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Ecological Impact Assessment

Site Name

Church Farm, Upper Beeding

Client

Fairfax Acquisitions Ltd.

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Author

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About the Author

This report has been prepared by Meerabai Kings MSci, a Consultant Ecologist at The Ecology Co-op with over two years' experience. As a qualifying member of the Chartered Institute for Ecology and Environmental Management (CIEEM) she is bound by their code of professional conduct.

About the Reviewer

This report has been reviewed by Emma Baker, who is a Senior ecologist with eight years' experience. She holds Level 1 great crested newt and hazel dormouse survey licenses. As a Full member of the Chartered Institute for Ecology and Environmental Management (CIEEM), she is bound by their code of professional conduct.

Report Summary

Purpose	The Ecology Co-op was commissioned by Fairfax Acquisitions Ltd. to undertake protected species surveys for bats and reptiles in relation to a proposed development for the construction of four residential dwellings and associated soft and hard landscaping at Church Farm, Upper Beeding. The purpose of the surveys is to identify the presence or likely absence of commuting and foraging bats and reptiles at the site and if present, characterise populations of these species and their use of the site to provide tailored mitigation and compensation measures, should they be necessary.
Context	The existing site measures 0.46ha in area and comprises a field of bramble scrub. The site is immediately surrounded by residential housing to the east and south and bramble scrub to the north and west. A small parcel of deciduous woodland borders the southwestern corner of the site. The site lies within the River Adur Water Meadows & Wyckham Wood Local Wildlife Site, a non-statutory designated site for nature conservation. The site also lies within the Beeding Hill to Newtimber Hill Site of Special Scientific Interest's Impact Risk Zone and Natural England will need to be consulted on this matter. A Preliminary Ecological Appraisal was previously conducted by The Ecology Co-op in June and October 2021, and August 2025, both identified suitable habitat for bats and reptiles.
Key Findings	The bat activity surveys completed to date (surveys covering Spring, Summer and Autumn of 2022 and a static bat logger deployment covering autumn 2025) indicate that the boundaries of the site are regularly used by a few common and widespread species of bat, as well as occasional passes from rarer species such as barbastelle bats. 'Low' populations of slow worm and grass snake were identified on site.
Recommendations	Precautionary mitigation and compensatory measures have been detailed for both bats and reptiles. Enhancements have been additionally recommended to further improve the site's suitability for bats, nesting birds and reptiles. A Construction Environmental Management Plan will be necessary to outline measures to prevent damage or pollution to the River Adur Water Meadows & Wyckham Wood Local Wildlife Site and nearby priority habitats. Best working practices must be adopted during the works. During the operational phase of the proposed development, a buffer will be required to protect the woodland from recreational pressures such as increased footfall of residents and pets. A double-staggered hedgerow is recommended, to be planted using native shrubs. To enhance the site and compensate for the loss of bramble scrub, native hedgerows have been proposed throughout the site and a wildflower meadow in the southeastern corner of the site.

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1 INTRODUCTION

1.1 Purpose of the Report

The Ecology Co-op was commissioned by Fairfax Acquisitions Ltd. to undertake protected species surveys for bats and reptiles in relation to a proposed development for the construction of four residential dwellings and associated soft and hard landscaping at Church Farm, Upper Beeding.

This report provides the results of the 2022 survey effort (bat activity surveys covering the Spring, Summer and Autumn seasons and reptile presence/absence surveys) as well as the 2025 survey effort (one static bat detector deployment covering the Autumn season and a repeat reptile presence/absence survey. These updated surveys were carried out under the supervision of Meerabai Kings MSci, a qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

The purpose of the surveys was to identify the presence or likely absence of commuting and foraging bats and reptiles at the site and if present, characterise populations of these species and their use of the site to provide tailored mitigation and compensation measures, should they be necessary.

1.2 Background

Church Farm is located in the northwest of Upper Beeding, West Sussex. The central grid reference for the site is TQ 19399 11179.

The site measures 0.46ha in area and comprises a field of bramble *Rubus fruticosus* agg.scrub. The site is immediately surrounded by residential housing to the east and south and bramble scrub to the north and west. A small parcel of deciduous woodland borders the southwestern corner of the site. The wider landscape contains the River Adur, drainage ditches and pasture. Figure 1 shows the approximate boundary of the site and local context.

The proposed development comprises the construction of four residential dwellings with associated soft and hard landscaping. The proposed plan for the site is indicated in Figure 2 below.

