WARREN FARM COTTAGES EFFINGHAM GOLF CLUB

ECOLOGICAL IMPACT ASSESSMENT (EcIA)

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ACD ENVIRONMENTAL

Ecology
Archaeology
Arboriculture
Landscape Architecture

QUALITY ASSURANCE

1.1. This report has been prepared in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Report Writing (2nd Edition, December 2017).

1.2. The facts stated in this report are true to the best of our knowledge and belief, and any opinions expressed are held genuinely and in accordance with the accepted standards of the profession. ACD Environmental Ltd is a CIEEM Registered Practice.

Client:	Steve Slinger
Site/job:	PRI23677
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Technical review:	H. Roberts

CONTENTS

1 EXECUTIVE SUMMARY

Purpose of report	To assess the ecological impacts of a proposed development at Warren Farm cottages (1-5), Effingham golf club, Guildford Road, clearly identifying any 'significant effects' on important ecological features (including designated sites or protected species) and detailing any mitigation and/or compensation measures required, and how these could be secured.
Description of proposed development	Five attached cottages will be demolished and replaced with five detached residential properties.
Brief description of the Site	The proposed development site (hereafter referred to as 'the Application Site') is currently a residential site of approximately 0.4ha with five houses present. Habitats within the Application Site comprise semi-improved grassland, hedgerows, scattered trees and buildings. The Application Site is of limited ecological interest.
Designated Sites	The Application Site falls within 5km of several Statutory and non-statutory sites, however due to the nature of the development there will be no additional pressure on these sites and therefore mitigation/avoidance measures are not required.
Key habitats	Habitats within the Application Site are of negligible ecological value. However, the scattered trees are of higher ecological value.
Key species	Key species relating to the Application Site are limited to nesting and foraging birds and roosting, foraging and commuting bats.
Key impacts & mitigation/ compensation measures	Key impacts & mitigation/ compensation measures include clearance of vegetation outside of the bird nesting season (generally March – August inclusive) and a sensitive lighting scheme to minimise light spill. As a bat roost is present a Natural England licence will be required before demolition commences. One integrated bat box will be installed as compensation for the loss of the bat roost.
Enhancements	To achieve Biodiversity Net Gain there will be: • Suitable soft landscaping scheme to include new native tree, hedgerow and wildflower planting to benefit bats, birds and invertebrates. • Two new bat boxes will be integrated into the walls of the new buildings; • Two bat boxes to be installed on suitable trees; • Nesting boxes for sparrow and starling installed on the new buildings; • Two woodpiles for stag beetle habitat to be installed.

Conclusions	The ecological mitigation, compensation and enhancement measures outlined in this report comply with Paragraph 175 of the NPPF, and Policy ID4 of the Guildford Borough Local Plan.

2 INTRODUCTION

2.1. This report provides an assessment of the ecological effects of the proposed development at Warren Farm cottages, Effingham golf club, Guildford Road, (see **Image 1**). The principal author of this report is Hannah Yetman BSc (Hons).

Background

2.2. The Application Site is approximately 0.4ha. The Application Site is bound by an active farm, agricultural fields and golf course to the south. A private road to the west (unnamed – part of Warren farm) with an agricultural field and golf course on the other side, golf course is also located to the east and north. The Ordnance Survey Grid Reference for the centre of the Application Site is TQ 11166 52510.

2.3. The client intends to submit a planning application for the demolition of 5 existing cottages and the development of 5 residential dwellings in their place.

Competence

2.4. The Extended Phase 1 Habitat Survey and this report were written by Hannah Yetman and Brian Hicks, ACD Environmental Ltd. Hannah is a Graduate Ecologist and has been involved in a wide range of surveys including Extended Phase 1 and Phase 2 Surveys for protected species and reports, including Preliminary Ecological Appraisals (PEAs), Ecological Impact Assessments (EcIAs) and preparation of European Protected Species (EPS) licence applications. Hannah is a Qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

2.5. Brian is a Senior Ecologist and has been involved in a wide range of surveys including Extended Phase 1 Habitat Surveys and Phase 2 surveys for protected species and reports including Preliminary Ecological Appraisals (PEAs) and Ecological Impact Assessments (EcIAs). Brian is a Full Member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and holds Natural England Class Licences for bats, hazel dormouse *Muscardinus avellanarius* and great crested newt *Triturus cristatus*.

2.6. A Technical Review of this report has been undertaken in line with ACD Environmental Ltd's Quality Assurance procedures. The Technical Review was undertaken by Hayley Roberts of ACD Environmental Ltd. Hayley is a Senior Ecologist experienced in habitat and protected species survey along with producing associated reports including PEA and EcIA. Hayley holds Natural England Class Licences for bats (Level 2), barn owl *Tyto alba* and great crested newts, and is a FISC Level 4 botanist.

Purpose of the report

2.7. The purpose of this Ecological Impact Assessment (EcIA) is as follows:

- To identify and describe all potentially significant ecological effects associated with the proposed development.
- To set out the mitigation measures required to ensure compliance with nature conservation legislation and relevant planning policy, and to address any potentially significant ecological effects.
- To identify how mitigation measures can be secured.
- To identify any significant residual ecological effects and set out any compensation measures proposed to address these.
- To identify appropriate enhancement measures in order to achieve Biodiversity Net Gain.

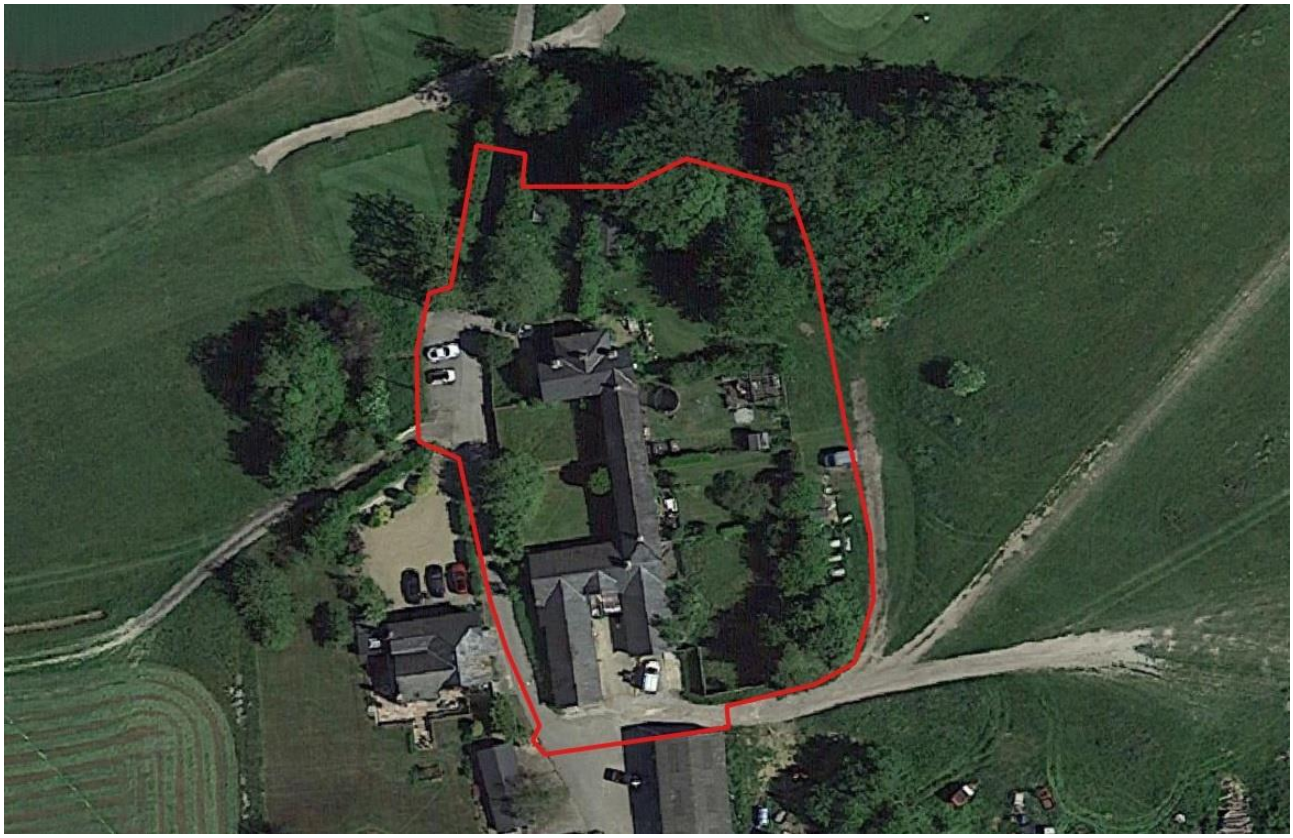


Image 1: Application Site location and approximate site boundary shown in red. Map data (2022): QGIS (2016): Getmapping plc.

