



HYBRID ECOLOGY LTD
joined up thinking

Low Impact EclA:
Grimshill Farm, Billericay

On behalf of:
Millen Homes

Prepared by:
Gemma Holmes BSc (Hons) ACIEEM

Report version control:
Version 1:
September 2020

Summary

Grimshill Farm (the site) was visited on 26th August 2020 in response to a proposal for residential development. The proposal requires planning consent from Basildon District Council and this report informs the planning submission.

Designated sites and Priority Habitats

- The site is not the subject of a conservation designation nor is it mapped as Priority Habitat. The Essex Coast Recreational Avoidance Mitigation Strategy (RAMS) requires that a per-unit financial contribution be made to offset recreational impacts arising from new residential development.

Legally protected species

- The site contains a detached garage that was subject to Preliminary Roost Assessment including an internal inspection. The garage is classed as having negligible bat roost potential owing to the clear lack of external crevices and a lack of field evidence internally or externally to suggest recent use. The garage requires no further survey for roosting bats.
- The pond to the north-east of the site is ornamental in nature, has steep artificial banks and lacks any egg-laying substrate for great crested newt. The surrounding garden is kept maintained by the owners and holds little terrestrial habitat value for great crested newt. Further survey is not required.
- The boundary trees and hedgerows are capable of supporting nesting birds. Any tree work or hedgerow removal/management (or any work that could impact an active birds nest) will be carried out between September and February inclusive, or follow a nest check undertaken by an ecologist who confirms that nesting birds are absent from the habitat in question.

Habitats

- All retained trees require appropriate protection in accordance with the Tree Protection Plan (Appendix 1).
- It is recommended that the garden is kept maintained (e.g. through mowing) to discourage wildlife colonisation.

Enhancement opportunities

The development has potential to provide enhanced opportunities for wildlife. There is scope to re-design the on-site pond, provide new planting/hedgerow management and install habitat boxes around the site. These measures would contribute to Government aims under Paragraph 170(d) of the National Planning Policy Framework 2019, which requires all development to demonstrate measurable biodiversity net-gain.

Table of Contents

1.0	INTRODUCTION	4
2.0	PLANNING POLICY AND LEGISLATION	7
	LEGISLATION: PROTECTION OF DESIGNATED SITES, HABITATS AND SPECIES	9
3.0	METHODOLOGY: DESKTOP STUDY	11
4.0	METHODOLOGY: HABITATS AND SPECIES	12
	PHASE 1 HABITAT SURVEY	12
	PROTECTED/PRIORITY SPECIES SCOPING	12
5.0	LIMITATIONS	13
6.0	RESULTS: DESKTOP STUDY	14
	LANDSCAPE CONTEXT	14
	DESIGNATED SITES AND PRIORITY HABITATS	14
7.0	RESULTS: PHASE 1 HABITAT SURVEY	17
	HABITATS EVALUATION	18
8.0	RESULTS: PROTECTED/PRIORITY SPECIES SCOPING	23
	BATS	23
	GREAT CRESTED NEWT	23
	DORMOUSE	24
	OTTER AND WATER VOLE	24
	REPTILES	25
	BIRDS	25
	BADGER	26
	LEGALLY PROTECTED PLANTS/INVERTEBRATES	26
	SPECIES EVALUATION	26
9.0	SUMMARY OF ECOLOGICAL CONSTRAINTS AND OPPORTUNITIES	27
	ECOLOGICAL CONSTRAINTS	27
	OPPORTUNITIES	27
10.0	CONCLUSIONS	29
	REFERENCES	30

1.0 Introduction

Personnel:

- 1.1 This report has been prepared by Gemma Holmes; Consultant Ecologist at Hybrid Ecology Ltd. Gemma is a qualified ecologist with 12 years' experience in professional survey work and is an Associate member of the Chartered Institute of Ecology and Environmental Management. Gemma holds licences to survey for great crested newt and bats in the UK (Licence numbers 2015-19096-CLS-CLS and 2016-27305-CLS-CLS respectively).

Brief:

- 1.2 In Property Ltd. instructed Hybrid Ecology on behalf of Millen Homes to produce a Low Impact EclA for Grimshill Farm, Billericay CM11 2PP. A Location Plan is provided in Figure 1 and Survey Boundary in Figure 2. The proposal involves a new residential development. The layout is provided in Appendix 1.

Aims:

- 1.3 This Low Impact EclA has been produced to advise the client/developer and relevant members of the project team as to the key ecological constraints and opportunities associated with this project and any necessary mitigation requirements to ensure legal obligations in respect of protected species, designated sites and habitats are met.

Figure 1. Location plan

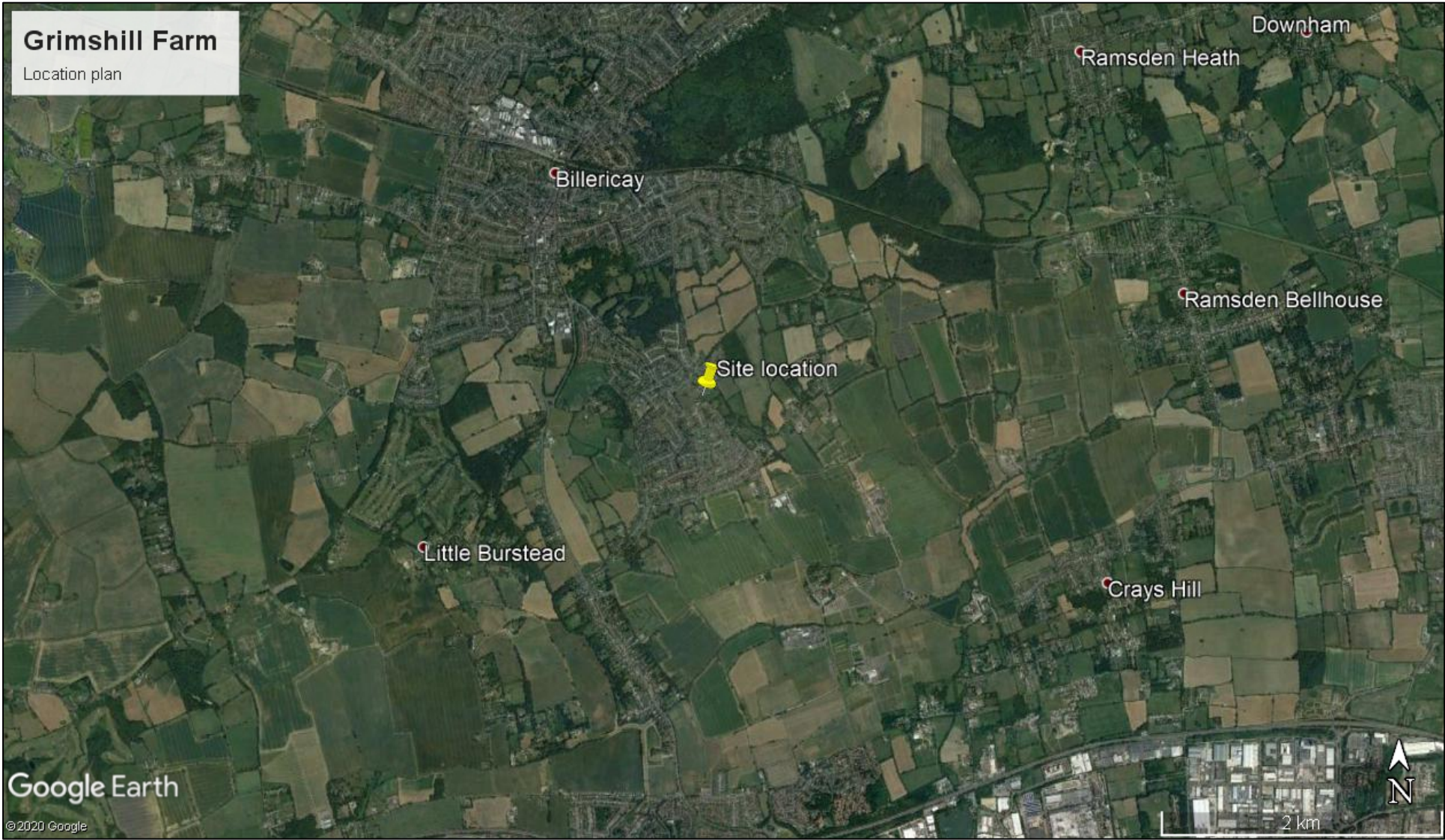
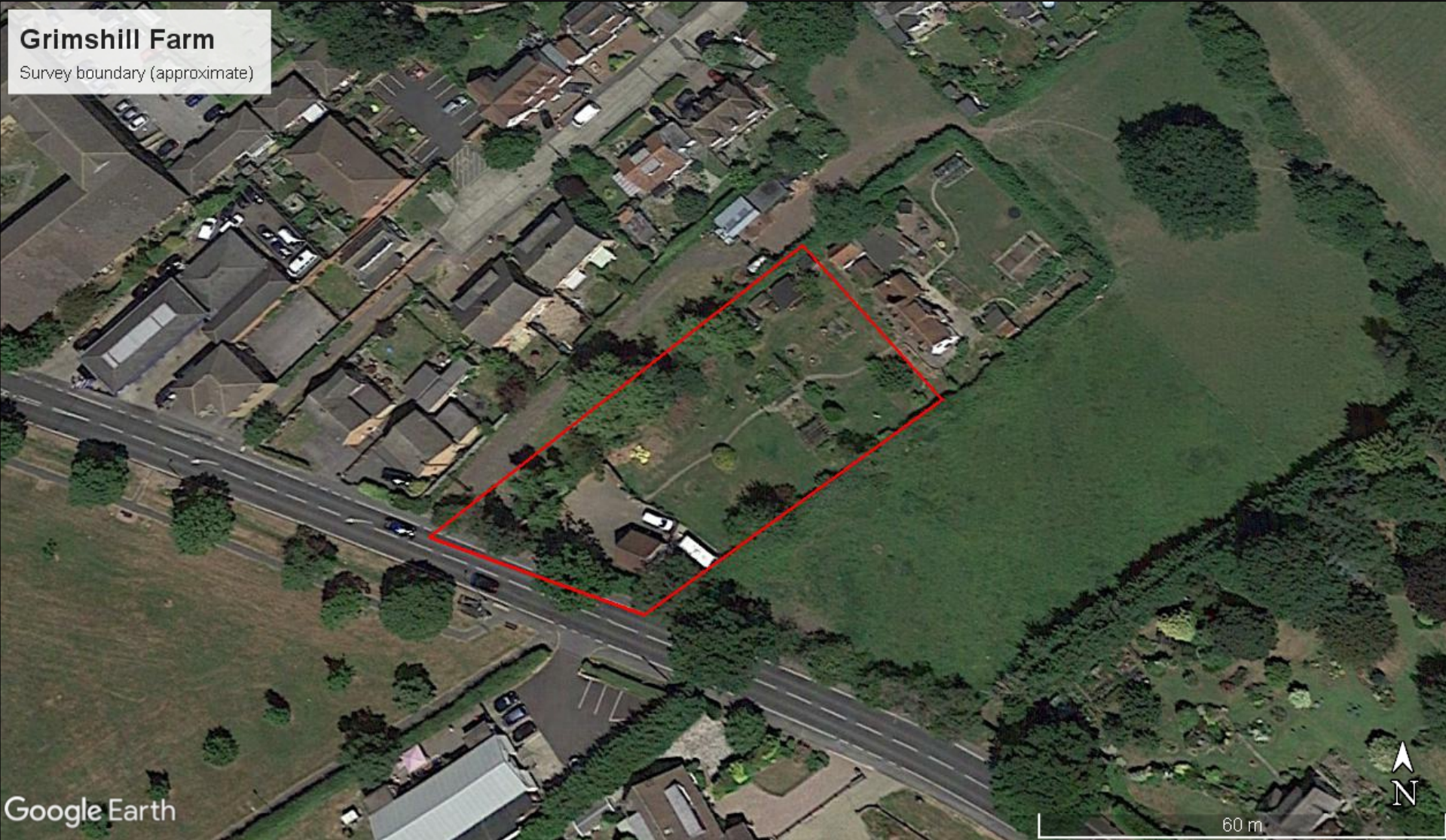


