientific Interest, LNR=Local Nature Reserve, CWS=County Wildlife Site

Priority Habitats

- 3.7** The search for Priority Habitats within 1km returned results for deciduous woodland and traditional orchard. Of these habitats the closest was an area of deciduous woodland comprising Watts Wood, c.9m east of the site.

Habitats

- 3.8** A UKHab map of the site is provided within Appendix 4 whilst plant species recorded per habitat type are tabled in Appendix 5 and site photos are provided in Appendix 6.

- 3.9** The UKHab types within the site are listed below followed, by a description of each habitat type:

- Bramble scrub h3d
- Modified grassland g4
- Hedgerows
 - Native hedgerow h2a
 - Hedgerow associated with ditch h2a, 50
 - Hedgerow with trees h2a, 11
 - Ornamental hedgerow h2b

Bramble scrub h3d

- 3.10** The western edge of the main field (Field 1) was encroached by bramble *Rubus fruticosus agg.*

Modified grassland g4

- 3.11** Field 1 comprised the majority of the site. Quadrat data indicated an average of three species per metre squared, dominated by cock's foot *Dactylis glomerata* with abundant creeping thistle *Cirsium arvense* and more rarely occurring common agrimony *Agrimonia eupatoria* at the periphery. Though frequently characterised by the presence of perennial rye grass *Lolium perenne* and white clover

Trifolium repens, field 1 was considered to meet the description for modified grassland given that a single palatable productive grass was dominant (cock's foot) and grass cover was over 75%. The field was regularly managed with a uniform sward. Bracken was not recorded and encroachment of bramble was minimal. Historical mapping indicates that the field is utilised for grass agriculture, supported by the presence of a hay bale during the visit.

Hedgerows

3.12 There were six total hedgerows surrounding the site which were varied in type, condition, and management regime. Details of these are provided in Table 2 below.

Table 2: Hedgerows noted on site during the walkover

Hedge no.	Habitat code	Hedge type	Description
1	h2a; 11	Native hedgerow with trees	Located running north to south bordering Field 1 and the byway. Averaged at least 1.5m in height and width along length. Trees within the hedgerow were restricted to a single age class (mature). Species included ash <i>Fraxinus excelsior</i> , maple <i>Acer sp.</i> , wild privet <i>Ligustrum vulgare</i> , hawthorn <i>Crataegus monogyna</i> , and wild cherry <i>Prunus avium</i> . Taken across 30m sections, the hedgerow averaged less than 5 woody species and as such was not considered to be species-rich.
2	h2a	Native hedgerow	Located adjacent to H1 on the opposite side of the byway. Dominated by bramble, dog rose <i>Rosa canina</i> with more occasionally occurring oak <i>Quercus robur</i> .
3	h2a; 50	Native hedgerow associated with ditch	Located along the southern boundary of the site. Averaged at least 1.5m in height and width across the length and had at least 1m of undisturbed ground across 90% of the length on at least one side. Hawthorn was the dominant species with frequent dog rose and bramble. Occasional apple <i>Malus sylvestris</i> .
4	h2a	Native hedgerow	Located along the western boundary of the site. Continued north from where it joined H3. Species composition also similar with dominant hawthorn and frequent dog rose and bramble.
5	h2b	Ornamental / non-native hedgerow	Located along northern boundary in shared curtilage with residential properties to the north of the site. Species comprised box <i>Buxus sp.</i> and privet.
6	h2a	Native hedgerow	Hawthorn hedge recorded immediately east of H5.

Protected/Priority Habitats

3.13 Hedgerows 1, 2, 3, 4, and 6 are considered to meet the definition for classification as UK Natural Environment Research Council (NERC) Act (2006) habitat of principal importance (i.e. more than 80% UK native woody species)(JNCC, 2008). Under the wildlife criteria of the Hedgerow Regulations, 1997,

these hedgerows are unlikely to meet the definition of an ‘important’ hedgerow given the lack of species diversity.

Summary

- 3.14** The majority of the site comprised a modified grassland field and was considered to be of low ecological value and common within the wider landscape. Hedgerows and associated trees were considered to be of relatively higher biodiversity value, with the potential to support protected species, though still ubiquitous within the local landscape. Taken together, these areas are considered to be of **Site** importance confidence in this assessment is **high**.

Protected and Notable Species

- 3.15** Protected species are animals and plants protected under the Wildlife and Countryside Act (WCA) 1981 (as amended), Conservation of Habitats and Species Regulations 2017 (as amended), the Protection of Badgers Act 1992, or listed in Section 40 or 41 of the NERC Act 2006. Protected and notable species with existing records within 2km of the site within the last 10 years are detailed in Table 3 below.

Table 3: Summary of protected and notable species records within 2km of the site.

Species	Number of records	Last recorded	Closest record (km)
European Protected Species (Conservation of Habitats and Species Regulations (as amended), 2017)			
Brown long eared bat <i>Plecotus auritus</i>	17	2024	0.1
Barbastelle bat <i>Barbastella barbastellus</i>	9	2024	0.1
Common pipistrelle bat <i>Pipistrellus pipistrellus</i>	37	2024	0.1
Soprano pipistrelle bat <i>Pipistrellus pygmaeus</i>	31	2024	0.1
Myotis bat species <i>Myotis sp.</i>	5	2024	0.1
Noctule bat <i>Nyctalus noctula</i>	4	2021	1
Otter <i>Lutra lutra</i>	53	2021	0.01
UK Protected Species (WCA, 1981/ Protection of Badgers Act 1992)			
Common frog <i>Rana temporaria</i> *	3	2017	0.01
Grass snake <i>Natrix helvetica</i>	3	2021	0.01
Water vole <i>Arvicola amphibius</i>	76	2019	0.01
Badger <i>Meles meles</i>	34	2024	0.01
Schedule I Protected Species (WCA, 1981)			
Kingfisher <i>Alcedo atthis</i>	78	2024	0.01
Schedule 9 Invasive Flora (WCA, 1981)			
N/A	N/A	N/A	N/A

* (in respect of section 9(5) only)

Protected and Invasive Flora

- 3.16** No protected or invasive species listed under WCA 1981 Schedule 8 or 9 were observed on site during the UKHab survey. Given the lack of identified protected plant species and the relatively common habitats on site, the site is currently considered to be of **Site** importance for flora, confidence in this assessment was **high**.

Badger

- 3.17** Thirty-four records of badger were identified within 2km of the site, most recently in 2024, 0.01km from the site.
- 3.18** The walkover survey found no evidence of badger setts within the site or within 30m of the site boundary. Mammal tracks were identified throughout the site but evidence specific to badger (e.g. hairs, footprints) was not recorded. The site had potential to support sett creation within the embankment associated with H3. The site was considered to support foraging and commuting habitats along the hedgerows and within the grassland parcel. Hedgerows were not species-rich but were considered to provide food plants suitable for badger diet such as fruits, nuts, and seeds.
- 3.19** Evidence of badger foraging or sett creation was not identified during the assessment, though was considered suitable; badger is a highly mobile species and as such may create setts on site in the future. The site is therefore currently considered of **Site** importance for badger and confidence in this assessment is **high**.

Bats

Bats – Roosting

- 3.20** Records of six bat species were identified within 2km of the site (Table 4) including barbastelle *Barbastella barbastellus* which is listed as the Rarest Annex II species / very rare for the South-eastern / East Anglia to The Wash region (Reason & Wray, 2025).
- 3.21** Of the trees assessed from ground level for Potential Roosting Features (PRF's), three trees were identified as having potential to support roosting bats, as shown in Table 4 below (Collins, 2023). Locations are provided in Appendix 7.

Table 4: Ground level tree assessment for potential roosting features

Tree Number	Species	Potential Roosting Features	Suitability
T1	English oak <i>Quercus robur</i>	Mature oak with broken / lifted bark on west facing limb facing eastern boundary of the site	PRF-I
T2	Ash <i>Fraxinus excelsior</i>	Ash with no specific PRF visible, however the presence of densely overgrown ivy has potential to either obscure other features, or provide shelter itself for individual bats	PRF-I
T3	English oak	Mature oak with callous roll, holes and additional crevices, all east facing	PRF-M

- 3.22** There is potential for the site to support roosting bats. The site is considered to be of **Site** importance for roosting bats with **moderate** confidence pending further surveys.

Bat - Foraging

- 3.23** Boundary habitats including the hedgerows and scrub were considered to provide continuous habitat connected to the wider landscape (e.g. Watts Wood to the east, continuing hedgerows associated with the byway running north and south) that could be used for flight paths. As such the site was considered to be of 'moderate' suitability for foraging/commuting bats (Collins, 2023).

3.24 Habitats provided were generally ubiquitous within the local landscape and had good connectivity with neighbouring habitats of value including hedgerows and woodland. The site is considered to be of **Site** importance for foraging/commuting bats. Confidence in this assessment is **moderate** pending further surveys.

Birds

3.25 Records of one Schedule 1 bird, Kingfisher *Alcedo atthis* was recorded within 2km, 0.01km away and as recently as 2024. Records of red and amber birds of conservation concern (BoCC) included swift *Apus apus* (red), kestrel *Falco tinnunculus* (amber), moorhen *Gallinula chloropus* (amber), and tawny owl *Strix aluco* (amber). The datasearch did not identify any designated sites with bird populations as a qualifying feature, and there is not considered to be a functional link from the site to SPAs/Ramsar sites or known sites of wintering populations.

3.26 The site as a whole was considered to provide opportunities for breeding, nesting and foraging birds, with habitats suitable to support a variety of species (grassland field, scrub, hedgerows) including schedule 1 species kingfisher (hedgerow associated with ditch).

3.27 Overall, the site is likely to support a range of widespread breeding and nesting species associated with scrub, hedgerows, and grassland. As such the site was considered to be of up to **Local** importance for breeding birds. Confidence in this assessment is **moderate** pending further surveys. The site was considered to be of **Negligible** importance for wintering birds, confidence is **high**.

Great Crested Newt

3.28 Records of great crested newt (GCN) were not identified within 2km of the site. Historic records from 2007 were identified; the precision of the record (given to 100m) indicates they were associated with Comberton allotments 0.4km west. The entire site falls within a Green Zone for GCN risk on the Natural England GCN Risk Zone Map, defined as “containing sparsely distributed GCN and are less likely to contain important pathways of connecting habitat for this species”.

3.29 Waterbodies were not located on site. A single pond was identified within 250m; located 163m north-west (P1). The pond was unable to be accessed during the survey and as such a Habitat Suitability Index (HSI) assessment was not able to be completed. P1 was separated from the site by Swaynes Lane and residential housing. A pond map is provided in Appendix 8.

3.30 A network of agricultural ditches was in proximity to the site on the southern boundary (associated with H3) and approximately 37m north-east. All drainage ditches reviewed were dry at the time of survey.

3.31 The majority of habitats present were considered suitable commuting terrestrial habitat for GCN, and hedgerows, scrub and grassland were considered to provide some opportunities for sheltering.

3.32 Therefore, the site was considered to be of **Site** importance for GCN and other amphibians. Confidence in this assessment is **moderate**.

Hazel Dormouse

- 3.33** No records of hazel dormouse *Muscardinus avellanarius* were identified within the 2 km CPERC datasearch, nor within 10 km of the site using open data. Similarly, no issued hazel dormouse licences were identified within 10 km of the site boundary. Current distribution data from the People’s Trust for Endangered Species (PTES, 2025) indicate that the species is absent from the majority of Cambridgeshire, although Brampton Wood SSSI, approximately 24 km north-west of the site, has been subject to a successful reintroduction programme.
- 3.34** The hedgerows on site were generally species poor, providing suboptimal diversity and structure for dormice. The hedgerows were generally in a well-managed state with few gaps, providing connecting habitat throughout the site, as well as to off-site habitats such as Watts Wood to the east. The remaining habitats (grassland, scrub) were not considered suitable for hazel dormouse.
- 3.35** As such, the site was considered to be of **Site** value for hazel dormouse. Confidence in this assessment is **high**.

