



Preliminary Ecological Appraisal

Steeple Aston

On Behalf of:

Rectory Homes

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Executive summary

1. This report presents the results of a preliminary ecological appraisal undertaken at South Side, Steeple Aston in Oxfordshire.
2. The site is located within Cherwell District Council. The site is bordered by rural residential and commercial properties to the north, west, and east, and arable farmland to the south with South Side road running along the northern boundary of the site.
3. There are no European designated sites within 10km however there are three ecologically designated national statutory sites within 5km of the proposed development. No impacts are predicted on these sites.
4. The site consisted primarily of semi-improved grassland with scattered young scrub growth and species-rich boundary hedgerows. It also featured two earth mounds with established scrub and tall ruderal vegetation. There is one building on site.
5. The building was assessed as having low potential for roosting bats due to the presence of extremely dense ivy growth, particularly around the western compartment.
6. Precautionary measures are set out to mitigate negative effects on badgers, birds, invertebrates, other notable species, and the habitats present on site.
7. Further survey effort is advised for bats (one emergence survey) and reptiles. These surveys are currently ongoing, and an ecological impact assessment will be provided once these surveys are completed. This report provides indicative mitigation options for bats and reptiles, which can be fully achieved if these taxa are found on site during further surveys.

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1.0 Introduction

- 1.1** Southern Ecological Solutions Ltd. (SES) was commissioned by Rectory Homes Limited to update an existing extended Phase 1 Habitat Survey report (SES, 2017) of land at South Side, Steeple Aston. The site location is shown in Appendix 1.
- 1.2** The site is located at Ordnance Survey Grid Reference SP 46959 25841 and is approximately 1ha, comprising semi-improved grassland, scattered scrub, and tall ruderal vegetation, with boundary hedgerows.
- 1.3** Planning permission is being sought for the demolition of an existing dilapidated shed structure and the construction of 10 residential properties with associated hard standing, amenity gardens, and access road. The proposed site layout is shown in Appendix 2.
- 1.4** The objectives of this preliminary ecological appraisal (PEA) were to:
- Map the main ecological features within the site 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;
 - Determine any potential further ecological issues;
 - Determine the need for further surveys and mitigation;
 - 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, 2019), and policy ESD 10 within the Cherwell Local Plan 2011-2031 (2016).
- 1.5** Details of relevant wildlife legislation and planning policies are provided in Appendix 3.

2.0 **Methods**

2.1 The following PEA follows guidance and methods as prescribed by the Chartered Institute for Ecology and Environmental Management (CIEEM) Guidelines for Ecological Appraisal 2nd edition (2017) and the Guidelines for Ecological Impact Assessment (2018). 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. Recommended phase 2 ecological surveys have been identified as well as a timetable for implementation. These surveys will fully inform the predicted impacts of the scheme in accordance with the National Planning Policy Framework (NPPF) (MHCLG, 2019), local planning policy and relevant wildlife legislation.

Desk study

2.2 To support the previous extended Phase 1 Habitat Survey report (SES, 2017), SES commissioned a data search for records of protected and notable species as well as non-statutory designated sites from the Thames Valley Environmental Records Centre (TVERC). The data search encompassed the study area, and up to 2km from the boundary. Data were received from TVERC on 2 November 2017. Given that these results are less than two years old, the results are still considered relevant to this assessment. Hazel dormouse *Muscardinus avellanarius* records were also sought from the National Biodiversity Network (NBN) Atlas, which holds data from the People's Trust for Endangered Species (PTES).

2.3 A web-based search for statutory designated sites via the Multi Agency Geographic Information for the Countryside (MAGIC) spatial data resource www.magic.gov.uk was undertaken on 8 May 2019 for the following designations: European (up to 10km from the site boundary); and national (5km from the site boundary).

2.4 An online search was undertaken for waterbodies within 500m of the site boundary utilising MAGIC Map on 8 May 2019.

Extended Phase 1 Habitat Survey

2.5 An extended Phase 1 Habitat Survey was carried out on 9 May 2019 by suitably qualified ecologist Dan Carne BSc (Hons) in appropriate weather conditions. This is a standard technique for obtaining baseline ecological information for areas of land, including proposed development sites. Phase 1 Habitat Survey methods are set out in the *Handbook for Phase 1 Habitat Survey* (Joint Nature Conservation Committee, 2010). Habitat mapping was undertaken using the standard classification to indicate habitat types.

2.6 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

2.7 These scores represent the abundance within the defined area only and do not reflect national or regional abundances. Plant species nomenclature follows Stace (2010).

2.8 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.

Badger

2.9 An initial assessment was made to identify areas that might be used by badgers *Meles meles* for foraging, commuting and sett creation.

Bats

2.10 The site was assessed for its suitability to support roosting, foraging and commuting bats. Buildings and trees were assessed for their potential to support roosting bats using guidelines issued by the Bat Conservation Trust (Collins, 2016). Roosting habitats assigned a level of suitability according to the descriptions outlined in Table 1.

2.11 Good bat foraging habitat generally includes sheltered areas and habitats with good numbers of insects, such as woodland, scrub, ponds lakes and species-rich or rough grassland. Good commuting habitat generally comprises linear features such as well-connected hedgerows, woodland edge, watercourses. The site was assigned a level of suitability according to the descriptions outlined in Table 1.

Table 1: Assessment of the potential suitability of a proposed development site for roosting, foraging and commuting bats (Collins, 2016)

Suitability	Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	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 but not enough space, shelter, protection and appropriate conditions to be used on a regular basis or by larger numbers of bats. A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features seen with only very limited roosting potential.	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 or tree 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.

Suitability	Roosting habitats	Commuting and foraging habitats
High	A structure or tree 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.	<p>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.</p> <p>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.</p> <p>Site is close to and connected to known roosts.</p>

Birds

- 2.12** The site was assessed for its potential to support breeding birds. Suitable habitat generally includes scrub, trees and ruderal vegetation but can also include buildings, open grassland and piles of debris.
- 2.13** The site was also assessed for its potential to support significant wintering and/or migratory bird populations.

Great crested newts

- 2.14** Any aquatic habitat on site and within 500m, as well as the terrestrial habitat on site, was assessed for their suitability for great crested newts *Triturus cristatus* (GCN). Suitable terrestrial habitat generally includes rough grassland and woodland where they can forage and hibernate, with good links to the ponds where they breed.

Hazel dormice

- 2.15** Habitats were assessed for their general suitability for hazel dormice. 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

- 2.16** The site was assessed for its potential to support rare or notable invertebrate species.

Other notable species

- 2.17** The site was assessed for its potential to support species of principal importance listed under the UK Natural Environment and Rural Communities NERC Act which are likely to occur in the local area.

Reptiles

- 2.18** The site was assessed for its suitability for the four most common 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 favour rough grassland, however they can be found in a variety of habitats ranging from woodland glades to walls and pastures. Slow-worms use similar habitats to common lizards and are often found in gardens and derelict land. Grass snake have similar habitat requirements to common lizards but have a greater reliance on ponds and wetlands where they hunt amphibians. Adders occupy areas of rough, open countryside and are often associated with woodland edges.

Assessment of nature conservation importance

2.19 CIEEM (2018) has been adopted to assess the impacts upon habitats within the zone of influence 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 importance. As such, data from the data search and extended Phase 1 habitat 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.