Figure 2. Survey Boundary



2.0 Planning Policy and Legislation

National Planning Policy Framework (2019): Conserving and Enhancing the Natural Environment

Please note the below policies have been taken directly from the National Planning Policy Framework.

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;
- e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;
- f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.”

Paragraph 175 (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.

Local Planning Policy: Basildon Local Plan (2007)

Please note, the below policies have been taken directly from the Basildon Local Plan.

Policy BAS C1

The Council will not permit development which may have an adverse material effect on a Site of Special Scientific Interest (SSSI). When considering planning applications affecting Sites of Importance for Nature Conservation (SINC) or other important wildlife habitats, the Council will have full regard to the nature conservation value of the site. The criteria which the Council will take into account in dealing with planning applications affecting SSSIs, SINCs and other important habitats will be:

- i. effects on significant nature conservation or scientific features of the site;
- ii. the importance of the site and of any nature conservation or scientific features affected;
- iii. any benefits of the proposed development.”

Policy BAS C2

The Council will not normally permit development which may adversely and materially affect the conservation or landscape value of a Country Park.

Policy BAS C5

Existing woodlands should be retained, especially where they are Ancient Woodlands.

Policy BAS C7

The Council will not permit development, including recreational proposals, which would cause harm to the landscape, the open and rural character or the wildlife of the marshes Coastal Protection Area

Policy BAS C13

The Council will not normally permit development which may adversely and materially affect any river, pond, lake or other important water feature or wildlife habitat of acknowledged importance.

Legislation: Protection of Designated Sites, Habitats and Species

Please note this section is a summary of legislation only and should not be taken as a definitive interpretation of any law.

European sites

- 2.1 Legal protection prevents damaging activities on designated sites. Some of the sites, known as Special Protection Areas (SPAs) are specifically designated for birds and Special Areas of Conservation (SACs), are of European importance for certain species (e.g. barbastelle bat). These sites have been created under the EC Birds Directive and Habitats Directive. In the UK they form part of a larger European network called Natura 2000.
- 2.2 Most residential development sites in Essex (excluding Epping and Harlow districts), within a certain Zone of Influence (Zoi) of European designated sites require consideration under the “Essex Coast Recreational Avoidance and Mitigation Strategy” (or Essex Coast RAMS). This requires a per-unit financial contribution to offset impacts related to recreation at coastal sites.

Nationally protected sites

- 2.3 Within the UK sites that are nationally important for plants, animals or geological or physiographical features are protected by law as Sites of Special Scientific Interest (SSSIs). This system provides the underpinning statutory protection for all sites, including those which are also of international importance.

Locally designated sites

- 2.4 Local authorities for any given area may designate certain areas as being of local conservation interest. The criteria for inclusion, and the level of protection provided, if any, may vary between areas. Most individual counties have a similar scheme, although they do vary. These sites, which may be given various titles such as ‘Local Wildlife Sites’ (LWS), ‘Local Nature Conservation Sites’ (LNCS), ‘Sites of Importance for Nature Conservation’ (SINCs), or ‘Sites of Nature Conservation Importance’ (SNICIs), together with statutory designations, are defined in local and structure plans under the Town and Country Planning system and are a material consideration when planning applications are being determined.

Hedgerows

- 2.5 The Hedgerow Regulations (1997) is a piece of legislation designed to protect countryside hedges. The criteria include length, number of woody species and associated features (including wet ditches). The legislation prevents the intentional or reckless removal of an “important” hedgerow. Applications to remove hedgerows can be issued to the Local Planning Authority who may then issue a Hedgerow Removal Notice. From an ecological perspective, all hedgerows hold value for a huge range of wildlife. Hedgerows should be retained and protected throughout the lifetime of a development wherever possible and managed to secure long term viability.

Legally protected species

- 2.6 The Conservation of Habitats and Species Regulations (2016) affords protection to bats (all species), great crested newt, otter and dormouse (this is not an exhaustive list and is relevant to East Anglia only). The Wildlife and Countryside Act 1981 (as amended) is the main source of legal protection for wildlife in England and was strengthened by the Countryside and Rights of Way Act 2000.
- 2.7 Species protection is provided under Schedules 1, 5, 6 and 8 to species including bat, great crested newt, water vole, otter and nesting birds. Badgers are protected separately under the Protection of Badgers Act (1992).

Species and Habitats of Principal Importance in England (or Priority habitats/species)

- 2.8 The Natural Environment and Rural Communities Act (2006) places a duty on Local Planning Authorities to conserve and enhance certain habitats and species. The species that have been designated to be of "principal importance for the purpose of conserving biodiversity" are those that are most threatened, in greatest decline, or where the UK holds a significant proportion of the world's total population. They mainly derive from lists originally drawn up for the UK Biodiversity Action Plan (UK BAP). Similarly, the list of habitats of principal importance in England also derive from the UK Biodiversity Action Plan.

3.0 Methodology: Desktop Study

Mapping exercise

- 3.1 Aerial imagery (Google Earth Pro, 2019) was used to examine the landscape context of the site in relation to significant ecological assets such as woodland, established hedgerows, grassland and any naturalised features that would allow wildlife use and dispersal.
- 3.2 Multi-Agency Geographical Information for the Countryside (MAGIC) was used to identify any land designated for nature conservation reasons within 2km of the site, or within the Zone of Influence of Essex Coastal sites. Designated sites include Ramsar, Special Areas of Conservation (SAC), Special Protection Areas (SPA), Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR). MAGIC was also used to identify any areas of land mapped by Natural England as Priority Habitat.

Biological Records Search

- 3.3 Essex Field Club (EFC) was instructed to carry out a search of records for protected and priority species within a 1km radius of the site. Data records are included in the protected species evaluation in Section 8.

4.0 Methodology: Habitats and Species

Phase 1 Habitat Survey

- 4.1 An Extended Phase 1 Habitat Survey was carried out on 26th August 2020 by ecologist Gemma Holmes (BSc Hons ACIEEM). The survey included the red line in Figure 2 and up to 30 metres beyond the site boundaries, where accessible. The weather conditions were conducive to surveying, with good visibility, no wind and no rain. The survey was undertaken in accordance with the Handbook for Phase 1 Habitat Survey (JNCC 2010). Habitats on and adjacent to the site were mapped and target notes added for any interesting or notable biodiversity features.

Protected/priority species scoping

- 4.2 The survey also included an assessment of the site's potential to support any legally protected species; or Species and Habitats of Principal Importance, as identified by Section 41 of the Natural Environment and Rural Communities Act (2006). Where best practice guidelines exist, these have been used to assess the likelihood that individual species will be present, for example Bat Surveys: Good Practice Guidelines (BCT 2016) and Habitat Suitability Index for Great Crested Newt (Oldham et al, 2000).
- 4.3 The detached garage was subject to a Preliminary Roost Assessment to establish features that could reasonably be used by bats (external crevices or loft voids) and to identify any field signs (such as droppings) that could indicate presence of a roost. The garage was assigned "high, moderate, low or negligible" bat roost potential in accordance with BCT 2016 Guidelines, Any recommendation for further survey was dictated by this outcome.

Evaluation criteria

- 4.4 Features (conservation sites, habitats, and species) were evaluated where possible in relation to a geographical context (i.e. International, National, Regional, Metropolitan, County, District, Borough, Local and Site), in accordance with CIEEM Ecological Impact Assessment Guidelines (2016). Criteria include designations, quality of habitat in relation to the site context, ability to support notable assemblages of species, contribution to habitat connectivity, dispersal opportunities or providing intrinsic ecological value.

5.0 Limitations

- 5.1 Whilst every effort has been made to provide a comprehensive description of the site, no investigation could ensure the complete characterisation and prediction of the natural environment. Wildlife is transient and mobile, and results of a survey can reasonably vary from one day to the next or across the seasons.
- 5.2 The protected species assessment provides a view of the likelihood of protected species occurring on the site based on the known distribution of species in the local area and the suitability of the habitat. However, it should not be taken as providing a full and definitive survey of any protected species/group.
- 5.3 Biological records can be patchy, and some areas/species are under recorded, therefore absence of records for a species or group does not necessarily mean that there is a lack of ecological interest. Equally, the presence of records does not necessarily mean the habitat is still suitable for the species/group in question.
- 5.4 This report is valid for 18 months, after which point habitats are reasonably expected to have changed to warrant a re-survey.