Notable Invertebrates

- 3.36** No records of notable invertebrates were identified within the datasearch. Terrestrial habitats on site were considered suitable, though suboptimal, for invertebrates; hedgerows, scrub and grassland were species-poor and lacked the structural diversity favoured by notable invertebrates, which typically prefer a mosaic of vegetation heights and areas of bare earth. Deadwood suitable for saprophytic species, such as stag beetle *Lucanus cervus*, was not present. The site substrate was recorded as “lime-rich loamy and clayey soils with impeded drainage” and did not include a chalk component required to support protected species such as Roman snail *Helix pomatia*.
- 3.37** The majority of the site comprised a highly managed grassland field and associated hedgerow and were ubiquitous within the local landscape; the site was considered unlikely to support a notable assemblage of invertebrates. The site is considered of **Site** importance for notable invertebrates. Confidence in this assessment is **high**.

Water Vole and Otter

- 3.38** A single record of otter was recorded, in 2021 and 0.01km from the site. One record of water vole was recorded, in 2019 and 0.01km from the site.
- 3.39** There were no waterbodies on site. The nearest likely major watercourse was the Bourne Brook, c.1km south. The terrestrial habitats comprised predominantly managed grassland with bordering hedgerows and scrub; H3 was associated with a drainage ditch, which was dry at the time of survey and hence unsuitable, therefore opportunities were limited.

3.40 The ditch associated with H3, although dry, was part of a network of drainage ditches that eventually links with the Bourne Brook and if wet, may be considered a commuting corridor. The woodland adjacent to site was deemed to provide limited suitable habitat due to its distance from the closest substantial watercourse and lack of riparian habitats.

3.41 Given the habitats present and dry condition of the drainage ditches, it is considered highly unlikely water vole or otter would rely solely on usage of the site. Should the network of drainage ditches become and remain wet for prolonged periods of the year, it is considered that that it may provide opportunities for water vole. It is considered that the ditch is less suited for otter given their requirement for clean fresh water with an abundance of prey. The site is considered to be of **Site** importance for water vole and otter. Confidence is **high**.

Reptiles

3.42 There were records of grass snake *Natrix Helvetica*, most recently in 2021, 0.01km from the site.

3.43 Habitats on site were considered to provide suitable commuting/foraging (grassland, hedgerow) and sheltering (scrub, hedgerow) habitat for common reptile species. The main grassland field was considered to be sub-optimal given ongoing management involving cutting the grass to a low sward height. Specific hibernating opportunities were not identified. The site is well connected to the wider landscape for reptiles through hedgerows, and it is considered likely that if reptiles are locally present, they could utilise habitats on site.

3.44 As such, the site was considered to have potential to be of **Site** importance for reptiles. Confidence in this assessment is **moderate** pending further surveys.

Other Notable Species

3.45 On-site habitats such as hedgerows, scrub, and grassland on site were considered to be suitable for hedgehog and common toad *Bufo bufo*, though the absence of arable habitat resulted in it being unsuitable for brown hare *Lepus europaeus*. The site was deemed to be sub-optimal for harvest mouse *Micromys minutus* due to the regular mowing regime and lack of tussocky grasslands.

3.46 As such, the site is considered to be of **Site** importance for other notable species. Confidence in this assessment is **high**.

Summary

3.47 An evaluation of the surveyed area in relation to ecological features is provided in Table 5.

Table 5: Evaluation of existing ecological features

Feature	Summary Description	Importance	Confidence
Statutory Designated Sites	Eversden and Wimpole Woods SAC, 4.57km south-west Five SSSI sites, closest 3.26km north-east Two LNR sites, closest 4.26km west The site is within the IRZ for Eversden and Wimpole Woods	International/National	High
Non-statutory Designated Sites	Three CWS, closest located 1.47km south	County	High
Habitats	Majority of site made up of grassland field. Other habitats consisted of hedgerows associated with trees and ditches, and patches of scrub. Hedgerows were deemed habitats of principal importance.	Site	High
Protected and Invasive Flora	No notable species in records or noted on site.	Site	High
Badgers	Potential for badgers to commute, forage, and build setts on site.	Site	High
Bats - roosting	Trees with bat roosting potential present.	Site	Moderate
Bats – foraging/ commuting	Habitats on site provide ‘moderate’ suitability for foraging/commuting bats.	Site	Moderate
Birds	Likely to support a breeding assemblage of common and widespread species including red and amber list Birds of Conservation Concern (BoCC) associated with grassland and hedgerows.	Up to Local	Moderate
Great Crested Newt	Historic records within 2km but nothing within the last decade. Site lies within a Green Risk Zone. Terrestrial habitat suitable for GCN. No aquatic habitat on site but one pond within 250m, in addition to a network of dry drainage ditches to the south and east	Site	Moderate
Hazel Dormouse	Suitable habitat is restricted to hedgerows which were considered to be suboptimal. Some links to woodland habitat though generally considered isolated. Remainder of on-site habitat considered unsuitable	Site	High
Invertebrates	Habitat suitable for common and widespread invertebrate species only	Site	High
Water vole and otter	Ditch associated with H3 although dry at time of survey, may provide opportunities and links to more substantial watercourses if wet	Site	High
Reptiles	Potential for reptile species within field margins, hedgerows, grassland, and scrub habitats.	Site	Moderate
Other notable species	Suitable habitat for European hedgehog and common toad within the hedgerows, field margins, scrub	Site	High

4.0 Preliminary Prediction of Impacts, Mitigation and Enhancement Measures and Residual Effects

Description of Proposals

4.1 It is understood that the client seeks to pursue an application for the land for residential development, though detailed proposals had not been provided at the time of writing/assessment. The following precautionary approach has therefore been adopted;

- It has been assumed that all modified grassland and scrub will be lost to facilitate the development
- It has been assumed that the Comberton byway will be utilised for access and a punch through of H1 will be required to access the site
- It has been assumed that boundary hedgerows backing onto residential curtilage will be retained

4.2 It is recommended that this assessment is revised in line with any updated plans as they become available.

Statutory Designated Sites

4.3 The closest designated site of International Importance is Eversden and Wimpole Woods SAC, 4.57km south-west. The designated features for the SAC and underpinning SSSI are Annex II species barbastelle bat with a nationally important summer maternity roost.

4.4 Map 1 within the Biodiversity SPD (South Cambridgeshire District Council, 2009) indicates that Comberton falls within the “barbastelle bat area of importance” for the SAC. Given the presence of potentially suitable roosting features on site in addition to suitable foraging and commuting habitat, it is considered that development of the site could lead to direct impacts upon the qualifying features of the SAC.

4.5 The impact risk zone description for the SAC states that proposals for any net increase in residential units may affect the notified features through increased recreational pressure, and a proportionate assessment of recreational pressure impacts would be required. This is supported by the upcoming local plan – although in draft, the Habitats Regulations Assessment of the Greater Cambridge Local Plan (Cambridge City Council and South Cambridgeshire District Council, 2025) concluded that a zone of influence of 5km should be applied to Eversden and Wimpole Woods SAC in relation to recreational effects.

4.6 Given the above, a Habitat Regulations Assessment (HRA) will be required to determine any likely significant effects (LSE) and hence required mitigation on nearby internationally designated sites or associated functional land.

4.7 Mitigation would be determined by the HRA but would likely include provision of suitable alternative natural greenspace (SANG) and/or financial contributions. Bat surveys recommended elsewhere in this report would be utilised to refine likely requirements for LSE relating to barbastelle as a qualifying feature.

Non-statutory Designated Sites

- 4.8** There were three non-statutory designated sites located within 2km, the closest being 1.47km south. Given the distance between sites, it is not considered likely that the proposed development would have direct impacts upon non-statutory designated sites. It is recommended that an Ecological Impact Assessment (EclA) for the site takes into account the fixed scheme for the site when available and outlines any such necessary mitigation.

Habitats

- 4.9** Notable habitats on site include the hedgerows, mature trees located within them, and ditch associated with H3. The remaining habitats on site are of low ecological value or are common and widespread within the surrounding environment.
- 4.10** Potential impacts from development, in the absence of mitigation, comprise construction phase impacts such as the loss of habitats through site clearance and potential damage to retained habitats e.g. due to pollution events, direct damage, or compaction of roots. During the occupational phase, retained habitats are also at risk of losing their ecological functionality through edge effects due to lighting and recreational disturbance, therefore adversely affecting their biodiversity value.
- 4.11** It is recommended that works are restricted to the least ecologically valuable habitats such as the modified grassland field, and the masterplan should seek to retain all existing boundary features and habitats of value as far as possible, creating gaps only where strictly necessary to allow access. All access routes should, where possible, make use of existing gaps and areas of lower-density vegetation, avoiding mature notable trees. Buffering should be combined with native planting, alongside the woodland and tree lines. This will serve to maintain their ecological functionality and protect them during construction and from lighting disturbance during operation.
- 4.12** It is recommended that all retained and adjacent habitats are protected during construction works through the provision of suitable fencing such as Heras fencing. Heras fencing should follow BS standard BS 5837: 2012 Trees in relation to design, demolition and construction. Together, adherence to these recommendations will serve to maintain a functional network of 'green corridors' through the site.

Biodiversity Net Gain

- 4.13** Once detailed landscape proposals have been produced, a Biodiversity Net Gain (BNG) Plan will be required to demonstrate that net gain is deliverable using the Statutory Metric in accordance with current national planning policy (MHCLG, 2024). Where habitat impacts cannot be avoided, compensatory habitat will need to be provided to ensure measurable BNG is delivered. National policy mandates that new developments demonstrate a minimum 10% net gain using the Statutory Metric. If an on-site gain cannot be achieved, an off-site solution may need to be explored.
- 4.14** A preliminary assessment of the site's baseline has been undertaken based on the assumptions provided in section 4.1; however, this does not replace a full BNG assessment which will be required once detailed proposals are available.

- 4.15** The current baseline value for the site is 9.73 habitat units and 9.47 hedgerow units.
- 4.16** It is likely that a proportion of hedgerow H1 will require removal to facilitate access to the site, though the remaining network is anticipated to be retained. Assuming approximately 50 m of H1 is removed, this would result in a loss of 0.46 hedgerow units. This loss could be sufficiently offset—and a 10% gain achieved—through the creation of approximately 0.1 km of ornamental hedgerow and 0.2 km of species-rich native hedgerow in moderate condition.
- 4.17** Modified grassland and bramble scrub within the main grassland field would be lost to accommodate the proposed development, equating to a loss of 9.73 habitat units. Initial scenario testing indicates that reserving c.35% of the site (c.1.53 ha) as greenspace, alongside the provision of 70 street trees, would yield a developable area of approximately 3.15 ha and enable delivery of a 10% net gain. These results are indicative only and based on high-level assumptions; they should be used to inform the evolution of the masterplan rather than as a substitute for a full BNG assessment.
- 4.18** It is noted that where on-site mitigation (i.e. high-quality, informal, semi-natural open space) is required for Habitats Regulations Sites or as mitigation/compensation for protected species, BNG is only attributable to such habitat creation or enhancement that proves measurable ‘additionality’ over and above the minimum requirements. For BNG to be delivered on the areas of high-quality, informal, semi-natural open space, the provided space should achieve nature conservation outcomes that demonstrably exceed existing requirements of the Strategy (i.e. higher quality habitat, and/or additional habitat interest, over and above what is required to make the area functional as high-quality, informal, semi-natural open space). This will need to be considered as the extent of on-site semi-natural open space required to mitigate recreational effects on designated sites is defined.
- 4.19** If boundary habitats or those considered of value are to be removed in part/full, in order to mitigate habitat losses, compensatory planting should be undertaken and retained boundary habitats enhanced with native, species-rich mixes using species of local abundance through gap filling. In addition, loss of habitats including areas of neutral grassland, hedgerow, and woodland should be compensated for through the enhancement of retained habitats or provision of additional habitats of equal or greater value. Restoration of boundary habitats which act as a wildlife corridor should also be implemented by creating a transitional habitat (Figure 1) including a 1.5m buffer of grassland to tall ruderal to scrub.