2.20 The following geographical scale categories is considered appropriate:

- International;
- National (England);
- Regional (South-east);
- County (Oxfordshire);
- District (Cherwell);
- Local (Steeple Aston); and
- Site.

Constraints

2.21 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. This is not considered to significantly constrain the recommendations of this report given the common habitat types present and the detailed site visit.

3.0 **Baseline ecological conditions**

Site description

- 3.1** The site consisted primarily of semi-improved grassland with scattered young scrub growth. There were areas of established scattered scrub and tall ruderal vegetation upon two earth mounds positioned centrally within the site. The boundary habitats featured species-rich hedgerows, with a line of mature beech *Fagus sylvatica* trees on the far side of the eastern site boundary. There is a disused single storey building in the north-west corner of the site.
- 3.2** The site was bordered to the north by South Side road, with arable farmland to the south and rural residential and commercial properties to the north, east, and west. In a wider context, the surrounding environment is comprised of a mixed farmland mosaic featuring small areas of woodland, with residential development associated with Steeple Aston to the north and east.

Statutory/non-statutory sites

European designated sites

- 3.3** There are no European designated sites within 10km of the site boundary and as such these are not considered further in this assessment.

Nationally designated sites

- 3.4** There were four national statutory designated site within 5km, including three Sites of Special Scientific Interest (SSSI) and one Local Nature Reserve (LNR). Details of all statutory designated sites within 5km of the site are provided in Table 2. The site falls within the Natural England Impact Risk Zone (IRZ) of Middle Barton Fen SSSI, but does not qualify for any of the relevant criteria due to the nature of the development.
- 3.5** All SSSI sites are considered important at a **national** level.

Non-statutory designated sites

- 3.6** There are two non-statutory designated sites within 2km (Table 2). Glyme and Dorne Valleys Conservation Target Area (CTA) is the closest at c.0.9km to the south-west.
- 3.7** The CTAs are considered important at a **county** level.

Table 2: Statutory Designated Sites within the vicinity of the site

Name and Site Designation	Approximate Distance and Direction from Site	Size (Ha.)	Designated Features
UK Statutory Designated Sites			
Horsehay Quarries SSSI	1.7km north-west.	8.2	The site is designated for its geological significance rather than any ecology value.
Middle Barton Fen SSSI	2.3km north-west.	11.3	This site comprises calcareous fen-meadow with limestone grassland and hedgerows and is the most extensive example of calcareous fen-meadow currently known in Oxfordshire. The site is designated for its priority habitats and rich invertebrate assemblage.
Bestmoor SSSI	4.3km north-east.	12.4	Semi-improved floodplain meadow designated for its specialist plant assemblage, wintering waterfowl, as well as having one of the largest known British populations of the nationally scarce narrow-leaved water dropwort <i>Oenanthe silafolia</i> .
Crecy Hill LNR	4.4km south	0.84	A limestone bank with a varied calcareous grassland flora and rich invertebrate assemblage.
Non-Statutory Designated Sites			
Glyme and Dorn Valleys CTA	Nearest point is 0.9km south-west.	2496	The CTA is comprised of the whole Glyme Valley from its source near Chipping Norton to Blenheim Park and including some tributary valleys, especially the Dorn. The CTA includes several SSSI and LWS sites, and supports limestone grassland, lowland meadow, fen/swamp/reedbed, woodland, river, and standing water habitats.
Upper Cherwell Valley CTA	Nearest point 1.2km south-east.	451	The CTA is comprised of the Cherwell Valley from Lower Heyford to Clifton. It includes several SSSI and LWS sites, and supports species such as otter, water vole, and several BAP bird species.

SSSI: Site of Special Scientific Interest

CTA: Conservation Target Area

Habitats

3.8 The Phase 1 Habitat map of the site is provided within Appendix 4 and the plant species recorded per habitat type are tabled in Appendix 5. Site plates are illustrated in Appendix 6. Areas of the site with ecological constraints are shown in Appendix 7.

3.9 The Phase 1 Habitat types (JNCC, 2010) within the site were:

- Semi-improved grassland;
- Scattered scrub;
- Tall ruderal vegetation;
- Hedgerows; and
- Hard standing with ephemeral vegetation

Semi-improved grassland

3.10 The site, which was previously bare ground in 2017, consisted primarily of semi-improved grassland with scattered young tree growth. This habitat featured a moderately diverse range of species typical of this transitional grassland habitat, such as false oat-grass *Arrhenatherum elatius*, tall feascue *Festuca arundinacea*, pyramidal orchid *Anacamptis pyramidalis*, and hairy tare *Vicia hirsuta*. The grassland had a variable sward, featuring areas of tall tussocky grassland (30-90cm) as well as areas of short vegetation (5-15cm) dominated by rough hawkbit *Leontodon hispidus*. There were several piles of woody vegetation scattered throughout the grassland.

Scattered scrub

- 3.11 Two areas of established scattered scrub featuring frequent ash *Fraxinus excelsior* and bramble *Rubus fruticosus* were located centrally within the site on and around earth mounds, interspersed with tall ruderal vegetation. Further scattered scrub was located in the north-western corner of the site, around and within the disused barn/shed structure. This area featured a similar range of species. The scattered young tree growth within the semi-improved grassland will develop into scrub in the next few years without management.

Tall ruderal vegetation

- 3.12 There were three distinct areas of tall ruderal vegetation on site, one adjoining the southern edge of the hardstanding near the access gate along the northern boundary, and two positioned centrally within the site interspersed with scattered scrub. This habitat consisted mainly of common nettle *Urtica dioica*.

Hedgerows

- 3.13 There were hedgerows along parts of the northern, eastern, southern, and western boundary of the site. Most of the hedgerows on site featured a range of native species, with the exception of the eastern hedge, which consisted of beech *Fagus sylvatica* and Portugese laurel *Prunus lusitanica*. The hedgerows along the northern and southern boundaries were particularly diverse, and the southern boundary hedge also featured lots of climbing plants such as dog rose *Rosa canina* and traveller's joy *Clematis vitalba*. Most of the hedgerows on site are well-established with a dense structure, though the southern hedgerow appears to have been more recently planted and has an open structure, without any trees along its length.

Hard standing with ephemeral vegetation

- 3.14 There was an area of hard standing adjacent to the site entrance along the northern boundary, with scattered ephemeral vegetation and several piles of rubble and spoil. This habitat featured common and widespread species such as lesser burdock *Arctium minus* and smooth sow-thistle *Sonchus oleraceus*.

Summary

- 3.15 The habitats on site are of moderate ecological importance, with the hedgerows offering particular value for a range of wildlife. The boundary hedgerows are of importance at the **local** level due to the role they play in habitat connectivity. The semi-improved grassland displays moderate botanical diversity, though the species present are typical of recently disturbed area and this habitat is considered to be of importance at the **site** level due to its transitional nature, the encroaching scrub growth, and its relative local abundance. Confidence in this assessment is high.

Protected habitats

Species-rich hedgerows

- 3.16 Most of the hedgerows on site (with the exception of the east hedge) are considered to meet the definition for classification as UK NERC Act (2006) habitat of principal importance, (i.e. more than 80% UK native woody species) (JNCC, 2008) (Table 3). A formal hedgerow survey was not conducted as it was outside the scope of the survey to undertake a detailed assessment. However, given that these hedgerows were each found to contain more than five woody species, they are likely to qualify as 'important' under the wildlife criteria of *The Hedgerow Regulations 1997*. The hedgerows on site are therefore considered to be of **local value**.