6.0 Results: Desktop Study

Landscape context

- 6.1 The site is situated to the south-east of Billericay on the edge of residential development, in a suburban setting. There is a grazing paddock which borders the northern, eastern and southern boundaries. Southend Road is to the south, beyond which is an area of public open space. There is a small woodland 200 metres to the north-east, and unmanaged rough grassland/scrub beyond a further residential property 130 metres to the south-east.

Designated sites and Priority Habitats

- 6.2 Please refer to Figure 3 for a map supporting the text below. The site is not the subject of a conservation designation nor does it adjoin a European or nationally designated site.

Mill Meadows SSSI and LNR

- 6.3 The closest designated site is Mill Meadows Local Nature Reserve and Site of Special Scientific Interest, 480 metres to the north-west of the site at its closest point. In summary, Mill Meadows is comprised of five adjoining grassland units that overlie Claygate beds (sandy clay or loam) and London Clay. The grassland units generally slope to the north-west and north-east. These grassland units are separated by old hedge lines, some of which are associated with ditches. The site is bounded by a combination of housing, roads, a stream and semi-natural grassland, scrub and secondary woodland. Mill Meadows supports a characteristic flora of a grassland type that is very much reduced within the Essex landscape due to development and agricultural improvement. Given the intervening land-use between the site and Mill Meadows, there is no risk of impact. Whilst the site is within the Impact Risk Zone, Natural England states the threshold for impacts arising from development to be 50 units or above.

Norsey Wood SSSI and LNR

- 6.4 Norsey Wood is 1.6km to the north of the site and contains an ancient oak woodland on acid soils. There will be no direct impact on Norsey Wood as a result of development. This site is not within the Impact Risk Zone for development and requires no further consideration.

Essex Coast designated sites

- 6.5 The site is within 13km of the Essex Estuaries coastal sites and therefore requires consideration under the Essex Coast Recreational Avoidance Mitigation Strategy (RAMS), which aims to deliver the mitigation necessary to avoid significant adverse effects from 'in-combination' impacts of residential development that is anticipated across Essex; thus protecting the Habitats (European) sites on the Essex coast from adverse effect on site integrity. All new residential developments within the evidenced Zone of Influence where there is a net increase in dwelling numbers are included in the Essex Coast RAMS. This will require a per-unit financial contribution of £122.30 to fund mitigation measures at Essex Coast sites.

Priority Habitats

- 6.6 The closest Priority Habitat is off-site woodland, which is approximately 220 metres to the north-east of the site. There is no reason that a small-scale residential development would impact off-site woodland.

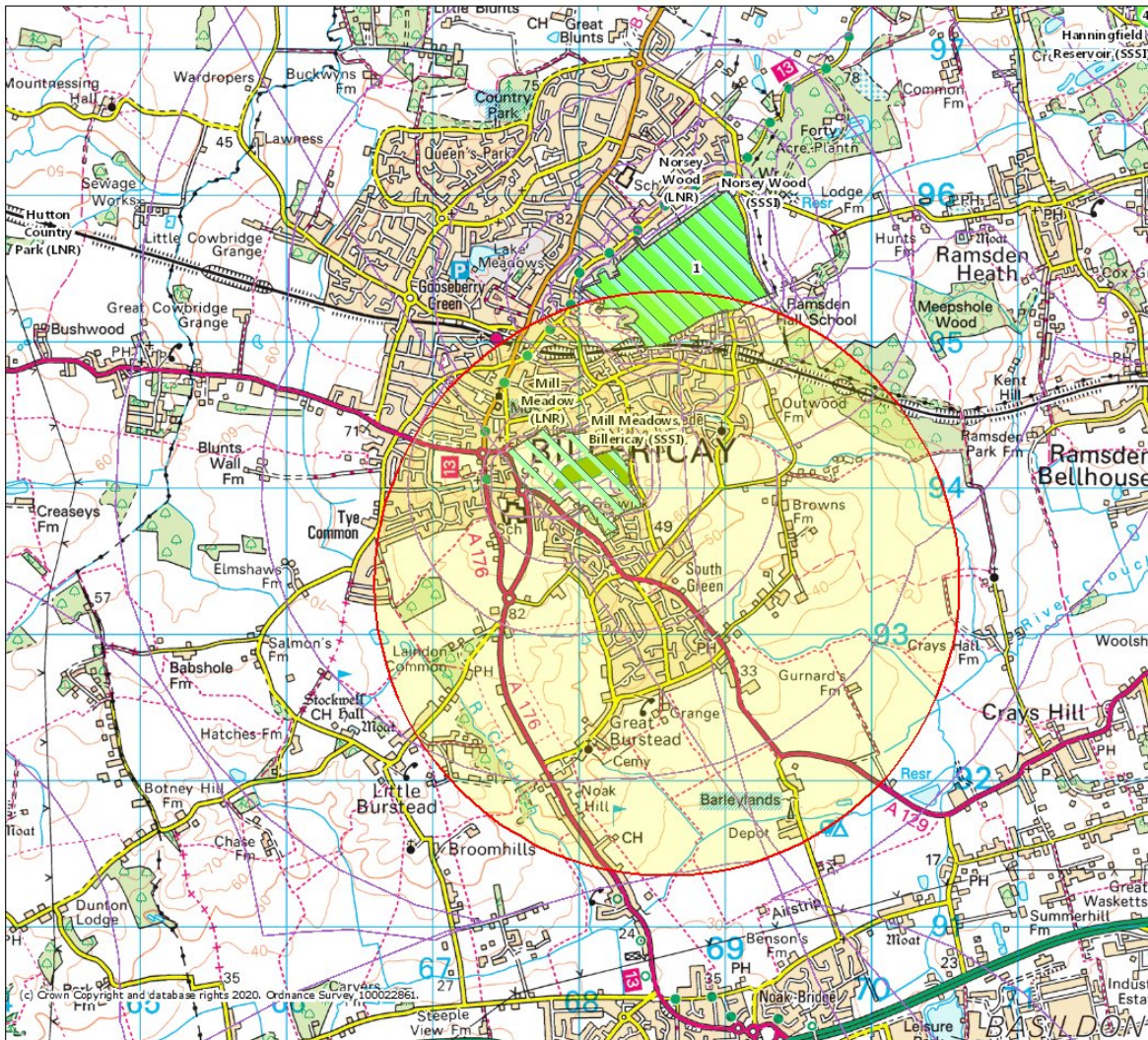
Sites evaluation:

- 6.7 **Impacts on designated sites are relevant at Site level only. No on-site mitigation is necessary in respect of designated sites/priority habitats.**

Figure 3. MAGIC map showing designated sites within 2km

MAGiC

Magic Map



Legend

- Local Nature Reserves (England)
- National Nature Reserves (England)
- Ramsar Sites (England)
- Proposed Ramsar Sites (England)
- Sites of Special Scientific Interest Units (England)**
- Favourable Condition
- Unfavourable Recovering
- Unfavourable no change
- Unfavourable Declining
- Part Destroyed
- Destroyed
- Not Assessed
- Sites of Special Scientific Interest (England)
- SSSI Impact Risk Zones - to assess planning applications for likely impacts on SSSIs/SACs/SPAs & Ramsar sites (England)
- Special Areas of Conservation (England)
- Possible Special Areas of Conservation (England)
- Special Protection Areas (England)
- Potential Special Protection Areas (England)

Projection = OSGB36
 xmin = 562800
 ymin = 191400
 xmax = 573200
 ymax = 196200

Map produced by MAGIC on 2 September, 2020.
 Copyright resides with the data suppliers and the map must not be reproduced without their permission. Some information in MAGIC is a snapshot of the information that is being maintained or continually updated by the originating organisation. Please refer to the metadata for details as information may be illustrative or representative rather than definitive at this stage.



7.0 Results: Phase 1 Habitat Survey

A plan with Target Notes is in Figure 4. Photographs from the site visit are provided in Figure 5. For full details on legally protected species, please refer to Section 8. Latin names appear once.

Buildings

- 7.1 The site contains a detached garage in the southern corner. Built around 10 years ago, it comprises of timber-clad external walls and a steeply pitched, tiled roof. Internally there is bright strip lighting and all supporting rafters are modern cut timber. The garage is open to the ridge which is clearly visible. The garage is in a good state of repair with no obvious cracks, crevices or damage noted, therefore little potential for wildlife ingress.
- 7.2 The listed residential property to the north of the site will be retained/unaffected.

Amenity lawn

- 7.3 The amenity lawn dominates the site and is well-maintained. Observable species include perennial rye grass *Lolium perenne*, common knapweed *Centaurea nigra*, daisy *Bellis perennis*, dandelion *Taraxacum officinale*, broadleaved plantain *Plantago major*, yarrow *Achillea millefolium*, common hawkweed *Achillea millefolium*, self-heal *Prunella vulgaris*, creeping cinquefoil *Potentilla reptans* and spear thistle *Cirsium vulgare*. There is a paved walkway through the centre of the lawn to the retained cottage to the north.

Pond

- 7.4 There is an ornamental pond to the north-east of the site which is approximately 2 metres x 2 metres. It has steep concrete banks which are likely to render it inaccessible to amphibians. Aquatic plants are limited to water lilies *Nymphaeaceae sp.* This pond could be substantially improved through enhancements, described later in this report.

Individual trees

- 7.5 There are several mature trees to the west of the site. They include several weeping willow *Salix babylonica trees*, silver birch *Betula pendula* and sycamore *Acer pseudoplatanus*. There is an individual ivy-clad oak *Quercus robur* tree within a hedgerow to the south of the site, along the frontage. There is an apple *Malus sp.* tree within a hedgerow to the west of the site and a walnut *Juglans regia* tree close to the eastern boundary. Trees will be protected in accordance with the Arboricultural Impact Assessment.

Hedgerows

- 7.6 There is a short section of managed hawthorn hedge to the south of the site, which includes small amounts of bramble *Rubus fruticosus agg.* and ivy *Hedera sp.* To the south-west of the site is a short section of gappy hawthorn *Crataegus monogyna* hedge. To the east is a managed hawthorn hedge with occasional dogwood *Cornus sanguinea*, holly *Ilex sp.* and bramble. Hedgerows are not over 20 metres long and therefore do not qualify as Priority Habitat.