A Preliminary Ecological Appraisal was previously conducted by The Ecology Co-op in 2021[1] and again in May 2025[2]. Both surveys identified suitable habitat for bats and reptiles associated with the scrub habitat on site, which is well connected to suitable habitat and foraging resources within the wider landscape. Other protected species are not considered a constraint to the proposed development at Church Farm and are therefore not considered in this Ecological Impact Assessment (EcIA).

[1] The Ecology Co-op (2021) P3535 Church Farm - Ecological Assessment.
[2] The Ecology Co-op (2025) P10959 Church Farm - Preliminary Ecological Assessment.

Figure 1. An aerial image showing the location of the site, with the approximate site boundary outlined in red. Image produced courtesy of Google maps (map data ©2025 Google).

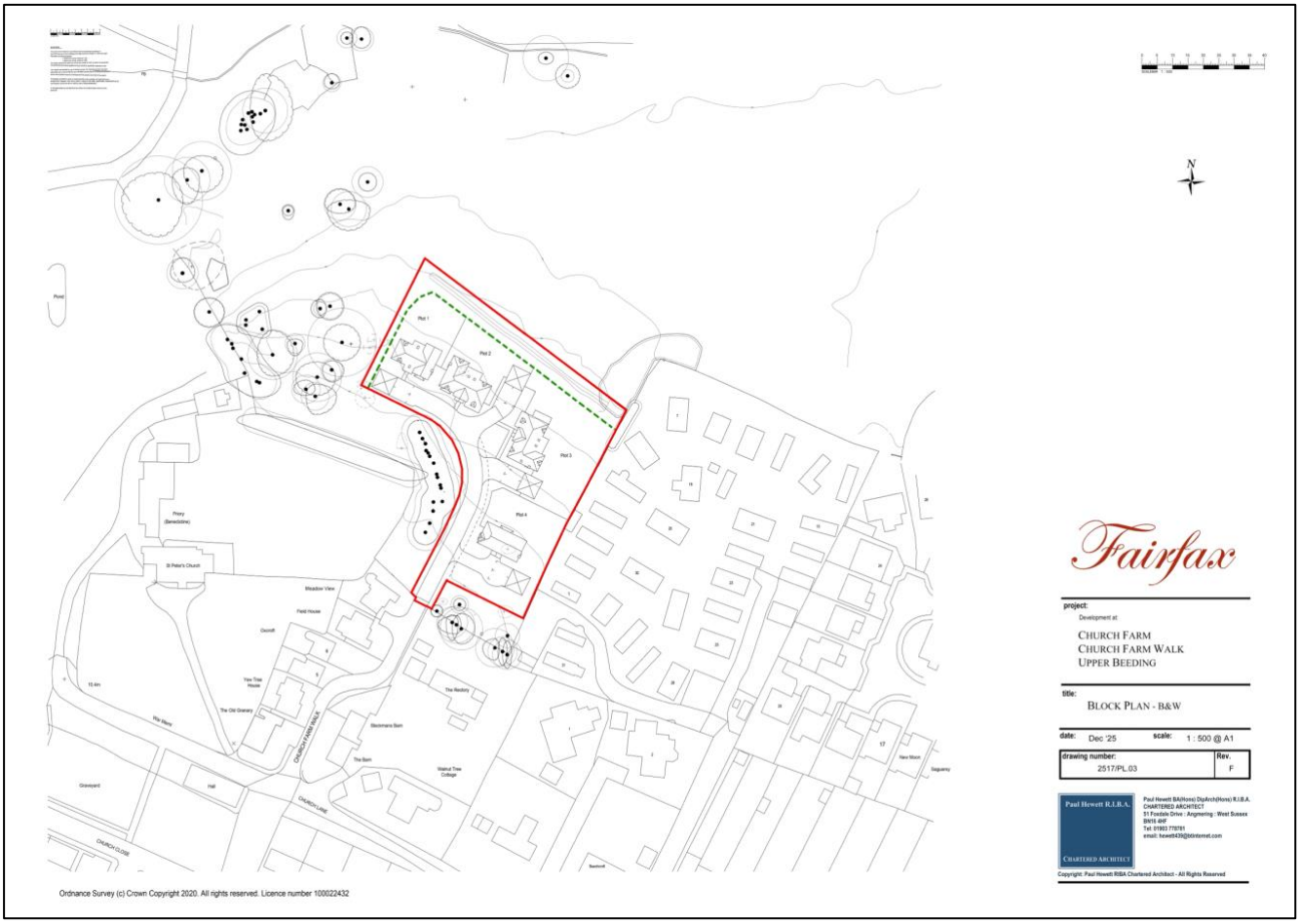

Figure 2. Proposed scheme layout for the development at Church Farm, reproduced from Paul Hewett RIBA Chartered Architect, drawing number 2517/PL.03, Rev F, December 2025.