Open mosaic on previously developed land

3.17 The site has the potential to meet the criteria of the UK NERC Act (2006) habitat of principal importance ‘open mosaic on previously developed land’ as the majority of the site comprises bare ground that has colonised with grassland and ruderal vegetation. Table 3 provides the criteria for meeting this habitat definition and comments on whether habitats at the site qualify.

Table 3. Criterion for UK NERC Act (2006) habitat ‘open mosaic on previously developed land’ (taken from JNCC)

	Criterion	Does the development site meet criteria?
1	The area of open mosaic habitat is at least 0.25ha in size.	Yes – habitats in question cover approximately 0.78ha of the site.
2	Known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site. Extraneous materials/substrates such as industrial spoil may have been added.	Yes – the site previously comprised bare ground, and there is evidence that soil has been removed (i.e. spoil piles).
3	The site contains some vegetation. This will comprise early successional communities consisting mainly of stress-tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of (a) annuals, or (b) mosses/liverworts, or (c) lichens, or (d) ruderals, or (e) inundation species, or (f) open grassland, or (g) flower-rich grassland, or (h) heathland.	In part – the habitat in question comprises annuals, grassland and ruderal vegetation that has recently colonised bare ground. There was a lack of mosses/liverworts, inundation vegetation and heathland.
4	The site contains unvegetated, loose bare substrate and pools may be present.	In part – there was a general lack of loose, bare substrate and the majority of the bare ground was tightly compacted. Pools were absent.
5	The site shows spatial variation, forming a mosaic of one or more of the early successional communities (a)–(h) above (criterion 3) plus bare substrate, within 0.25ha.	No – the habitat in question was dominated by grassland, with small patches of ruderal vegetation interspersed. The habitat did not create a mosaic and lacked a number of the early successional communities described in criteria 3.

3.18 Therefore, although the site meets some of the above criteria, it does not qualify under all and does not meet the definition for an open mosaic habitat. The ongoing lack of management will also mean that the site eventually becomes dominated by dense bramble, further reducing the number of qualifying features.

Protected and notable species

Rare and notable plants

3.19 The 2017 data search with TVERC returned records of *Schedule 8* protected species bluebell *Hyacinthoides non-scripta* within 2km of the site. There was one record of *Schedule 9* invasive species Himalayan balsam *Impatiens glandulifera* within 2km of the site, dated 1977-1986.

3.20 No species listed under *Schedule 8* or *Schedule 9* of the *WCA 1981* were recorded on site.

Badger

3.21 There were five badger records [REDACTED] most recently in 2009.

3.22 No badger setts or field signs such as badger tracks, hairs, and snuffle marks were observed during the survey. The site contains extensive opportunities for future sett-building in the form of the earth mounds and earth

bank positioned centrally within the site (Appendix 4). The site offers excellent foraging/commuting habitat for badgers.

- 3.23** The site is assessed as being of **site** importance for badgers and confidence in this assessment is currently moderate.

Bats

- 3.24** There were records of two bat species within 2km of the site (Table 4).

Table 4: Records of bat species within 2km of the site boundary

Bat species	Number of records	Last recorded (c. distance from site)
Brown long-eared <i>Plecotus auritus</i>	1	1997
Common pipistrelle <i>Pipistrellus pipistrellus</i>	3	2014

Bats – roosting

- 3.25** There was one single-storey dilapidated building located in the north-west corner of the site. It is of stone construction with a slightly pitched and partially collapsed roof and an open southern aspect. The building is divided into several internal compartments. Generally, it is in a poor state of repair, with dense ivy growth covering most of the building. The western compartment was completely obscured by ivy growth, which was considered sufficiently dense to offer potential roosting opportunities between the thick mass of vegetation and the building walls.

Bats - foraging/commuting

- 3.26** The habitats within the site were largely of suboptimal suitability for foraging and commuting bats (recently colonised bare ground; small patches of semi-improved grassland) due to their size. However, the boundary habitat (hedgerows), are considered to provide moderate suitability habitat for foraging and/commuting bats, and collectively are likely to provide a valuable habitat corridor for bats commuting/foraging between nearby areas of suitable habitat. The boundary habitats on site are not due to be affected by the proposed works.
- 3.27** The site is considered to be valued up to **local** level of importance for bats and confidence in this assessment is currently high.

Birds

- 3.28** There were records of 40 bird species within 2km of the site; 19 of which were red-listed birds of conservation concern (BoCC) (Eaton *et al.* 2015).
- 3.29** The majority of the site does not offer potential nesting habitat for birds. However, the boundary hedgerows and scattered scrub offer potential nesting habitat suitable for an array of bird species, including some species of conservation concern such as dunnock *Prunella modularis* (amber listed) and song thrush *Turdus philomelos* (red-listed) (Eaton *et al.* 2015). However, these habitats are locally abundant, and the boundary hedgerows are due to be retained on site.
- 3.30** The site is considered to be important at the **site** level for birds and confidence in this assessment is currently high.

Great crested newt

- 3.31** The data search returned a single record of GCN within 2km of the site boundary, in 2002, 1.8km south. It is considered that any individuals in this area would not disperse onto site, given the distance and abundance of suitable habitat near to the record. The absence of more recent records may reflect the absence of individuals in the local area, or may simply result from a lack of recording.
- 3.32** No aquatic habitats were found on site, though the site offers extensive suitable terrestrial habitat for GCN in the form of rough grassland, scrub, and hedgerows. Additionally, the rubble piles, vegetation piles, and the dry-stone wall along the north-eastern boundary may act as suitable refugia.
- 3.33** Two potential water bodies were identified within 250m of the site boundary using MAGIC (Appendix 8). Ponds were not accessed during the survey due to access restrictions. Research undertaken by English Nature (Cresswell, 2004), now Natural England, suggests it is most common to encounter GCN within 50m of a breeding pond, with few moving further than 100m unless significant linear features are involved when GCN can be encountered at distances of between 150m – 200m. The closest waterbody is located c.200m north of the site. A drainage stream exists directly to the south of the ponds. The stream was fast flowing and c.0.6m deep. As such, it is considered that the stream represents a significant barrier to dispersal for GCN. Additionally, the South Side road and residential housing between the ponds and the site represent further minor barriers to dispersal.
- 3.34** Given the presence of these dispersal barriers and the distances involved, if GCN were present within these water bodies, it is considered highly unlikely that they would disperse onto site; as such, the site is considered to be of **negligible** value for GCN and confidence in this assessment is currently high. Further surveys are not deemed to be necessary and GCN are not considered further in this assessment.

Invertebrates

- 3.35** The nectar-rich semi-improved grassland and scrub habitats on site offer habitat suitable for invertebrates, and moderate invertebrate diversity was observed during the site visit. The scrub and hedgerows contained some deadwood suitable for saproxylic invertebrates. The semi-improved grassland was structurally diverse across the site, with some areas of tussocky grassland and others more sparsely vegetated. However, given the small size of the site and the relative abundance of these habitats within the local area, it is considered unlikely that the site supports any assemblages of rare/noted invertebrates significant at a local level.
- 3.36** It is important to note that the habitats recorded on site were transitional, and if the present lack of management continues, the site will consist primarily of dense scrub within a few years. Given the small area of the site and the abundance of these habitats locally, the site is considered only to be of **site** importance for invertebrates.