3 PLANNING POLICY AND LEGISLATION

Legislation

3.1. The following pieces of legislation are of specific relevance to this assessment:

- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[1].
- Wildlife and Countryside Act 1981[2] (as amended, including by the Countryside and Rights of Way Act 2000).
- Natural Environment and Rural Communities (NERC) Act 2006[3]. Section 41 includes lists of habitats and species recognised as of 'principal importance' for the conservation of biodiversity. Section 40 of the NERC Act 2006 requires all public bodies to have regard for biodiversity conservation when carrying out their function. This is commonly referred to as the 'biodiversity duty'.
- Hedgerows Regulations 1997.

3.2. The following pieces of legislation have been considered, but are not considered to be of specific relevance in this case:

- Protection of Badgers Act 1992 (no badger *Meles meles* setts are present within the Application Site or sufficiently close to be affected).
- Water Framework Directive 2000.

Planning policy

National Planning Policy Framework 2021[4]

3.3. Paragraph 175 of the NPPF states that when determining planning applications, local planning authorities should apply the following principles:

- If significant harm to biodiversity resulting from a development cannot be

[1] Great Britain. *The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019* No.579 [online]. Available from: https://www.legislation.gov.uk/ukdsi/2019/9780111179512/contents
[2] Great Britain. *Wildlife and Countryside Act 1981* [online]. Available from: http://www.legislation.gov.uk/ukpga/1981/69/contents
[3] Great Britain. *Natural Environment and Rural Communities Act 2006* [online]. Available from: http://www.legislation.gov.uk/ukpga/2006/16/contents
[4] Great Britain. *National Planning Policy Framework (2021)*. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2

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.

- Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.

- 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.

Guildford Borough Local Plan 2015-2034

POLICY ID4: Green and blue infrastructure

Biodiversity

(1) The Council will maintain, conserve and enhance biodiversity and will seek opportunities for habitat restoration and creation, particularly within and adjacent to Biodiversity Opportunity Areas (BOAs). The Council will produce a Green and Blue Infrastructure Supplementary Planning Document (SPD) setting out how this approach will be implemented.

(2) New development should aim to deliver gains in biodiversity where appropriate. Where proposals fall within or adjacent to a BOA, biodiversity measures should support that BOA's objectives. The SPD will set out guidance on how this can be achieved.

(3) The designated sites in the following hierarchy are shown on the Policies Map or as subsequently updated:

(a) European sites: Special Protection Areas (SPA) and Special Areas of Conservation (SAC)

(b) National sites: Sites of Special Scientific Interest (SSSI)

(c) Local sites: Sites of Nature Conservation Importance (SNCI) and Local Nature Reserves.

(4) Permission will not be granted for development proposals unless it can be demonstrated that doing so would not give rise to adverse effects on the integrity of European sites, whether alone or in combination with other development. Any development with a potential impact on SPA or SAC sites will be subject to a Habitats Regulations Assessment.

(5) Permission will only be granted for development proposals within or adjacent to national sites where it can be demonstrated that doing so would not be harmful to the nature conservation interests of the site and its function as an ecological unit.

(6) Permission will not be granted for proposals that are likely to materially harm the nature conservation interests of local sites unless clear justification is provided that the need for development clearly outweighs the impact on biodiversity. Where this test is met, every effort must be made to reduce the harm to the site through avoidance and mitigation measures.

4 METHODOLOGY

Scope of assessment

4.1. The EcIA focuses on 'important ecological features', i.e., those which are considered to be of relevance to the decision-making process and could be affected by the proposed development. Important ecological features include protected species, habitats/species of 'principal importance' for biodiversity conservation (i.e., Section 41 habitats/species[5]), birds of conservation concern[6], invasive non-native plant species[7], and habitats and species identified as priorities for conservation in the Local Biodiversity Action Plan.

Zone of influence

4.2. The 'zone of influence' (ZOI) is the area over which important ecological features (on-site or off-site) may be affected as a result of the proposed development and associated activities. The ZOI can vary for different ecological features, depending on their sensitivity to environmental change.

4.3. The ZOI for statutory designated sites has been informed by Natural England's Sites of Special Scientific Interest Impact Risk Zones[8] (SSSI IRZs). IRZs define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts. This has been determined as part of the desk study, as discussed below.

4.4. In this case the Application Site is within the IRZ of several SSSI's, although potential impacts are limited to increases in residential population, where the proposed development is for the same amount of residential properties as already present. Therefore, the ZOI is the site itself and immediate surrounds.

[5] Section 41 (41) of the Natural Environment and Rural Communities (NERC) Act, which came into force on 1st October 2006, requires the Secretary of State to publish a list of habitats and species which are of principle importance for the conservation of biodiversity in England.
[6] Red list species are those that are globally threatened, whose population or range has declined rapidly in recent years (i.e. by more than 50% in 25 years), or which have declined historically and not recovered. Amber list species are those whose population or range has declined moderately in recent years (by more than 25% but less than 50% in 25 years), those whose population has declined historically but recovered recently, rare species (<300 breeding pairs or <900 wintering individuals), those with internationally important populations in the UK, those with localised populations, and those with an unfavourable conservation status in Europe. Species that meet none of these criteria are Green-listed.
[7] Invasive non-native plants (Section 14) on Schedule 9 of the Wildlife & Countryside Act 1981 (as amended).
[8] Natural England (June 2019). Natural England's Impact Risk Zones for Sites of Special Scientific Interest (For use by Local Planning Authorities to assess planning applications for likely impacts on SSSIs/SACs/SPAs & Ramsar sites and determine when to consult Natural England).

Desk Study

4.5. The following information was requested from Surrey Biodiversity Information Centre (SBIC) for a search area of 2km around the central grid reference of the Application Site:

- Statutory Designated Sites;
- Non-statutory Designated sites; and
- Protected and Notable species.

4.6. The data was received on 22nd March 2022. The data provided within the Background Ecological Data Search[9] is valid until 22nd March 2023.

4.7. The MAGIC website[10] was used to search for nearby granted EPS licences within 2km; and carry out a 5km data search for SSSIs, Local Nature Reserves (LNRs), Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) with an IRZ that falls within the Application Site, in March 2022.

Field surveys

4.8. An Extended Phase 1 Habitat Survey was carried out on the 17th of March 2022.

4.9. Incidental records of fauna were made during the Extended Phase 1 Habitat Survey and the habitats identified were evaluated for their potential to support legally protected species and Species of Principle Importance.

Limitations

4.10. The Extended Phase 1 survey was undertaken in March, outside of the recommended season for botanical work, however considering the types of vegetation and habitats present and the continued management of the habitats, the valuation of their intrinsic interest and therefore their significance is unlikely to change. In addition, the Application Site was re-visited on several occasions throughout the summer, with any changes noted.

4.11. Constraints were within normal limits for an Extended Phase 1 Habitat Survey and have been taken into consideration within the recommendations given and did not limit the survey.

Assessment methodology

[10] Multi Agency Geographic Information for the Countryside [online]. Available at: https://magic.defra.gov.uk/

4.12. The habitats and species evaluations and likely effects are made with reference to the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment[11].

4.13. The importance of ecological features has been assessed by carrying out a suite of specialist surveys to determine whether protected species/habitats, and/or species/habitats of conservation concern are present in the Application Site or its ZOI, then comparing their status at the international/national/county/regional/local scale, through the use of available contextual information, to establish the importance of those features in a geographical context.

4.14. The overall effect of the proposed development on a given feature has been predicted, considering the baseline data collected through desk study and field survey, and the various impacts expected to occur. An assessment has then been made as to whether the effect on each important ecological feature is likely to be significant or not.

4.15. Significance is the weight that should be attached to effects when decisions are made. For the purpose of EcIA, a likely significant effect is an effect that either supports or undermines biodiversity conservation objectives for important ecological features (which could be species populations/groups of species, habitats, or a designated site), or for biodiversity in general. Effects have been considered significant at a wide range of scales, from international to local.

4.16. A sequential process has been adopted to avoid/mitigate, and if required, compensate for significant negative ecological effects. This is referred to as the 'Mitigation Hierarchy'. Avoidance includes measures to change the design of the proposed development to avoid an impact occurring. Mitigation includes measures to avoid or reduce the negative impacts of the proposed development. Compensation addresses significant negative residual effects (those likely to occur after avoidance and mitigation have been considered). It is this objective of compensation, and not its location, that distinguishes compensation from 'mitigation'.

