



Preliminary Ecological Appraisal

Land at Great Barton, Suffolk

On Behalf Of:

Montagu Evans

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PRELIMINARY REPORT - FOR INFORMATION PURPOSES ONLY

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Executive Summary

1. This report presents the results of a Preliminary Ecological Appraisal (PEA) carried out on land at Great Barton, Suffolk. The surveys were carried out to provide a baseline regarding ecological constraints and opportunities at the site proposed for residential development.
2. The site is approximately 12.9ha in total and comprised a large arable field compartment with hedgerows, plantation woodland, scrub and a dry pond. The site is bordered by residential development to the south and west. The B1106 and A143 roads lie immediately adjacent the northern and eastern boundaries respectively beyond which arable land extends into the wider landscape. The town of Bury St. Edmunds is situated approximately 3km southwest.
3. The site is within 10km of Breckland Special Protection Area (SPA) located c. 8.5km northwest, and 5km of Pakenham Meadows and The Glen Chalk Caves, Bury St Edmunds Sites of Special Scientific Interest (SSSI). A project level Habitat Regulations Assessment Screening Report has been produced to determine likely significant effects on the SPA. Given the proximity of the development to European and National sites no adverse impacts are considered likely.
4. There are two local non-statutorily designated sites within 2km. The nearest is Great Barton Roadside Nature Reserve c.1km east. Given the distance from the site and lack of direct footpaths to these sites, no adverse impacts are anticipated from the proposed development.
5. The habitats on site were dominated by arable land of low ecological value. Habitats of greater value included plantation woodland and hedgerow. It is recommended that where feasible these habitats are retained and enhanced. In line with local policy, screening habitats which could include native hedgerow/woodland should be provided along the site's northern and western boundaries, and the dry pond retained and re-instated. An early stage biodiversity net gain assessment using the Defra 2.0 biodiversity metric calculator was undertaken to guide the development design.
6. The habitats have potential to support a number of protected/priority species and further surveys are recommended for reptiles, bats, breeding and wintering birds and great crested newts. The scope of the recommended surveys may be reduced should smaller applications within the site be put forward.
7. Mitigation for the potential impacts upon protected species will be guided through results from the further surveys however likely requirements are detailed within section 4 of this report and include precautionary methods of working, retention and enhancement of habitat, wildlife sensitive lighting, provision of bird and bat boxes and inclusion of wildlife friendly landscaping.

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1.0 Introduction

1.1 Southern Ecological Solutions Ltd. (SES) was commissioned by Montagu Evans to undertake a Preliminary Ecological Appraisal (PEA) of land at Great Barton, Bury St Edmunds, Suffolk (the site) (Appendix 1). The site is located centrally at Ordnance Survey Grid Reference TL 89340 67396 and is approximately 12.9ha comprising predominantly of arable farmland. This report has been prepared to identify potential ecological constraints and opportunities should this land be developed.

1.2 The objectives of this 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)/

1.3 The study area as shown within Appendix 1 was defined by the proposals, desk study, relevant wildlife legislation (Appendix 3) and Zones of Influence relating to specific species and designated sites.

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

- 2.3 SES commissioned a data search for records of protected and notable species as well as non-statutory designated sites within 2km of the site from Suffolk Biodiversity Information Service. The data was received in November 2020. Hazel dormouse *Muscardinus avellanarius* records were also sought from the National Biodiversity Network (NBN) Atlas www.nbnatlas.org, which holds data from the People's Trust for Endangered Species (PTES).
- 2.4 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 16 November 2020 for the following designations: European (up to 10 km from the site boundary); national (5km from the site boundary); and local (2km from the site boundary).
- 2.5 The Suffolk Coast Recreation Disturbance Avoidance and Mitigation Strategy (RAMS) (Hoskin, R., Liley, D. & Panter, C., 2019) was referred to in order to determine the Zone of Influence (Zoi) for coastal European Designated sites and hence the requirement for any off-site mitigation.
- 2.6 Maps of the area of assessment and wider area, using the MAGIC online spatial data resource and aerial photographs on Google Earth (Google Inc., 2011), were examined to determine the possible habitats present on, and adjacent to the area of assessment, and their context in the surrounding landscape, searching in particular for waterbodies, watercourses and other landscape features that may be of ecological significance to protected species, notably great crested newt and mobile species such as bats and birds.

Extended Phase 1 Habitat Survey

- 2.7 An extended Phase 1 Habitat Survey was carried out on 22 October 2020 by suitably qualified ecologist Luci Coyne 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 (JNCC), 2010). Habitat mapping was undertaken using the standard classification to indicate habitat types.
- 2.8 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

2.9 These scores represent the abundance within the defined area only and do not reflect national or regional abundances. Plant species nomenclature follows Stace (2019).

2.10 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

Badger

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

Bats

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

2.13 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 and 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 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 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 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

- 2.14** 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.
- 2.15** The site was also assessed for its potential to support significant wintering and/or migratory bird populations.

Great Crested Newt

- 2.16** Any aquatic and terrestrial habitats were assessed for their suitability for great crested newts (GCN) *Triturus cristatus*. Suitable terrestrial habitat generally includes rough grassland and woodland where they can forage and hibernate, with good links to the ponds where they breed.

Reptiles

- 2.17** The site was assessed for its suitability for the four commoner reptile species; common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, grass snake *Natrix helvetica* and adder *Vipera berus*. Specific habitat requirements vary between species. Common lizard favor 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 edge habitats.

Hazel Dormouse

- 2.18** 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

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

Other Notable Species

- 2.20** 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.

Assessment of Nature Conservation Value

2.21 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 value. 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.

2.22 The following geographical scale categories is considered appropriate:

- International;
- National (England);
- Regional (South-east);
- County (Suffolk);
- District (Bury St Edmunds);
- Local (Great Barton); and
- Site.

Constraints

2.23 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.

2.24 The survey was undertaken outside of the optimum plant growing season (April to September) and as such a number of plant species may not have been present or identifiable. However given the presence of only common and widespread habitat types, the habitats present could be accurately characterised.