Reptiles

- 3.37** A single record of grass snake *Natrix natrix* was recorded within 2km of the site boundary in 2012, 1.5km south. This species is very mobile and, if present in the local area, it is likely to make use of areas of suitable habitat. The lack of records of other reptile species may indicate that they are absent from the local area, or may result from a lack of local recording efforts. In general the site is ecologically well connected to the wider environment through hedgerows and field margins. It is therefore considered that individuals in the wider landscape could disperse onto site using these habitat corridors.

3.38 The site offered excellent habitat for reptiles in the form of semi-improved grassland, scrub, hedgerows, and numerous potential hibernacula such as the dry stone wall in the north-east corner, the rubble piles near the northern boundary, and the vegetation piles distributed across the site. The semi-improved grassland displayed structural diversity, with sparsely vegetated areas ideal for basking as well as more tussocky areas suitable for sheltering and foraging.

3.39 The site is considered to have **local** importance for reptiles however confidence in this assessment is currently low.

Other notable species

3.40 A single record of brown hare *Lepus europaeus* was recorded in 2003 2km north of site. Brown hare could utilise some areas of the site (hedgerow margins and semi-improved grassland), but the site only covers a small area, and is likely to be less significant for this species than the extensive arable fields and field margins in the surrounding environment. No field signs of brown hare were observed during the site visit. The data search did not return any records of European hedgehog *Erinaceus europaeus* or harvest mouse *Micromys minutus*.

3.41 Habitats on site (emergent vegetation, scrub, semi-improved grassland) are considered to provide suitable foraging and sheltering habitat for European hedgehog. Field signs of hedgehog are difficult to locate, and no field signs were found during the site visit. The boundary habitats connect offer connectivity between further areas of suitable habitat off site.

3.42 The site is considered to have **site** importance for European hedgehog and brown hare and confidence in this assessment is currently high.

Summary

Table 5: Summary Evaluation of Features

Feature	Summary Description	Importance	Confidence
SSSI/LNR	Middle Barton Fen SSSI, Bestmoor SSSI, and Crecy Hill LNR, with Middle Barton SSSI closest at 2.3km north-west.	National	High
CTA	Various CTA within 2km, with Glyme and Dorn Valleys CTA located closest at 0.9km south-west	County	High
Habitats	Hedgerow Semi-improved grassland, scrub, and tall ruderal vegetation.	Local Site	High
Badger	No setts but the site provides suitable sett building, foraging and commuting habitat.	Site	High
Bats	One building with low potential to support roosting bats and foraging/commuting potential restricted to boundary habitat.	Local	High
Birds	Potential nesting of common and protected species in hedgerows and scattered scrub.	Site	High
GCN	Suitable terrestrial habitats on site, but fast-flowing stream between the site and all ponds within 250m is likely to act as a significant barrier to dispersal.	Negligible	High
Invertebrates	Habitats of moderate invertebrate value, value likely to degrade if unmanaged	Site	High
Other notable species	Habitats suitable for European hedgehog and may be used by individual brown hare.	Site	High
Reptiles	Suitable habitat for reptiles in the form of rough grassland and scrub. Suitable refugia also present.	Local	Low

4.0 Preliminary prediction of impacts, recommendations and mitigation measures

Description of proposals

- 4.1 The proposal for the site is for the construction of ten new residences, with associated access and parking areas. The works will also involve the demolition of the existing building on site. The proposal involves the loss of the semi-improved grassland and scattered scrub habitats on site, though the boundary hedgerows are to be retained. The proposal includes the provision of a small area of public green space along the northern boundary.

Statutory/non-statutory sites

Nationally designated sites

- 4.2 Adverse indirect effects of the proposed development upon nearby SSSIs and the LNR are not considered likely due to the distances involved and the scale of the proposed development.

Non-statutory designated sites

- 4.3 Two Conservation Target Areas (CTA) were identified; Glyme and Dorn Valleys, and Upper Cherwell Valley. These areas are denoted by TVERC as areas of high value habitat and high biodiversity.
- 4.4 Given the small scale of the proposed development, the absence of local wildlife sites in the vicinity, and the distance between the CTA's identified and the site, it is considered that the proposed development will not have a significant direct or indirect impact on any non-statutory designated sites in the surrounding environment.

Habitats

Hedgerow

- 4.5 The boundary hedgerows are to be retained where possible, though the loss of a small area is expected to accommodate visibility splays for the new access road. However, the proposed layout includes provision for boundary planting along the new internal boundaries of the development. It is recommended that all planting is comprised of native species such as those listed in Appendix 9. Hedgerows on site should be managed through rotational cutting to further enhance their value for wildlife. A rotation where no more than half of the hedgerows on site are trimmed in any one year is considered appropriate, with longer rotations of up to five-yearly cuts providing even greater wildlife value.
- 4.6 The inclusion of native planting within the development plan, together with retaining hedgerows where possible, buffering works from remaining hedgerows, and managing the hedgerows on site through rotational cutting is predicted to result in a residual **positive** impact on this habitat at a **site** level.

Other habitats

- 4.7 The proposed development will result in the loss of most of the semi-improved grassland on site. It should be noted that this habitat is transitional and would eventually become scrub regardless of the development, however the proposal presents an opportunity to retain some of the botanical diversity observed on site during the site visit.

4.8 The proposed layout includes the provision of open green space north of the access road, along the northern boundary of the site. It is advised that either topsoil or turf from the existing semi-improved grassland on site be retained and spread over a significant proportion of the proposed areas of public green space in order to ensure that the seed bank is preserved post-construction. Further provision should be made for the ongoing management of this habitat as wildflower-rich semi-improved grassland through annual cutting in late summer. Cuttings should be piled in a different area of the site in order to prevent nutrient enrichment of the grassland.

4.9 The retention of existing hedgerows and further planting of native species is likely to provide adequate mitigation to the loss of scattered scrub habitat on site. Together with the provision of a long-term management plan to ensure the continued provision of an area of semi-improved grassland on site, the proposed development is predicted to result in a **neutral** residual effect at site level.

Badgers

4.10 The habitats on site (semi-improved grassland, hedgerows, scattered scrub) provide foraging opportunities for badgers. To mitigate against the loss of foraging habitat expected to result from the proposed development, it is recommended that fruit and seed-bearing tree species (such as crab apple *Malus sylvestris*, elder *Sambucus nigra* and rowan *Sorbus aucuparia*) are included in the landscape plans. Traffic control measures such as a reduced speed limit and/or other speed control measures such as speed bumps are advised in order to reduce the risk presented by increased traffic and the new access road.

4.11 General precautionary techniques sympathetic to badgers (applicable to most sites) are recommended due to the potential for badgers to forage/disperse within the study area:

- 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;
- Storing chemicals safely (e.g. locked away); and
- A toolbox talk will be given to on-site operatives detailing these precautionary measures.

4.12 Due to the propensity of badger to move around the landscape and dig out old setts / open new ones, it is recommended that a pre-construction walkover is undertaken no more than 12 months prior to the start of development. If an active sett is found, a licence may be required to close the sett if it is to be impacted by the development.

4.13 If the above mitigation measures are put into place, a **neutral** residual impact on badgers is anticipated as a result of the proposed development.

Bats

Bats – roosting

4.14 The building on site intended for demolition was assessed as having low potential to support roosting bats. An emergence survey is therefore necessary in order to determine whether there is a roost present within the building. The survey should be conducted under suitable conditions in accordance with best practice guidance (Collins, 2016). If the building is found to contain a bat roost then up to two additional survey visits may be required and a licence will be required in order to demolish the building.