1.3 Legal Basis

Legal protection applying to relevant bird, mammal, herpetofauna, invertebrate species and flora, and current nature conservation planning policy is outlined in Appendix 1 of this report.

2 SURVEY METHODOLOGY

This document is written in accordance with the CIEEM Guidelines for Ecological Impact Assessment[3] and CIEEM Guidelines for Ecological Report Writing[4] Details of the ecological assessment methods are provided within section 2.5 below.

This report details impact assessments and mitigation recommendations for species, habitats and designations relevant to the site at Church Farm. Protected species, habitats and designations outside of the preliminary ecological appraisal's scope are not considered further in this report.

2.1 Desk Study

A search for existing records of protected species, species of conservation concern and invasive non-native species was requested from the Sussex Biodiversity Records Centre (SxBRC) within a radius of 1km of the site.

The MAGIC website resource (www.magic.gov.uk) was used to identify the location of statutory designated sites for nature conservation in relation to the survey site.

2.2 Habitat Survey

A site walkover survey was undertaken on 11th August 2025, during which the habitats contained within the site were described and evaluated in accordance with standard UK Habitat Classification (UKHab)[5]. The dominant species and indicators of important habitat types such as ancient woodland or unimproved grassland were recorded.

UKHab survey presents a standardised system for classifying and mapping wildlife habitats in all parts of Great Britain, including urban areas. The aim of the survey is to provide, relatively rapidly, a record of the vegetation and wildlife habitats present. The habitat classification is based principally on vegetation, augmented by reference to topographic and substrate features, particularly where vegetation is not the dominant component of the habitat.

Data was gathered through a site walkover survey and use of on-line aerial photography to broadly categorise

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[3] CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Chartered Institute of Ecology and Environmental Management, Winchester.

[4] CIEEM (2017) *Guidelines for Ecological Report Writing, 2nd edition.* Chartered Institute of Ecology and Environmental Management, Winchester.

[5] The UK Habitat Classification Working Group (2023) *The UK Habitat Classification User Manual* at http://ecountability.co.uk/ukhabworkinggroup-ukhab

the habitats present using the UKHab classifications[6]. The results are presented as a map showing the distribution of habitat categories across the site. Target notes are used to describe specific features of biodiversity interest and record indicator species where appropriate. In addition to this, notable habitats, such as habitats listed under the NERC Act, 2006, are highlighted. More information on the UKHab data is presented in the Biodiversity Impact Calculation report for the site[7].

The UKHab methodology is a recognised tool for initial scoping of potential ecological constraints and opportunities, and for identifying potential effects of the proposed development as part of the planning application process.

As part of the appraisal, the site features were evaluated for their potential to support legally protected species and observations of any important plant communities, bird assemblages or other potentially valuable ecological features were recorded. Details of the preliminary survey methods for each legally protected species are given below and any specific limitations to the survey(s), such as access constraints, are set out in section 1.5.

2.3 Bats

There are 18 species of bat resident in the UK, each with their own specific habitat requirements. Bats can use a wide range of features for roosting purposes including loft spaces, cavity walls, loose tiles, mortice joints and cracks/gaps in a variety of built structures. They can also be found in trees with holes, splits, cracks, cavities, ivy and loose bark. Bats are generally active at night and utilise a wide range of habitats for foraging and commuting between roost sites, hibernation sites and foraging habitats. Linear features such as hedgerows, woodland edges, even fences can be important for navigation between roosting and foraging habitats.

2.3.1 2022 Surveys - Night-time Bat Walkover Surveys

Three bat activity surveys were conducted and followed the most recent best practice guidelines[6] at the time. Pre-determined transect routes were followed by surveyors (Figure 3) focusing on all linear features within the site boundary (tree lines, woodland edge and hedgerows). The transect routes were walked at a slow pace during the period from sunset to two hours after sunset by a team of surveyors, such that each part of the route was passed approximately every twenty minutes. All surveys were undertaken during weather conditions suitable for bat activity and at ambient temperatures above 10°C. The surveyors recorded bat activity using 'Echo Meter Touch' bat detectors featuring auto-identification of bat species and automatically triggered recording for later review. The locations of all bat 'registrations' were recorded onto a field map during the survey to correspond with all sound recordings.