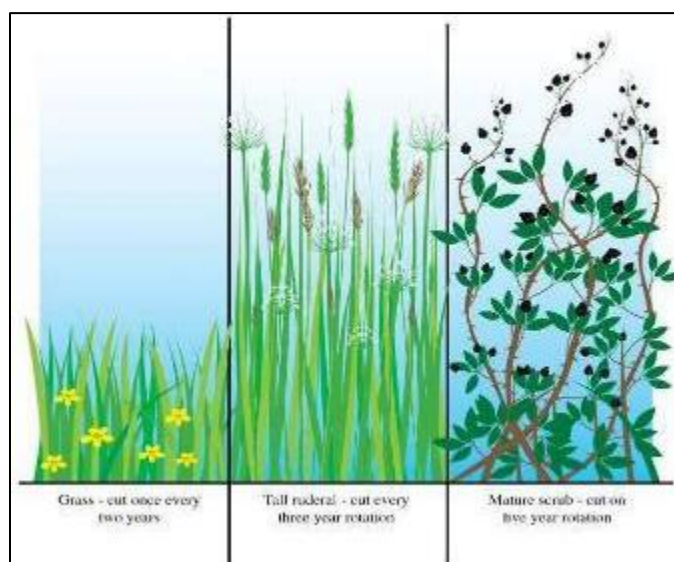


Figure 1: Edge Habitat Sketch

4.20 The inclusion of native planting and habitat creation within the development plan, together with retaining and enhancing boundary habitats and habitats of value (woodland, pond, neutral grassland) where possible, buffering works from retained habitats and managing the retained habitats for wildlife is predicted to result in a residual positive impact on habitats.

Protected and Notable Species

4.21 All legislation relating to protected and notable species is provided in Appendix 2.

Badger

4.22 Badgers are legally protected under the Protection of Badgers Act (1992). Construction works within 30m of an active badger sett have potential to damage/destroy a sett, or disturb/injure badgers occupying a sett, both of which are offences under the Protection of Badgers Act 1992.

4.23 Given that badgers are prolific sett-builders, an updated badger walkover survey is recommended within three to six months prior to commencement of any construction on site, to check that no setts have established.

4.24 Standard mitigation measures provided below shall be implemented to prevent harm to individual badgers moving through the site during the construction period:

- Covering trenches at night or leaving a plank of wood leant against the side to ensure badgers can escape if they were to accidentally fall in;
- Covering open pipework with a diameter of greater than 120mm at the end of the workday to prevent animals from entering and becoming trapped;
- Covering chemicals and storing them appropriately overnight;
- Regular removal of litter; and
- Low speed limits (≤ 20 mph).

4.25 The loss of foraging habitat during clearance for the proposed development should be mitigated against through the enhancement of existing habitats, the creation of complementary new habitats within areas of proposed open space, and maintaining areas of boundary habitats as dark corridors during the construction and operational stages. This can be achieved through planting using a range of native, berry and fruit-bearing tree and shrub species within the landscaping scheme (a list of potential species is provided in Appendix 9). Additionally, the adoption of varied mowing regimes through grassland areas in order to create shorter-sward areas, which in turn would facilitate earthworm predation, would be beneficial to badgers. This would result in a residual positive impact on badgers.

Bats - Roosting

4.1 All bat species are legally protected under the WCA (1981, as amended) and Habitats Regulations (2017, as amended). Taken together, it is an offence to destroy/damage or obstruct access to a bat roost, to kill/injure or disturb individual bats, or to deliberately disturb bats in such a way to be likely to significantly affect their ability to survive, breed, rear or nurture their young or their local distribution.

4.2 In the first instance, it is recommended that all trees with roosting potential are retained and therefore not directly impacted by the proposed development. Additionally, indirect impacts should also be avoided with a suitable buffer retained around the trees (up to 20m) to ensure that the trees are not subject to increased light or vibration levels. If trees with suitability for roosting bats are impacted, detailed further assessment will be required for the identified trees. Possible impacts could include felling/pruning, significant lighting and vibration disturbance, or where connected habitat (e.g. hedgerows) will be significantly lost or fragmented.

4.3 Where trees with PRFs are impacted (either directly or indirectly), required surveys are likely to comprise an aerial inspection with an endoscope to search for evidence of roosting bats in the first instance. Aerial tree inspections are possible at any time of year, however trees with PRF-M features require three climbs within the bat active season between May-August, with surveys spaced at least 3 weeks apart. Should inspections confirm the absence of roosting bats, the trees may be subject to a pre-fell check and finally removal of the roosting feature under an ecological method statement. Further, should the first inspection of the PRF's downgrade their suitability to PRF-I or negligible suitability for roosting bats, then no further surveys are required. Trees with only PRF-I features may be soft-felled under a method statement, with supervision from an Ecological Clerk of Works (ECoW). The loss of PRF trees should be mitigated for through the provision of bat boxes. Where trees are deemed not safe to climb, up to three dusk emergence surveys may be required to establish bat presence/likely absence. Emergence surveys are only possible to undertake during the bat active season between May-September (peak season May-August) with surveys undertaken at three-week intervals.

4.4 If a bat roost is discovered, and will be impacted by proposals, then a European Protected Species Mitigation (EPSM) licence will be required to permit works. Works to confirmed roosts may be subject to seasonal timings (dependant on roost type). Application for a licence can only be made once full/detailed planning permission has been granted, and a licence will only be issued once all relevant wildlife related conditions have been discharged. Potential mitigation for loss of any existing roost

could comprise bat boxes installed on retained trees/integrated into new buildings or translocation of the original roost feature to a tree set to be retained (involving removal of the associated limb and attachment to a nearby tree). Ahead of any licence approval, all confirmed bat roosts will need to be provisioned with a suitable exclusion buffer (30m).

- 4.5** The proposed development provides the opportunity to enhance the surveyed area for bats through the provision of additional roosting areas on retained trees and new buildings. Bat boxes should be integrated into new buildings and installed upon retained trees. A variety of bat boxes that can integrate seamlessly into the design of new buildings are available, such as the Habibat Bat Box, which can be supplied plain for a rendered finish, or faced with brick (see Figure 2). Alternatively, there are a wide range of woodcrete bat boxes with a long lifespan that are suitable for installation on trees (see Figure 3). Ongoing tree management also has potential to deliver favourable habitats for roosting bats, through new natural roost feature creation (e.g. deliberate cutting of crevices) and/or transplantation of suitable features from trees that need to be removed for health and safety reasons.



Figure 2: Habibat Bat Box faced with red brick, incorporated within wall at gable end



Figure 3: Schwegler 1FD bat box erected on a tree.

- 4.6** On trees, boxes should be sited at a minimum 5m height, with a clear uncluttered flight path to the box. Integrated boxes in buildings should be sited in properties close to the boundaries of the development and retained established vegetation. Ideally, the boxes would be installed with a variety of orientations, including south-facing, high up on gable ends, or directly under the eaves.
- 4.7** It is considered that mitigation is fully achievable within the surveyed area with regards to roosting bats through a sensitive design at masterplan stage incorporating use of bat roosting features throughout the site. This will likely have a residual positive impact on roosting bats.

Bats – Foraging and Commuting

- 4.8** Taken together, terrestrial habitats on site (hedgerows and associated trees/ditch, scrub and grassland) were considered to be of ‘moderate’ value for foraging and commuting bats.
- 4.9** Given the placement of the site within the Barbastelle Bat Area of importance for Eversden and Wimpole Woods SAC (South Cambridgeshire District Council, 2009), it is recommended that bat activity surveys are undertaken to determine the level of usage of the site by foraging and commuting bats. Bat activity surveys are only possible during the bat active season between April-October; given

the mobility of bats as a species group, and their tendency to utilise different habitats and areas in varying frequency throughout the year, a 'moderate' level of survey effort is considered proportionate to likely impacts. As such, survey effort is recommended to include three seasonal (Spring; Summer; Autumn) transects and monthly automated surveys within the habitats of moderate foraging suitability between April and October.

4.10 In general, it is recommended that site lighting around key features likely to be used by potential roosting, foraging or commuting bats, such as the on-site treelines, is avoided during both the construction and operational phases. If lighting is necessary, then there are a number of ways to minimise the effect of lighting on bats. The following mitigation strategies have been taken from the Institution of Lighting Professionals and Bat Conservation Trust's Guidance Note 08/23 Bats and artificial lighting in the UK (2023) and other referenced sources:

- All luminaires should lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used;
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability;
- A warm white light source (2700Kelvin or lower) should be adopted to reduce blue light component;
- Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012);
- Internal luminaires can be recessed (as opposed to using a pendant fitting) where installed in proximity to windows to reduce glare and light spill;
- Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path edges;
- Column heights should be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards;
- Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered;
- Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt;
- Where appropriate, external security lighting should be set on motion sensors and set to as short a possible a timer as the risk assessment will allow. For most general residential purposes, a 1 or 2 minute timer is likely to be appropriate;
- Use of a Central Management System (CMS) with additional web-enabled devices to light on demand;
- Use of motion sensors for local authority street lighting may not be feasible unless the authority has the potential for smart metering through a CMS;
- The use of bollard or low-level downward-directional luminaires is strongly discouraged. This is due to a considerable range of issues, such as unacceptable glare, poor illumination efficiency, unacceptable upward light output, increased upward light scatter from surfaces and poor facial recognition which makes them unsuitable for most sites. Therefore, they should only be considered in specific cases where the lighting professional and project manager are able to resolve these issues.
- Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely;

- 4.11** The loss of foraging habitat (such as hedgerows and scrub) should be mitigated by the planting of native fruit-producing and nectar-rich hedgerow and tree species as this is more favourable for invertebrates (bats prey). This approach would serve to enhance the site for bats by improving connectivity and offering an additional foraging resource. Furthermore, any new hedgerows to be planted within the development should be native-species rich (at least five native woody species), as this is most attractive to invertebrates. Wherever feasible, hedgerows should incorporate maiden trees at intervals, as bats tend to prefer hedgerows with a more complex structure. Further enhancement could be delivered through the planting of lower flora known to be favoured by their invertebrate prey within the open space landscaping, such as night-flowering and nectar producing species attractive to moths (see Appendix 10).
- 4.12** It is considered that mitigation is fully achievable within the surveyed area with regards to foraging bats and would have a residual neutral to positive impact.