Ornamental shrub

- 7.7 The garden contains several small trees and shrubs including Japanese maple *Acer palmatum*, elder *Sambucas nigra*, hypericum, pyracantha and spotted laurel *Aucuba japonica*.

Disturbed ground

- 7.8 There are two areas of disturbed ground to the north of the site close to the ornamental pond. Observable species include fat hen *Chenopodium album*, dandelion, goat's rue *Galega officinalis*, yarrow, common nettle *Urtica dioica*, violet, scattered bramble, rose *Rosa sp.*, white-dead nettle *Lamium album* and mallow *Malva sp.*

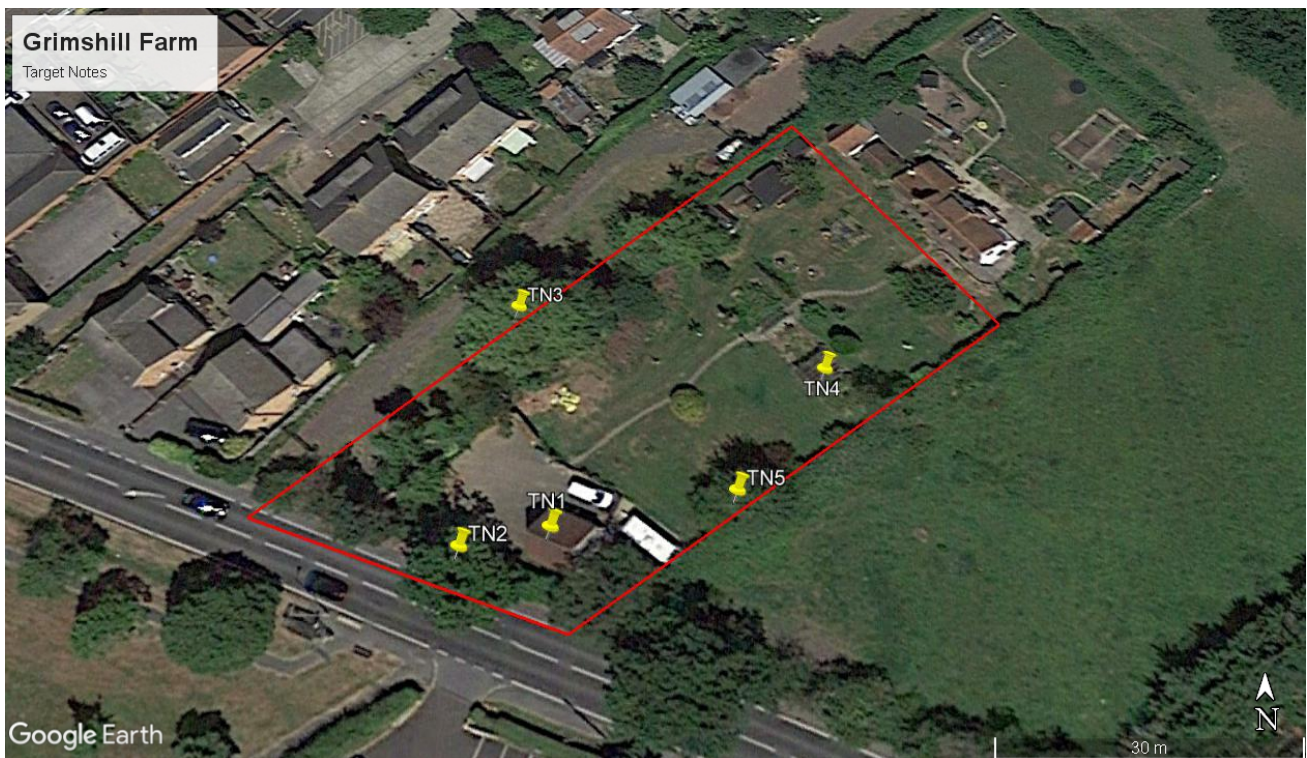
Other (rubble and hard standing)

- 7.9 There is a rubble pile to the east of the garage and a small log pile to the south-western corner of the garden. To the west of the garage is a hard standing parking area.

Habitats evaluation

- 7.10 **There is no irreplaceable or otherwise noteworthy habitat that will be affected by the work. All habitats are considered to be important at Site level only.**

Figure 4. Target Notes



Target Note	Description
1	Detached garage, negligible bat roost potential.
2	Ivy-clad oak tree within hedgerow at the front of the site.
3	Weeping willow trees on the western boundary.
4	Retained pond, potential for enhancements. Disturbed ground to the north-west/south-east.
5	Eastern boundary, species-poor hedgerow, walnut and apple trees.

Figure 5. Photographs



a) Detached garage



b) Western boundary weeping willow trees



c) View to the north showing listed property which will be unaffected.



d) Ornamental pond



e) Walnut tree, apple tree and managed hedgerow to the east of the site.

8.0 Results: Protected/Priority Species Scoping

Bats

Data records:

- 8.1 The closest recorded bat is a noctule, 0.1km from the site. Other bats recorded locally include common pipistrelle, soprano pipistrelle (both 0.4km from the site).

Habitat requirements:

- 8.2 Bats roost in buildings, trees and underground sites. Buildings with large, uncluttered loft voids, external crevices (e.g. hanging tiles, fascias, weatherboarding) and missing roof tiles are often suitable, particularly when a building is close to a foraging resource – e.g. woodland or water. Trees with cavities, woodpecker holes, hazard beams and flaking bark are also suitable for roosting.

Assessment:

- 8.3 The detached garage was inspected and found to be intact, well-sealed and lacking in external crevices that bats could use. Inside there is no enclosed loft space and no light enters from the exterior. The lining is all intact and rafters are modern leaving no crevice opportunities. The garage is regularly used and strip lights are installed. Given the lack of roosting opportunities and absence of field signs, the garage is assigned negligible roost potential and requires no further survey effort.
- 8.4 The garden is adjacent to some grazing paddocks, beyond which is rough grazing and there is a woodland 220 metres away. Therefore, it is expected that small numbers of bats will forage over the site or pass over the site to access habitats further afield. However, the site is unlikely to represent a commuting corridor or a significant foraging resource to the extent that the ability of bat species to survive, reproduce or nurture young would be affected.
- 8.5 In order to ensure bat foraging behaviour is not impacted, any lighting scheme should ensure that all vegetated boundaries, particularly the western boundary are not lit, and that any lighting is focused away from vegetation.

Outcome: Further survey is not required.

Great crested newt

Data records:

- 8.6 No great crested newt records were returned from EFC.

Habitat requirements:

- 8.7 Great crested newt (GCN) require both terrestrial and aquatic habitats. They return to aquatic habitat to breed March-June, using small to medium ponds with no fish and suitable marginal vegetation including watercress and float grass (Froglife 2001). Terrestrial habitat includes refuges and foraging

and dispersal opportunities as well as hibernation sites such as rubble piles or mammal burrows. It is rare to find GCN over 250 metres from a breeding pond (Cresswell & Whitworth 2004).

Assessment:

- 8.8 There is one pond to the north-east of the site which will be retained. There are no ponds within 250 metres of the site. The condition of the on-site pond is such that amphibian breeding activity is unlikely – that is steep sided artificial banks, lack of egg-laying substrate and the surrounding habitat consists of paved areas and amenity lawn; all of which are contra-indicators to great crested newt breeding/terrestrial presence. The habitat surrounding the pond consists of a maintained garden which is unlikely to be favourable for terrestrial great crested newt. Taking all factors into consideration it is highly unlikely that great crested newt would be present on the site.

Outcome: Further survey is not required.

Dormouse

Data records:

- 8.9 Dormice have been recorded 0.9km from the site.

Habitat requirements:

- 8.10 The hazel dormouse requires wooded habitats, usually semi-natural woodland containing hazel coppice and oak, and a rich understorey cover through which to disperse safely between trees (English Nature 2006).

Assessment:

- 8.11 The habitat on site consists of a maintained garden, sporadic hedgerows and some boundary shrub. Since dormice favour woodland and dense species-rich hedgerows, there is no reason to suspect that this species would be present on the site.

Outcome: Further survey is not required.

Otter and water vole

Data records:

- 8.12 Neither species has been recorded within 2km of the site.

Habitat requirements:

- 8.13 Both species require flowing water, deep enough to support foraging behaviour and with connectivity into the wider landscape.

Assessment:

- 8.14 There is no suitable habitat on or adjacent to the site.

Outcome: Further surveys are not required.

Reptiles

Data records:

- 8.15 The closest reptile record is a slow worm, 1km from the site.

Habitat requirements:

- 8.16 Reptiles (common lizard, slow worm, grass snake and adder) require mosaic habitats with features in which to bask, forage and shelter. These habitats need to have onward connectivity for dispersal. Suitable habitats include grassland with scrub edges or small woodland coppices (Edgar et al. 2010).

Assessment:

- 8.17 The site is well-maintained leaving only peripheral habitats suitable for supporting this species group. They include a rubble pile, log pile and garden boundaries. Whilst the occasional slow worm cannot be ruled out, the regular mowing regime is likely to discourage reptile presence over the majority of the site. Any transient individuals can be appropriately protected through the careful dismantling of any possible refugia such as log and rubble. In the unlikely event that reptiles are encountered, they will be moved to a place of safety in the retained garden to the north.
- 8.18 As a precautionary measure it is recommended that the garden mowing regime be continued until such point as development commences.

Outcome: Further survey is not required.

Birds

Data Records:

- 8.19 Several records for Schedule 1 and Priority bird species have been returned within a 1km radius of the site. They include brambling, red kite, fieldfare and kingfisher. Priority species recorded locally include spotted flycatcher and lapwing.

Habitat requirements:

- 8.20 Nesting birds use buildings, scrub and trees between March and August inclusive (note some species including pigeon will nest all year round).

Assessment:

- 8.21 There is no habitat on site suitable for supporting Schedule 1 listed bird species (i.e. those species with elevated legal protection). The site has high potential to support generalist nesting birds in trees and hedgerows.