3.0 Baseline ecological conditions

Site Description

3.1 The site was dominated by a single arable field. Plantation woodland was present along the south-eastern boundary. Other habitats included hedgerow, scattered trees, scrub and poor semi-improved grassland field margins. Residential development borders the site to the south and west. The B1106 and A143 roads lie immediately adjacent the northern and eastern boundaries respectively beyond which arable land extends into the wider landscape. The town of Bury St. Edmunds is situated approximately 3km southwest.

Statutory/Non-statutory Sites

European Designated Sites

3.2 The site does not fall within the ZoI identified by the Suffolk Coast RAMS however there is a single site of European Importance within 10km; Breckland SPA approximately 8.5km northwest of the site. Details of the site are provided within Table 2. Sites of European importance for nature conservation are considered to be of **international** importance.

Nationally Designated Sites

3.3 There are two nationally designated sites within 5km of the site. Both are located at 3.7km from the site and include The Glen Chalk Cave, Bury St Edmunds SSSI designated for its tunnels excavated in chalk and used by five species of hibernating bats, and the Pakenham Meadows SSSI notified for its unimproved grassland representing one of the best examples of its kind in the county. All nationally designated sites are considered to be of value at a **national** level.

3.4 The site falls within the Natural England SSSI Impact Risk Zone used to assess planning applications for likely impacts on SSSIs/SACs/SPAs and Ramsar sites. The following are listed as likely impacts:

- All planning applications (except householder) outside or extending outside existing settlements/urban areas affecting greenspace, farmland, semi natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures.
- Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location).

3.5 There were no statutory sites of local importance present within 2km of the site. All statutory designated sites are listed in Table 2 in order of proximity and short descriptions provided.

Table 2: Statutory designated sites within the vicinity of the site

Site name	Distance and direction from site	Size (ha)	Reason for designation
Breckland SPA	8.6km northwest	39433.66	The site qualifies under article 4.1 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season: Stone curlew <i>Burhinus oedicephalus</i> ; Nightjar <i>Caprimulgus europaeus</i> ; Woodlark <i>Lullula arborea</i>

Site name	Distance and direction from site	Size (ha)	Reason for designation
The Glen Chalk Cave, Bury St Edmunds SSSI	3.7km south-west	1.62	The site consists of a series of tunnels excavated horizontally in chalk, and totalling about 200m in length. Five species of bats regularly use the tunnels and the lime-kiln for hibernation including: Brown long-eared bat <i>Plecotus auritus</i> , Natterer's bat <i>Myotis nattereri</i> , Daubenton's bat <i>Myotis daubentoniid</i> , Whiskered <i>Myotis mystacinus</i> and Brandt's <i>Myotis brandti</i> .
Pakenham Meadows SSSI	3.7km north-east	5.83	The meadow is unusually species rich, unimproved and poorly drained, and forms one of the best examples of its kind in the county. The small-scale complex mosaic of vegetation types present reflects the variation in soils from loam to peat. The meadow is also herb rich and contains a number of uncommon species, and the dykes provide a valuable additional habitat for invertebrates'.

SSSI: Site of Special Scientific Interest, SPA: Special Protection Area

Non-statutory Designated Sites

3.6 There were two non-statutory designated sites within 2km of the site (Table 3). The closest was a Roadside Nature Reserve located c.1km east of the site.

3.7 The LWSs are considered important at a **county** level.

Table 3: Non-statutory designated sites within the vicinity of the site

Site Name	Distance and direction from site	Size (Ha.)	Description
182 Roadside Nature Reserve	1km east	0.0074	Under the Roadside Nature Reserve Scheme, the grass verges are individually managed to benefit the scarce or unusual plants or fungi growing in the stretch protected from normal highways management
Barton Shrub CWS	1.6km southeast	9.56	Ancient woodland

CWS: County Wildlife Site

Protected and Priority Species Records

3.8 European protected species are animals and plants listed on the European Habitats Directive 1992 which receive protection in the UK by Regulation 41 of the Conservation of Habitats and Species Regulations (Habitats Regulations) (CHSR) 2017. A summary of these records is provided in Table 4 below.

Table 4. European Protected Species within 2km of the site.

Species	Total no. Records	Date of Most Recent Record	Location of Nearest Record
Great crested newt <i>Triturus cristatus</i>	1	2014	1.8km south-east
Bat species	2	2001	1.2km south
Liesler's <i>Nyctalus leisleri</i>	1	2017	750m north-west
Noctule <i>Nyctalus noctula</i>	1	2000	500m east
Common pipistrelle <i>Pipistrellus pipistrellus</i>	3	2017	750m north-west
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	1	2017	750m north-west
Brown long-eared bat <i>Plecotus auritus</i>	1	2017	750m north-west
Otter <i>Lutra lutra</i>	1	2014	450m south

3.9 UK protected species are animals and plants protected within one or more of the following: Wildlife and Countryside Act (WCA) 1981 (as amended), the Protection of Badgers Act 1992, species listed on the Natural Environment and Rural Communities (NERC) Act 2006 (previously UK biodiversity Action Plan (BAP) species) Section 41. Those of relevance to the site and found within 2km of the site are summarised in Table 5 below.

Table 5. Protected Species within 2km of the site.

Species	Total no. Records	Date of Most Recent Record	Location of Nearest Record
UK Protected Species			
Badger <i>Meles meles</i>	2	2015	<1km
NERC Act Species			
Common toad <i>Bufo bufo</i>	3	2012	1km south-west
Harvest mouse <i>Micromys minutus</i>	1	2016	450m north-west
Brown hare <i>Lepus europaeus</i>	19	2016	<1km
West European Hedgehog <i>Erinaceua europaeus</i>	78	2016	<1km
Polecat <i>Mustela putorius</i>	1	2018	500m east
Reed bunting <i>Emberiza schoeniclus</i>	5	2017	<2km
Yellowhammer <i>Emberiza citrinella</i>	15	2016	<2km
Hawfinch <i>Coccothraustes coccothraustes</i>	1	2017	<2km
Bullfinch <i>Pyrrhula pyrrhula</i>	11	2017	<2km
Linnet <i>Linaria cannabina</i>	12	2016	<2km
Lesser redpoll <i>Acanthis cabaret</i>	1	2008	<2km
Tree sparrow <i>Passer montanus</i>	5	2017	<2km
House sparrow <i>Passer domesticus</i>	24	2016	<2km
Starling <i>Sturnus vulgaris</i>	24	2017	<2km
Marsh tit <i>Poecile palustris</i>	10	2016	<2km
Spotted flycatcher <i>Muscicapa striata</i>	7	2017	<2km
Song thrush <i>Turdus philomelos</i>	18	2017	<2km
Grey partridge <i>Perdix perdix</i>	17	2017	<2km
Lapwing <i>Vanellus vanellus</i>	18	2017	<2km
Cuckoo <i>Cuculus canorus</i>	8	2017	<2km
Skylark <i>Alauda arvensis</i>	14	2016	<2km
Yellow wagtail <i>Motacilla flava</i>	5	2017	<2km
Turtle Dove <i>Streptopelia turtur</i>	4	2016	<2km