4.17. In EcIA, it is only essential to assess and report significant residual effects that remain after mitigation measures have been taken into account. However, the potential significant effects without mitigation as well as the residual significant effects following mitigation have been presented where the mitigation proposed is experimental, unproven or controversial and/or to demonstrate the importance of securing the measures proposed through planning conditions or obligations.

[11] CIEEM (2019). Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater and Coastal, Version 1.1. updated September 2019. Chartered Institute of Ecology and Environmental Management, Winchester.

Valuation

4.18. The value of important ecological features (sites, habitats and species) is assigned according to their scale of importance using the following terms:

- International importance - ecological features of international importance such as SPAs and SACs, and/or sites that support internationally-important populations of species.

- National importance - ecological features of national importance such as SSSIs, features which meet the criteria for designation as a SSSI, and/or sites that support nationally important populations of certain species.

- Regional importance - ecological features of regional importance, such as a species population that is of importance at a scale greater than the County but does not meet the criteria for National Importance.

- County importance - ecological features of county-scale importance, including features that have been designated as local wildlife sites, or meet the criteria for designation as a local wildlife site, and/or county-important populations of species.

- Local importance - ecological features of local importance, including habitats or species populations listed as being of nature conservation importance (e.g. S41, local Biodiversity Action Plan (BAP), or listed in local planning policy), which are not considered to be of County importance by virtue of the quality, size/number, rarity, the extent to which they are threatened throughout their range, or to their rate of decline.

Precautionary principle

4.19. The evaluation of significant effects is based on the results of the ecological surveys carried out in the Application Site and other available evidence. In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect is assumed. Where uncertainty exists, it has been duly acknowledged.

5 BASELINE ECOLOGICAL CONDITIONS

Context

5.1. The Application Site is approximately 0.4ha and is located in Effingham. The Application Site is bounded by an active farm and agricultural fields to the south with a golf course to the north and east. A private road is present to the west (unnamed – part of Warren farm) with an agricultural field and golf course on the western side, the golf course is also located to the east and north. The Ordnance Survey Grid Reference for the centre of the Application Site is TQ 11166 52510.

Designated Sites

5.2. SSSIs, LNRs, SACs and SPAs within 5km of Application Site are shown in **Table 1**.

Table 1: Statutory designated sites with an 5km within the Application Site

Name of statutory designated sites	Approximate distance and direction from Application Site	Reason for designation	Scale of importance
Sheepleas – Local nature reserve	1.8km west/south-west	The site holds a range of habitats including woodlands (both ancient and recent) and grassland. The grasslands are rich in plants that thrive on chalky soil like Eyebright *Euphrasia*, Milkwort *Polygala*, Wild Thyme *Thymus serpyllum* and wild orchids *Orchis*. Over 30 butterfly species can be found here, including common blue *Enallagma cyathigerum*, green hairstreak *Callophrys rubi* and silver-washed fritillary *Argynnis paphia*.	Local
Sheepleas SSSI	1.8km west/south-west	The woodland ground flora includes rare plants such as narrow-lipped helleborine *Epipactis leptochila*, yellow bird's nest *Monotropa hypopitys* and the nationally uncommon grass *Bromus benekenii*.	National

		The site also supports a rich and varied invertebrate fauna, which includes two nationally rare flies *Norellia spinipes* and *Microdon devius*, the rufous grasshopper *Gomphocerippus rufus*, and the pearl bordered fritillary butterfly *Boloria euphrosyne*. This site is also notable for its colonies of the Duke of Burgundy fritillary *Hamearis Lucina*.	
Ranmore Common SSSI	2.6km south-east	This site is a large and continuous block of woodland some of which (notably Bagden Wood and Dorking Wood) is ancient. Several species of butterflies and moths have been recorded including the satin-wave moth *Idaea subsericeata,* and the white admiral butterfly *Ladoga camilla*. The site also supports a diverse breeding bird community, which includes sparrowhawk *Accipiter nisus*, tree-pipit *Anthus pratensis* and nightjar *Caprimulgidae*.	National
Hackhurst and White Downs SSSI	3km south-east	Forty species of butterfly have been recorded and there are good colonies of locally uncommon species such as adonis blue *Lysandra bellargus*, chalkhill blue *L. coridon*, marbled white *Melanargia galathea* and silver-spotted skipper *Hesperia comma*. Other notable invertebrates include the rare flies *Gymnosoma rotundatum* and *Microdon devius*, four rare beetles (*Coleoptera*) and *Centromerus albidus*, a spider known from only two other locations in Britain.	National

Bookham Commons SSSI	3.4km north-east	This site supports a range of habitat types including woodland, scrub, grassland and open water. The diversity of habitats promotes an extremely rich community of breeding birds and important invertebrate populations. Detailed invertebrate recording has taken place for over forty years by the London Natural History Society and this is regarded as one of the best recorded clay sites in Britain.	National
Upper Common Pits SSSI	3.8km south-west	These pits are excavated in the celebrated Netley Heath Beds, originally thought to be Pliocene, but now regarded as of early Pleistocene, possibly Calabrian age. Near the base of these sandy deposits numerous marine fossils occur. These are of considerable importance since they have Red Crag affinities.	National
Hackhurst Downs – Local nature reserve	4km south-east	Diverse old woodland occurs on the forest soils on the ridge and chalk grassland remnants survive on the south facing slopes. Abundant chalk grassland fauna and flora.	Local
Mole gap to Reigate Escarpment – Special area of conservation	4.3km east/north-east	This site hosts the priority habitat type "orchid rich sites". This large but fragmented site on the North Downs escarpment supports a wide range of calcareous grassland types on steep slopes. It exhibits a wide range of structural conditions ranging from short turf through to scrub margins, and is particularly important for rare vascular plants, including orchids *Orchidaceae*.	National

Mole Gap to Reigate Escarpment SSSI	4.3km east/north-east	This site contains the largest part of the North Downs in Surrey. It includes woodland, chalk grassland, chalk scrub and heathland which supports a wide diversity of characteristic plants and animals, of which many are rare. A wide variety of woodland birds also breed within the site, including hawfinch *Coccothraustes coccothraustes*, sparrowhawk and nightingale *Luscinia megarhynchos*. An old chalk mine is used as a winter roost by several species of bats.	National
Combe Bottom SSSI	5km south-east	This site contains an example of pedunculate oak *Quercus Robur*, ash *Fraxinus excelsior*, beech *Fagus* woodland, located on the scarp slope of the North Downs. There is an important stand of juniper *Juniperus communis* scrub, while the site also supports a wide diversity of bryophytes (mosses and liverworts) including several locally rare species. Invertebrates at this site have been poorly studied but the rare beetle *Prionocyphon serricornis* occurs here, as well as the uncommon slug *Limax tenellus.*	National
Shere woodlands – Local nature reserve	5km south-east	The site includes West Hanger, Coombe Bottom and Netley Plantation. Most of these areas are heavily wooded with secondary woodland and conifer *Pinophyta* plantations. However, all these reserves contain small pockets of remnant chalk grassland. West Hanger, Combe Bottom and Netley	Local

		contain some interesting archaeological features in the shape of Neolithic flint quarries.	

5.3. Natural England's Impact Risk Zones (IRZs) are used as a tool to identify where development has the potential to affect the features for which a SSSI is designated. In this case, the Application Site does not fall within an Impact Risk Zone which identifies that "Any residential developments with a total net gain in residential units" could have impacts on nearby SSSIs. As the proposed development is for the same quantity and size of housing it is not anticipated that there will be any impacts on any of the SSSIs identified above.

5.4. As outlined within Table 2, there are three LNRs within 5km of the Application Site. LNRs are notified under section 21 of the National Parks and Access to the Countryside Act 1949 (As amended) by the local authorities and are of Local Value. They are intended for public appreciation and enjoyment of wildlife. The LNR designation does not afford special protection; however, LNRs are protected under legislation and planning policy. In this case, it is not considered that the proposed development will have any significant impacts on LNRs because the proposed development is a replacement of five houses that are already standing and will not add any social pressures to the LNR.

5.5. Although there are several Statutory sites within 5km of the Application Site, it is not expected that there will be any additional pressure or significant impacts on any of the sites identified due to the nature of the proposed development. Impacts on statutory designated sites are scoped out and they will not be discussed further within this report.