- 4.15** The site could be enhanced for roosting bats through the inclusion of integrated bat boxes within the proposed buildings (away from artificial light) or provision of traditional bat boxes that could be mounted on retained trees/new buildings. There are numerous bat box designs but the Habibat 001 Bespoke (www.habibat.co.uk) provides excellent summer roosting conditions for crevice inhabiting species including common pipistrelle and Natterer's bat *Myotis nattereri*. Furthermore, no maintenance is required. See Figure 1 for an illustration.

Figure 1: Habibat Integrated Bat Box



Bats - foraging/commuting

- 4.16** The boundary hedgerows on site are considered to be of moderate importance for foraging and/or commuting bats. Under current development plans, these habitats will be retained post-development. However, a sensitive lighting strategy should be implemented to offset any indirect negative impacts on this habitat resulting from light disturbance.
- 4.17** In general, it is recommended that site lighting around key features likely to be used by roosting, foraging or commuting bats 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 08/18 Bats and artificial lighting in the UK (2018) and other referenced sources:
- In general, light sources should not emit ultra-violet light so as to avoid attracting insects and thus potentially reducing numbers in adjacent areas, which bats may use for foraging. Metal halide and fluorescent sources should not be used.
 - LED luminaires should be used where possible. A warm white spectrum (ideally <2700Kelvin) should be adopted to reduce blue light component. Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012).
 - Limiting the height of lighting columns to eight metres and increasing the spacing of lighting columns (Fure, 2006) can reduce spill of light into unwanted areas. Only luminaires with an upward light ratio of 0% and with good optical control should be used. Luminaires should always be mounted on the horizontal, i.e. no upward tilt.
 - Other ways to reduce light spill include the use of directional luminaires, shields, baffles and/or louvres. Flat, cut-off lanterns are best. Additionally, lights should be located away from reflective surfaces where the reflection of light will spill onto potential foraging/commuting corridors. Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill. Where windows and glass facades etc. cannot be avoided, low transmission glazing treatments may be a suitable option in achieving reduced illuminance targets.

- Lighting that is required for security or access should use a lamp of no greater than 2000 lumens and be PIR sensor activated on a short timer (1 minute), to ensure that the lights are only on when required and turned off when not in use (Jones, 2000; Hundt, 2012). A control management system can be used to dim (typically to 25% or less) or turn off groups of lights when not in use.

4.18 The site could be enhanced for bats through the planting of plant species known to benefit bats along internal boundaries and within the proposed residence gardens (see Appendix 9).

4.19 With these lighting recommendations and the installation of bat boxes, it is considered that any adverse effects upon potential bat populations within the wider landscape resulting from the development will be mitigated satisfactorily and result in a **positive** effect at a local level. This is only valid if the development layout does not change; if changes are made then this will need to be re-assessed.

Birds

4.20 The proposed development will necessitate the removal of a small amount of scattered scrub currently offering potential nesting habitat for small numbers of a range of bird species. It is recommended that this, in addition to any hedgerow that is to be removed in order to splay the access road, should be cleared outside of the nesting season (generally 1 March to 31 August) or after an ecologist has confirmed the absence of active nests.

4.21 The loss of nesting and foraging habitat can be mitigated for through the inclusion of native species planting within the development along internal boundaries and the proposed planting buffers along the southern and eastern external boundary hedgerows. Given that it will take time for newly planted trees and hedges to develop into potential nesting bird habitat, bird-nesting features or boxes should be installed on site to provide additional nesting sites. Appropriate locations should be advised by an appropriately qualified ecologist. The following selection of boxes is recommended in order to cater for a range of bird species:

- 4 x swift *Apus apus* integrated bricks on buildings
- 3 x house sparrow *Passer domesticus* terrace boxes (32mm hole x 3) on buildings
- 3 x starling *Sturnus vulgaris* boxes (45mm hole) on buildings

4.22 The retention and enhancement of the boundary hedgerows and the provision of additional native planting along internal boundaries, together with the inclusion of bird boxes across the development is expected to result in a **positive** residual impact at a site level.

Invertebrates

4.23 The proposed development will result in the loss of most of the invertebrate-rich semi-improved grassland on site, however this habitat is transitory and will eventually develop into dense scrub if current management practices continue. The proposed layout includes the provision of a strip of open green space along the northern boundary, between the northern hedgerow and the access road. Topsoil or turf from the existing semi-improved grassland should be retained and spread over the proposed area of green space, to preserve the seed bank and ensure the continued provision of nectar-rich semi-improved grassland. The existing boundary hedgerows are due to be retained where possible and it is recommended that hedgerow clearance to provide visibility splaying be kept to a minimum. Any dead wood which is generated through hedgerow and scrub clearance should be used to create log piles on site as habitat for saproxylic invertebrates.

- 4.24** The semi-improved grassland habitat along the access road should be cut annually, with all cuttings removed from this area, with the aim of maintaining it as nectar-rich semi-improved grassland suitable for invertebrates and reptiles.
- 4.25** The development proposals includes scope for the provision of further native species (Appendix 9) planting along internal boundaries, within the proposed residential gardens, and along the external southern and eastern hedgerows. The inclusion of nectar rich plants in the landscaping design would further mitigate against the reduction of semi-improved grassland habitat on site. Night-scented plant species such as evening primrose *Oenothera sp.*, honeysuckle *Lonicera sp.* and jasmine *Jasminium officinale* attract moths in the evening, which would in turn attract foraging bats.
- 4.26** The retention of boundary habitats and continued provision of semi-improved grassland together with the provision of deadwood piles on site is likely to result in a **neutral** residual effect at a site level for invertebrates.

Reptiles

- 4.27** The site was found to offer suitable foraging, sheltering and basking habitat for reptiles in the form of rough semi-improved grassland, hedgerows, and scrub. The site also offered potential refugia in the form of spoil piles vegetation piles, and the dry stone wall in the north-east corner. Due to the suitable habitat on site and connectivity to the wider landscape, a seven-visit presence/likely absence reptile survey (typically carried out Mid-March to September) should be undertaken during 'suitable' days for reptile activity; a 'suitable' survey day is determined by the weather with temperature being the preeminent factor (10°C-17°C). Reptile refugia (0.5m x 0.5m) should be used to observe reptiles basking. Refugia should be laid at a density of 10 per hectare. This survey methodology is recognised as best practice by Froglife (1999) and the Herpetofauna Worker's Manual (Gent and Gibson, 2003).
- 4.28** If reptiles were to be found during the recommended surveys, it may be necessary to produce an onsite mitigation plan including the provision of exclusion fencing throughout the construction phase of the development. If it is necessary to translocate reptiles from within the development area, then a suitable area of habitat would be retained to serve as a suitable receptor area or if this is not possible, an ex situ receptor site will be sought. Reptile translocations typically last for between 30 and 90 days (depending on the population size found) and involve daily visits by an ecologist.
- 4.29** Further surveys are required in order to assess the impacts of the proposed development on reptiles, however mitigation measures would likely include the provision of an appropriate management plan featuring rotational cutting of semi-improved grassland along the boundary hedgerows. Likely advice would also include the provision of artificial hibernacula within the retained semi-improved habitats on site and may include prescriptions for the management of the receptor area to enhance its value for reptiles. Clearance of potential refugia should take place during the summer months when reptiles are most active, under the supervision of an Ecological Clerk of Works (ECoW).