3.10 A search for priority habitats on Magic Map identified broadleaved woodland and historic parkland within 1km of the site. The closest was broadleaved woodland approximately 80m east from the site across the A143. The habitats may meet the criteria for Habitats of Principle Importance under the NERC Act 2006 and therefore their protection from the proposed development must be considered.

3.11 No European Protected Species Licences (EPSL) were identified from Magic Map within 5km of the site.

Habitats

3.12 Habitats within the site were dominated by a single arable field. A strip of plantation woodland c. 0.95ha was present along the eastern boundary. Other habitats included a limited area of dense scrub surrounding a dry pond in the centre of the arable field, hedgerows and low numbers of scattered semi-mature broadleaved trees present around the peripheries of the site. The Phase 1 Habitat map is provided within Appendix 2, and the plant species recorded per habitat type are tabled in Appendix 4. Site plates are illustrated in Appendix 5.

Arable

3.13 The site was predominantly an arable field planted with a root vegetable crop (Appendix 5, Plate 1).

Plantation Woodland

3.14 A plantation woodland, known locally as 'Elms Wood' was present along the eastern boundary (Appendix 5, Plate 2). The woodland was approximately 0.95ha in size and according to google earth history is likely to be between 20-30 years old. Trees were planted in block formation at 2m spacings with average stem diameters of 100 to 200cm. Species present within the canopy included frequent oak *Quercus robur*, wild cherry *Prunus avium*, silver birch *Betula pendula*, lime *Tilia* sp, sweet chestnut *Castanea sativa* with occasional holly *Ilex aquifolium*, beech *Fagus sylvatica*, apple *Malus* sp. and rowan *Sorbus aucuparia*. No shrub layer was present however ground flora comprised small areas of bramble *Rubus fruticosus* agg..

3.15 The woodland is managed by Great Barton Community Woodland with log and brash piles present throughout.

Poor Semi-improved Grassland

3.16 Poor semi-improved grassland margins were present along the boundaries of the site, adjacent the arable field (Appendix 5, Plate 3). These were between 1-2m in width and species included couch grass *Elymus repens*, frequent or locally dominant false oat grass *Arrhenatherum elatius*, frequent cock's-foot *Dactylis glomerata*, and occasional rough meadow grass *Poa trivialis*, and Yorkshire fog *Holcus lanatus*. Herbs were generally limited within the wider sward and largely comprised ruderals including bristly oxtongue *Helminthotheca echinoides*, mugwort *Artemisia vulgaris*, broadleaved dock *Rumex obtusifolius*, creeping thistle *Cirsium arvense*, white dead-nettle *Lamium album*, cleavers *Galium aparine*, cow parsley *Anthriscus sylvestris*, common mallow *Malva sylvestris*, ground ivy *Glechoma hederacea*, common nettle *Urtica dioica* and yarrow *Achillea millefolium*.

Scattered Trees

3.17 Several scattered broadleaved trees were present around the perimeter of the site (Appendix 5, Plate 4). None of the trees were mature with the majority comprising semi-mature oak with occasional ash *Fraxinus excelsior*, sycamore *Acer pseudoplatanus*, wild cherry, silver birch and aspen *Populus tremula*.

3.18 Scattered trees were also present in a hollow within the arable field (Appendix 5, Plate 5) comprising species such as sycamore and willow *Salix* sp. Bramble was present as an understorey in this area.

Hedgerow

3.19 Hedgerows were present along the western and south-eastern boundaries of the site. Hedgerow 1 (H1) comprised species such as beech and ash and was largely unmanaged with a section of it managed along the adjacent residential property fenceline (Appendix 5, Plate 6).

3.20 H2 was present separating the arable field from the plantation woodland and was well managed (Appendix 5, Plate 7). Species comprised hawthorn *Crataegus monogyna*, dogwood *Cornus sanguinea*, bramble, field maple *Acer campestre* and holly.

Summary

3.21 The habitats within the site were noted as species-poor during the survey with poor semi-improved grassland margins considered common and widespread. The hedgerows and woodland were of greater value however both were either relatively young and uniform (plantation) or defunct (hedgerow) reducing their ecological value. The habitats on site are assessed as being up to **local** level value and the confidence in this assessment is high.

Protected and Notable Species

Rare and Notable Plants

- 3.22** No plants that are considered to be rare or notable were identified on the site during the survey.
- 3.23** There were no records of Schedule 9 invasive plant species on or immediately adjacent the site. No Schedule 9 invasive species were recorded on site.

Badger

- 3.24** There were two records of badgers within 2km of the site, with the most recent recorded in 2015.
- 3.25** No evidence of badger was identified within the site including setts, latrines, snuffle holes or footprints however mammal path were noted throughout the site.
- 3.26** The habitats on site provided foraging and commuting habitat for individuals that may be present within the surrounding area. Additionally, the woodland and hedgerows provided potential sett building opportunities.
- 3.27** The site is assessed as being of **site** value for badgers and confidence in this assessment is currently high.

Bats

- 3.28** There were nine records of bats provided by the records centre. These included unknown bat species, common and soprano pipistrelle, noctule, Leisler's and brown long-eared bat.

Roosting

- 3.29** All the trees within and bordering the site were assessed for their potential to support roosting bats. None of the trees were considered to have potential to support roosting bats as the majority of trees were semi-mature and lacked suitable features.