5.6. Local (non-statutory) wildlife sites within 2km of the Application Site are shown in **Table 2.**

Table 2: Local wildlife sites within 2km of the Application Site

Name of Local Wildlife Site	Approximate distance and direction from the Application Site	Nature Conservation Interest	Scale of importance
Effingham golf course SNCI	0m north, south, east, west	Selected for its calcareous grassland. 63 species typical of grassland of conservation interest in Surrey have been recorded on the site since 2000. A number of notable plant species have been recorded on the site including 13 plants on the GB Red Data List and England Data List, one UK	Local

Name of Local Wildlife Site	Approximate distance and direction from the Application Site	Nature Conservation Interest	Scale of importance
		BAP Priority species and four VC17 Rare and Scarce species recorded in 2016. There is a known population of Dormice, *Muscardinus avellanarius* on the site.	
Hangers wood SNCI	1.2km south west	The site is composed of commercial forest, including large swathes of coniferous plantation, although many broadleaved stands are also present. Most of the east of the site is ancient woodland. the SNCI is important for a range of woodland communities, including ancient semi-natural acidic and calcareous woodland. The site also contains three areas of very high quality unimproved chalk grassland. A number of locally scarce vascular plants are known, as well as two nationally rare bryophytes. The site is important for its sensitive breeding birds. Invertebrate potential is also high with a nationally scarce species of *Lepidoptera*.	Local
Pump Pond Wood SNCI	1.3km south west	Part of Netley Heath and Effingham Woods SNCI, the site covers an extensive area of woodland on the North Downs scarp and dip. Much of the site is composed of commercial forest, including large swathes of coniferous plantation, although many broadleaved stands	Local

Name of Local Wildlife Site	Approximate distance and direction from the Application Site	Nature Conservation Interest	Scale of importance
		are also present. Most of the east of the site is ancient woodland. In addition to its large size, the SNCI is important for a range of woodland communities, including ancient semi-natural acidic and calcareous woodland. The site also contains three areas of very high quality unimproved chalk grassland, one of which is a Surrey Wildlife Trust reserve. A number of locally scarce vascular plants are known, as well as two nationally rare bryophytes. The site is important for its sensitive breeding birds. Invertebrate potential is also high with a nationally scarce species of *Lepidoptera*. Protected species are present.	
Grassy Shaw and Primrose Rew SNCI	1.6km south	Ancient Semi-natural Woodland with diverse flora including 13 ancient woodland indicator species.	Local
Riding's Wood SNCI	1.7km north west	Recommended by Surrey Flora Committee (SFC) as the site of a county rare plant. Also strongly recommended by Surrey Bird Club (SBC) as the best site in Surrey for Hawfinch.	Local
Part of The Glaziers to Robinsgrove Wood SNCI	1.7km south	Part of Netley Heath and Effingham Woods SNCI, the site covers an extensive area of woodland on the North Downs scarp and dip. Much of the site is composed of commercial forest, including large swathes of coniferous plantation, although	Local

Name of Local Wildlife Site	Approximate distance and direction from the Application Site	Nature Conservation Interest	Scale of importance
		many broadleaved stands are also present. Most of the east of the site is ancient woodland. In addition to its large size, the SNCI is important for a range of woodland communities, including ancient semi-natural acidic and calcareous woodland. The site also contains three areas of very high quality unimproved chalk grassland, one of which is a Surrey Wildlife Trust reserve. A number of locally scarce vascular plants are known, as well as two nationally rare bryophytes. The site is important for its sensitive breeding birds. Invertebrate potential is also high with a nationally scarce species of Lepidoptera. Protected species are present.	
Thornet Wood SNCI	1.8km north	Thornet Wood SNCI, Ancient semi-natural and broad-leaved woodland with mature Field Maple *Acer campestre*, Ash *Fraxinus excelsior* and Hazel *Corylus avellana* coppice.	Local
Dick Focks Common SNCI	2.3km south west	Part of Netley Heath and Effingham Woods SNCI, the site covers an extensive area of woodland on the North Downs scarp and dip. Much of the site is composed of commercial forest, including large swathes of coniferous plantation, although many broadleaved stands are also present. Most of the east of the site is ancient woodland. In	Local

Name of Local Wildlife Site	Approximate distance and direction from the Application Site	Nature Conservation Interest	Scale of importance
		addition to its large size, the SNCI is important for a range of woodland communities, including ancient semi-natural acidic and calcareous woodland. The site also contains three areas of very high quality unimproved chalk grassland, one of which is a Surrey Wildlife Trust reserve. A number of locally scarce vascular plants are known, as well as two nationally rare bryophytes. The site is important for its sensitive breeding birds. Invertebrate potential is also high with a nationally scarce species of *Lepidoptera*. Protected species are present.	

5.7. Given the proximity and nature of Effingham golf course LWS to the Application Site and that it has de facto public access due to lack of fencing, it is possible that a development could have an impact. However, as the size of the proposed development is small, and is a replacement of existing dwellings, and the LWS is moderately inaccessible due to being bordered by the A3 on one side and arable fields on the others, the impact is likely to be insignificant.

5.8. Considering the spatial separation and reason for designation of the remaining LWSs as well as the nature of the proposed development, no significant impacts are anticipated as a result of the development.

5.9. Non-statutory designated sites are scoped out of the assessment due to no predicted significant effects. They are not discussed further within this report.

Habitats

5.10. Habitats are listed alphabetically. All the features described are shown on the Phase 1 Habitat Map in **Appendix 1**.

5.11. The habitats within the Application Site are all considered to be of negligible value, with the

exception of the mature trees which are of value within the zone of influence.

Buildings (J3.6) and Hardstanding

5.12. There are a total of 11 buildings within the Application Site.

5.13. Buildings 1 to 5 are residential properties which are linked and are of similar construction being brick/ block with rendered walls and pitched roofs clad in slate. The eastern and western walls are overclad with timber boarding. Windows and doors are of uPVC construction (photographs 1 and 2).

5.14. Internally the roofspaces are lined with bitumen roofing felt (photograph 3). Generally, the residential buildings are in good condition, although some gaps were observed in the tiles in building 5, which also had several scattered bat droppings present in the roofspace.

Photograph 1: Eastern side of the residential buildings.

Photograph 2: Western side of residential properties.

Photograph 3: Internal view of loftspace

5.15. The remaining buildings are single storey, wooden storage sheds. The wooden sheds were in varying condition and were clad with bitumen felt on the roofs.

5.16. The residential buildings were assessed as having high roosting potential for bats. The detached sheds were assessed as being of negligible value.

5.17. Hardstanding is present in the form of tarmac access roads and car parking areas.

Semi- improved grassland (B2.2)

5.18. The majority of the Application Site comprises semi-improved grassland kept mown short and used as gardens (photograph 4). Species recorded include fescue *Festuca sp*., ground ivy *Glechoma hederacea*, cocks-foot *Dactylis glomerata*, yarrow *Achillea millefolium*, daisy *Bellis perennis*, creeping cinquefoil *Potentilla reptans*, perennial ryegrass *Lolium perenne*, sorrel *Rumex acetosa* and dandelion *Taraxacum officinale* agg.

5.19. During the initial walkover survey the south-eastern part of the grassland was long, but this had been cut short before the next visit (for bat surveys).

Photograph 4: Semi-improved grassland within the Application Site

Species poor Hedgerow

5.20. Four hedgerows are present within the Application Site. The first is on the north-western edge and comprises privet *Ligistrum ovalifolium.* The second is on the western boundary and comprises elder *Sambucus nigra, cotoneaster* sp. and Norway maple *Acer platanoides*. The third hedgerow divides the gardens of buildings B2 and B3 and is a laurel *Laurus sp*. hedge. The fourth hedgerow is on the south-eastern boundary and comprises elder and wild cherry *prunus avium*.

5.21. The hedgerows are all managed by regular cutting.

Trees

5.22. Several trees are present within the site and on the site boundaries. Species recorded include walnut *Juglans regia*, *Cotoneaster* sp., ash *Fraxinus excelsior*, beech *Fagus sylvatica*, Scots pine *Pinus sylvestris*, yew *Taxus baccata* and wild cherry *Prunus avium*.

Fauna

Invertebrates

5.23. The data search returned a vast number of invertebrate records within 2km of the Application Site, the majority likely associated with the scheduled nature conservation sites nearby. These include a butterfly species listed in 'The Butterfly Red List for Great Britain', the brown hairstreak *Thecla betulae*, white admiral *Limenitis camilla*, small blue *Cupido minimus*, purple emperor *L. arthemis*, small heath *Coenonympha pamphilus*, silver spotted skipper *Epargyreus clarus*, dingy skipper *Erynnis tages*, grizzled skipper *Pyrgus malvae*. The data search also returned red listed bee species including large scabious mining bee *Andrena hattorfiana.*

5.24. The data search also returned 10 records of stag beetle *Lucanus cervus*, a protected species. The latest of these records is from 2020.

5.25. The majority of the Application Site is composed of semi-improved grassland; therefore, it has potential to support a variety of common invertebrate species although not rare or notable species. The hedgerow may support some invertebrate species, the Application Site is assessed as being of **value within the zone of influence** to invertebrates.