Birds

- 4.13** All breeding birds are protected from deliberate destruction under the WCA 1981 (as amended). Under this legislation all birds, their nests and eggs are protected by law and it is an offence, with certain exceptions, to intentionally kill, injure, or take any wild bird or their eggs or nests (exceptions to this are listed in Schedule 2). In addition, a select group of species are further listed under Schedule 1 of the Act and these have additional protection that makes it an offence to disturb these birds at the nest, or to disturb their dependent young. In addition to this statutory protection British birds are also classified according to their conservation status, including their position on the Red and Amber lists of Birds of Conservation Concern (BoCC)(BTO, 2021) and whether they have been identified as Priority Species.
- 4.14** The hedgerows, trees, scrub, and grassland within the site are considered to contain the potential for nesting birds. Therefore, potential impacts on nesting birds include damage to/disturbance of nests and loss of nesting habitat, during vegetation clearance prior to construction. Furthermore, the BoCC bird community utilising the sites could potentially be negatively impacted by loss of arable/grassland feeding resource.
- 4.15** It is predicted significant impacts of nesting habitat loss can be avoided and minimised through sensitive design at master planning stage to retain the existing hedgerows likely utilised by the majority of the breeding bird community. Existing trees and hedgerow habitats should be retained and reinforced with native species (suitable to mitigate for a range of generalist species likely to utilise the site) wherever feasible.
- 4.16** Due to the presence of suitable habitat, breeding bird surveys should be undertaken to confirm the value of the breeding assemblage and to guide the development of an appropriate mitigation strategy for the site. Given the mobility of birds as a species group, and their tendency to utilise different habitats and areas in varying frequency throughout the year, it is recommended that a comprehensive assessment of birds breeding use of the site is carried out.

- 4.17** The breeding bird surveys will require six visits, with at least one per month spread over the core breeding bird season between March to July. The surveys will be undertaken using a cut-down version of the standard Common Bird Census (CBC) methods, devised by the British Trust for Ornithology (BTO) (Marchant, 1983; Bibby *et al.*,1992) and will also focus on arable species such as skylark.
- 4.18** If any nesting bird habitat is to be lost or disturbed through construction then these areas should be cleared outside of the nesting bird season (March to August inclusive) where possible. If works on these habitats are required during the nesting bird season, then a nesting bird check / habitat inspection should be undertaken to ensure that there is no nest disturbance within the site by an ecologist within 24 hours prior to clearance to confirm the absence of active nests. Any active nests located during inspections will be protected with a species-suitable buffer of retained vegetation around the nest (of appropriate size to the species) and monitored until the nest is no longer active/all chicks have fledged, when the ecologist will provide sign off for clearance to be undertaken.
- 4.19** Further mitigation recommendations may be required dependant on the assemblage of breeding birds noted on site. Should nesting skylark be noted on site potential mitigation could include the offsite provision of compensatory skylark plots at a ratio of 2 plots for each identified nest.
- 4.20** To enhance the site for nesting birds, artificial nesting opportunities are recommended to be integrated into properties and installed on trees. Boxes are recommended to be included on buildings or retained trees to attract species known to occur locally, in particular house sparrow *Passer domesticus* and swift *Apus apus* (swift boxes are suitable for both species, Figure 4). Nest boxes should be installed with a northerly orientation to create a cool nesting environment and minimise the risk of chicks overheating. Swift boxes should be installed on buildings at 4-5m with a clear flight line directly below the eaves of properties. The locations of boxes should be grouped within the scheme due to the colonial nesting nature of these species, to facilitate likelihood of uptake. An example of suitable locations for the swift bricks to be installed is provided in Figure 6.



Figure 4: Manthorpe Swift box (integrated)



Figure 5: Schwegler 1B bird box for erection on trees



Figure 6: Suitable locations for the installation of nest boxes in a typical residential home (from BS 42021:2022)

4.21 Further measures to maintain and enhance the site post-development and provide feeding resources include the planting of new hedgerow, scrub, woodland and trees and reinforcement of existing habitats, with native species that are attractive to invertebrates and also provide suitable plant-based food sources (buds and berries). In addition, a low-intensity management regime should be adopted for hedgerow habitats, including late winter cutting to maintain food availability through the winter, and cutting only one side of hedges each time.

4.22 It is considered that mitigation is fully achievable within the surveyed area with regards to nesting birds and mitigation measures will result in a neutral to positive impact.

Great Crested Newt

4.23 Great crested newts are legally protected under the WCA (1981, as amended) and Conservation of Habitats and Species Regulations (2017, as amended). Taken together, it is an offence to destroy/damage a great crested newt resting place, to kill/injure individual animals, to disturb them within their resting places, or to impact them in such a way to be likely to significantly affect their ability to survive, breed, rear or nurture their young or their local distribution.

4.24 Research by English Nature (Cresswell, 2004) and Jehle et al. (Jehle, 2000) suggests that GCN are most likely to be encountered within 100m of a pond unless aided by linear features. P1 was approximately 163m north-west from the site. It was separated from the site by Swaynes Lane, though this road was small and without kerbs, and as such was not considered to form a barrier to dispersal. The ditch associated with H3 was dry at the time of survey; if water were present seasonally and did not have a flow, it could provide sub-optimal breeding habitat for GCN, as the species typically requires waterbodies that are sufficiently open, not heavily shaded, and of adequate size to support courtship behaviour.

- 4.25** Given the suitable terrestrial habitat on site, ponds in the vicinity, and potentially seasonally wet ditch on the southern boundary, further surveys are recommended. The surveys would seek to determine GCN presence/likely absence in ponds within 250m of the site, assess the significance of any GCN population, and define appropriate avoidance, mitigation, compensation and enhancement measures. To accord with published guidance (English Nature, 2001), it is advised that presence/likely absence surveys are conducted via an environmental DNA (eDNA) survey following published guidance (Biggs et al, 2014). eDNA can be undertaken at any time of year, but in order to evidence likely absence needs to take place between 15 April and 30 June. Dependent on the results, follow-up surveys may be required to determine population class size and to accurately determine mitigation. The ditch associated with H3 should also be subject to eDNA survey should it contain sufficient standing water at the time of sampling.
- 4.26** If GCN are confirmed and impacts cannot be avoided, a licence may be required (either District Level Licence (DLL) or standard mitigation licence). Mitigation would differ depending on the licensing route, but could include trapping/translocation and sensitive clearance of suitable habitat, along with creation of a receptor site, managed long term for this species. Given the characteristics of the site, mitigation is considered to be fully achievable.

Hazel Dormouse

- 4.27** Hazel dormouse are listed on Schedule 5 of the WCA 1981, and are also protected under Schedule 2 of the Habitats Regulations 2010 making them European Protected Species (EPS).
- 4.28** Suitable habitat for hazel dormouse included the hedgerows. Proposals for the site are not available but it is presumed that H1 will be partly lost to facilitate the development, primarily through access. It is considered that this would not lead to significant habitat loss or fragmentation effects, but may lead to death/injury to dormouse if present.
- 4.29** Given the suboptimal quality of the habitats present and likely low level of impact, in conjunction with the published data suggesting that hazel dormouse is absent from much of Cambridgeshire, it is considered that the likelihood of such an offence occurring is low. It is considered that a precautionary working method statement delivered by a dormouse licensed/accredited ecologist would sufficiently avoid impacts. Method statements differ by site, but would likely include measures to check vegetation at certain times of year before clearance to confirm absence of nests. If a dormouse or dormouse nest would be found during work under a method statement, works would need to be postponed until a licence is acquired.

Invertebrates

- 4.30** Section 40 of The Natural Environment and Rural Communities Act (NERC) 2006 places a legal duty on Local Authorities to conserve biodiversity. Section 41 (S41) sets out a list of 943 species and Habitats of Principal Importance. These species are known as England Biodiversity Priority (EBP) species and are those identified as requiring action under the former UK Biodiversity Action Plan (BAP) and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework.

- 4.73** In the first instance, it is recommended that suitable invertebrate habitat (hedgerows and scrub) be retained. No further surveys are considered necessary although it is recommended that clearance of suitable notable invertebrate habitat should be dismantled using hand tools in a methodical manner to allow invertebrates to move from the area to adjacent suitable habitat. Clearance should be done under supervision of an ECoW.
- 4.74** Retained habitat should be enhanced for invertebrates through additional planting and a sensitive long-term management plan. In addition, the proposal should include planting of native fruit and seed-bearing trees and shrubs such as those listed in Appendix 10 as well as areas of wildflower grassland throughout public open space. This will have a neutral to positive impact on invertebrates.

Water Vole

- 4.31** Water vole are protected from killing/injury and disturbance/obstruction/destruction of their burrows under the WCA 1981.
- 4.32** The ditch associated with H3 is considered potentially suitable for water vole and this species was recorded within 2km of the site. Where any impacts (such as excavation, releveling, or compaction of soils by plant) occur within 5m of the banks, there is as such considered to be a risk of impacts to water vole burrows. Although proposals for the site are not formalised, some level of impact to habitats in proximity to the ditch may be considered likely.
- 4.33** It is therefore considered that a water vole survey will be needed to search for evidence of this species activity (e.g. latrines and feeding signs) and in particular for the presence of burrows that could be destroyed or damaged by the works. This survey should comprise two visits, one during the early part of the season (between April-June) and a second in the latter part of the season (July-September).
- 4.34** If burrows are confirmed to be present within the impact zone of proposed works, proposals should be altered to avoid impacts in the first instance if possible. Alternatively, water vole may be displaced from burrows under licence via a process of staged vegetation removal. This must take place during spring (defined as 15 February to 15 April) or Autumn (15 September to 31 October) in order to avoid both the breeding period and the winter period when individuals show more fidelity to their burrows. There are also restrictions on the area of habitat over which displacement can take place under a CL31 class licence (a 50m continuous length of bank, with a gap of at least 500m in length between cuts on the same bank). While displacement can be undertaken over longer lengths of bank under a project-specific A11 licence, it should be noted that regardless, displacement may only take place where there is suitable water vole habitat in adjoining lengths of bank or in other immediately adjacent areas which are unaffected by the works. Displacement would be also required to be followed by a destructive search of the burrows within the construction zone under the supervision of a suitably qualified ecologist. It should be noted that the trapping and removal of water voles offsite is considered a last resort, and Natural England will only issue a licence to translocate water voles to an offsite receptor in exceptional circumstances.
- 4.35** To utilise a CL31 class licence if required, it is necessary to deliver enhancement for water voles post-works. Any A11 licence application will also require adequate habitat compensation to be demonstrated. Suitable enhancement measures would be determined by further survey/licence work

but may include compensatory planting incorporating a variety of water vole food plants, and ongoing favourable management of the ditch.

Reptiles

- 4.36** Common reptiles are protected under the WCA 1981, they are listed as schedule 5 species, therefore part of Section 9(1) and section 9(5) apply; the Countryside and Rights of Way Act 2000 (CRoW) also strengthens their protection.
- 4.37** Areas of hedgerow, grassland, and scrub provide some potential habitat features for reptiles and it is likely there will be impacts to reptile habitats. As such, it is recommended that a seven-visit presence/likely absence surveys are undertaken across all suitable habitats to determine if reptiles currently use the site. This should be undertaken during the active reptile season from April – September and during appropriate weather conditions, with temperature being the pre-eminent factor, by following current best practice guidelines (Froglife, 1999). The results of the surveys will determine the level of mitigation is required.
- 4.38** If reptile presence is confirmed on site, a review of habitat loss will determine likely mitigation required. If suitable sheltering habitat is to be lost, mitigation will likely require removal of these habitats under the supervision of an ECoW, with any reptiles found moved to suitable retained habitats outside of the works area. If proposals require the removal of large amounts of suitable reptile habitat, mitigation may require the installation of exclusion fencing along site boundaries, followed by trapping and translocation of reptiles to a suitable onsite receptor site with log piles/ hibernacula, followed by a destructive search supervised by an ECoW and under an appropriate precautionary working method statement.
- 4.39** Exclusion fencing for GCN (if required) would also function as mitigation for reptiles by prohibiting access onto the construction area. Furthermore, a Toolbox Talk would be carried out to site workers and reptile identification information should be displayed.
- 4.40** The provision of habitat buffers adjacent to hedgerows and grassland areas, as well as the site boundaries should aid to minimise impacts as these areas are likely to be most frequently utilised by reptile species. Within these areas, ongoing management should seek to create and maintain areas of dense scrub grading down to tall sward grasses and ruderals, and then into shorter grassed areas. This will provide a highly favourable mix of refuge and foraging opportunities, increasing the carrying capacity of retained habitats. To deliver additional habitat to compensate for any losses elsewhere through the site, new tussock type grassland (e.g., Emorsgate EM10) and native scrub planting should be incorporated in further areas of open space. Log piles and hibernacula should also be created within the open space close to retained hedgerow areas, using materials from any required tree clearance (Figure 7).