Other notable species

- 4.30** Mitigation for European hedgehogs includes the retention and enhancement of boundary habitats. Any suitable hibernating habitat (scrub and hedgerows) being removed should be removed outside of the hedgehog hibernating season (generally November to February inclusive) in a staged way to ensure animals can move from the area. Care should be taken when clearing any vegetation.

- 4.31** The optimum time to remove vegetation would be during September/October as this avoids both the nesting bird season and the hedgehog hibernation season. It is recommended that boundary hedgerows are retained and enhanced through the provision of an appropriate management regime featuring rotational cutting.
- 4.32** It is recommended that care should be taken when clearing vegetation to avoid killing or injuring hedgehogs or brown hares throughout the year in their nests (summer, maternity and hibernation). Vegetation clearance should be undertaken in stages and be excluded during the hibernation period (October to March) when hedgehog is more vulnerable or once a fingertip search by an ecologist has been undertaken.
- 4.33** The retention and enhancement of boundary habitat through additional planting (Appendix 9) and rotational cutting is likely to result in a **neutral** effect at site level.

5.0 Conclusions

- 5.1** The site is dominated by habitats of inherently low ecological importance (i.e. amenity grassland) with interest limited to small area of scattered trees due to be impacted by the proposal and the species rich hedgerow, scrub, and woodland which bound the site. A summary of likely impacts and mitigation is provided in Table 8 below.

Table 8: Summary of Likely Impacts, Mitigation and Enhancement Measures and Residual Impacts.

Feature	Likely impacts	Further surveys	Likely mitigation and enhancement measures	Residual effect
SSSI/LNR	None due to small scale of development and distances involved.	N/A	N/A	Neutral
CTA	None due to small scale of development and distances involved.	N/A	N/A	Neutral
Habitats	<p>Loss of semi-improved grassland and scattered scrub.</p> <p>Loss of a small stretch of hedgerow for the access road and visibility splays.</p> <p>Lighting impacts on boundary habitat</p>	N/A	<p>Turf or topsoil from semi-improved grassland to be retained and spread in proposed area of public green space, to be managed by cutting annually.</p> <p>Planting of native species along new internal boundaries and enhancement of retained hedgerows through rotational cutting regime.</p> <p>Implementation of wildlife sensitive lighting.</p>	Positive

Feature	Likely impacts	Further surveys	Likely mitigation and enhancement measures	Residual effect
Badgers	<p>Potential injury/death during construction.</p> <p>Loss of foraging/commuting habitat.</p>	N/A	<p>Precautionary construction techniques.</p> <p>Pre-construction walkover.</p> <p>Mitigation for the loss of foraging habitat through the provision of badger-friendly fruiting trees.</p>	Neutral
Bats	<p>Demolition of a building with low potential to support roosting bats.</p> <p>Potential disturbance of commuting and foraging habitat.</p>	One emergence survey of the building proposed for demolition.	<p>Provision of bat boxes on new buildings.</p> <p>Implementation of wildlife sensitive lighting.</p> <p>Enhancement of retained boundary habitats through planting of trees which are of value to bat prey species.</p>	To be determined by further surveys.
Birds	<p>Loss or of nesting habitat in the form of scattered trees and possibly scrub.</p>	N/A	<p>Works to be undertaken outside of breeding bird season or after an ecologist has confirmed no active nests.</p> <p>Mitigate for loss of nesting habitat through native planting.</p> <p>Bird box installation on new buildings, targeting species of conservation concern.</p>	Positive

Feature	Likely impacts	Further surveys	Likely mitigation and enhancement measures	Residual effect
Invertebrates	Death/injury, disturbance, loss of foraging habitat in the form of semi-improved grassland, and loss of a resting place/shelter due to scrub clearance.	N/A	<p>Turf or topsoil from semi-improved grassland to be retained and spread in proposed area of public green space, to be managed by cutting annually.</p> <p>Boundary habitats to be retained where possible and enhanced through trimming on a two-to-five year rotational trimming regime.</p> <p>Dead wood generated through hedgerow/scrub clearance to be used to create log piles.</p> <p>Landscaping plans to feature native species planting.</p>	Neutral
Other Notable Species	Loss of habitat. Injury/ and or death.	N/A	<p>Sensitive habitat removal.</p> <p>Enhancement of retained boundary habitat through hedgehog-friendly planting.</p>	Neutral
Reptiles	Loss of nesting and commuting habitat (if scrub clearance is necessary).	Seven-visit presence / absence survey	<p>If reptiles are present on site, a translocation may be necessary, along with exclusion fencing through the construction phase.</p> <p>Mitigation advice would likely include areas of the site to be managed as semi-improved grassland on a rotational cutting regime as well as the provision of artificial hibernacula.</p> <p>Boundary habitats to be retained where possible.</p>	To be determined by further surveys.

5.2 Through the above survey and precautionary methods, it is considered that all significant impacts upon biodiversity, including any potential adverse impacts upon specific protected species, habitats and designated sites will likely be able to be wholly mitigated in line with relevant wildlife legislation, chapter 15 of the National Planning Policy Framework (MHCLG, 2019); and development control policies as set out in the Cherwell Local Plan (Cherwell District Council, 2011).

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Appendix 1. Site location



Appendix 2. Proposed Site Layout



Appendix 3: Legislative and Policy Framework

National Planning Policy

The *NPPF* (MHCLG, 2019) outlines what the planning system should do to contribute to and enhance the natural and local environment through the following policy statements:

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 28

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 102

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

- d) 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 118

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 141

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 170

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;

Paragraph 174

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 creation⁵⁷; 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 175

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 reasons⁵⁸ 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 176

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 sites⁵⁹; and 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 177

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 180

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.

Local Planning Policy

The Cherwell adopted Local Plan 2011-2031 (2011) policies related to nature conservation are set out below.

Policy ESD 9: Protection of the Oxford Meadows SAC

Developers will be required to demonstrate that:

- *During construction of the development there will be no adverse effects on the water quality or quantity of any adjacent or nearby watercourse*
- *During operation of the development any run-off of water into adjacent or surrounding watercourses will meet Environmental Quality Standards (and where necessary oil interceptors, silt traps and Sustainable Drainage Systems will be included)*
- *New development will not significantly alter groundwater flows and that the hydrological regime of the Oxford Meadows SAC is maintained in terms of water quantity and quality*
- *Run-off rates of surface water from the development will be maintained at greenfield rates.*

Policy ESD 10: Protection and Enhancement of Biodiversity and the Natural Environment

Protection and enhancement of biodiversity and the natural environment will be achieved by the following:

- *In considering proposals for development, a net gain in biodiversity will be sought by protecting, managing, enhancing and extending existing resources, and by creating new resources*
- *The protection of trees will be encouraged, with an aim to increase the number of trees in the District*
- *The reuse of soils will be sought*
- *If significant harm 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 development will not be permitted.*
- *Development which would result in damage to or loss of a site of international value will be subject to the Habitats Regulations Assessment process and will not be permitted unless it can be demonstrated that there will be no likely significant effects on the international site or that effects can be mitigated*
- *Development which would result in damage to or loss of a site of biodiversity or geological value of national importance will not be permitted unless the benefits of the development clearly outweigh the harm it would cause to the site and the wider national network of SSSIs, and the loss can be mitigated to achieve a net gain in biodiversity/geodiversity*
- *Development which would result in damage to or loss of a site of biodiversity or geological value of regional or local importance including habitats of species of principal importance for biodiversity will not be permitted unless the benefits of the development clearly outweigh the harm it would cause to the site, and the loss can be mitigated to achieve a net gain in biodiversity/geodiversity*
- *Development proposals will be expected to incorporate features to encourage biodiversity, and retain and where possible enhance existing features of nature conservation value within the site.*
- *Existing ecological networks should be identified and maintained to avoid habitat fragmentation, and ecological corridors should form an essential component of green infrastructure provision in association with new development to ensure habitat connectivity*
- *Relevant habitat and species surveys and associated reports will be required to accompany planning applications which may affect a site, habitat or species of known or potential ecological value*
- *Air quality assessments will also be required for development proposals that would be likely to have a significantly adverse impact on biodiversity by generating an increase in air pollution*
- *Planning conditions/obligations will be used to secure net gains in biodiversity by helping to deliver Biodiversity Action Plan targets and/or meeting the aims of Conservation Target Areas.*

- *Developments for which these are the principal aims will be viewed favourably*
- *A monitoring and management plan will be required for biodiversity features on site to ensure their long term suitable management.*

Policy ESD 11: Conservation Target Areas

Where development is proposed within or adjacent to a Conservation Target Area biodiversity surveys and a report will be required to identify constraints and opportunities for biodiversity enhancement. Development which would prevent the aims of a Conservation Target Area being achieved will not be permitted. Where there is potential for development, the design and layout of the development, planning conditions or obligations will be used to secure biodiversity enhancement to help achieve the aims of the Conservation Target Area.

Wildlife Legislation

The two principal wildlife statutes are the Conservation of Habitats and Species Regulations (The Habitats Regulations 2017) that deals with internationally important sites and species, and the Wildlife and Countryside Act (WCA) 1981 that 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 (2017). 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 (GCN) *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 any significant groups of animals 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.

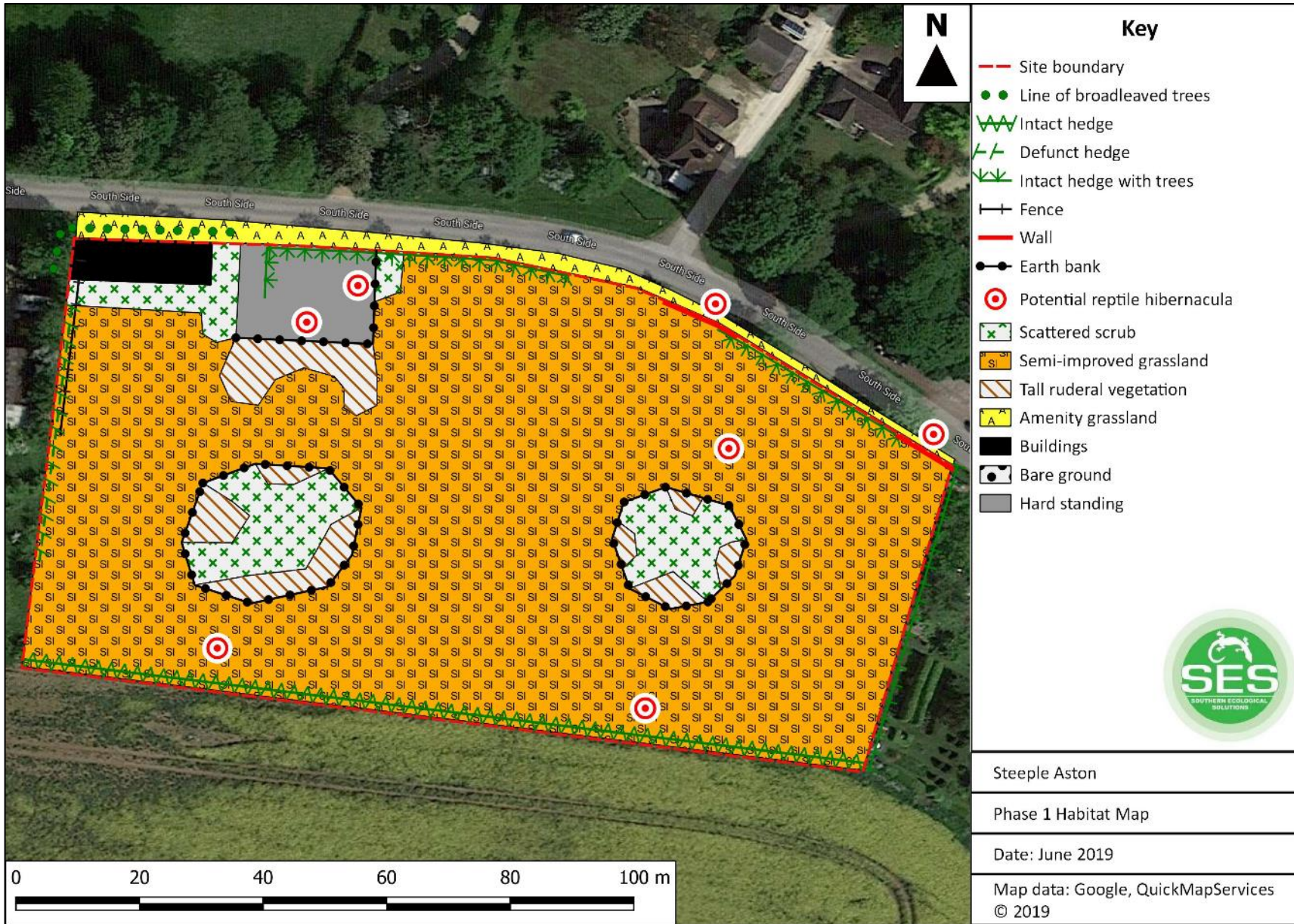
Badger *Meles meles* is protected from sett disturbance and destruction under the Protection of Badgers Act 1992.

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 *Fallopia 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 built structures. 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 4: Phase 1 Habitat Map



Appendix 5: Plant Species List and Relative Abundance

Common name	Latin name	Line of Trees	Amenity grassland roadside verge	Species-rich hedgerow with trees (north hedge)	Species-rich hedgerow (south hedge)	Intact species-poor hedgerow with trees (east hedge)	Defunct species-rich hedgerow (west hedge)	Semi-improved grassland with scattered young tree growth	Scattered scrub	Tall ruderal vegetation	Hard standing with ephemeral weeds
Alder buckthorn	<i>Rhamnus frangula</i>				O						
Ash	<i>Fraxinus excelsior</i>	O		O	O		A	O	F		
Barren brome	<i>Bromus sterilis</i>							O			
Beech	<i>Fagus sylvatica</i>					A					
Black medick	<i>Medicago lupulina</i>							F			
Blackthorn	<i>Prunus spinosa</i>			F	O		O	R			
Bramble	<i>Rubus fruticosus</i>	O					O	O	F		
Broad-leaved dock	<i>Rumex obtusifolius</i>	O	O	F							O
Buckthorn	<i>Rhamnus cathartica</i>				F						
Buddleia	<i>Buddleja davidii</i>										R
Cleavers	<i>Galium aparine</i>	O		A						R	
Cocksfoot	<i>Dactylis glomerata</i>		A					F			
Common field speedwell	<i>Veronica persica</i>							O			
Common mouse ear chickweed	<i>Cerastium fontanum</i>							F			
Common nettle	<i>Urtica dioica</i>	O		A			O	O		D	R
Common spotted orchid	<i>Dactylorhiza fuchsii</i>							R			
Common vetch	<i>Vicia sativa</i>		O					F			
Couchgrass	<i>Elymus repens</i>		O								
Cow parsley	<i>Anthriscus sylvestris</i>	F									
Cowslip	<i>Primula veris</i>							O			
Crack willow	<i>Salix fragilis</i>								R		
Creeping buttercup	<i>Ranunculus repens</i>		O					O			
Creeping thistle	<i>Cirsium arvense</i>		R					O			R
Cut-leaved cranesbill	<i>Geranium dissectum</i>	O	O					O			
Daisy	<i>Bellis perennis</i>		R					O			