Great crested newt/ Amphibians

5.26. No great crested newt records were returned from the data search within 2km of the Application Site. The data search returned no common amphibian records.

5.27. A search of MAGIC map's EPS licence records reveal that no EPS great crested newt licenses have been granted within 2km of the Application Site.

5.28. One water body is present within 500m of the Application Site. It is a lake located within Effingham golf course and is 40m north-west of the Application Site. The lake is considered negligible for GCN due to its size (4000sq metres) as well as the presence of fish and birds and lack of vegetation present.

5.29. No suitable terrestrial habitat for great crested newt is present within the Application Site.

5.30. There is an absence of a cohesive pond network on-site or within the immediate landscape and limited suitable connecting terrestrial habitat for use by great crested newt. It is assessed that the Application Site has **negligible value** for great crested newt and other amphibians.

Reptiles

5.31. The data search returned no reptile records.

5.32. A small woodpile is present in the rear garden (target note on phase 1 plan).

5.33. The habitat of tussocky semi-improved grassland has some suitability for reptiles however there is a lack of connectivity to adjacent sites due to the surroundings of amenity grassland of the golf course, and so it's considered that reptiles are likely absent. In addition, the area of long grassland had been mown shortly after the initial visit. Also, the arable fields to the south have potential suitable habitat in the form of field margins, however, an active farm lies between the site and the fields, preventing connectivity. The Application Site is therefore considered to be of **negligible value** for reptiles.

Bats

Foraging and Commuting

5.34. The data search returned records of various bat species from within 2km of the Application Site. Species identified are as follows: pipistrelle species *pipistrellus sp*., common pipistrelle *P. pipistrellus*, brown long-eared bat *Plecotus auritus* and bat species *Vespertilionidae sp.* The closest and most recent account was a pipistrelle sp. found in 2019, 600m north-west of The Application Site.

5.35. A search of MAGIC map EPS licence records identified 2 granted licences relating to bats within 2km of the Application Site. The nearest and most recent of these (2018-33944-EPS-MIT) is located 900m south-east of the application site and was granted in 2018. This was granted to allow damage and destruction of a resting place of common pipistrelle and brown long-eared bat.

5.36. There are several trees within the Application Site, including multiple linear groups of shrubs/trees. These may form a commuting passage and is suitable habitat for foraging bats. In addition, the semi-improved grassland within the Application Site and the lake 40m north of The Application Site will support an invertebrate population that may provide a food source for bats. The Application Site is therefore assessed as being of **value within the zone of influence** for bats.

Roosting Bats

5.37. The buildings within the Application Site were assessed for roosting bat potential. During the external inspection there were features present in buildings 5, 6, and 7 which could be used for roosting. Furthermore, an internal inspection was undertaken on all buildings with loft spaces at the time of the Extended Phase 1 Habitat Survey and several droppings were found in the loft spaces of buildings 5 and 6. These droppings were sent for eDNA analysis and were found to be from brown long eared bats *P. auritus.*

5.38. Buildings 1, 2, 3, 4, 8, 9, 10 and 11 were assessed as having negligible roosting potential for roosting bats, building 7 was assessed as having low roosting potential for bats and buildings 5 and 6 were confirmed as an active roost.

5.39. The trees within the Application Site were also assessed for roosting bat potential. 20 trees within the Application Site were assessed as having **negligible roosting potential**, two were assessed as having **low roosting potential** and another three were assessed with having **moderate roosting potential** for bats. The trees with bat roosting potential will all be retained.

Bat Activity Surveys

5.40. As the building was assessed as having high suitability to support roosting bats, three emergence/ re-entry surveys were recommended. The results are shown in Table 3, below.

Table 3: Results of bat activity surveys

Survey Date	**Recorded Bat Roosts**			**General Bat Activity at the Site**		
19/5/22	**Species**	**First Emergence/Re-entry**	**Last Emergence/ Re-entry**	**Species**	**First Pass**	**Last Pass**
				Common Pipistrelle	21:28	22:48
				Noctule	21:40	-
				Soprano pipistrelle	21:44	21:45
Dusk	Summary: No emergences.			Summary: Several bats recorded foraging and commuting throughout the surrounding habitats.		
16/6/22	**Species**	**First Emergence/Re-entry**	**Last Emergence/ Re-entry**	**Species**	**First Pass**	**Last Pass**

	-			Soprano pipistrelle	21:56	22:46
		-		Common pipistrelle	22:01	22:44
		-		Noctule	21:59	22:44
				Serotine	22:21	22:47
Dusk	Summary: No emergences.			Summary: Several bat passes recorded foraging and passing through site.		
30/6/22	**Species**	**First Emergence/ Re-entry**	**Last Emergence/ Re-entry**	**Species**	**First Pass**	**Last Pass**
	Common pipistrelle	22:08	-	Common pipistrelle	22:29	22:50
Dusk				Soprano pipistrelle	21:46	22:49
				Noctule	21:51	22:32
				Serotine	22:21	22:54
	Summary: 1x common pipistrelle emerged from corner of roof inside courtyard.			Summary: Bats recorded foraging and commuting throughout the surrounding habitats.		

5.41. As shown above, one common pipistrelle was observed exiting building 5 at the edge of the roof (photograph 5). Other common species were recorded foraging and commuting in the grounds and neighbouring landscape.

Photograph 5: Emergence point shown in red

5.42. Building 5 is therefore a confirmed bat roost and a Natural England Mitigation Licence will be required before demolition works commence. The roost is a small day roost of a common species and will therefore qualify to be destroyed under a Bat Mitigation Class Licence (BMCL).

5.43. Although long eared bat droppings were recorded in the loft space, no long eared were recorded during the bat surveys. It is considered that the use of the loft space by long eared bats was temporary, and that the access into the loft space has been sealed.

Badger

5.44. The data search returned no records of badger within 2km of the Application Site.

5.45. No evidence of badger (setts, snuffle holes, snagged hairs) was recorded during the Extended Phase 1 Habitat Survey.

5.46. Given that badger's diets primarily comprise earthworms, the Application Site may have limited suitability for foraging badgers due to the presence of species poor grassland. However, the lack of evidence of badgers within the Application site concludes the site as being of **negligible value** to badger.

Birds

5.47. The data search returned three records of various bird species within 2km of the Application Site and birds were noted while carrying out the Phase 1 survey on site. Species considered relevant to the Application Site have been grouped by their UK conservation status according to RSPB, where birds are split into conservation priority ranging from red (most critical), amber (next most critical) to green (least critical):

- Red listed species: kestrel *Falco sparverius*, hawfinch *Coccothraustes coccothraustes,*
- Amber listed species*:* common gull *Larus canus.*
- Green listed species: great tit *Parus major*, Eurasian nuthatch *Sitta europaea,* red kite *Milvus milvus.*

5.48. There is potential for common birds to nest and forage within the trees and hedgerow.

5.49. The Application Site is primarily composed of semi-improved grassland which is a poor-quality habitat for most bird species. However, the presence of tree groups and hedgerow may provide foraging opportunities for a limited population of common bird species.

5.50. The Application Site is assessed of being of **value within the zone of influence** to birds.

Hazel Dormouse

5.51. The data search returned 26 records of hazel dormouse *Muscardinus avellanarius* within 2km of the Application Site. The records were from 2016 and located 670m south of the application site on the boundary between Effingham golf club SNCI and a six-acre copse.

5.52. A search of MAGIC revealed no EPS licences granted within 2km of the Application Site.

5.53. There is no suitable habitat within the Application Site to support hazel dormouse including a lack of foraging opportunities and appropriate flora (e.g., hazel), and poor connectivity to any suitable habitats The Application Site is therefore considered to be of **negligible value** for hazel dormouse.

Water voles

5.54. The data search revealed no water vole records within 2km of the Application Site.

5.55. The Application Site contains no waterbodies or suitable foraging habitat for water voles. The Application Site is therefore considered to be of **negligible value** for water vole.

Hedgehog

5.56. The data search returned 1 record of hedgehog *Erinaceus europaeus* within 2km of the Application Site. It was recorded in 2013 and located 2km north-west from the Application Site.

5.57. Foraging, commuting and hibernation habitats for hedgehog within the Application Site are present in the form of semi-improved grassland, tree lines, and hedgerow. However, given the surrounding habitats are amenity golf course, it is considered unlikely that hedgehogs would be present on site due to lack of connectivity to other suitable habitat.

5.58. The Application Site is considered to be of **negligible value** for hedgehog.

6 SCHEME DESIGN

6.1. The scheme has been designed in accordance with the mitigation hierarchy whereby avoidance of impacts on higher importance habitats has been advocated in the first instance.

6.2. In line with this, the proposed development involves the removal of all habitats present which are of low intrinsic ecological importance. The boundary hedgerow with trees will be retained. New native trees, native hedgerows, wildflower grassland, will be incorporated into the proposed development.