2.3.2 2022 Surveys - Bat Activity Surveys – Automated Static Bat Detecting

One SongMeter static bat detector was deployed across the site on three separate occasions, covering the spring (April) and Summer (June and August) seasons. Each deployment was left in the field for a minimum of five days – the expected maximum lifetime of the battery. Static bat detectors comprise a passive recording device with

[6] UK Habitat Classification Working Group (2018). *UK Habitat Classification – Habitat Definitions V1.0* at http://ecountability.co.uk/ukhabworkinggroup-ukhab
[7] The Ecology Co-op (2025) P10959 Church Farm – Biodiversity Impact Calculation.

real-time full-spectrum calls that can be viewed in detail once downloaded on analysis software, allowing accurate identification of most bat calls to species level (or genus level in the case of *Nyctalus*, *Myotis* and *Plecotus* spp.).

2.3.3 2025 Survey -Bat Activity Surveys – Automated Static Bat Detecting

One SongMeter static bat detector was been deployed across the site in October 2025 (Figure 3), covering the Autumn season and left in the field for a minimum of five days – the expected maximum lifetime of the battery. Static bat detectors comprise a passive recording device with real-time full-spectrum calls that can be viewed in detail once downloaded on analysis software, allowing accurate identification of most bat calls to species level (or genus level in the case of *Nyctalus*, *Myotis* and *Plecotus* spp.).

Figure 3. The 2022 transect routes (marked in yellow) of surveyors with stops (numbers). The 2025 logger deployment location is shown with a red circle. Image produced courtesy of Google maps (map data ©2025 Google).

The data was processed using the British Trust for Ornithology's (BTO) Acoustic Pipeline v5.502[8], an auto-

[8] BTO (2023). BTO Acoustic Pipeline. Available from: https://www.bto.org/our-science/products-and-technologies/bto-acoustic-pipeline

identification system. The Acoustic Pipeline uses classifiers to detect and identify bat calls within files and assign them a probability or confidence percentage of the call belonging to a particular species. The data output from the pipeline was then processed differently depending on the species identified, but groups of species' calls underwent some degree of post-classification manual analysis by a suitably experienced bat acoustic analyst using Kaleidoscope Lite software v5.6.3[9]. Data management was facilitated using the R Shiny App through R Studio v2023.09.1+494[10], which assisted with creating random samples of some datasets to establish error rates.

Common and Soprano Pipistrelles, Barbastelle and Serotine

All calls with a confidence score of below 50% were discarded from the dataset. 10% of remaining calls from each logger then underwent post-classification validation through manual analysis to establish false positive error rates within the dataset. Each logger was validated as bat calls can vary between habitats, meaning that the location in which the logger is placed can influence the effectiveness of species detection.

Myotis, *Plecotus*, and *Nyctalus* species and Nathusius' Pipistrelle

All low confidence calls and 10% of high confidence calls from these species were analysed. This is because these genera overlap and are often very difficult to distinguish. Therefore, it is likely that the Acoustic Pipeline may otherwise underestimate the numbers of calls from these genera as it assigns them a lower confidence score, whilst the confidence in correctly analysing the genera the call belongs to is still high.

Noise

10% of all noise files identified by the BTO Acoustic Pipeline were manually analysed to establish a false negative error rate. Individual error rates were established for each logger location due to possible variation in noise production from logger placement.

If error rates of any species or noise files is above 10%, the entire dataset for that logger deployment is manually analysed by a competent bat acoustic analyst. All calls from the 2025 bat logger were analysed by a competent bat acoustic analyst and so no error rates are presented for these analysis results.

The walked transect and static bat detector ('bat logger') survey methods complement each other with the transect surveys providing information on foraging and commuting patterns, and distribution across the site; and automated static detector surveys giving more prolonged coverage through consecutive nights, thus increasing the likelihood of detecting scarce species.

2.4 Reptiles

The common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, grass snake *Natrix helvetica* and adder *Vipera berus* are widespread species that can be found in many semi-natural habitats, such as rough grassland, scrub, heathland and open woodland where there is good vegetation cover, an abundance of invertebrate, amphibian or small mammal prey and areas of open ground for basking.