Outcome: Further survey is not required. Any required tree work or hedgerow management will be undertaken between September and February inclusive, to avoid the nesting period. If this is not possible, an ecologist can carry out a check for active nests immediately prior to work commencing.

Badger

Data records:

8.22 Badger records were returned 0.3km from the site.

Habitat requirements:

8.23 Badger is a widespread, common mammal and is legally protected due to persecution rather than rarity or conservation significance. European badger requires habitats in which to build their setts and in which to forage. Badgers preferentially choose sloping banks (road verges, railway embankments, woodlands) with easy-dig substrate for sett building where foraging habitat is available.

Assessment:

8.24 No badger setts, or any other signs alluding to use of the site by badger were identified on the site.

Outcome: Further survey is not required.

Legally protected plants/invertebrates

Data Records:

8.25 No records for notable plants or insects were returned for the site. Records for small heath and wall butterflies were returned for the site, note that the precision for these records is a 1km grid square.

Assessment:

8.26 The site does not contain any significant invertebrate habitat, and there are no habitats on the site that could reasonably support rare or notable plant species.

Outcome: Further survey is not required.

Species evaluation

8.27 **With the exception of nesting birds, there is not a reasonable likelihood of protected or priority species being present and further survey is not required. The species presence on site is considered to be relevant at Site level only.**

9.0 Summary of Ecological Constraints and Opportunities

Ecological Constraints

Nesting birds

- 9.1 All nesting birds receive basic legal protection from killing and injury. Any required tree work/hedgerow management will be carried out between September and February inclusive unless a check for active nests has been completed by an ecologist immediately beforehand and the habitat in question deemed clear of inactive nests. Any active nests found must be left undisturbed with a 5 metre buffer until the young have fledged.

Tree protection

- 9.2 All retained trees must be protected in accordance with the Tree Protection Plan (Tracy Clarke Tree Consultants) in Appendix 1.

General habitat maintenance

- 9.3 The garden will continue to be maintained until such point as development starts, to discourage wildlife colonisation.

Opportunities

Biodiversity net-gain is now mandatory under Paragraph 170(d) of the National Planning Policy Framework (2019).

Pond re-design

- 9.4 The retained pond could be re-designed to be more attractive to wildlife. This would involve removing the steep artificial banks, increasing its capacity and planting aquatic species conducive to amphibian egg-laying such as aquatic grasses and water mint.

Hedgerow management and replacement planting

- 9.5 Undesirable species including bramble and ivy could be removed from the eastern and western boundary hedgerows, and the south-western hedgerow could be improved through infill planting with native species such as hawthorn, guelder rose, hornbeam, hazel and holly. For shrub planting, the Royal Horticultural Society's Planting for Pollinators List provides a list of species to attract pollinating insects and is provided in Appendix 2.

Habitat boxes (Recommended boxes are provided in Appendix 3)

- 9.6 There is scope to install bat roost boxes around the site. It is recommended that the following bat roost boxes/features are included:
- One integrated feature/box on a south-facing external wall
 - Two bat boxes on a retained weeping willow tree

Note: Bat roost features should be sited as high as possible, away from external lighting with immediate connectivity into natural habitats.

- 9.7 Two woodcrete/woodstone house sparrow terraces and one generalist open-fronted bird box suitable for spotted flycatcher should be installed on new properties/within boundary vegetation. Bird boxes should be located at a height of at least 2m, and face between north and east.

Permeable fencing

- 9.8 Residential development can result in the severance of garden habitats for nocturnal mammals, including the hedgehog, a Priority Species. To remedy this, garden fences will be made permeable to nocturnal mammals. This can be achieved by allowing a 13cm x 13cm square at ground level.

10.0 Conclusions

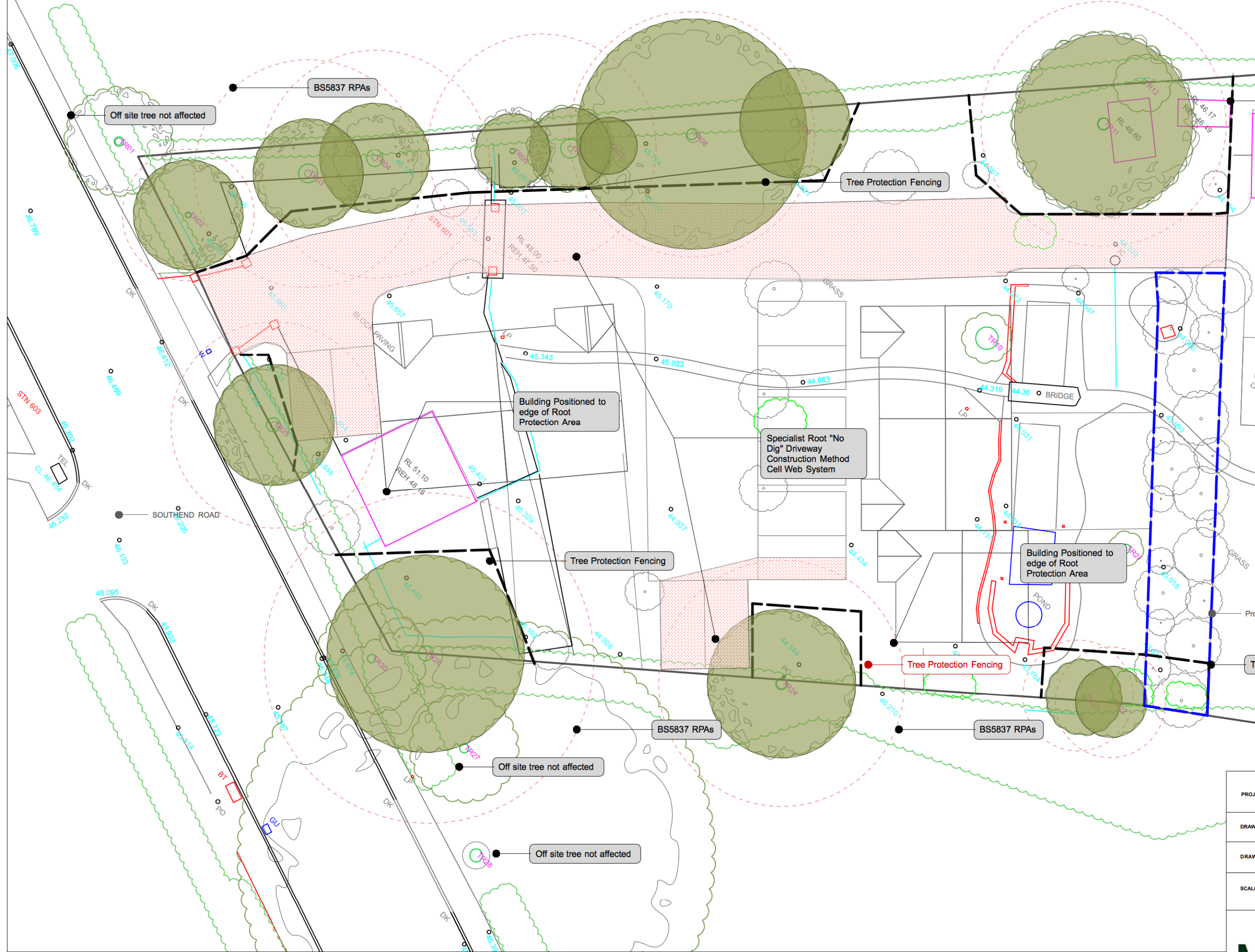
- 10.1 The survey has established ecological constraints to developing the site and identified opportunities that new development could bring. The site is not designated for any conservation reason and does not contain any Priority Habitat. A financial contribution is required to offset any residual recreational impact on Essex coast sites.
- 10.2 Since no evidence of, or potential for any legally protected species was found on the site, there is not a reasonable likelihood of the development impacting species and further survey is not required. Mitigation measures are required to ensure any nesting birds on site are given appropriate protection in accordance with wildlife legislation.
- 10.3 The development presents an opportunity to implement enhancement measures such as re-design of the existing pond, hedgerow planting/management and habitat boxes which will increase the wildlife value of the site post-development. These measures will ensure compliance with the requirement for measurable “biodiversity net-gain” and provide new habitat opportunities in accordance with Paragraph 170(d) of the National Planning Policy Framework 2019.

References

- BCT, 2018. Bats and Artificial Lighting <https://www.bats.org.uk/news/2018/09/new-guidance-on-bats-and-lighting>
- BCT, 2016. Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). The Bat Conservation Trust, London. http://www.bats.org.uk/pages/batsurveyguide.html?_sm_au_=_ijVsrSjrZMIR1Psj
- BSI, 2013. BS 42020:2013 Biodiversity. Code of practice for planning and development. British Standards Institute. Available at: <http://shop.bsigroup.com/ProductDetail/?pid=000000000030258704>
- BS 5837, 2012. Trees in Relation to Design, Demolition and Construction – Recommendations.
- BTO, 2015. Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. British Birds. <https://www.britishbirds.co.uk/wp-content/uploads/2014/07/BoCC4.pdf>
- CIEEM, 2015. Guidelines for Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester. Available at: http://www.cieem.net/data/files/Publications/Ecological_Report_Writing_23.12.2015.pdf
- CIEEM, 2016. Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester. Available at: http://www.cieem.net/data/files/Publications/EcIA_Guidelines_Terrestrial_Freshwater_and_Coastal_Jan_2016.pdf
- Conservation of Habitats and Species Regulations, 2017. Available at: http://www.legislation.gov.uk/ukxi/2010/490/pdfs/ukxi_20100490_en.pdf
- English Nature, 2001. Bat Mitigation Guidelines.
- English Nature, 2006. The Dormouse Conservation Handbook, 2nd edition. English Nature. Available at: https://ptes.org/wp-content/uploads/2014/06/Dormouse-Conservation-Handbook.pdf?_sm_au_=_ijVsrSjrZMIR1Psj
- Froglife, 2001. Great Crested Newt Conservation Handbook. Suffolk: Froglife. Available at: http://www.froglife.org/wp-content/uploads/2013/06/GCN-Conservation-Handbook_compressed.pdf
- Froglife, 2001. Advice Sheet 10. Surveying Reptiles. Available at: http://www.froglife.org/wp-content/uploads/2014/01/FAS_10.pdf
- Harris, S., Cresswell, P., Jefferies, D., 1989. Surveying Badgers. London: The Mammal Society. Available at: <http://www.mammal.org.uk/sites/default/files/Surveying%20Badgers%20%201989%20-%20Whole%20Book.pdf>
- HM Government, 2018. National Planning Policy Framework. London: Department for Communities and Local Government. Available at: <http://planningguidance.communities.gov.uk/blog/policy/>
- HM Government, 2015a, as amended. Protected species and sites: how to review planning proposals. Available at: <https://www.gov.uk/guidance/protected-species-and-sites-how-to-review-planning-proposals>
- JNCC, 2004b. Common Standards Monitoring Guidance for Reptiles and Amphibians. JNCC. Available at: http://jncc.defra.gov.uk/pdf/CSM_reptiles_amphibians1.pdf
- JNCC, 2010. Handbook for Phase 1 habitat survey: A technique for environmental audit. JNCC. Available at: http://jncc.defra.gov.uk/PDF/pub10_handbookforphase1habitatsurvey.pdf?_sm_au_=_ijVN1vPTstVv1Dt
- JNCC, 2014, as amended. Protected areas designations directory. JNCC. Available at: <http://jncc.defra.gov.uk/page-1527>
- Natural Environment and Rural Communities Act (NERC Act), 2006, as amended. Available at: <http://www.legislation.gov.uk/ukpga/2006/16/contents>
- Protection of Badgers Act, 1992. Available at: http://www.legislation.gov.uk/ukpga/1992/51/pdfs/ukpga_19920051_en.pdf