6.3. Habitat and species-specific impacts and relevant compensation and mitigation for any impacts are outlined within **Section 7** below.

7 ASSESSMENT OF EFFECTS AND MITIGATION MEASURES

7.1. In accordance with CIEEM guidelines, the following important ecological features have been identified with the potential to be affected by the proposed development and carried forward for further assessment:

Table 3: Important ecological features brought forward for impact assessment.

Habitats	None.
Species and species groups	Roosting, commuting and foraging bats, nesting and foraging birds

7.2. Habitats that will be affected are all of negligible value. Those habitats with higher value (e.g. trees) will not be affected.

7.3. The following ecological features have been scoped out of the ecological impact assessment, owning to the conclusion that no significant effects are predicted:

Table 4: Ecological features scoped out of the impact assessment.

Statutory sites	All Statutory Sites
Non-statutory sites	All Non-Statutory Sites
Habitats	Species poor- semi-improved grassland, dry ditch, hardstanding, scattered trees.
Species and species groups	Badger, invertebrates, great crested newt, reptiles, hazel dormouse, hedgehog, water vole.

Fauna

General

7.4. Care must be taken during groundworks/clearance to ensure wildlife is not harmed. In the unlikely event that any protected species is found when an ecologist is not in attendance, works must stop and ACD Environmental will be contacted in the first instance. The protected species must not be handled, except by an ecologist with suitable experience.

7.5. The following good practice measures will also be adopted within the construction site (lighting addressed separately below):

- Avoidance of rubble piles where possible;
- Building materials (e.g., hardcore, timber, pipes) will be stored off the ground;
- Any excavations will be covered when works are not taking place to ensure that they do not fill with water and prevent the potential for wildlife to become trapped (a means of escape must be present); and
- Any temporarily exposed open pipe system will be capped in such a way as to prevent potential access and trapping animals.

Bats- Roosting

7.6. As building 5 is a confirmed bat roost it will be necessary to obtain a Natural England European Protected Species Mitigation Licence prior to demolition. This can be applied for once planning permission is granted.

7.7. As the roost is a low status roost of a common species this work can be covered under the CL21 low impact mitigation class licence.

7.8. Prior to the commencement of works, 1x Schwegler 1FF Bat Box will be erected on a retained tree to provide a suitable location for bats to be moved during the works only by a licenced bat ecologist if required.

7.9. Works impacting upon areas where bat roosts have been identified and sensitive areas of the building identified by an ecologist will be subject to soft-strip under supervision by a licenced ecologist.

7.10. Works to demolish the building will be restricted to the period between October and April, inclusive, with the spring or autumn seasons preferred, to avoid disturbance to roosting bats during the summer maternity period.

Bats - commuting and foraging

7.11. Commuting and foraging features for bats are being retained along the boundary but the grassland area will be lost to the development. Common and widespread bat species with some tolerance to light are likely to be the only species using the Application Site given the artificial light currently surrounding the Application Site. Nonetheless, these bats could be vulnerable to disturbance caused by increased lighting during the construction and operational phase unless appropriate mitigation is put in place.

Construction impacts

7.12. Without appropriate mitigation, lighting during the construction phase could disturb bats, which use the boundary to forage and commute.

7.13. This would have a non-significant minor negative impact within the zone of influence.

Mitigation

7.14. To minimise the impact of the proposed development on commuting and foraging bats, the lighting scheme will be sensitively designed. During the construction phase, the following mitigation will be followed:

- All works will be undertaken during normal working daylight hours. Any artificial lighting (if absolutely required) should not illuminate the boundary habitats;
- Light levels should not exceed artificial light levels already present along the Application Site boundaries;
- Where security lighting is required, it is recommended that these are motion-activated with hooded luminaires and directed away from the boundaries, particularly the northern boundary; and
- No lighting will fall or be directed on to the boundary vegetation.

7.15. With inclusion of the mitigation measures above, overall residual effects during the construction phase will be **negligible.**

Operational impacts

7.16. Inherent mitigation is embedded within the proposed soft landscaping (new tree planting, wildflower grass areas along the northern boundary and new hedgerows) will improve the habitats for foraging bats.

7.17. Due to the nature of the usage of the site it is not anticipated that lighting will be used at a high intensity. However, if high intensity lighting is installed there is still a risk that light-spill from the development could disrupt foraging and commuting bats within the boundaries of the Application Site and within the wider landscape.

7.18. Without appropriate mitigation, this would have a long-term minor negative impact on bats, which would be non-significant within the zone of influence.

Mitigation

7.19. Suitable mitigation during the occupational phase will follow the principles of mitigation as outlined within the Bat Conservation Trust and Institution of Lighting Professionals Guidance Note[12]. Mitigation measures for external lighting will include:

- Only luminaires with an upward light ratio of 0% will be used, and low-level bollard lighting will be used where feasible to retain darkness above the luminaire;
- All external luminaires used on site will lack UV elements and will be warm-white coloured (ideally <2700 Kelvin) to reduce blue-light components;
- LED luminaries will be used due to their sharp cut-off, lower intensity, good colour retention and dimming capability;
- Where security lighting is installed this should be motion-activated; and
- Lights will not be directed at boundary vegetation. Where required, lights can be fitted with hoods, baffles or louvres to reduce back-spill.

7.20. No lighting schedule will be formalised until this has been checked by and ecologist to ensure adherence to the measures above.

Significance of residual effects with mitigation

7.21. With implementation of the mitigation measures above, overall residual effects on foraging and commuting bats during the occupational phase will be **negligible.**

Nesting and foraging birds

[12] Bat Conservation Trust and Institution of Lighting Professionals. (2018). *Guidance Note 08/18 Bats and artificial lighting in the UK: Bats and the Built Environment Series.* UK: BCT & The ILP.

7.22. The Application Site is not considered to be of any particular importance to nesting and foraging birds. However, sections of grassland will be removed to facilitate the development. Without appropriate mitigation, there is the potential for negative impacts during the construction phase.

Construction impacts

7.23. Without appropriate mitigation, increased disturbance as a result of construction noise, dust and vibration is likely to affect the ability of birds nesting within the surrounding habitats to hold territory and breed successfully, if construction takes place in the breeding season. Ambient noise level increases would be variable, but at times there could be considerable increases in noise levels.

7.24. This would lead to a minor temporary impact on nesting birds, which would be significant within the zone of influence.

Mitigation

7.25. To protect nesting birds, work in close proximity to the hedgerows with trees should be limited during the nesting bird season.

7.26. Given the protection afforded to all nesting birds, any works impacting upon the trees or hedgerows should ideally be undertaken during September to February (inclusive), which is outside of the main bird breeding season. Demolition/removal during March-August would require a nesting bird check within 24 hours prior to the works being carried out. If any active bird nests are found, then works should stop in the area and an appropriate buffer zone (as determined by the ecologist) must be established around the nest and the nest left until the young have fledged.

Operational impacts

7.27. Due to the nature of the usage of the site it is not anticipated that significant disturbance to nesting or foraging birds will occur. However, where possible areas which are of benefit to birds should be left undisturbed.

7.28. Without appropriate mitigation, this would have a long-term minor negative impact on birds, which would be non-significant within the zone of influence.

Mitigation

7.29. Inherent mitigation is embedded within the proposed soft landscaping (new tree planting, long wildflower grass areas along the northern boundary and an area of mixed planting habitat) will improve the habitats for foraging and nesting birds.

Significance of residual effects with mitigation

7.30. It is considered that the mitigation above will reduce the residual effect **to minor negative and non-significant within the zone of influence**.

8 BIODIVERSITY NET GAIN

8.1. In order to comply with Local and National planning policy and planning policy guidance, the following enhancements will be delivered as a commitment to the planning application:

- Planting of approximately 20 new trees, it is recommended that fruiting species are used where possible;
- Creation of wildflower grass areas;
- Installation of two integrated bat boxes;
- Two woodpiles on the northern boundary to provide stag beetle habitat;
- Starling and sparrow nest boxes;
- Installation of two tree mounted bat boxes (Schwegler 1FF, 2FN or similar; and
- Species rich hedgerows.

9 CONCLUSIONS

9.1. Habitats within the Application Site are dominated by species poor semi-improved grassland, buildings and hardstanding which are of low intrinsic ecological interest. The boundary trees are of ecological value, however, these are being retained within the development.

9.2. Mitigation measures for habitats and wildlife have been incorporated within this report and include:

- Vegetation removal undertaken outside of the bird nesting season (generally March-August inclusive); and
- A sensitive lighting scheme to minimise light spill.
- A Natural England licence to destroy the bat roost will be required before commencement of works.