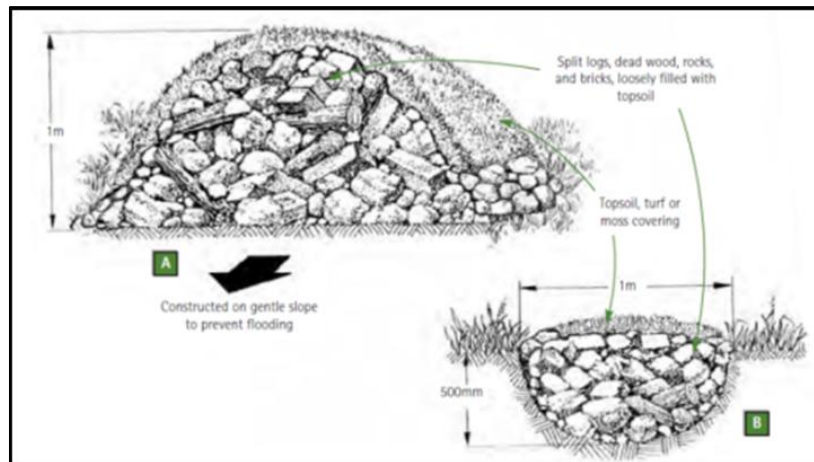


Figure 7: Hibernacula Design

4.41 Given the characteristics of the site, mitigation is considered to be fully achievable through the proposed layout. The above mitigation and enhancement recommendations would likely result in a positive residual effect.

Other Notable Species

4.42 Habitats on site were suitable for hedgehog and common toad comprising the hedgerows, grassland, and scrub. No further species-specific surveys are likely to be required under current legislation and planning policy. However, sightings of these species during other surveys should be recorded to inform iterative assessments.

4.43 Potential impacts to hedgehog and common toad include risk of death/injury during construction/vegetation clearance. In addition, if access is impeded to new residential gardens, habitat loss/fragmentation could significantly impact hedgehog during the occupational phase. As such, clearance of suitable habitats should occur outside of hedgehog hibernation (March-September) under supervision of an ECoW. Precautionary measures implemented to protect badgers, including low speed limits, would also serve to protect hedgehogs during the operational stage of the development.

4.44 Habitat loss and fragmentation within the site will be minimised through the retention of hedgerows, wherever feasible. Buffering of retained boundary features will maintain ecological connectivity through the site for other notable species.

4.45 To retain access into the site for hedgehog post-development, it is recommended that garden boundaries are either defined by permeable hedgerows, or hedgehog highways are added to garden fences by creating ad hoc 13cm x 13cm holes in fencing/walls. This size gap is too small for most pets and can be undertaken by raising a fence panel per garden; installing Hedgehog friendly fencing (Figure 8); removing a brick at the bottom of a wall or cutting a hole in fencing/walls. Regular dropped curbs will protect hedgehogs from road collision. Furthermore, the installation of hibernacula and use of native, species-rich seed mixes (Appendix 9) in informal areas will provide suitable foraging habitat for this species.



Figure 8: Hedgehog friendly fencing

- 4.46** Creation of new hedgerow, and grassland habitats, together with hibernacula provision as detailed for reptiles, would benefit hedgehog and common toad by providing enhanced foraging, breeding and refuge opportunities on the site. This would result in a neutral to positive impact for other notable species.

5.0 Conclusions

- 5.1** The site supports a range of habitats, including priority hedgerows, in addition to areas of lower value grassland and scrub habitats. The site provides suitable habitat for a number of protected and/or notable species. A summary of features, likely impacts, and outline mitigation and enhancement measures is provided in Table 6.
- 5.2** An initial BNG scenario has been tested in order to establish a reasonable developable parcel whilst still delivering 10% net gain on site.
- 5.3** The proposed development therefore provides an important opportunity to deliver biodiversity benefits which enhance habitats within and adjacent to the site and strengthen ecological connectivity for priority habitats and protected and notable species.

Table 6: Summary of likely impacts, mitigation and enhancement measures and residual effects

Feature	Likely Impacts	Further Surveys and Assessment	Likely Mitigation and Enhancement Measures
Statutory Designated Sites	Impacts upon qualifying feature (barbastelle) Increased recreational pressure.	HRA including Designated sites assessment Bat surveys (roosting and activity)	To be confirmed within HRA but likely to comprise provision of on-site semi-natural open space. To be confirmed as a result of the bat surveys
Non-statutory Designated Sites	Increased recreational pressure.	N/A	Provision of greenspace on site
Priority Habitats	Impacts to retained and/or adjacent habitats during construction, via direct damage, dust, pollution events, light and noise.	Biodiversity Net Gain Assessment using Defra Statutory Metric calculations	Retention, buffering and enhancement of habitats of ecological value wherever feasible, with compensatory provision where losses are unavoidable. Buffering of adjacent woodland habitats. Suitable habitat creation/enhancement throughout the site including enhancing existing woodland, new grassland, native tree, shrub, and hedgerow planting. Sensitive lighting scheme.
Badger	Injury/death of dispersing individuals during construction and operation. Loss of foraging and sett building habitat.	Update walkover survey 3 to 6 months before construction commences	Standard precautionary measures during construction; covering trenches overnight or installing a plank/mammal ladder, sensible storage of chemicals/equipment, avoidance of littering, low speed limits. Delivery of suitable enhancement for foraging badger within open space.

Feature	Likely Impacts	Further Surveys and Assessment	Likely Mitigation and Enhancement Measures
Bats - Roosts	Loss/disturbance of a roost (if present) Lighting impacts during/post construction	Aerial inspection of trees (May to August)	Further surveys and/or additional mitigation required if trees with potential to support roosting bats are impacted, and further surveys identify presence. If present, then application for an EPSL to cover the works. Retention of all mature trees where possible within the design. Sensitive design to avoid impacts to trees with suitability for roosting bats. Provision of bat boxes/suitable roost features on retained trees/within new buildings.
Bats - Activity	Loss and fragmentation of foraging/ commuting habitat Disturbance effects due to lighting	Seasonal bat activity surveys and monthly static monitoring	Retention of priority habitats, plus reinforcement & buffering of woodlands and tree lines. Sensitive lighting and wildlife-friendly landscaping schemes, incorporating new native tree and hedgerow planting.
Birds	Injury/death of birds and eggs Destruction/damage of nests Disturbance of nests Loss of nesting and foraging habitat	Breeding bird surveys (six per season, May to July)	Sensitive timings for vegetation clearance or nesting bird check by an ecologist within 48 hours prior with suitable buffer to be applied around any nests found. Retention, reinforcement and buffering of hedgerow and trees. Sensitive lighting and wildlife-friendly landscaping schemes, incorporating new native tree and hedgerow planting. Provision of artificial nesting opportunities (bird boxes).
GCN	Death/injury of adult great crested newt and loss of habitats Loss and fragmentation of foraging/ dispersal habitat	DLL: No further survey effort required Traditional licence route: eDNA surveys to confirm status. Presence /absence and population class pond surveys	Payment of DLL fee. No further surveys required. Mitigation will comprise on site ECoW during clearance of suitable habitats under a suitable Method Statement. If present then application for an EPSL to cover the works. New suitable habitat created/ enhancements delivered e.g. SUDS, hibernacula.
Hazel dormouse	Death/injury of hazel dormice	N/A	Minor clearance works to be undertaken under a sensitive method statement by a licenced/accredited ecologist. If found to be present, mitigation measures must be undertaken under an EPSL. Retention and enhancement of hedgerow habitats. Creation of hedgerow. Maintenance of ecological connectivity through retaining and enhancing hedgerows.

Feature	Likely Impacts	Further Surveys and Assessment	Likely Mitigation and Enhancement Measures
Invertebrates	<p>Potential for a range of generalist species.</p> <p>Direct loss of habitat</p> <p>Indirect impacts such as light disturbance during and post construction</p>	N/A	<p>Retention and buffering of higher-value priority habitats hedgerows and trees.</p> <p>Wildlife friendly planting scheme throughout development, incorporating resources for a range of pollinator species.</p> <p>Sensitive lighting scheme.</p>
Water vole	<p>Potential for ditch to provide suitable habitat</p> <p>Loss of habitat, death/injury</p>	Two visit presence/like absence surveys in season (April-June, then July-September)	<p>If present, displacement under licence via staged vegetation removal</p> <p>Buffering ditch and additional wildlife friendly planting throughout</p>
Reptiles	<p>Death/injury of common reptile species</p> <p>Habitat loss/fragmentation</p>	Seven presence/likely absence surveys in active season (April to September)	<p>Likely mitigation includes staged removal of suitable habitats under ecological supervision. If significant numbers of reptiles are recorded a translocation may be required.</p> <p>Key habitats to be retained/protected (grassland margins to woodland and hedgerows).</p> <p>Habitat enhancements e.g. hibernacula provision, new grassland creation, edge habitat creation.</p>
Hedgehog, common toad	<p>Death/injury</p> <p>Habitat loss/fragmentation</p>	Sightings to be reported in combination with other species specific surveys	<p>Retention and buffering of hedgerows to maintain ecological connectivity through the sites.</p> <p>Habitat creation including new grassland and shrub areas. Sensitive timings for works to terrestrial habitats, e.g. outside of hedgehog hibernation season (November-March).</p> <p>Provision of hedgehog highways in fencing and culverts for animal movement under new roads.</p> <p>Precautionary measures already specified for badgers will also serve to protect hedgehogs from harm during construction.</p>

6.0 References

Bibby, C. J., Burgess, N. D. and Hill, D. A. (1992) *Bird census techniques*. London: Academic Press.

British Standards Institution (2012) *BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations*. British Standards Institution: London.

British Standards Institution (2013) *BS 42020: 2013 Biodiversity – Code of Practice for Planning and Development*. British Standards Institution: London.

BRITISH Trust for Ornithology (2021) *Birds of Conservation Concern 5*. Available online: <https://www.bto.org/our-work/science/publications/reports/birds-conservation-concern>

Butcher, B., Carey, P., Edmonds, R., Norton, L., & Treweek, J. (2023). The UK habitat classification user manual, version 2.01. UKHab. <http://www.ukhab.org/>

Cambridge City Council and South Cambridgeshire District Council (2025). Habitats Regulations Assessment of Greater Cambridge Local Plan. Draft Local Plan Regulation 18 Consultation. Available at URL:<https://consultations.greatercambridgeplanning.org/sites/gcp/files/2025-11/SDGCLPDGCLPHRANov25.pdf>

Cambridge City Council and South Cambridgeshire District Council (2025) Draft Greater Cambridge Local Plan. Available at URL: <https://consultations.greatercambridgeplanning.org/sites/gcp/files/2025-11/PDGCLPPDGCLP1IDSNov25.pdf>

CIEEM (2017a) *Guidelines on Ecological Report Writing*. Chartered Institute of Ecology and Environmental Management: Winchester.

CIEEM (2017b) *Guidelines for Preliminary Ecological Appraisal 2nd edition*. Chartered Institute of Ecology and Environmental Management: Winchester.

CIEEM (2019a) *Code of Professional Conduct*. Chartered Institute of Ecology and Environmental Management: Winchester.

CIEEM (2019b) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* version 1.1. Chartered Institute of Ecology and Environmental Management: Winchester.

Collins, J. (ed.) (2024) *Bat Surveys for Professional Ecologists: Good Practice Guidelines 4th Edition*. London: The Bat Conservation Trust.