Foraging/commuting

- 3.30** The site's arable field offered limited foraging opportunities for bats. The peripheral woodland and hedgerows offered greater potential opportunities for foraging and commuting with links to offsite woodland to the northeast. The northern boundary lacked any features suitable for commuting bats.
- 3.31** As the site is dominantly by intensively managed monoculture habitat with no potential roosting features, it is considered to be valued at **site** level of importance for bats and confidence in this assessment is moderate.

Birds

- 3.32** There were a large number of bird records returned from within 2km of the site including several Schedule 41 (NERC Act 2006) and red-listed birds of conservation concern (BoCC) (Eaton *et al.* 2015); Skylark *Alauda arvensis*, hawfinch *Coccothraustes coccothraustes*, starling *Sturnus vulgaris*, yellowhammer *Emberiza citrinella*, song thrush *Turdus philomelos*, house sparrow *Turdus viscivorus*, tree sparrow *Passer montanus*, linnet *Linaria cannabina*, and yellow wagtail *Motacilla flava*. Additionally, skylark is listed under *Schedule 1* of the *Wildlife*

Countryside Act (WCA) 1981.

- 3.33** The arable field with plantation woodland and hedgerow habitats on site cover an area of approximately 12.9ha, and as such are considered likely to be suitable for urban edge species and farmland species of conservation concern such as skylark, yellowhammer and linnet. In addition, the site may provide suitable foraging opportunities for wintering birds such as geese species and red listed farmland birds including fieldfare and redwing *Turdus iliacus*.
- 3.34** The site is considered to be important at the **local** level for breeding and confidence in this assessment is moderate until further surveys are undertaken.

Great Crested Newt

- 3.35** There is a single record of GCN identified c. 1.8km south-east from the site.
- 3.36** Habitats on site had limited suitability to support terrestrial phase GCN within the intensively managed arable field. Areas of more suitable habitat included the plantation woodland, scrub, hedgerows and field margins which provided potential foraging, commuting, rest/shelter and hibernation.
- 3.37** Three ponds were identified within 500m of the site from aerial and ordnance mapping. The closest was P1 present within the site however this was found to be dry at the time of the survey. P2 was a garden pond present approximately 130m west across School Road while P3 was beyond 250m from the site located c. 280m northwest beyond Mill Road (B1106) (Appendix 8).
- 3.38** As the site is dominated by habitats of limited value to GCN and forms a triangular piece of land surrounded by roads considered partial barriers to dispersal for GCN, the site is considered to have **site** importance for this species and confidence in this assessment is high.

Reptiles

- 3.39** There were no records of reptiles identified within 2km of the site.
- 3.40** The majority of the site is considered unsuitable for reptiles within the areas of arable field. The field margins and woodland with log piles provided potential for foraging, commuting, shelter/cover and hibernation. The presence of roads surrounding the site limits connectivity to the wider landscape however these are only considered to be partial barriers to dispersal for reptiles due to the lack of raised curbs.
- 3.41** Therefore, the site is valued at the **site** level for reptiles and confidence in this assessment is currently moderate until further surveys are undertaken.

Hazel Dormouse

- 3.42** No records of hazel dormice were returned from the local records centre. A single record was identified using the NBN Gateway within 5km of the site at c. 4.5km southwest however this record was from 1890 and located within the town of Bury St. Edmunds. The habitats within the site are largely unsuitable (i.e. arable field with grassland margins) with the woodland and hedgerow providing only sub-optimal habitat due to lack of shrub layer and dense scrub this species utilises. As the site is surrounded by roads it is considered isolated to the wider landscape for this arboreal species and any connectivity to surrounding suitable habitats and local records has been severed.

3.43 Due to the lack of records and connective habitat, the site is considered to have **negligible** importance for dormouse and confidence in this assessment is high, and as such is no longer considered in this report.

Invertebrates

3.44 The majority of the site comprises common and widespread habitat being dominated by intensively managed arable land considered to have very limited suitability for invertebrate species of importance. The plantation woodland with log piles had greater suitability for invertebrates however this was considered limited by the young age and uniform nature of the plantation. It is considered that the site is of **site** importance for invertebrates and confidence in this assessment is high.

Other Notable Species

3.45 There were records of hedgehog , harvest mouse, brown hare and polecat within 2km of the site. The site is considered suitable for supporting these species within the arable land (brown hare), long marginal grassland (harvest mouse) and woodland (hedgehog and polecat).

3.46 The site is considered to have **site** value for these species and confidence in this assessment is currently high.

Summary

Table 6: Summary evaluation of features

Feature	Summary description	Value	Confidence
SAC/SPA/Ramsar	The site is within 8.5km from Breckland SPA.	European	High
SSSI	There are two SSSI's within 5km; both at 3.7km.	National	High
CWS	There is one CWS and one Roadside Nature Reserve in 2km	County	High
Habitats on site	Common and widespread habitats; arable, plantation woodland, hedgerow, scrub, poor semi-improved grassland and scattered trees. Hedgerows and woodland considered of local value	Up to local	High
Badger	No evidence of badger was identified within or immediately adjacent the site	Site	High
Bats	No roosting habitats present on site, and very limited foraging present on site boundaries.	Site	Moderate
Birds	Habitats on site considered likely to be suitable for species of conservation concern	Local	Moderate
Great crested newt	Dry pond onsite and two ponds within 500m across partial barriers to dispersal. Majority of site considered unsuitable.	Site	High
Reptiles	Majority of site unsuitable with limited connectivity. Field margins and woodland offer suitable habitat for foraging, basking and hibernating.	Site	Moderate
Hazel dormice	Habitats on site are not considered suitable for this species and lack connectivity to other suitable habitats	Negligible	High
Invertebrates	Habitats on site considered common and widespread with limited opportunity to support importance invertebrate assemblages	Site	High

Feature	Summary description	Value	Confidence
Other notable species	Arable field, grassland margins, scrub and woodland habitat suitable for European hedgehog, brown hare, polecat and harvest mouse.	Site	High

4.0 Preliminary prediction of impacts, recommendations and mitigation measures

Statutory/Non-statutory Sites

European Designated Sites

- 4.1** The site falls within 10km of Breckland SPA. A capacity plan is yet to be produced for the scheme however it is anticipated that over 150 residential units are likely to be proposed. While the site is considered at such a distance that direct impacts are not anticipated, increases in recreational pressure on the Breckland SPA may result from the proposed development with potential to adversely impact the integrity of the designated site.
- 4.2** A project level Habitat Regulations Assessment Screening Report (SES, 2020) has been produced to accompany this report. The report identified relevant buffers applied to the SPA in relation to potential impacts. This includes a 7.5km buffer advised by Natural England, as stated within the Forest Heath area of West Suffolk Council Site Allocations Local Plan (SALP), where increase from recreational disturbance could impact the integrity of the SPA. As the site is beyond all buffers where impacts are considered likely, no likely significant effects on the integrity of Breckland SPA were identified from the proposed development.