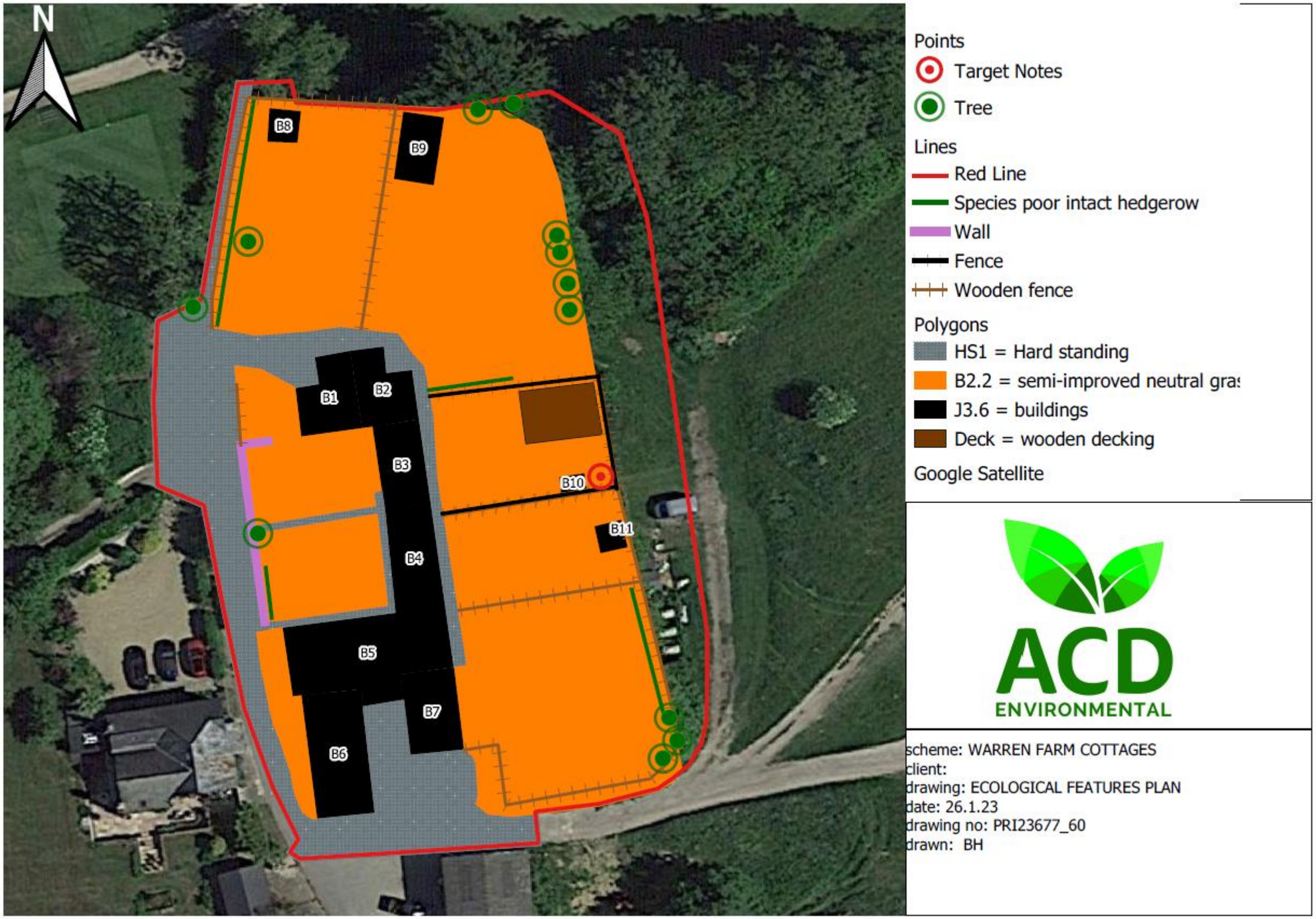
9.3. Compensation for the loss of the bat roost will be in the form of an integrated bat box built into the wall of the new building.

9.4. It is considered that Biodiversity Net Gain can be achieved through the implementation of measures including planting new native trees, creation of wildflower grassland and the creation of new native hedgerows. In addition, two further integrated bat boxes, two tree mounted bat boxes, two woodpiles, two starling boxes and four sparrow terraces will be installed.

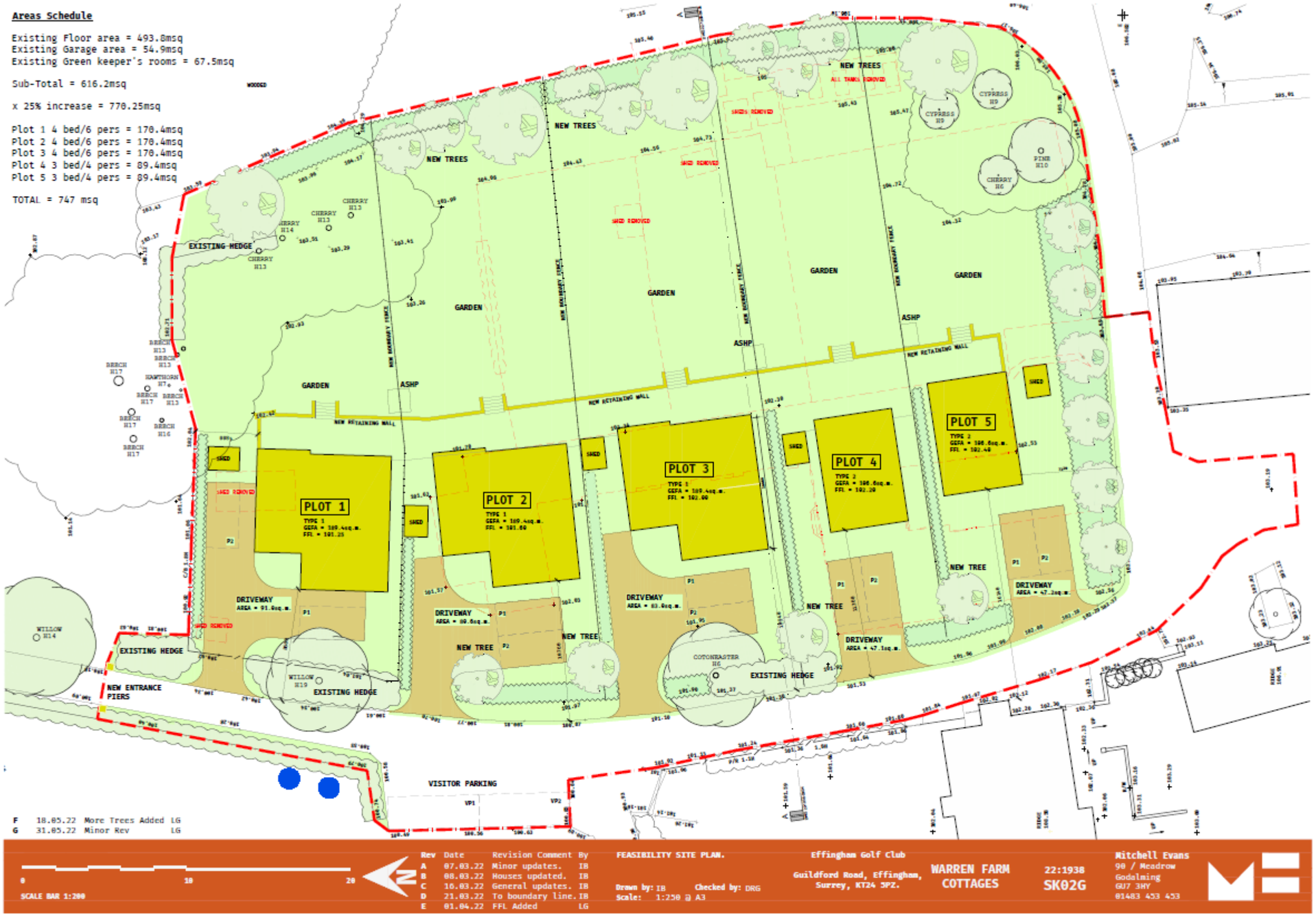
9.5. Assuming the implementation of the mitigation and enhancement measures set out in this report, the proposed development would conform to local planning policies and would deliver biodiversity enhancements in accordance with the NPPF.