Department for Environment, Food and Rural Affairs (DEFRA) (January 2022) *Consultation on Biodiversity Net Gain Regulations and Implementation*

English Nature (2001). *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.

Froglife (1999) *Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife advice sheet 10. Froglife, Halesworth.

Gunnell, K., Grant, G. and Williams, C. (2012). *Landscape and Urban Design for Bats and Biodiversity*. Bat Conservation Trust

Harris, S., Cresswell, P. and Jefferies, D. (1989) *Surveying Badgers: Occasional Publication No.9*. The Mammal Society.

Hundt, L. (2012) *Bat Surveys: Good Practice Guidelines 2nd Edition*. The Bat Conservation Trust: London.

Institution of Lighting Professionals (2023) *Guidance Note 08/23: Bats and Artificial Lighting at Night*. Institution of Lighting Professionals, Warwickshire.

JNCC (2008) *UK Biodiversity Action Plan: Priority Habitat Descriptions*. Peterborough.

Marchant, J.H. (1983) *BTO Common Birds Census instructions*. BTO: Tring.

Ministry of Housing, Communities and Local Government (MHCLG) (2024) *National Planning Policy Framework*.

Natural England (2009). *Guidance on 'Current Use' in the Definition of a Badger Sett*. Natural England: Peterborough.

Reason, P.F. and Wray, S. (2025). *UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Version 1.2*. Chartered Institute of Ecology and Environmental Management, Ampfield.

South Cambridgeshire District Council, (2009). Biodiversity SPD. Available at URL: <https://www.scamb.gov.uk/media/2dcp4d10/adopted-biodiversity-spd.pdf>

South Cambridgeshire District Council, (2018). South Cambridgeshire Local Plan. Available at URL: <https://www.scamb.gov.uk/media/h0vjdqxj/south-cambridgeshire-adopted-local-plan-2018-1.pdf>

Stace, C. A. (2019) *New Flora of the British Isles, 4th Edition*. Cambridge University Press: Cambridge.

Stone, E.L., Jones, G., Harris, S. (2012) *Conserving energy at a cost to biodiversity? Impacts of LED lighting on bats*. *Glob Change Biol.* 18, 2458-2465.

Wells, D., Chanin, P. & Gubert, L. (2025) *Hazel Dormouse Mitigation Handbook*. The Mammal Society. ISBN: 978-1-0687982-2-1

Appendix 1: Site Plans

Site Location Plan



Appendix 2: Legislative and Policy Framework

National Planning Policy Framework (NPPF)

The *NPPF* (MHCLG, 2024) outlines what the planning system should do to contribute to and enhance the natural and local environment through the following policy statements:

Relevant Paragraphs

Paragraph 8

Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):

c) an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

Paragraph 20

Strategic policies should set out an overall strategy for the pattern, scale and quality of development, and make sufficient provision for:

d) conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure, and planning measures to address climate change mitigation and adaptation.

Paragraph 29

Non-strategic policies should be used by local planning authorities and communities to set out more detailed policies for specific areas, neighbourhoods or types of development. This can include allocating sites, the provision of infrastructure and community facilities at a local level, establishing design principles, conserving and enhancing the natural and historic environment and setting out other development management policies.

Paragraph 77

The supply of large numbers of new homes can often be best achieved through planning for larger scale development, such as new settlements or significant extensions to existing villages and towns, provided they are well located and designed, and supported by the necessary infrastructure and facilities (including a genuine choice of transport modes). Working with the support of their communities, and with other authorities if appropriate, strategic policy-making authorities should identify suitable locations for such development where this can help to meet identified needs in a sustainable way. In doing so, they should:

a) consider the opportunities presented by existing or planned investment in infrastructure, the area's economic potential and the scope for net environmental gains;

Paragraph 109

Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:

f) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and

Paragraph 124

Planning policies and decisions should promote an effective use of land in meeting the need for homes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions. Strategic policies should set out a clear strategy for accommodating objectively assessed needs, in a way that makes as much use as possible of previously-developed or 'brownfield'

land (Except where this would conflict with other policies in this Framework, including causing harm to designated sites of importance for biodiversity.)

Paragraph 125

Planning policies and decisions should:

- a) encourage multiple benefits from both urban and rural land, including through mixed use schemes and taking opportunities to achieve net environmental gains – such as developments that would enable new habitat creation or improve public access to the countryside;
- b) recognise that some undeveloped land can perform many functions, such as for wildlife, recreation, flood risk mitigation, cooling/shading, carbon storage or food production;

Paragraph 151

Once Green Belts have been defined, local planning authorities should plan positively to enhance their beneficial use, such as looking for opportunities to provide access; to provide opportunities for outdoor sport and recreation; to retain and enhance landscapes, visual amenity and biodiversity; or to improve damaged and derelict land.

Paragraph 162

Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating and drought from rising temperatures. Policies should support appropriate measures to ensure the future health and resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.

Paragraph 187

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.

Paragraph 188

Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

Paragraph 192

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 biodiversity⁵⁶; 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.

Paragraph 193

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 reasons and a suitable compensation strategy exists; and
- d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

Paragraph 194

The following should be given the same protection as habitats sites:

- a) potential Special Protection Areas and possible Special Areas of Conservation;
- b) listed or proposed Ramsar sites;
- c) sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

Paragraph 195

The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

Paragraph 198

Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

South Cambridgeshire Adopted Local Plan (2018)

Policy NH/4: Biodiversity

1. Development proposals where the primary objective is to conserve or enhance biodiversity will be permitted.

2. New development must aim to maintain, enhance, restore or add to biodiversity. Opportunities should be taken to achieve positive gain through the form and design of development. Measures may include creating, enhancing and managing wildlife habitats and networks, and natural landscape. The built environment should be viewed as an opportunity to fully integrate biodiversity within new development through innovation. Priority for habitat creation should be given to sites which assist in the achievement of targets in the Biodiversity Action Plans (BAPs) and aid delivery of the Cambridgeshire Green Infrastructure Strategy.
3. If significant harm to the population or conservation status of a Protected Species, Priority Species¹ or Priority Habitat 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 will be refused.
4. Where there are grounds to believe that a proposal may affect a Protected Species, Priority Species or Priority Habitat, applicants will be expected to provide an adequate level of survey information and site assessment to establish the extent of a potential impact. This survey information and site assessment shall be provided prior to the determination of an application.
5. Previously developed land (brownfield sites) will not be considered to be devoid of biodiversity. The reuse of such sites must be undertaken carefully with regard to existing features of biodiversity interest. Development proposals on such sites will be expected to include measures that maintain and enhance important features and appropriately incorporate them within any development of the site.
6. Planning permission will be refused for development resulting in the loss, deterioration or fragmentation of irreplaceable habitats, such as ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss
7. Climate change poses a serious threat to biodiversity and initiatives to reduce its impact need to be considered.

Policy NH/5: Sites of Biodiversity or Geological Importance

1. Proposed development likely to have an adverse effect on land within or adjoining a Site of Biodiversity or Geological Importance, as shown on the Policies Map (either individually or in combination with other developments), will not normally be permitted. Exceptions will only be made where the benefits of the development clearly outweigh any adverse impact.
2. In determining any planning application affecting Sites of Biodiversity or Geological Importance the Council will ensure that the intrinsic natural features of particular interest are safeguarded or enhanced having regard to:
 - a. The international, national or local status and designation of the site;
 - b. The nature and quality of the site's features, including its rarity value;
 - c. The extent of any adverse impacts on the notified features;
 - d. The likely effectiveness of any proposed mitigation with respect to the protection of the features of interest;
 - e. The need for compensatory measures in order to re-create on or off the site features or habitats that would be lost to development.
3. Where appropriate the Council will ensure the effective management of designated sites through the imposition of planning conditions or Section 106 agreements as appropriate.

Wildlife Legislation

The two principal wildlife statutes are the Conservation of Habitats and Species Regulations (The Habitats Regulations 2019), which deals with internationally important sites and species, and the Wildlife and Countryside Act (WCA) 1981, which deals with nationally important sites and species.

Certain habitats and species within discrete sites are protected as SSSI under the WCA 1981. A proportion of these are more strictly protected as proposed or designated SPA, SAC and Ramsar sites under the Conservation of Habitats and Species Regulations (2019). These designations protect features and resources listed as being of international importance from both direct and indirect effects arising from a range of issues including proposed development. In addition, non-statutory designated sites (e.g. Local Wildlife Sites) are protected under the National Parks and Access to the Countryside Act, (1949) Section 21.

Certain species listed on Schedule 5 of the WCA 1981, including all bat species, great crested newt *Triturus cristatus*, hazel dormouse *Muscardinus avellanarius* and otter *Lutra lutra* are also protected under Schedule 2 of the Habitats Regulations 2010 making them European Protected Species (EPS). Taken together it is illegal to:

- Deliberately kill, injure or capture any wild animal of EPS;
- Deliberately disturb wild animals of any EPS in such a way to be likely to significantly affect:
 - The ability of that species to survive, breed, rear or nurture their young; or
 - The local distribution of that species.
- Recklessly disturb an EPS or obstruct access to their place of rest;
- Damage or destroy breeding sites or resting places of such animals;
- Deliberately take or destroy the eggs of such an animal;
- Possess or transport any part of an EPS, unless acquired legally; and/or
- Sell, barter or exchange any part of an EPS.

A range of species other than birds, including water vole *Arvicola amphibius*, is protected from disturbance and destruction under the WCA 1981 through inclusion on Schedule 5.

All breeding birds are protected from deliberate destruction under the WCA 1981. Certain species are further protected from disturbance at their nest sites being listed on Schedule 1 of the WCA 1981.

Common reptiles including common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, grass snake *Natrix helvetica* and adder *Vipera berus* are protected under the WCA 1981, they are listed as schedule 5 species, therefore part of Section 9(1) and section 9(5) apply; the Countryside and Rights of Way Act 2000 (CRoW) also strengthens their protection.

Badger *Meles meles* is protected from sett disturbance and destruction under the Protection of Badgers Act 1992.

Section 40 of The Natural Environment and Rural Communities Act (NERC) 2006 places a legal duty on Local Authorities to conserve biodiversity. Section 41 (S41) sets out a list of 943 species and Habitats of Principal Importance. These species are known as England Biodiversity Priority (EBP) species and are those identified as requiring action under the former UK Biodiversity Action Plan (BAP) and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework.

Native, species-rich hedgerows that fit certain criteria are protected as being 'important' under the Hedgerow Regulations (1997).

Japanese Knotweed *Reynoutria japonica*, along with other introduced and invasive species are listed under Schedule 9 of the WCA 1981. Japanese knotweed is highly invasive, and its rhizomes cause damage to buildings and other infrastructure. Hence it is also classed as controlled waste under the Environment Protection Act 1990 and has therefore either to be removed or disposed of in a licensed landfill or the rhizomes buried to a depth of at least 5m.