Nationally Designated Sites

- 4.3** There are two nationally important designated sites within 5km of the application site. These include The Glen Chalk Cave, Bury St Edmunds SSSI located approximately 3.7km south-west and designated for its tunnels which provide regular hibernation habitat for five species of bat. The second SSSI within 5km is Pakenham Meadows situated c 3.7km north-east and comprising unimproved grassland.
- 4.4** Given the distance from the site to the SSSIs no direct impacts are considered likely. In addition, due to the nature of The Glen Chalk Cave, Bury St Edmunds SSSI as a tunnel network with grills to prevent public access, no indirect adverse impacts are anticipated from the proposals on this SSSI.
- 4.5** Pakenham Meadow is relatively small at 5.3ha and notified for its unimproved grassland habitat. A public footpath runs through the SSSI but is not directly linked to footpaths adjacent the proposed development site. Additionally, the SSSI has no recreational infrastructure. As such the SSSI itself is unlikely to be a draw for visitors and particularly dog walkers when considering the proximity of public footpaths adjacent the proposed development. Given this, increased recreational pressure within the SSSI is not considered likely to be significant.
- 4.6** Pakenham SSSI is located within an area of floodplain grazing marsh (Magic Map) with a network of waterbodies leading south and then west, appearing to end approximately 700m south of the proposed scheme. The site has no direct hydrological links to the SSSI however lies within the IRZ which states that where any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water is considered likely to have an impact on a designated site. The schemes Sustainable Urban Drainage System will be designed in line with the IRZ in order to prevent adverse impacts from the scheme on the SSSI.

Non-statutory Designated Sites

- 4.7** There were two non-statutory sites within 2km. This included a Roadside Nature Reserve 1km east for which no exact details were provided by the record centre however these grass verges are individually managed to

benefit the scarce or unusual plants or fungi growing there. The verge is located along Pakenham Road which has no pavements or safe walking routes and is unlikely to be utilised by high numbers of walkers. Given this and its distance from the site, direct impacts or indirect impacts such as those from increased recreational disturbance from the proposals are considered unlikely.

- 4.8** The second site is a Barton Shrub CWS located c. 1.6km south-east of the site and notified for its ancient woodland. No public footpaths are located within or around the CWS and therefore given the distance from the site and lack of public access no adverse impacts are anticipated from the proposals. In addition, the onsite SANG will act to further deter residents from visiting the CWS.

Habitats

- 4.9** The proposed scheme design has not yet been formalised however it is considered that the entirety of the arable land will be lost to facilitate development and the plantation woodland retained. In line with the Great Barton Neighborhood Plan It is recommended that the majority of the boundary habitats including hedgerows, broadleaved trees and plantation woodland are retained, protected and enhanced. This will maintain and enhance connectivity across the site for a number of faunal species and screen the development from adjacent roads. Engagement with the Great Barton Community Woodland group is recommended in order to provide a collaborative approach to the woodland enhancement. Specific enhancements will be designed for the woodland but could include thinning, planting of understory shrub species, creation of rides and glades, and wood/brush piles. Enhancements will result in a more structurally and botanically diverse woodland which will benefit a range of fauna including invertebrates and birds.
- 4.10** In addition, the Neighborhood Plan states that the existing pond on site should be retained and new woodland planted. As such it is recommended that the dry pond be re-instated and incorporated into areas of Public Open Space. Finally, the Plan also states that new screen planting should be included along Mill Road (northern boundary). In order to maximise benefits to wildlife it is recommended that this comprise a native species-rich hedgerow (7 species) with trees.
- 4.11** It is recommended that the woodland, hedgerows and trees are retained and protected within the final development in accordance with British Standard (BS) 5837; *Trees in Relation to Design, Demolition and Construction*.
- 4.12** The proposal offers an opportunity to deliver benefits to biodiversity and achieve measurable net gain, in line with the NPPF (2019). A high level, indicative biodiversity net gain assessment was carried out using the DEFRA 2.0 biodiversity metric calculator to quantify the value of habitats pre and post development. As no layout had been produced at the time of the assessment the Concept Diagram for the site provided under Figure 12 of the Great Barton Neighborhood Plan was used and included the recommendations within the Plan as stated above included. If the scheme was to follow this indicative layout a significant net loss in biodiversity would be expected from the proposals due to the amount of arable land converted into habitats of lower ecological value e.g. buildings and roads.
- 4.13** To improve the score from the BNG Assessment and provide a net gain in biodiversity it is likely the scheme would need to provide between 2-3 ha of semi-natural habitat such as wildflower meadow along with the creation of additional woodland of approximately 0.6ha in line with the Plan. Additional benefits to biodiversity within the landscaping design could include the planting of native tree, shrub and hedgerows throughout the site and creation of SUDS with native seeding. It is also recommended that a buffer be created between the development and retained woodland of at least 5m. A suggested list of species for inclusion within the

landscaping is provided in Appendix 6.

- 4.14** It is recommended that the BNG Assessment be updated once a more detailed design of the proposals is created,
- 4.15** The retention and enhancement of boundary habitats with the creation of new habitats has potential to result in a **positive** residual effect at site level.