Common name	Latin name	Line of Trees	Amenity grassland roadside verge	Species-rich hedgerow with trees (north hedge)	Species-rich hedgerow (south hedge)	Intact species-poor hedgerow with trees (east hedge)	Defunct species-rich hedgerow (west hedge)	Semi-improved grassland with scattered young tree growth	Scattered scrub	Tall ruderal vegetation	Hard standing with ephemeral weeds
Damson	<i>Prunus domestica subsp. insititia</i>				R		F				
Dandelion	<i>Taraxacum officinale</i>		F								
Dog rose	<i>Rosa canina</i>				O						
Dove's foot cranesbill	<i>Geranium mole</i>							R			F
Elder	<i>Sambucus nigra</i>	R		F					O		
False brome	<i>Brachypodium sylvaticum</i>							O			
Annual fescue	<i>Vulpia sp.</i>							O			
False oat-grass	<i>Arrhenatherum elatius</i>							R			
Field maple	<i>Acer campestre</i>						F	R			
Field forget-me-not	<i>Myosotis arvensis</i>		O	R				F			
Goat willow	<i>Salix caprea</i>						R				
Goatsbeard/salsify	<i>Tragopogon sp.</i>							R			
Great mullein	<i>Verbascum thapsus</i>										
Great willowherb	<i>Epilobium hirsutum</i>							O			
Greater plantain	<i>Plantago major</i>		O					O			
Green alkanet	<i>Pentaglottis sempervirens</i>							R			R
Grey willow	<i>Salix cinerea</i>							R	R		
Ground ivy	<i>Glechoma hederacea</i>							O			
Groundsel	<i>Senecio vulgaris</i>		R								R
Hairy tare	<i>Vicia hirsuta</i>							F			
Hawkweed species	<i>Hieracium sp.</i>							R			
Hawthorn	<i>Crataegus monogyna</i>	F		A	A		O	O			
Hazel	<i>Corylus avellana</i>			F							
Hedge bindweed	<i>Calystegia sepium</i>	R									
Hedge woundwort	<i>Stachys sylvatica</i>							O			
Herb-robert	<i>Geranium robertianum</i>		O	O							O

Common name	Latin name	Line of Trees	Amenity grassland roadside verge	Species-rich hedgerow with trees (north hedge)	Species-rich hedgerow (south hedge)	Intact species-poor hedgerow with trees (east hedge)	Defunct species-rich hedgerow (west hedge)	Semi-improved grassland with scattered young tree growth	Scattered scrub	Tall ruderal vegetation	Hard standing with ephemeral weeds
Honeysuckle species	<i>Lonicera sp.</i>							R			
Ivy	<i>Hedera helix</i>	A		A							
Meadow buttercup	<i>Ranunculus acris</i>							O			R
Laurel	<i>Laurus nobilis</i>							R			
Lesser burdock	<i>Arctium minus</i>	O									O
Poppy species	<i>Papaver sp.</i>							R			
Portuguese laurel	<i>Prunus lusitanica</i>					F					
Purple loostrife	<i>Lythrum salicaria</i>							R			
Pyramidal orchid	<i>Anacamptis pyramidalis</i>							O			
Ragged robin	<i>Lychnis flos-cuculi</i>							R			
Ragwort	<i>Jacobaea vulgaris</i>							O			
Red clover	<i>Trifolium pratense</i>							R			
Ribwort plantain	<i>Plantago lanceolata</i>		O					F			
Rose species	<i>Rosa sp.</i>				R						
Rosebay willowherb	<i>Chamerion angustifolium</i>							F			
Rough hawkbit	<i>Leontodon hispidus</i>							F			
Rough meadow-grass	<i>Poa trivialis</i>		A					F			
Silver birch	<i>Betula pendula</i>							R			
Smooth sow-thistle	<i>Sonchus oleraceus</i>										O
Smooth tare	<i>Vicia tetrasperma</i>							R			
Soft brome	<i>Bromus hordeaceus</i>							O			
Spear thistle	<i>Cirsium vulgare</i>										R
Sweet violet	<i>Viola odorata</i>							O			
Sycamore	<i>Acer pseudoplatanus</i>	F		R			O	O	F		
Tall fescue	<i>Festuca arundinacea</i>							A			
Traveller's joy	<i>Clematis vitalba</i>				A	O		O	O		
Tutsan	<i>Hypericum androsaemum</i>							R			

Common name	Latin name	Line of Trees	Amenity grassland roadside verge	Species-rich hedgerow with trees (north hedge)	Species-rich hedgerow (south hedge)	Intact species-poor hedgerow with trees (east hedge)	Defunct species-rich hedgerow (west hedge)	Semi-improved grassland with scattered young tree growth	Scattered scrub	Tall ruderal vegetation	Hard standing with ephemeral weeds
Wild cherry	<i>Prunus avium</i>				O		R				
Wild strawberry	<i>Fragaria vesca</i>							R			
Willow species	<i>Salix sp.</i>							O			
Wood avens	<i>Geum urbanum</i>						O	O			
Woody nightshade	<i>Solanum dulcamara</i>										O
White clover	<i>Trifolium repens</i>							O			
White dead nettle	<i>Lamium album</i>		R								
Yorkshire fog	<i>Holcus lanatus</i>							O			

Appendix 6: Plates



Plate 1: Semi-improved grassland habitat.



Plate 2: Building in north-west corner, largely obscured by dense ivy growth. Viewed looking west.



Plate 3: Building in north-west corner, viewed looking north-east.



Plate 4: Northern hedgerow, viewed looking south.



Plate 5: Southern hedgerow, viewed looking south-east.



Plate 6: Eastern hedgerow, viewed looking south-east.



Plate 7: Scattered scrub and tall ruderal vegetation on earth mound in centre of site. Viewed looking south.



Plate 8: Hard standing and spoil piles near northern boundary. Viewed looking east.




Plate 9: Pyramidal orchids within semi-improved grassland.

Appendix 7: Ecological Constraints Map



Key

- Site boundary
- Trees requiring root protection buffer zone
- ▲ Potential hibernacula
- Building with low bat roost potential
- Potential reptile habitat



Steeple Aston
Eco constraints map
Date: June 2019
Map data: Google, QuickMapServices © 2019

Appendix 8: Ponds within 250m



Appendix 9: Plant species of known benefit to bats

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 suggests plant species that can provide benefit for bats by either 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. This list has been checked 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 saooarum</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
<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

Plant species	Common name	Native (N)	Type	Benefit	Soil	Light	Extensive green roofs	Living walls	Rain gardens	Hedge/ trees	Beds/ borders
<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 species	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	
<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>Quercus 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>	saxifage	N	HP	C	Well drained	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>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>	Michalemas 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
<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>	Mulliens	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		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		
	Creeper/ climber		