Appendix 3: Detailed Methods

Badger

- 6.1** Surveys were carried out using standard guidelines for classifying badger setts and categorising entrance holes (Harris et al., 1989; Scottish Badgers, 2018; Natural England, 2009). All areas of the site and wider area were readily accessible except private residential properties.
- 6.2** The survey comprised a detailed systematic walkover survey of the site. The badger signs looked for were:
- Additional holes/setts;
 - Prints;
 - Badger runs;
 - Hairs;
 - Latrines;
 - Scratching posts, and;
 - Snuffle marks.
- 6.3** The number of entrances and levels of use were recorded, and the sett was classified according to the criteria used in the National Badger surveys (Harris et al., 1989). The classification criteria are given below:
- Main setts – a large well established, often extensive and in continuous use. There is only one main sett per social group of badgers. This is where the cubs are most likely to be born.
 - Annexe setts – occur in close association with the main sett and are linked to the main sett by clear well-used paths. If a second litter of cubs are born, they will be reared here.
 - Subsidiary setts – these often have 3-5 holes and are normally over 50m from a main sett and are not linked by clear paths. These setts are not continually active.
 - Outlying setts – these usually have 1-3 holes, have small spoil heaps and are sporadically used. Foxes and rabbits may move in.
- 6.4** An assessment of the activity of each sett was undertaken; the following categories were assigned to the entrance holes to make this assessment:
- Well-used: Entrances clear of debris and vegetation and are obviously well used.
 - Partially-used: Entrances are not in regular use and have debris such as leaves or twigs across the entrances. These holes could come into regular use with minimal clearance.
 - Disused: Entrances have not been used for some time, are partially or completely blocked. There may be a depression in the ground where the hole used to be.
- 6.5** A badger sett is protected by legislation if it “displays signs indicating current use by a badger”. A sett is therefore protected if such signs remain present (Natural England, 2009). As such, a sett is likely to fall outside the definition of a sett in the Act if the evidence available indicates that it is not in current use by badgers; e.g. absence of badger field signs, debris in sett entrances etc.

Bats

- 6.6** A scoping exercise was undertaken to assess the sites suitability to support roosting, foraging and commuting bats.
- 6.7** All trees within the site boundary were assessed for their potential to support roosting bats. Trees and buildings were assessed to determine if further surveys including ground level tree assessments and preliminary bat roosting feature assessments are required.

6.8 Habitats on and adjacent site were assessed for their suitability to support roosting, foraging and commuting bats using guidelines issued by the Bat Conservation Trust (Collins, 2023).

Table 7: Assessment of the potential suitability of a proposed development site for roosting, foraging and commuting bats (Collins, 2023)

Suitability	Roosting habitats	Commuting and foraging habitats
Negligible	No obvious habitat features on site likely to be used by roosting; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion	Negligible habitat features on site likely to be used by commuting and foraging bats
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by another habitat Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or patch of scrub
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. These structures have the potential to support high conservation status roosts	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge High-quality habitat that is well-connected to the wider landscape that is likely used regularly by foraging bats such as broad-leaved woodland, tree-lined watercourses and grazed parkland Site is close to and connected to known roosts

Table 8: Assessment of the potential suitability of tree for roosting bats (Collins, 2023)

Suitability	Description
NONE	Either no PRFs in the tree or highly unlikely to be any
FAR	Further assessment required to establish if PRFs are present in the tree
PRF	A tree with at least one PRF present

Table 9: Categorisations of the potential suitability of PRFs for bats (Collins, 2023)

Suitability	Description
PRF-I	PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats
PRF-M	PRF is suitable for multiple bats and may therefore be used by a maternity colony

Birds

6.9 The site was assessed for its potential to support breeding birds and significant wintering and/or migratory bird populations. Suitable habitat generally includes scrub, trees and can also include buildings, open grassland and piles of debris. Detailed bird surveys were not undertaken at this preliminary stage.

Great Crested Newt

- 6.10** Aquatic and terrestrial habitats were assessed for their suitability for great crested newts. Suitable terrestrial habitat generally includes rough grassland and woodland where they can forage and hibernate, with good links to ponds where they breed.

Hazel Dormouse

- 6.11** Habitats on site were assessed for their general suitability for hazel dormouse. This species generally uses areas of dense woody vegetation and are more likely to be found where there is a wide diversity of woody species contributing to a three-dimensional habitat structure, a number of food sources, plants suitable for nest-building materials and good habitat connectivity.

Invertebrates

- 6.12** The site was assessed for its potential to support rare or notable invertebrate species; this assessment was made on the basis of the range of the habitats present.

Otter

- 6.13** The site was assessed for its potential to support otters. Otters have been recorded exploiting virtually all types of water and waterways in the UK and can be found on still waters (canals, lakes, ponds and reservoirs) as well as rivers and streams of all sizes. Suitable sites must have an abundant supply of food (normally associated with high water quality), together with suitable habitat, such as vegetated riverbanks, islands, reedbeds and woodland, which are used for foraging, breeding and resting.

Water Vole

- 6.14** The site was assessed for its potential to support water voles. Water voles will inhabit most open water and wetland habitats including streams, canals, wet ditches and ponds however they do require certain characteristics to thrive. These include slow-flowing waters around 1m deep, steep earth banks to create burrows, and tall herbaceous vegetation to provide food and cover from predators.

Reptiles

- 6.15** The site was assessed for its suitability for the four common UK reptile species; common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, grass snake *Natrix natrix* and adder *Vipera berus*. Specific habitat requirements vary between species. Common lizard and slow worm prefer rough grassland although they can be found in a variety of habitats ranging from woodland glades to walls and pastures. Grass snakes have similar habitat requirements but have a greater reliance on ponds and wetlands. Adder is more associated with dry grasslands, heathland and woodland edge habitats.

Other Notable Species

- 6.16** The site was assessed for its potential to support Natural Environment and Rural Communities (NERC) Act 2006 species of principal importance which are likely to occur in the local area especially hedgehog *Erinaceus europaeus* and brown hare *Lepus europaeus*.

Appendix 4: UKHab Survey Plan



Appendix 5: Plant Species recorded during UKHab Survey

Common name	Latin Name	Modified grassland	H1	H2	H3	H4	H5	H6
Agrimony	<i>Agrimonia sp.</i>	R						
Ash	<i>Fraxinus excelsior</i>		A	A				
Bramble	<i>Rubus futicosus agg.</i>		F	F	F	F		
Box	<i>Buxus sepervirens</i>						D	
Cleavers	<i>Galium aparine</i>		O	O				
Cock's-foot	<i>Dactylis glomerata</i>	D	A	A				
Common couch	<i>Elymus repens</i>	F						
Common crownvetch	<i>Securigera varia</i>		R	R				
Common nettle	<i>Urtica dioica</i>		A	A				
Creeping thistle	<i>Cirsium arvense</i>	O	O	O				
Dock	<i>Rumex sp.</i>		R	R				
Dog rose	<i>Rosa canina</i>				F	F		
False oat-grass	<i>Arrhenatherum elatius</i>				R	R		
Field bindweed	<i>Convolvulus arvensis</i>	A						
Great willowherb	<i>Epilobium hirstum</i>		R					
Groundsel	<i>Senecio vulgaris</i>	F						
Hawthorn	<i>Crataegus monogyna</i>		D		D	D		D
Hedge bedstraw	<i>Galium album</i>	R						
Ivy	<i>Hedera helix</i>		O					
Maple	<i>Acer sp.</i>		O					
Pedunculate oak	<i>Quercus robur</i>		R			F		
Perennial rye-grass	<i>Lolium perenne</i>		D					
Teasel	<i>Dipsacus sp.</i>				R	R		
Wild cherry	<i>Prunus avium</i>		O					
Wild privet	<i>Ligustrum vulgare</i>		F				R	

Appendix 6: Site Photos



Plate 1: Comberton Byway with H1 on left.