Appendix 1. Tree Protection Plan

ARBORICULTURAL IMPACT ASSESSMENT AND TREE PROTECTION PLAN



Tree Protection Fencing

Tree Protection Fencing

Building Positioned to edge of Root Protection Area

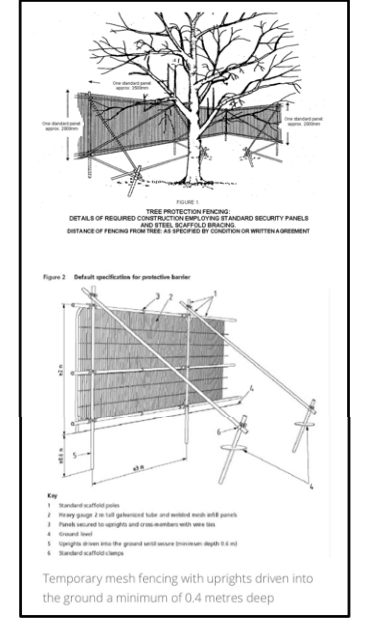
Specialist Root "No Dig" Driveway Construction Method Cell Web System

Building Positioned to edge of Root Protection Area

Tree Protection Fencing

Tree Protection Fencing

Tree Protection Fencing



Temporary mesh fencing with uprights driven into the ground a minimum of 0.4 metres deep

PROJECT:	PROPOSED AFFORDABLE HOUSING DEVELOPMENT AT GRIMSHALL FARM, SOUTH END ROAD, BILLERICAY, ESSEX. TO PROVIDE 5 AFFORDABLE DWELLINGS (COMPRISING SHARED OWNERSHIP), INCLUDING NEW SHARED SURFACE ACCESSWAY.	
DRAWING No:	GHF005	DATE: 09/03/2020
DRAWING TITLE	AIA AND TPP	REVISION No: 0
SCALE:	1:200	

Appendix 2. Planting for pollinators

Get your garden buzzing

- ◆ Fill gardens with **RHS Plants for Pollinators** plants
- ◆ Grow **a range of plants** for year-round flowering
- ◆ **Avoid** plants with double or multi-petalled flowers
- ◆ **Never use pesticides** on plants in flower
- ◆ Provide nest sites for **wild bees**

Subspecies and cultivars of plants listed here are also **Plants for Pollinators**, except for those that provide significantly reduced floral resources (i.e. pollen and nectar). This includes most doubles. See p.2 for **key to codes**.

Winter

Nov – Feb

<i>Clematis cirrhosa</i> Spanish traveller's joy	C
<i>Crocus species</i> crocus (winter-flowering)	B
<i>Eranthis hyemalis</i> winter aconite	B
× <i>Fatsyhedera lizei</i> tree ivy	S
<i>Galanthus nivalis</i> common snowdrop	B
<i>Helleborus species and hybrids</i> hellebore (winter-flowering)	H
<i>Lonicera × purpusii</i> Purpus honeysuckle	S
<i>Mahonia species</i> Oregon grape	S
<i>Salix aegyptiaca</i> musk willow	S
<i>Sarcococca confusa</i> sweet box	S

Photo: RHS / Carol Sheppard (bumblebee on *Salvia farinacea* 'Victoria').



<i>Sarcococca hookeriana</i> sweet box	S
<i>Viburnum tinus</i> laurustinus	S

Spring

Mar – May

<i>Acer campestre</i> Native plant; field maple	S or T
<i>Acer platanoides</i> Norway maple	T
<i>Acer pseudoplatanus</i> sycamore	T
<i>Acer saccharum</i> sugar maple	T
<i>Aesculus hippocastanum</i> horse chestnut	T
<i>Ajuga reptans</i> Native plant; bugle	H
<i>Arabis alpina</i> subsp. <i>caucasica</i> alpine rock cress	H
<i>Armeria juniperifolia</i> juniper-leaved thrift	H
<i>Aubrieta</i> species aubretia	H
<i>Aurinia saxatilis</i> gold dust	H
<i>Berberis darwinii</i> Darwin's barberry	S
<i>Berberis thunbergii</i> Japanese barberry	S
<i>Bergenia</i> species elephant ear	H
<i>Buxus sempervirens</i> Native plant; common box	S
<i>Caltha palustris</i> Native plant; marsh marigold	H
<i>Ceanothus</i> species California lilac	S
<i>Cercis siliquastrum</i> Judas tree	T
<i>Chaenomeles</i> species Japanese quince	S
<i>Cornus mas</i> Cornelian cherry	S
<i>Cotoneaster conspicuus</i> Tibetan cotoneaster	S
<i>Crataegus monogyna</i> Native plant; common hawthorn	S or T
<i>Crocus</i> species crocus (spring-flowering)	B
<i>Doronicum</i> × <i>excelsum</i> leopard's bane	H
<i>Enkianthus campanulatus</i> redvein enkianthus	S
<i>Erica carnea</i> alpine heath	S
<i>Erica</i> × <i>darleyensis</i> Darley Dale heath	S
<i>Erysimum</i> species wallflower	Bi or H
<i>Euphorbia amygdaloides</i> Native plant; wood spurge	H
<i>Euphorbia characias</i> Mediterranean spurge	H
<i>Euphorbia cyparissias</i> cypress spurge	H
<i>Euphorbia epithymoides</i> cushion spurge	H
<i>Euphorbia</i> × <i>martini</i> Martin's spurge	S
<i>Euphorbia nicaeensis</i> Nice spurge	H
<i>Geranium</i> species cranesbill	H
<i>Geum rivale</i> Native plant; water avens	H
<i>Hebe</i> species hebe	S
<i>Helleborus</i> species & hybrids hellebore (spring-flowering)	H

<i>Iberis saxatilis</i> alpine candytuft	H
<i>Iberis sempervirens</i> perennial candytuft	H
<i>Ilex aquifolium</i> Native plant; common holly	T
<i>Lamium maculatum</i> spotted dead nettle	H
<i>Lunaria annua</i> honesty	Bi
<i>Mahonia</i> species Oregon grape (spring-flowering)	S
<i>Malus baccata</i> Siberian crab	T
<i>Malus domestica</i> edible apple	T
<i>Malus floribunda</i> Japanese crab	T
<i>Malus hupehensis</i> Hupeh crab	T
<i>Malus sargentii</i> Sargent's crab apple	T
<i>Mespilus germanica</i> common medlar	T
<i>Muscari armeniacum</i> Armenian grape hyacinth	B
<i>Nectaroscordum</i> species honey garlic	B
<i>Ornithogalum umbellatum</i> common star of Bethlehem	B
<i>Pieris formosa</i> lily-of-the-valley bush	S
<i>Pieris japonica</i> lily-of-the-valley bush	S
<i>Primula veris</i> common cowslip	H
<i>Primula vulgaris</i> Native plant; primrose	H
<i>Prunus avium</i> Native plant; wild & edible cherries	T
<i>Prunus domestica</i> wild & edible plums	T
<i>Prunus dulcis</i> almond	T
<i>Prunus incisa</i> 'Kojo-no-mai' cherry 'Kojo-no-mai'	S
<i>Prunus insititia</i> damson	T
<i>Prunus laurocerasus</i> cherry laurel	S
<i>Prunus mume</i> Japanese apricot	T
<i>Prunus padus</i> Native plant; bird cherry	T
<i>Prunus pendula</i> f. <i>ascendens</i> 'Rosea' flowering cherry	T
<i>Prunus persica</i> peach	T
<i>Prunus spinosa</i> Native plant; blackthorn	S
<i>Prunus tenella</i> dwarf Russian almond	S
<i>Prunus</i> × <i>yedoensis</i> flowering cherry	T
<i>Pulmonaria</i> species lungwort	H
<i>Pyrus communis</i> pear	T
<i>Ribes nigrum</i> blackcurrant	S
<i>Ribes rubrum</i> Native plant; common redcurrant	S
<i>Ribes sanguineum</i> flowering currant	S
<i>Salix caprea</i> Native plant; goat willow (male form only)	S or T
<i>Salix hastata</i> 'Wehrhahnii' halberd willow 'Wehrhahnii'	S
<i>Salix lanata</i> Native plant; woolly willow (male form only)	S
<i>Skimmia japonica</i> skimmia	S
<i>Smyrniolum olusatrum</i> Native plant; alexanders †	Bi
<i>Stachyurus chinensis</i> stachyurus	S
<i>Stachyurus praecox</i> stachyurus	S
<i>Vaccinium corymbosum</i> blueberry	S

Natural England states: You can legally collect small quantities of wildflower seed for your own use, but you must get permission from the land's owner, tenant or other authority, as necessary. Although seed-collecting is allowed, you should not dig up native plants – many rare species are protected by law. You can collect seed of even rare plants, but cannot sell / trade seed or progeny.