Protected and notable species

Badgers

- 4.16** No badger setts were recorded within the site boundary therefore impacts on setts are not predicted. The proposed development is likely to result in a reduction in suitable foraging habitat within the site as a whole. These can be enhanced for badgers through addition planting and a sensitive long-term management plan. In addition, the proposal will need to include planting of native fruit and seed-bearing trees and shrubs. Together, these measures should mitigate for the loss of rough grassland and ensure the site continues to provide sufficient resources.
- 4.17** Due to the propensity of badgers to open up old setts / dig new ones, a pre-construction badger survey is recommended if the commencement of works has not commenced within 12 months of this report.
- 4.18** Other potential impacts are badger death/injury during construction. To mitigate these impacts the following precautionary techniques that are sympathetic to badgers are recommended:
- 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;
 - Capping of any pipes overnight;
 - Storing chemicals securely overnight (*e.g.* locked away); and
 - A toolbox talk will be given to on-site operatives detailing these precautionary measures.
- 4.19** The site could be enhanced for badgers through the planting of species known to benefit wildlife (see Appendix 6) such as fruit trees.
- 4.20** With the retention of existing boundaries, as well as the above precautionary working methods, it is predicted that the development will result in a **neutral** residual effect on badgers.

Bats

Bats – foraging / commuting

- 4.21** The site's hedgerows, woodland and tree lines provided potential for foraging and commuting bats however the majority of the site was of limited value. As such the site is considered of low suitability habitat for bats. If the entire site is brought forward for development it is recommended that seasonal nocturnal bat activity surveys and static monitoring are recommended to understand the site's usage by the local bat population as per the Bat Conservation Trust (2016) guidance for low suitability habitats. This includes one survey visit per season (spring-April/May, summer – June/July/August, autumn – September/October) in appropriate weather

conditions for bats. One static location per transect with data collected over five consecutive nights will also be undertaken. If applications are brought forward for smaller parts of the site where features such as hedgerow, woodland or tree lines are less prominent, then the requirement for nocturnal bat activity surveys may be scoped out.

4.22 To minimise impacts to bats, it is recommended that boundary features including hedgerows and woodland are maintained in order to retain foraging and commuting habitat for bats. The provision of additional hedgerows and/or trees lines around the site's boundaries will act to improve the foraging and commuting opportunities for the local bat population.

4.23 In general, it is recommended that site lighting around key features likely to be used by 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 (150 Watts) 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.

Bats – roosting

4.24 The site had very limited numbers of trees of which none had potential to support roosting bats. The site could be further enhanced for bats through the planting of flora known to be favoured by their invertebrate prey within the landscaping (Appendix 7) and the inclusion of traditional bat boxes on retained trees and/or integrated within new buildings. There are numerous bat box designs but the Schwegler universal bat box 1FF (Figure 1) provides excellent summer roosting conditions for crevice inhabiting species and is easily erected on retained trees. Additionally, a variety of bat boxes that can integrate seamlessly into the design of new buildings are available, such as the Habibat Bat Box (Figure 2), which can be supplied plain for a rendered finish, or faced with brick.

Figure 1: Schwegler 1FF bat box erected on a tree.



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



- 4.25** The retention of boundary habitat, planting of new linear features such as hedgerows and trees and native lower plants and inclusion of bat boxes, as recommended, would likely result in a **positive** residual effect at site level.

Birds

- 4.26** Potential impacts on nesting birds include death, damage to and disturbance of nests during vegetation clearance. Therefore where any clearance of nesting bird habitat (hedgerows, scrub, trees, arable) is required, then this should be undertaken outside the nesting bird season (March to August inclusive), or only once a habitat inspection has been carried out by a suitably qualified ecologist within 48 hours prior to clearance.
- 4.27** In addition, due to the nature of habitats on site the development could potentially impact notable bird species. This could include disturbance of breeding Schedule 1 birds (an offence under the Conservation of Habitats and Species Regulations 2017 (as amended) and disturbance impacts/ habitat loss for wintering bird species. As such, further bird surveys are considered to be required.
- 4.28** As the wider site as a whole has suitability for a range of breeding and wintering species of conservation concern, it is considered that both breeding and wintering bird surveys will be required. The breeding bird surveys are considered to require three visits spread over the core bird breeding season from March to June while wintering bird surveys will comprise three visits from November to February. 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).
- 4.29** Where any applications are planned for smaller areas of the site, the requirement for further bird surveys may be scopes out depending on the extent of the site area and habitats present.
- 4.30** The further surveys will guide mitigation and compensation requirements. Depending on outcomes, it is considered that a **neutral to positive** residual effect could likely be achieved through a combination of the following. Where it is determined that specific mitigation items are not required, these could instead be considered as enhancements to be delivered by the development:

- Retention of all boundary habitat
- Planning of new native species rich boundary hedgerows with trees

- Sympathetic management regime of habitats
- Payment to farmers to create skylark plots on adjacent arable land (if significant numbers of skylark are confirmed to be nesting within the site)
- Sensitive lighting scheme that avoids nocturnal lighting of boundary vegetation
- Inclusion of integral bird boxes within the fabric of new buildings and installation of bird boxes on retained trees

4.31 Bird-nesting features or boxes should be installed to provide nesting opportunities for birds adapted to nesting in urban areas. Boxes should be made of a long-lasting material, with examples including the *Schwegler 1B Nest Box* (Figure 3) offering nesting habitat for a variety of birds which have been recorded in the wider landscape. The *Schwegler 1SP Sparrow Terrace* (Figure 4) offers a nest box specific to house sparrows also recorded within the local area.

Figure 3: Schwegler 1B nest box



Figure 4: Schwegler 1SP Sparrow Terrace



Great Crested Newt

4.32 The onsite pond was dry at the time of the survey. Two further ponds were identified within 500m of the site at which included P2; a garden pond present approximately 130m west across School Road, and P3 located c. 280m northwest beyond Mill Road (B1106) (Appendix 8). The majority of the site was intensively managed arable land of limited suitability to great crested newts. In addition, the two ponds were located beyond roads considered partial barriers to dispersal with habitat of greater suitability (broadleaved woodland) in close proximity. As such is it considered extremely unlikely that any GCN that may be present within the waterbodies would utilise the habitats on site.