Plate 2: Modified grassland main field

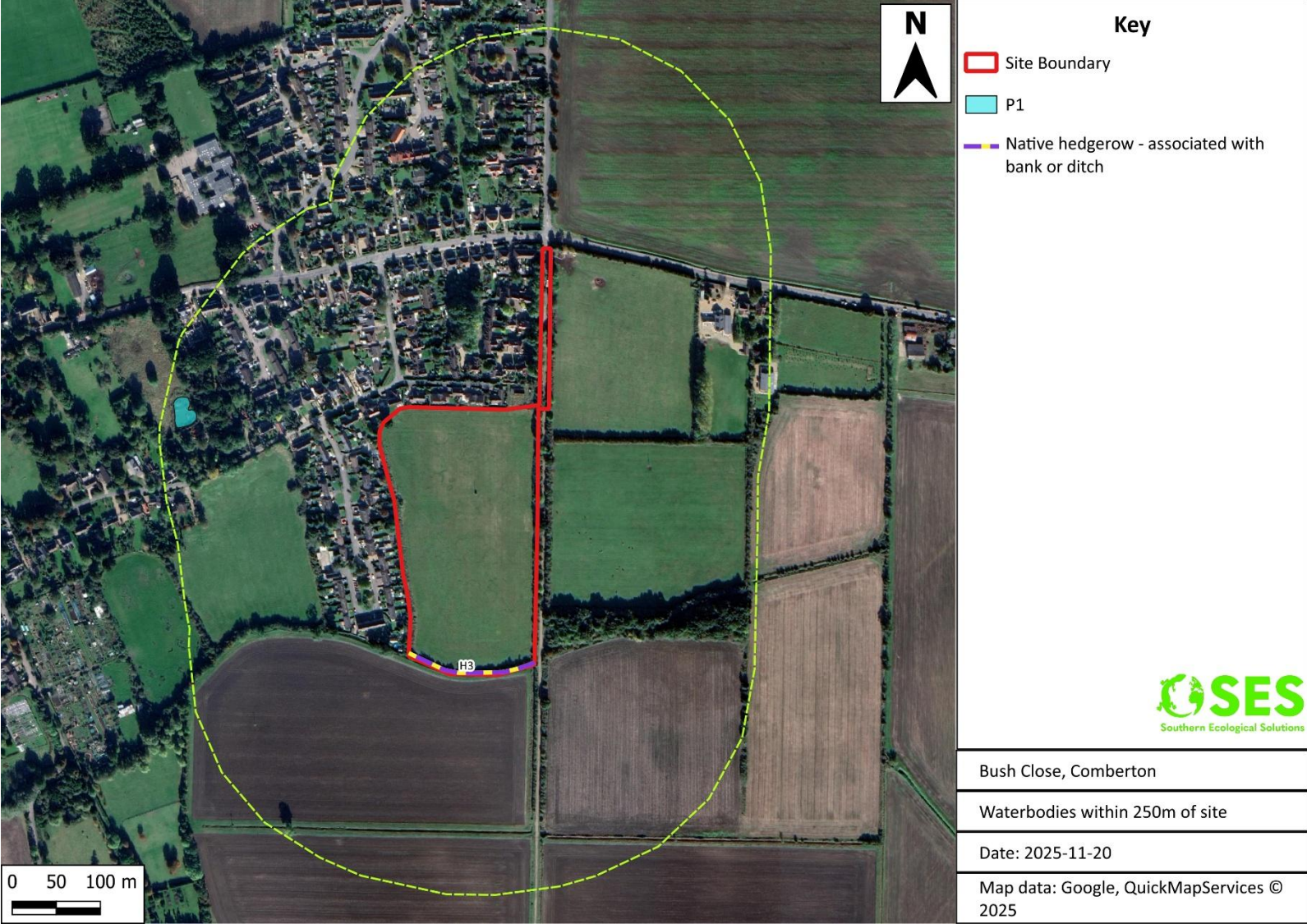


Plate 3: West side of main field looking at boundary scrub

Appendix 7: Bat Roosting Potential Map



Appendix 8: Pond Location Plan



Appendix 9: Plant Species of Known Benefit to Wildlife

Common Name	Scientific Name	Benefits
Shrubs		
Barberry *	<i>Berberis spp.</i>	Nectar, fruit, nesting cover
Blackthorn	<i>Prunus spinosa</i>	Nectar, fruit, larval foodplant, nesting cover
Broom	<i>Cystisus scoparius</i>	Nectar, larval foodplant
Buckthorn #	<i>Rhamnus cathartica</i>	Nectar, berries, larval foodplant, nesting cover
Butterfly bush*	<i>Buddleja davidii</i>	Nectar, nesting cover
Butterfly bush*	<i>Buddleja globosa</i>	Nectar
Californian lilac*	<i>Ceanothus spp.</i>	Nectar, nesting cover
Cherry laurel*#	<i>Prunus laurocerasus</i>	Nectar (including extra-floral nectaries)
Dog Rose	<i>Rosa canina agg.</i>	Nectar, fruit, larval foodplant, nesting cover
Dogwood	<i>Cornus sanguinea</i>	Nectar, fruit, larval foodplant
Elder	<i>Sambucus nigra</i>	Nectar, fruit, larval foodplant, nesting cover
Field rose	<i>Rosa arvensis</i>	Nectar, larval foodplant, fruit
Firethorn*	<i>Pyracantha spp.</i>	Nectar, fruit, nesting cover
Flowering currant *	<i>Ribes sanguineum</i>	Nectar, larval foodplant
Garden lavender*	<i>Lavandula x intermedia</i>	Nectar
Gorse	<i>Ulex europaeus</i>	Nectar, larval foodplant, nesting cover
Guelder rose	<i>Viburnum opulus</i>	Nectar, fruit, larval foodplant
Hawthorn	<i>Crataegus monogyna</i>	Nectar, fruit, larval foodplant, nesting cover
Hazel	<i>Corylus avellana</i>	Nuts, larval foodplant
Hebe *	<i>Hebe spp.</i>	Nectar
Holly	<i>Ilex aquifolium</i>	Nectar, fruit, larval foodplant, nesting cover
Laurustinus*	<i>Viburnum tinus</i>	Nectar, nesting cover
Mexican orange *	<i>Choisya ternata</i>	Nectar
Portuguese laurel *	<i>Prunus lusitanica</i>	Nectar, fruit, nesting cover
Rosemary *	<i>Rosmarinus officinalis</i>	Nectar
Spindle #	<i>Euonymus europaeus</i>	Nectar, fruits
Tutsan	<i>Hypericum androsaemum</i>	Nectar, fruit, larval foodplant
Wayfaring tree	<i>Viburnum lantana</i>	Nectar, fruit, larval foodplant
Yew#	<i>Taxus baccata</i>	Berries, nesting cover
Climbers		
Clematis*	<i>Clematis tangutica</i>	Nectar, seeds
Honeysuckle	<i>Lonicera periclymenum</i>	Nectar, fruit, larval foodplant, nesting cover
Ivy	<i>Herdera helix</i>	Nectar, fruit, larval foodplant, nesting cover
Traveller's joy	<i>Clematis vitalba</i>	Nectar, seeds, larval foodplant
Note: * Non-native species # Poisonous ** Native Woody species		

Appendix 10: Species of Known Benefit to Wildlife especially Bats and Invertebrates

The following table is reproduced from Gunnell, K., Grant, G. and Williams, C. (2012). Landscape and Urban Design for Bats and Biodiversity, Bat Conservation Trust. This table contains a suggested species list of plants that can provide benefit for bats either by providing a food source for insects and/ or roost potential. The plants listed are predominately native to Britain. The small group of non-native plants included for their documented value for wildlife. The list has been checked by the author against Natural England's list of invasive non-native plants.

Plant species	Common name	Native (N)	Type	Benefit	Soil	Light	Extensive green roofs	Living walls	Rain gardens	Hedge/ trees	Beds/ borders
<i>Acer campestre</i>	Field maple	N	T/S	C	Any	Sun/ shade				Y	
<i>Acer platanoides</i>	Norway maple		T	S	Well drained/ alkaline	Sun/ shade				Y	
<i>Acer saoocharum</i>	Sugar maple		T	S	Any	Sun/ shade				Y	
<i>Achillea millefolium</i>	Yarrow	N	HP	C,F	Well drained	Sun				Y	
<i>Ajuga reptans</i>	Bugle	N	HP	C,F	Any	Sun/ shade	Y		Y		
<i>Anthyllis vulneraria</i>	Kidney vetch	N	HP	F	Well drained	Sun	Y				
<i>Aubrieta deltoidea</i>	Aubrieta		H	F	Well drained	Sun/shade		Y			
<i>betula pendula</i>	Sliver birch	N	T	C	Sandy/ acid	Sun				Y	
<i>Cardamine pratensis</i>	Cuckoo-flower	N	HP	F	Moist	Sun/ shade			Y		Y
<i>Carpinus betulus</i>	Hornbeam	N	T	C	Clay	Sun				Y	
<i>Centaurea nigra</i>	Common knapweed	N	HP	C,F	Dry, not acid	Sun	Y				Y
<i>Centranthus ruber</i>	Red valerian		HP	F	Well drained	Sun	Y				Y
<i>Clematis vitalba</i>	Old man's Beard	N	C	F	well drained/ alkaline	Sun				Y	
<i>Corylus avellana</i>	Hazel	N	S	C	Any dry	Sun/ shade		Y		Y	
<i>Crataegus monogyna</i>	Hawthorn	N	S	S,C	Any	Sun/shade				Y	
<i>Daucus carota</i>	Wild carrot	N	Bi	S,C,F	Any	Sun	Y				Y
<i>Dianthus spp.</i>	Pinks	N	A-Bi	F	Well drained	Sun	Y	Y			Y
<i>Digitalis purpurea</i>	Foxglove	N	Bi	C	Well drained	Shade/ partial shade				Y	Y
<i>Erica cinera</i>	Bell heather	N	S	F	Sandy	Full sun					Y
<i>Ersimum cherira</i>	Wallflower		Bi-P	F	Well drained	Sun		Y			Y
<i>Eupatorium</i>	Hemp agrimony	N	H	F	Moist	Sun/ shade			Y		Y

Plant species	Common name	Native (N)	Type	Benefit	Soil	Light	Extensive green roofs	Living walls	Rain gardens	Hedge/ trees	Beds/ borders
<i>Fagus sylvatica</i>	Beech	N	T	C, R	Well drained alkaline	Sun/ shade				Y	
<i>Foeniculum vulgare</i>	Fennel		H	F	Well drained	Sun					Y
<i>Fraxinus excelsior</i>	Common Ash	N	T	C, R	Any	Sun/ shade				Y	
<i>Hebe spp.</i>	Hebe species		S	F	Well drained	Sun /shade				Y	Y
<i>Hedera Helix</i>	Ivy	N	C	F,C	Any	Sun/ shade		Y	Y	Y	Y
<i>Hesperis matronalis</i>	Sweet Rocket		H	F	Well drained/ dry	Sun/ shade					Y
<i>Hyacinthoides non-scripta</i>	Bluebell	N	B	F	Loam	Shade/ partial shade		Y		Y	Y
<i>Ilex aquifolium</i>	Holly	N	T	C	Any	Sun/ shade				Y	
<i>Jasmine officinale</i>	Common jasmine		C	F	Well drained	Sun		Y			Y
<i>Lavandula spp.</i>	Lavender species		S	F	Well drained / sandy	Sun		Y			Y
<i>Linaria vulgaris</i>	Toadflax	N	HP	C	Well drained/ alkaline	Sun	Y				Y
<i>Lonicera periclymenum</i>	Honeysuckle	N	C	F	Well drained	Sun		Y		Y	
<i>Lotus corniculatus</i>	Bird's foot trefoil	N	HP	F	Well drained/ dry	Sun	Y				Y
<i>Lunaria annua</i>	Honesty		Bi	F	Any	Sun/ partial shade	Y				Y
<i>Malus spp.</i>	Apple		T	C	Any	Sun				Y	Y
<i>Matthiola longipetala</i>	Night - scented stock		A	F	Well drained/ moist				Y		Y
<i>Myosotis spp.</i>	Forget me not sp.	N	A	F	Any	Sun	Y	Y			Y
<i>Nicotiana glauca</i>	Ornamental tobacco		A	F	Well drained moist	Sun / partial shade			Y		Y
<i>Oneothesa spp.</i>	Evening primrose		Bi	F	Well drained	Sun	Y				Y
<i>Origanum vulgare</i>	Marjoram	N	HP	F	Well drained / dry	Sun				Y	

Plant species	Common name	Native (N)	Type	Benefit	Soil	Light	Extensive green roofs	Living walls	Rain gardens	Hedge/trees	Beds/borders
<i>Populus alba</i>	White poplar	N	T	C	Clay loam	Sun				Y	
<i>Primula veris</i>	Cowslip	N	HP	F	Well drained/ moist	Sun/ partial shade	Y				Y
<i>Primula vulgaris</i>	Primrose	N	HP	F	Moist	Partial shade	Y	Y		Y	Y
<i>Prunus avium</i>	Wild cherry	N	T	C	Any	Sun				Y	Y
<i>Prunus domestica</i>	Plum		T	C	Well drained/ moist	Sun				Y	Y
<i>Prunus spinosa</i>	Blackthorn	N	S	C	Any	Sun/ partial shade				Y	
<i>Querois petraea</i>	Sessile oak	N	T	C,R	Sandy loam	Sun/ shade				Y	
<i>Quercus robur</i>	Common oak	N	T	R	Clay Loam	Sun/ shade				Y	
<i>Rosa canina</i>	Dog rose	N	S	C	Any	Sun			Y	Y	Y
<i>Salix spp.</i>	Willow species	N	S	S,C	Moist	Sun/ shade			Y	Y	
<i>Sambucus nigra</i>	Elder	N	T	C	Clay loam	Sun				Y	
<i>Saponaria officinalis</i>	Soapwort	N	HP	F	Any	Sun					Y
<i>Saxifraga oppositifolia</i>	Saxifrage	N	HP	C	Well drained	Sun	Y	Y			Y
<i>Scabiosa columbaria</i>	small scabious	N	HP	F	Well drained/ alkaline	Sun	Y				Y
<i>Sedum spectabile</i>	Ice plant		HP	F	Well drained/ dry	Sun	Y				Y
<i>Silene dioecia</i>	Red campion	N	HP	F	Any	Shade/ partial shade		Y	Y	Y	Y
<i>Sorbus aucuparia</i>	Rowan	N	T	C	Well drained	Sun				Y	
<i>Stachys lanata</i>	Lamb's ear		HP	F	Well drained/ dry	Sun					Y
<i>Symphotrichum spp.</i>	Michaelmas daisies		HP	F	Any	Sun					Y
<i>Tages patula</i>	French marigold		A	F	Well drained	Sun					Y
<i>Thymus serpyllum</i>	Creeping thyme	N	HP/S	F	Well drained/ dry	Sun	Y	Y			Y

Plant species	Common name	Native (N)	Type	Benefit	Soil	Light	Extensive green roofs	Living walls	Rain gardens	Hedge/trees	Beds/borders
<i>Tilia x europaea</i>	Common lime		T	C	Any	Sun/ shade				Y	
<i>Trifolium spp.</i>	Clover species	N	H	F	Any	Sun	Y				Y
<i>Valerina spp.</i>	Valerian species	N	HP	F	Moist	Sun/ partial shade			Y		Y
<i>Verbascum spp.</i>	Mulleins	N	Bi, HP	C	Well drained	Sun					Y
<i>Verbena bonariensis</i>	Verbena		HP	F	Well drained/moist	Sun					Y
<i>Viburnum lantana</i>	Wayfaring tree	N	S	C	Any	Sun/ shade				Y	Y
<i>Viburnum opulus</i>	Guelder rose	N	S	C	Moist	Sun/ shade			Y	Y	
<i>Viola tricolor</i>	Pansy	N	A	F	Well drained/moist	Sun/ partial shade	Y	Y			Y

Legend

Type		Benefit	
HP	Herbaceous perennial	C	Moth caterpillar food plant
Bi	Biennial	S	Sap sucking insects (e.g., whiteflies)
BiP	Biennial perennial	F	Flowers attract adult moths
T	Tree	E	Good roost potential
S	Shrub		
H	Herb		
A	Annual		
B	Bulb		
C	Creeper/ climber		