Key to codes: T tree S shrub C climber B bulb / corm A annual Bi biennial H herbaceous perennial † denotes an archaeophyte (a naturalised plant introduced into Britain before 1500)

Summer

June – Aug

<i>Achillea</i> species	yarrow	H
<i>Actaea japonica</i>	baneberry	H
<i>Aesculus indica</i>	Indian horse chestnut (resistant to leaf-mining moth)	T
<i>Aesculus parviflora</i>	bottlebrush buckeye	S
<i>Agastache</i> species	giant hyssop	H
<i>Ageratum houstonianum</i>	flossflower	A
<i>Alcea rosea</i>	hollyhock	Bi
<i>Allium</i> species	ornamental and edibles (when allowed to flower)	B
<i>Alstroemeria</i> species	Peruvian lily	B
<i>Amberboa moschata</i>	sweet sultan	A
<i>Amsonia tabernaemontana</i>	eastern bluestar	H
<i>Anchusa azurea</i>	large blue alkanet	A
<i>Anchusa capensis</i>	Cape alkanet	A
<i>Angelica archangelica</i>	angelica	Bi
<i>Angelica gigas</i>	purple angelica	Bi
<i>Angelica sylvestris</i>	Native plant; wild angelica	Bi
<i>Anthemis tinctoria</i>	dyer's chamomile	H
<i>Antirrhinum majus</i>	snapdragon	A or H
<i>Aquilegia</i> species	columbine	H
<i>Arabis allionii</i>	Siberian wallflower	H
<i>Argemone platyceras</i>	crested poppy	A or H
<i>Armeria maritima</i>	Native plant; thrift	H
<i>Aruncus dioicus</i>	goat's beard (male form only)	H
<i>Asparagus officinalis</i>	common asparagus	H
<i>Astrantia major</i>	greater masterwort	H
<i>Borago officinalis</i>	borage	A
<i>Brachyglottis</i> (Dunedin Group) 'Sunshine'	brachyglottis 'Sunshine'	S
<i>Brachyglottis monroi</i>	Monro's ragwort	S
<i>Buddleja davidii</i>	butterfly bush	S
<i>Buddleja globosa</i>	orange ball tree	S
<i>Buphthalmum salicifolium</i>	yellow ox-eye	H
<i>Bupleurum fruticosum</i>	shrubby hare's ear	S
<i>Calamintha nepeta</i>	Native plant; lesser calamint	H
<i>Calendula officinalis</i>	common marigold	A
<i>Callicarpa bodinieri</i> var. <i>giraldii</i>	beautyberry	S
<i>Callistephus chinensis</i>	China aster	A
<i>Calluna vulgaris</i>	Native plant; heather	S
<i>Campanula carpatica</i>	tussock bellflower	H
<i>Campanula glomerata</i>	Native plant; clustered bellflower	H



Photo: RHS / Helen Bostock (six-spot burnet moth on *Verbena bonariensis*).

<i>Campanula lactiflora</i>	milky bellflower	H
<i>Campanula latifolia</i>	Native plant; giant bellflower	H
<i>Campanula medium</i>	Canterbury bells	Bi
<i>Campanula persicifolia</i>	peach-leaved bellflower	H
<i>Campsis radicans</i>	trumpet honeysuckle	C
<i>Caryopteris</i> × <i>clandonensis</i>	caryopteris	S
<i>Catalpa bignonioides</i>	Indian bean tree	T
<i>Catananche caerulea</i>	blue cupidone	H
<i>Centaurea atropurpurea</i>	purple knapweed	H
<i>Centaurea cyanus</i>	cornflower †	A
<i>Centaurea dealbata</i>	mealy centauray	H
<i>Centaurea macrocephala</i>	giant knapweed	H
<i>Centaurea montana</i>	perennial cornflower	H
<i>Centaurea nigra</i>	Native plant; common knapweed	H
<i>Centaurea scabiosa</i>	Native plant; greater knapweed	H
<i>Centranthus ruber</i>	red valerian	H
<i>Centratherum punctatum</i>	Manaos beauty	A
<i>Cerithe major</i> 'Purpurascens'	honeywort 'Purpurascens'	A
<i>Cirsium rivulare</i> 'Atropurpureum'	purple plume thistle	H
<i>Clarkia unguiculata</i>	butterfly flower	A
<i>Clematis vitalba</i>	Native plant; old man's beard, travellers' joy	C
<i>Cleome hassleriana</i>	spider flower	A
<i>Consolida ajacis</i>	giant larkspur	A
<i>Convolvulus tricolor</i>	dwarf morning glory	C/A
<i>Coreopsis</i> species	tickseed	H or A

Natural England states: You can legally collect small quantities of wildflower seed for your own use, but you must get permission from the land's owner, tenant or other authority, as necessary. Although seed-collecting is allowed, you should not dig up native plants – many rare species are protected by law. You can collect seed of even rare plants, but cannot sell / trade seed or progeny.

Key to codes: T tree S shrub C climber B bulb / corm A annual Bi biennial H herbaceous perennial † denotes an archaeophyte (a naturalised plant introduced into Britain before 1500)

<i>Cornus alba</i> red-barked dogwood	S	<i>Geranium species</i> cranesbill (summer-flowering)	H
<i>Cosmos bipinnatus</i> cosmea	A	<i>Geum species</i> avens (summer-flowering)	H
<i>Cosmos sulphureus</i> yellow cosmos	A	<i>Gilia capitata</i> blue thimble flower	A
<i>Crambe cordifolia</i> greater sea kale	H	<i>Glandularia × hybrida</i> garden verbena	A
<i>Crataegus monogyna</i> Native plant; common hawthorn	S or T	<i>Glebionis segetum</i> Native plant; corn marigold †	A
<i>Cucurbita pepo</i> marrow, courgette	A	<i>Gypsophila elegans</i> annual baby's breath	A
<i>Cuphea ignea</i> cigar flower	A	<i>Hebe species</i> hebe	S
<i>Cynara cardunculus</i> including Scolymus Group globe artichoke and cardoon	H	<i>Helenium species</i> Helen's flower	H
<i>Cynoglossum amabile</i> Chinese forget-me-not	H	<i>Helianthus annuus</i> common sunflower (avoid pollen-free cultivars)	A
<i>Dahlia species</i> dahlia	H	<i>Helianthus debilis</i> cucumberleaf sunflower	A
<i>Delosperma floribundum</i> ice plant	H	<i>Heliopsis helianthoides</i> smooth ox-eye	H
<i>Delphinium elatum</i> candle larkspur	H	<i>Heliotropium arborescens</i> common heliotrope	A
<i>Dianthus barbatus</i> sweet william	Bi	<i>Heracleum sphondylium</i> Native plant; hogweed	Bi
<i>Dictamnus albus</i> dittany	H	<i>Hesperis matronalis</i> dame's violet	H
<i>Digitalis species</i> foxglove	Bi	<i>Hydrangea anomala subsp. petiolaris</i> climbing hydrangea	C
<i>Dipsacus fullonum</i> Native plant; common teasel	Bi	<i>Hydrangea paniculata</i> paniculate hydrangea (only cultivars with many fertile flowers, e.g. 'Kyushu', 'Big Ben', 'Floribunda', 'Brussels Lace')	S
<i>Echinacea purpurea</i> purple coneflower	H	<i>Hydrotelephium spectabile & hybrids</i> ice plant	H
<i>Echinops species</i> globe thistle	H	<i>Hydrotelephium telephium</i> Native plant; orpine	H
<i>Echium vulgare</i> Native plant; viper's bugloss	A	<i>Hyssopus officinalis</i> hyssop	S
<i>Elaeagnus angustifolia</i> oleaster	S	<i>Iberis amara</i> Native plant; wild candytuft	A
<i>Erica cinerea</i> Native plant; bell heather	S	<i>Ilex aquifolium</i> Native plant; common holly	T
<i>Erica erigena</i> Irish heath	S	<i>Inula species</i> harvest daisy	H
<i>Erica vagans</i> Native plant; Cornish heath	S	<i>Jasminum officinale</i> common jasmine	C
<i>Erigeron species</i> fleabane	H	<i>Kalmia latifolia</i> mountain laurel	S
<i>Eriophyllum lanatum</i> golden yarrow	H	<i>Knautia arvensis</i> Native plant; field scabious	H
<i>Eryngium alpinum</i> alpine eryngo	H	<i>Knautia macedonica</i> Macedonian scabious	H
<i>Eryngium giganteum</i> Miss Willmott's ghost	Bi	<i>Koelreuteria paniculata</i> pride of India	T
<i>Eryngium planum</i> blue eryngo	H	<i>Lathyrus latifolius</i> broad-leaved everlasting pea	H
<i>Eryngium × tripartitum</i> eryngo	H	<i>Laurus nobilis</i> bay tree	S
<i>Erysimum species</i> wallflower	H or S	<i>Lavandula angustifolia</i> English lavender	S
<i>Escallonia species</i> escallonia	S	<i>Lavandula × intermedia</i> lavandin	S
<i>Eschscholzia californica</i> California poppy	A	<i>Lavandula stoechas</i> French lavender	S
<i>Eupatorium cannabinum</i> Native plant; hemp agrimony	H	<i>Lavatera olbia</i> tree lavatera	S
<i>Eupatorium maculatum</i> Joe Pye weed	H	<i>Lavatera trimestris</i> annual lavatera	A
<i>Euphorbia cornigera</i> horned spurge	H	<i>Leucanthemum × superbum</i> Shasta daisy	H
<i>Euphorbia donii</i> spurge	H	<i>Leucanthemum vulgare</i> Native plant; ox-eye daisy	H
<i>Euphorbia sarawschanica</i> Zeravshan spurge	H	<i>Liatris spicata</i> button snakeroot	H
<i>Ferula communis</i> giant fennel	H	<i>Ligustrum ovalifolium</i> garden privet	S
<i>Foeniculum vulgare</i> Native plant; common fennel †	H	<i>Ligustrum sinense</i> Chinese privet	S
<i>Fragaria × ananassa</i> garden strawberry	H	<i>Limnanthes douglasii</i> poached egg flower	A
<i>Fuchsia species</i> fuchsia – hardy types	S	<i>Limonium platyphyllum</i> broad-leaved statice	H
<i>Gaillardia × grandiflora</i> blanket flower	H	<i>Linaria maroccana</i> annual toadflax	A
<i>Gaura lindheimeri</i> white gaura	H		
<i>Geranium pratense</i> Native plant; meadow cranesbill	H		

Natural England states: You can legally collect small quantities of wildflower seed for your own use, but you must get permission from the land's owner, tenant or other authority, as necessary. Although seed-collecting is allowed, you should not dig up native plants – many rare species are protected by law. You can collect seed of even rare plants, but cannot sell / trade seed or progeny.