4.33 Due to the presence of pond (P1) within the site, it is recommended that this waterbody be re-visited in 2021 to determine whether it holds water during the GCN breeding season. If water is present, a Habitat Suitability Index assessment will be undertaken to assess the suitability of the pond to support breeding GCN. If suitable, an eDNA sample should be taken from the waterbody to determine the presence/likely absence of GCN. The sample should be taken between mid-April and the end of June. If the sample comes back positive, then further surveys will be required to establish the population size and mitigation requirements for the proposal (mid-March to mid-June). Mitigation may include clearance of the site under a Precautionary Method of Works or if GCN are identified in P1 a European Protected Species License may be required to trap and translocate GCN to a receptor.

4.34 Through the retention of existing boundary habitats and appropriate mitigation as detailed above, any residual effects on GCN would likely be **neutral to positive**.

Reptiles

- 4.35** Given the suitability of perimeter habitats on site, potential impacts on common reptiles include death/injury during construction. As such it is recommended that a presence/likely absence survey is undertaken to determine the status of reptiles within the site and mitigation required. This should include seven visits during the reptile active season (March-September), during appropriate weather conditions (Froglife, 1999). These surveys may not be required for all applications. Any smaller planning applications will need to be looked at in terms of the population of reptiles they may support however if habitats are limited in these areas a precautionary method of works may be considered more proportionate.
- 4.36** Mitigation appropriate to the species, number and location of the sightings will be required. Mitigation can include retention of areas of the site where reptiles are located, changing the timing of works, and/or a precautionary method of works to actively displace reptiles towards areas of suitable habitat offsite through sensitive clearance. If significant numbers are found mitigation may require the installation of exclusion fencing along site boundaries, trapping out of any suitable habitat to be impacted under the development proposals, and translocation to a suitable off-site receptor where on-site requirements are not feasible, followed by a search of habitats on site supervised by an ecologist.
- 4.37** Through the retention of existing boundary habitats and appropriate mitigation as detailed above, any residual effects on reptiles would likely be **neutral to positive**.

Invertebrates

- 4.38** As the site is dominated by common and widespread habitats of poor species diversity no further surveys are considered necessary for this group. Enhancements for invertebrates should be included within the landscaping scheme. This could include the provision of wildflower meadow; native planting within the SUDS and re-created pond; and provision of log/brush piles within the retained woodland.
- 4.39** Through the retention of existing boundary habitats and appropriate landscaping as detailed above, any residual effects on invertebrates would likely be **neutral to positive**.

Other Notable Species

- 4.40** Potential effects caused by development could include loss of foraging habitat and death of/injury to European hedgehog, harvest mouse, polecat and brown hare.
- 4.41** Brown hare are unlikely to be impacted by the proposals as they will naturally disperse from disturbance and significant suitable habitat is present within the immediate surrounding. Retention of woodland will reduce potential impacts to polecat and hedgehog. Where clearance is necessary, this should be conducted sensitively. The optimum time to remove vegetation would be during October as this avoids both the nesting bird season as well as hedgehog hibernation season and is at the end of the harvest mouse breeding season.
- 4.42** If any of the above species are found on site during site works, they should be moved off site to a suitable area away from the development site. Mitigation measures outlined for badger will also serve to minimise impacts to these species.
- 4.43** These mitigation measures will result in a neutral effect for notable mammals.

5.0 Conclusions

5.1 A summary of likely impacts and mitigation is provided in Table 7.

Table 7 :Summary of likely impacts, mitigation and enhancement measures and residual impacts.

Feature	Likely impacts	Further surveys/assessments	Mitigation and enhancement measures	Likely residual impact
SPA	Indirect: recreational disturbance	Project HRA	Provision of on-site open space & links to local PRoW	Neutral
SSSI	None	Statutory Sites Impact Assessment	N/A	Neutral
CWS	None	N/A	N/A	Neutral
Habitats	Loss of arable land and grassland margins	N/A	Retention and reinforcement of boundary habitats including woodland Provision of onsite enhancement/compensation including woodland management to improve structural and botanical diversity, planting of new hedgerows and trees, pond and wildflower meadow creation Sensitive lighting scheme throughout (with particular consideration to boundary habitats) Wildlife friendly landscaping scheme	Neutral/Positive
Badgers	Potential injury/death during construction	A pre-construction survey for badgers should be undertaken prior to construction if not commenced within 12 months of this report.	Standard precautionary measures; covering trenches overnight or installing a plank/mammal ladder, sensible storage of chemicals/equipment, avoidance of littering Wildlife friendly planting such as fruit trees within the landscaping plan	Neutral/Positive

Feature	Likely impacts	Further surveys/assessments	Mitigation and enhancement measures	Likely residual impact
Bats	Loss/disturbance of commuting and foraging habitat	Activity transect surveys (may not be required for smaller applications)	<p>Implementation of wildlife sensitive lighting</p> <p>Limit removal of linear features including trees and hedgerows along boundaries</p> <p>Enhancement of retained habitats including bat friendly planting, and creation of linear features</p> <p>Provision of bat boxes</p>	Positive
Birds	Loss of nesting habitat and destruction of nests. Removal of important foraging grounds for wintering birds	Breeding bird assemblages should be assessed (March to July). Wintering bird surveys (November to February). (surveys may not be required for smaller applications)	<p>Clearance works to be undertaken outside of breeding bird season or after an ecologist has confirmed no active nests</p> <p>Retention and enhancement of boundary habitat including wildlife friendly planting, and creation of new habitats</p> <p>Bird box installation</p> <p>Payment to farmers to create skylark plots on adjacent arable land (if significant numbers of skylark are confirmed to be nesting within the site)</p>	Neutral/Positive
Great Crested Newts	Killing/injury Disturbance of resting place Loss of foraging/commuting/sheltering habitat	Survey of pond P1 in site to determine whether it holds water in GCN breeding season. If the pond holds water, further surveys may be required	Precautionary methods of works during site clearance recommended if pond is dry. If pond tested using eDNA and the sample is positive traditional licensing may be required which will include the creation of an onsite or ex-situ receptor with trapping and translocation under a EPSL.	Neutral/Positive
Reptiles	Loss of habitat Potential injury/death during construction	Presence/absence surveys required to determine whether reptiles are present on site (may not be required for smaller applications)	Appropriate mitigation will depend on survey findings and could include vegetation clearance during winter months, active displacement, retention of suitable habitat and/or trapping and translocation to off-site receptor area	Neutral/Positive
Invertebrates	Killing/injury	N/A	<p>Retention and enhancement of boundary habitat.</p> <p>Creation of new habitat.</p> <p>Sensitive lighting scheme</p>	Neutral to Positive