9.6. The proposed mitigation includes measures to ensure compliance with the legislation relating to protected species.

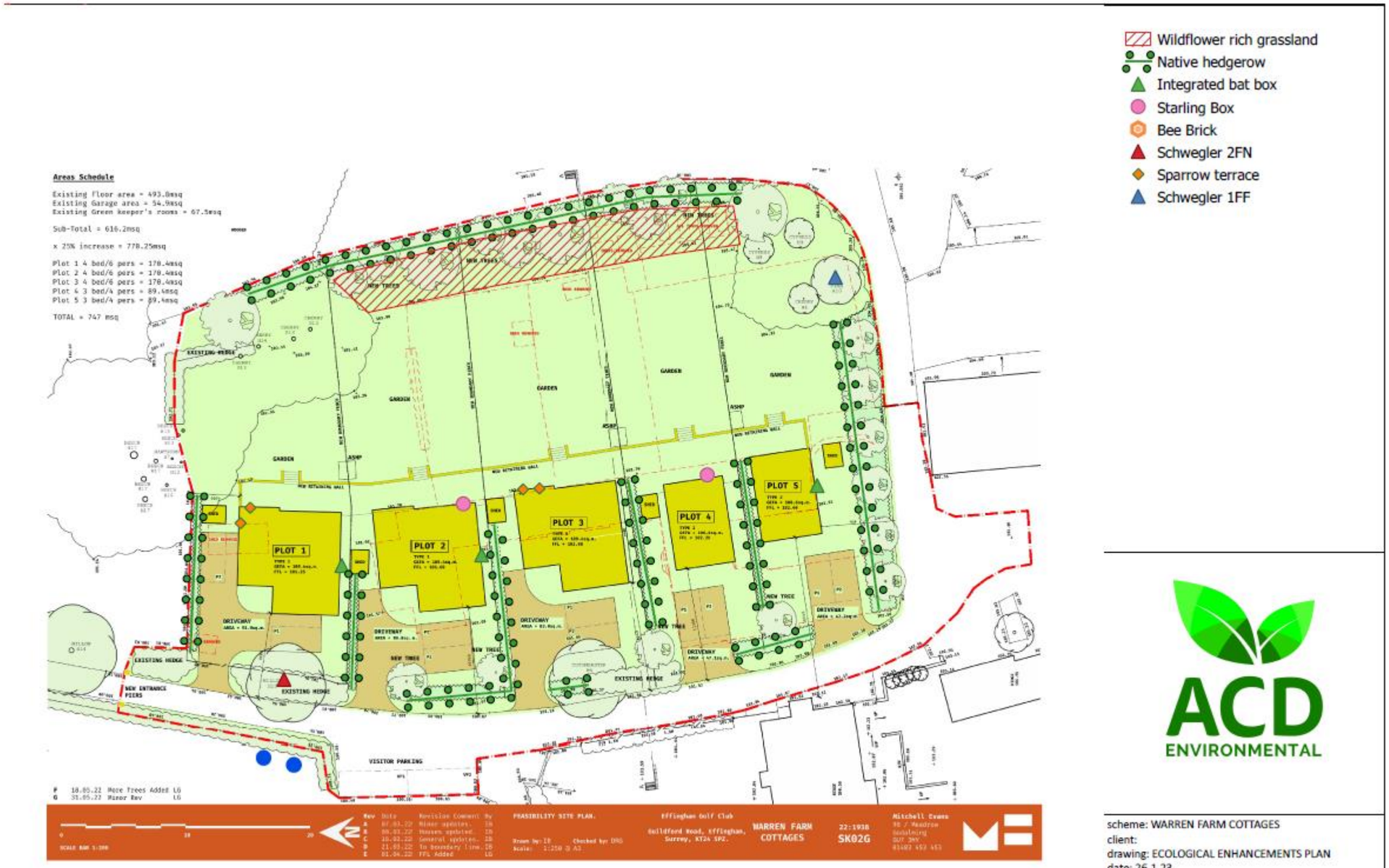
APPENDIX 1: PHASE 1 HABITAT MAP



APPENDIX 2: PROPOSED DEVELOPMENT



APPENDIX 3: ENHANCEMENT PLAN



ACD ENVIRONMENTAL

scheme: WARREN FARM COTTAGES
client:
drawing: ECOLOGICAL ENHANCEMENTS PLAN
date: 26.1.23
drawing no: PRI23677_63
drawn: BH

APPENDIX 4: FIELD SURVEY METHODOLOGY

Extended Phase 1 Habitat Survey

9.7. The Phase 1 Habitat Map is shown in **Appendix 1**.

9.8. The Phase 1 Habitat Survey methodology[13] was undertaken on 17th March 2022. The Phase 1 Habitat Survey was used to classify the Application Site into habitat types, as listed in the Phase 1 Manual. Where appropriate, dominant species codes within habitat types were recorded. Descriptive target notes were used for particular areas of interest.

9.9. Incidental records of fauna were made during the Phase 1 Habitat Survey and the habitats identified were evaluated for their potential to support legally protected species and species of Principal Importance.

Limitations

9.10. Although the Phase 1 Habitat Survey falls outside the recommended seasonal period for botanical surveys, the evaluation and habitat descriptions are unlikely to change given the type of vegetation and habitats present and their intrinsic interest is considered unlikely to change.

9.11. There were no limitations associated with the Phase 1 survey.

Preliminary Bat Roost Assessment - Trees and Building

9.12. A Preliminary Roost Assessment (PRA) was carried out on trees and building within the Application Site. This is an internal and external inspection survey, the purpose of which is to search for bats/evidence of bats and assess the likelihood of bats being present and the need for further survey and/or mitigation.

9.13. Features known to be suitable for bats were searched for on the trees with reference to the three broad categories of Potential Roost Features (PRFs) and sub-categories of PRFs from the Bat Tree Habitat Key[14]. These are as follows:

- Disease and decay PRFs:
    - Woodpecker and squirrel holes;

[13] JNCC, (2010), *Handbook for Phase 1 habitat survey - a technique for environmental audit.* JNCC, Peterborough.
[14] Bat Tree Habitat Key 2018. *Bat Roosts in Trees – A Guide to Identification and Assessment for Tree-care and Ecology professionals*. Exeter: Pelagic Publishing.

    - Knot holes;
    - Pruning-cuts;
    - Tear outs;
    - Compression forks;
    - Wounds;
    - Cankers; and
    - Butt rots.
- Association PRFs:
    - Fluting; and
    - Ivy.
- Damage PRFs:
    - Hazard beams;
    - Frost cracks;
    - Subsidence/shearing and helical splits;
    - Lightning strikes;
    - Desiccation fissures;
    - Transverse snaps;
    - Welds; and
    - Lifting bark.

9.14. The following equipment was used for the bat survey:

- Binoculars
- Powerful torch
- Microscopic ladder

- Collection pots and labels for corpses and droppings; and
- Camera to record evidence and potential roosting sites.

9.15. Features known to be suitable for bats were searched for on the building. These are as follows:

- External Features:
  - Slipped/ missing roof tiles;
  - Lifted lead flashing;
  - Damage to the building materials;
  - Gaps under the eaves;
  - Staining; and
  - Droppings
- Internal Features:
  - Bats;
  - Droppings; and
  - Feeding remains

Limitations

9.16. There were no limitations to the Preliminary Roost Assessment.

DNA Analysis of bat droppings

9.17. Bat droppings found in the roofspace were collected and sent to University of Warwick for DNA analysis on 17th March 2022 with the results received on 7th April 2022.

Bat Activity Surveys

9.18. The Preliminary Roost Assessment identified that the building had high suitability to support roosting bats and was therefore subject to three bat surveys in accordance with guidelines[5].

9.19. The bat surveys were carried out by Brian Hicks (licence number 2015-14880-CLS-CLS), Siobhan Pryke (2022-10330-CL17-BAT), Hannah Yetman, Katie Crawford and James Gretton of ACD Environmental. The bat detectors were Anabat Scout and Echometer Touch. In addition, a camcorder set to night mode was used with an infra-red lamp. All aspects of the property were surveyed.

9.20. Weather conditions are contained within Table 12, below.

Table 11: Summary of weather conditions during bat surveys

Date of survey	Time of survey	Sunset/ sunrise time	Weather Conditions (Wind in Beaufort Scale)
19/05/22	20:40-22:50	20:51	16°C, 50% cloud, force 1 wind.
16/06/22	21:05-22:53	21:23	20°C, 30% cloud, no wind.
30/06/22	21:06- 23:15	21:21	14°C, 20% cloud, force 2 wind.

9.21. There were no limitations to the emergence surveys.

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ECOLOGICAL SURVEYS * PROTECTED SPECIES LICENSING * MITIGATION * IMPACT ASSESSMENT
ARBORICULTURAL SITE MONITORING AND SUPERVISION * ARCHAEOLOGY
LANDSCAPE & VISUAL IMPACT ASSESSMENT * LANDSCAPE AUDIT * PROJECT MANAGEMENT
EXPERT WITNESS* LANDSCAPE DESIGN & PLANNING LANDSCAPE MANAGEMENT