Key to codes: T tree S shrub C climber B bulb / corm A annual Bi biennial H herbaceous perennial

† denotes an archaeophyte (a naturalised plant introduced into Britain before 1500)

<i>Linaria purpurea</i>	purple toadflax	H
<i>Lobularia maritima</i>	sweet alyssum	A
<i>Lonicera periclymenum</i>	Native plant; common honeysuckle	C
<i>Lychnis coronaria</i>	rose campion	Bi or H
<i>Lychnis flos-cuculi</i>	Native plant; ragged robin	H
<i>Lysimachia vulgaris</i>	Native plant; yellow loosestrife	H
<i>Lythrum salicaria</i>	Native plant; purple loosestrife	H
<i>Lythrum virgatum</i>	wand loosestrife	H
<i>Malope trifida</i>	large-flowered mallow wort	A
<i>Malva alcea</i>	greater musk mallow	H
<i>Malva moschata</i>	Native plant; musk mallow	H
<i>Matthiola incana</i>	hoary stock	Bi
<i>Mentha aquatica</i>	Native plant; water mint	H
<i>Mentha spicata</i>	spearmint	H
<i>Monarda didyma</i>	bergamot	H
<i>Myosotis species</i>	forget-me-not	Bi
<i>Nemophila menziesii</i>	baby blue eyes	A
<i>Nepeta species</i>	catmint	H
<i>Nicotiana alata</i>	flowering tobacco	A
<i>Nicotiana langsdorffii</i>	Langsdorff's tobacco	A
<i>Nicotiana sylvestris</i>	flowering tobacco	Bi
<i>Nigella damascena</i>	love-in-a-mist	A
<i>Nigella hispanica</i>	Spanish fennel flower	A
<i>Oenothera species</i>	evening primrose	Bi
<i>Olearia species</i>	daisy bush	S
<i>Onopordum acanthium</i>	cotton thistle	Bi
<i>Origanum onites</i>	pot marjoram	S
<i>Origanum 'Rosenkuppel'</i>	marjoram 'Rosenkuppel'	H
<i>Origanum vulgare</i>	Native plant; oregano, wild marjoram	H
<i>Paeonia species</i>	peony	H
<i>Papaver orientale</i>	oriental poppy	H
<i>Papaver rhoeas</i>	Native plant; common poppy †	A
<i>Parthenocissus tricuspidata</i>	Boston ivy	C
<i>Penstemon species</i>	beard-tongue	H
<i>Perovskia atriplicifolia</i>	Russian sage	S
<i>Persicaria amplexicaulis</i>	red bistort	H
<i>Persicaria bistorta</i>	Native plant; common bistort	H
<i>Phacelia campanularia</i>	Californian bluebell	A
<i>Phacelia tanacetifolia</i>	fiddleneck	A
<i>Phaseolus coccineus</i>	scarlet runner bean	A
<i>Phlomis species</i>	sage	S
<i>Phlox paniculata</i>	perennial phlox	H
<i>Photinia davidiana</i>	stranvaesia	S
<i>Phuopsis stylosa</i>	Caucasian crosswort	H
<i>Pileostegia viburnoides</i>	climbing hydrangea	C



Photo: RHS / Carol Sheppard (hoverfly on field scabious, *Knautia arvensis*).

<i>Polemonium caeruleum</i>	Native plant; Jacob's ladder	H
<i>Potentilla species</i>	cinquefoil	H or S
<i>Prostanthera cuneata</i>	alpine mint bush	S
<i>Ptelea trifoliata</i>	hop tree	S
<i>Pyracantha species</i>	firethorn	S
<i>Reseda odorata</i>	garden mignonette	A
<i>Ridolfia segetum</i>	false fennel	A
<i>Robinia pseudoacacia</i>	false acacia	T
<i>Rosa species</i>	rose	S
<i>Rosmarinus officinalis</i>	rosemary	S
<i>Rubus fruticosus</i> agg.	Native plant; blackberry	S
<i>Rubus idaeus</i>	Native plant; common raspberry	S
<i>Rudbeckia species</i>	coneflower	H or A
<i>Salvia species</i>	sage	A or H
<i>Sanvitalia procumbens</i>	creeping zinnia	A
<i>Scabiosa</i> spp.	scabious	A/H

Natural England states: You can legally collect small quantities of wildflower seed for your own use, but you must get permission from the land's owner, tenant or other authority, as necessary. Although seed-collecting is allowed, you should not dig up native plants – many rare species are protected by law. You can collect seed of even rare plants, but cannot sell / trade seed or progeny.

Key to codes: T tree S shrub C climber B bulb / corm A annual Bi biennial H herbaceous perennial
† denotes an archaeophyte (a naturalised plant introduced into Britain before 1500)

<i>Sidalcea malviflora</i> checkerbloom	H	<i>Vicia faba</i> broad bean	A
<i>Solidago species</i> goldenrod	H	<i>Weigela florida</i> weigelia	S
<i>Sorbus aria</i> Native plant; common whitebeam	T	<i>Zauschneria californica</i> Californian fuchsia	S
<i>Sorbus aucuparia</i> Native plant; mountain ash, rowan	T	<i>Zinnia elegans</i> youth and old age	A
<i>Spiraea japonica</i> Japanese spiraea	S		
<i>Stachys byzantina</i> lamb's ear	H		
<i>Stachys macrantha</i> big sage	H		
<i>Stokesia laevis</i> Stokes' aster	H		
<i>Symphoricarpos albus</i> snowberry	S		
<i>Tagetes patula</i> French marigold	A		
<i>Tamarix ramosissima</i> tamarisk	S	<i>Aconitum carmichaelii</i> Carmichael's monk's hood	H
<i>Tanacetum coccineum</i> pyrethrum	H	<i>Actaea simplex</i> simple-stemmed bugbane	H
<i>Tanacetum vulgare</i> Native plant; tansy †	H	<i>Anemone hupehensis</i> Chinese anemone	H
<i>Telekia speciosa</i> yellow ox-eye	H	<i>Anemone × hybrida</i> Japanese anemone	H
<i>Tetradium daniellii</i> bee-bee tree	T	<i>Arbutus unedo</i> strawberry tree	S or T
<i>Teucrium chamaedrys</i> Native plant; wall germander	H	<i>Campanula poscharskyana</i> trailing bellflower	H
<i>Thymus species</i> thyme	S	<i>Cerastigma plumbaginoides</i> hardy blue-flowered leadwort	H
<i>Tilia × europaea</i> common lime	T	<i>Chrysanthemum species & hybrids</i> chrysanthemum	H
<i>Tilia maximowicziana</i> lime	T	<i>Clematis heracleifolia</i> tube clematis	C
<i>Tilia oliveri</i> lime	T	<i>Colchicum species</i> autumn crocus	B
<i>Tilia platyphyllos</i> Native plant; broad-leaved lime	T	<i>Crocus species</i> crocus (autumn-flowering types)	B
<i>Tithonia rotundifolia</i> Mexican sunflower	A	<i>Dahlia species & hybrids</i> dahlia	H
<i>Trachymene coerulea</i> blue lace flower	A	<i>Elaeagnus pungens</i> silverthorn	S
<i>Trollius species</i> globeflower	H	<i>Elaeagnus × submacrophylla</i> Ebbinge's silverberry	S
<i>Tropaeolum majus</i> garden nasturtium	A	<i>Fatsia japonica</i> Japanese aralia	S
<i>Verbascum species</i> mullein	Bi	<i>Hedera colchica</i> Persian ivy	C
<i>Verbena bonariensis</i> purple top	H	<i>Hedera helix</i> Native plant; common ivy	C
<i>Verbena rigida</i> slender vervain	A	<i>Helianthus × laetiflorus</i> perennial sunflower	H
<i>Veronica longifolia</i> garden speedwell	H	<i>Leucanthemella serotina</i> autumn ox-eye	H
<i>Veronica spicata</i> speedwell	H	<i>Machaeranthera tanacetifolia</i> tansy-leaf aster	A
<i>Veronicastrum virginicum</i> Culver's root	H	<i>Salvia species</i> sage (autumn-flowering types)	H
<i>Viburnum lantana</i> Native plant; common wayfaring tree	S	<i>Symphotrichum species and hybrids</i> Michaelmas daisy	H
<i>Viburnum opulus</i> Native plant; guelder rose	S	<i>Tilia henryana</i> Henry's lime (one of the last to flower)	T

Autumn

Sept – Oct

Natural England states: You can legally collect small quantities of wildflower seed for your own use, but you must get permission from the land's owner, tenant or other authority, as necessary. Although seed-collecting is allowed, you should not dig up native plants – many rare species are protected by law. You can collect seed of even rare plants, but cannot sell / trade seed or progeny.

Key to codes: T tree S shrub C climber B bulb / corm A annual Bi biennial H herbaceous perennial
† denotes an archaeophyte (a naturalised plant introduced into Britain before 1500)

Appendix 3. Recommended habitat features

Integrated bat roost features for buildings:



Bat access tile (<https://www.nhbs.com/bat-access-tile-set>)



Habibat 003 Built in Bat Box faced with red brick. Dimensions 44 x 21.5 x 10.2 cm plus facing bricks. Self cleaning.



Schwegler 1FR Bat Tube, to be integrated into building wall, and either bricked in or rendered. Self cleaning. Dimensions: 47.5 x 20 x 12cm.



Sparrow terrace (<http://www.wildlifeservices.co.uk/nestboxes/sparrowterrace.jpg>)



Open fronted nest box (<https://www.nhbs.com/vivara-pro-barcelona-woodstone-open-nest-box>)