Feature	Likely impacts	Further surveys/assessments	Mitigation and enhancement measures	Likely residual impact
Other Notable Species	Loss of harvest mouse, polecat, brown hare and hedgehog habitat Injury/ and or death	N/A	Sensitive habitat removal. Retention and enhancement of boundary habitat with wildlife friendly species	Neutral

- 5.2** Through the above recommended surveys 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).
- 5.3** The proposal offers a significant opportunity to deliver benefits to biodiversity and achieve measurable net gain, in line with the NPPF (2019). This can be achieved through the creation of a large area of open space with retains and enhances existing habitat while providing new habitats on benefit to wildlife. A wildlife friendly soft landscaping scheme should be implemented within these areas and throughout the wider development, incorporating diverse native species planting.

6.0 References

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Appendix 1. Site Location Plan



Appendix 2. Phase 1 Habitat Map



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 7

There are three dimensions to sustainable development: economic, social and environmental; these give rise to the need for the planning system to perform a number of roles:

- *An environmental role- contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change moving to a low carbon economy.*

Paragraph 9

Pursuing sustainable development involves seeking positive improvements in the quality of the built, natural and historic environment, as well as in people's quality of life including but not limited to:

- *Moving from a net loss of biodiversity to achieving net gains for nature.*

Paragraph 109

The planning system should contribute to and enhance the natural and local environment by:

- *Recognising the wider benefits of ecosystem services;*
- *Minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the*
- *Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.*

Paragraph 118

When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

- *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 planning permission should be refused; and*
- *Opportunities to incorporate biodiversity in and around developments should be encouraged.*

Paragraph 125

By encouraging good design, planning policies and decisions should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

Paragraph 152

Local planning authorities should seek opportunities to achieve each of the economic, social and environmental dimensions of sustainable development and net gains across all three.

- *Protecting and enhancing valued landscapes, geological conservation interests and soils;*
- *Recognising the wider benefits of ecosystem services;*
- *Minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including establishing coherent ecological networks that are more resilient to current and future pressures.*

Local Planning Policy

The St Edmundsbury Rural Vision 2031 Local Plan Policy RV18: Great Barton allocates the site, referred to as 'Land at School Road (The Triangle)' for residential and community uses. The Great Barton Neighbourhood Plan 2019-2041 Development Principles for this site include the following considered relevant to this report:

*"Providing for biodiversity net-gains across the whole site;
Retention of the existing pond within the site;
Protection of community woodland areas adjoining A143;
Retention and enhancement of existing hedgerow along School Road; and
Provision of new screen planting along Mill Road"*

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.

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. Plant Species List and Relative Abundance

Common name	Latin name	Plantation woodland	Grassland	Scattered Trees	Hedgerow
Field maple	<i>Acer campestre</i>				O
Sycamore	<i>Acer pseudoplatanus</i>			O	
Yarrow	<i>Achillea millefolium</i>		O		
Cow parsley	<i>Anthriscus sylvestris</i>		O		
False oat grass	<i>Arrhenatherum elatius</i>		F/LD		
Mugwort	<i>Artemisia vulgaris</i>		O		
Silver birch	<i>Betula pendula</i>	F			
Sweet chestnut	<i>Castanea sativa</i>	F			
Dogwood	<i>Cornus sanguinea</i>				O
Creeping thistle	<i>Cirsium arvense</i>		O		
Hawthorn	<i>Crataegus monogyna</i>				O
Cock's foot	<i>Dactylis glomerata</i>		F		
Couch	<i>Elymus repens</i>		A		
Beech	<i>Fagus sylvatica</i>	O			O
Ash	<i>Fraxinus excelsior</i>			O	O
Cleavers	<i>Gallium aparine</i>		O		
Ground ivy	<i>Glechoma hederacea</i>		R		
Bristly ox-tongue	<i>Helminthotheca echioides</i>		O		
Yorkshire fog	<i>Holcus lanatus</i>		O		
Holly	<i>Ilex aquifolium</i>	O			O
White dead-nettle	<i>Lamium album</i>		O		
Apple	<i>Malus sp.</i>	O			
Common mallow	<i>Malva sylvestris</i>		R		
Ribwort plantain	<i>Plantago lanceolata</i>		R		
Rough meadow-grass	<i>Poa trivialis</i>		O		
Aspen	<i>Populus tremula</i>			O	
Wild cherry	<i>Prunus avium</i>	F		O	
Blackthorn	<i>Prunus spinosa</i>				O
Pedunculate oak	<i>Quercus robur</i>	F		A	
Bramble	<i>Rubus fruticosus agg.</i>	O			
Broadleaved dock	<i>Rumex obtusifolius</i>		O		
Rose	<i>Rosa sp</i>				R
Willow sp	<i>Salix sp</i>			O	
Rowan	<i>Sorbus aucuparia</i>	O			
Lime	<i>Tilia sp.</i>	F			
Common nettle	<i>Urtica dioica</i>		O		

D=Dominant; A=Abundant; F=Frequent; O=Frequent; R=Rare

Appendix 5. Plates



Plate 1: General overview of the site showing arable field



Plate 2: Plantation woodland to the east of the site



Plate 3: Poor semi-improved grass margins



Plate 4: Scattered trees present along the boundary of the site



Plate 5: Scattered trees present within a hollow



Plate 6: Hedgerow 1 to the west of the site



Plate 7: Hedgerow 2 present along the plantation woodland boundary

Appendix 6: Plants Offering a Value 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
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>Hedera 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 7: Species of 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 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
<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
<i>Scabiosa columbaria</i>	small scabious	N	HP	F	Well drained/ alkaline	Sun	Y				Y

Plant species	Common name	Native (N)	Type	Benefit	Soil	Light	Extensive green roofs	Living walls	Rain gardens	Hedge/ trees	Beds/ borders
<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		
C	Creeper/ climber		

Appendix 8: Pond Location Plan