[9] Wildlife Acoustics (2023) Kaleidoscope Lite Analysis Software. Available from: https://www.wildlifeacoustics.com/account/downloads/kaleidoscope

[10] RStudio Team (2020). RStudio: Integrated Development for R. Available from: http://www.rstudio.com

Standard reptile presence/likely absence surveys involve setting out artificial refugia (reptile 'mats' or 'tins') in potentially suitable habitat. Reptile mats are pieces of roofing bitumen felt and reptile tins are pieces of corrugated metal sheet approximately 1m x 1m in size, which absorb heat from the sun more rapidly than the surrounding vegetation and provide cover and basking places attractive to reptiles. These are then checked for presence of animals under suitable weather conditions. They are placed in areas of potentially suitable habitat at an approximate density of 20/ha, or 20m apart along linear features. There are no up-to-date best practice guidelines for reptile surveys, but a minimum of seven survey visits under suitable weather conditions is generally considered to be adequate when determining their presence/likely absence, and 15–20 visits are used to calculate a 'peak count' for a more detailed population size class assessment. An appropriate survey effort may depend upon the size of a site and suitability of habitats present and often requires the judgment of a suitably qualified and experienced ecologist.

The survey refugia were placed around the site, focusing on the areas of long vegetation and margins where they would warm up in the morning or afternoon sun. The survey sheets were spaced evenly in all suitable reptile habitat around the site, where possible avoiding areas that would be constantly shaded by trees.

2.4.1 2022 Reptile Surveys

A total of 11 reptile mats were used in this survey (Figure 4). The mats were left in-situ for a minimum of 10 days to 'bed in' and allow reptiles to locate them before the first check. The mats were checked at least seven times between 6th July and 26th September 2022 and all observations of reptiles were recorded, together with the weather conditions, temperature, and time of day.

2.4.2 2025 Reptile Surveys

A total of 30 mats were used in this survey (Figure 5). The mats were left in-situ for a minimum of 10 days to 'bed in' and allow reptiles to locate them before the first check. The mats were checked at least seven times between 24th September and 17th October 2025 and all observations of reptiles were recorded, together with the weather conditions, temperature, and time of day.

Figure 4. Location of reptile refugia on the site in 2022. Images produced courtesy of apple maps (map data ©2025 Apple maps).

Figure 5. Location of reptile refugia on the site in 2025. Images produced courtesy of Mapbox (map data ©2025 Mapbox).

2.5 Impact Assessment Methodology and Mitigation

The assessment of ecological impacts and mitigation recommendations in this report follow CIEEM Guidelines for Ecological Impact Assessment (EcIA)[3]. This involves evaluating the importance of an 'ecological feature' (habitat, vegetation community, population of a single species or assemblages of species) in terms of nature conservation priority, followed by the application of the 'mitigation hierarchy'.

2.5.1 Importance of Ecological Features

A level of importance was assigned to all existing ecological features through consideration of the rarity and distribution of a habitat or species, the population size, ecological function, and trends (declining/expanding), together with any designations, legal status, or conservation policies. CIEEM recommend that the importance of an ecological feature, in terms of nature conservation priority, should be considered within a defined geographical context (for definitions used by The Ecology Co-op, see Appendix 2):

- international and European
- national
- regional
- county
- local or parish

- site/negligible.

Where protected species are present and there is the potential for a breach of the legislation as a result of the development proposals, those species are considered as 'important' features and included in the EcIA. However, the level of importance assigned to the affected population of a protected species will vary depending on contextual information about the population size, distribution, abundance and trends across the range of geographical scales.

Features that are considered to be important at site level only, or are of negligible importance (such as paved ground or amenity grassland) are excluded from this EcIA and it should be reasonable to assume that if a feature is not mentioned, it is not ecologically important.

2.5.2 Significance of Effects

The assessment of ecological impacts and mitigation recommendations in this report follow CIEEM Guidelines for Ecological Impact Assessment (EcIA). This involves evaluating the importance of an 'ecological feature' (habitat, vegetation community, population of a single species or assemblages of species) in terms of nature conservation priority, followed by the application of the 'mitigation hierarchy'.

The impacts are identified and described in relation to the following characteristics:

- *adverse or positive* – does the impact result in the loss or gain in biodiversity/quality of the environment?
- *extent, magnitude* – the spatial area over which the impact may occur, the area of habitat lost, or the number of individuals/populations affected
- *timing* – in relation to the life cycle of the ecological feature (e.g. nesting bird season)
- *duration, frequency* – is the impact temporary or permanent, frequently repeated or a one-off event?
- *reversibility* – is the impact temporary or permanent? Would the ecological feature recover after the impact?
- *cumulative impacts* – in combination with other plans/projects.

2.5.3 The 'Mitigation Hierarchy'

The assessment of the significance of an effect is made initially in the absence of mitigation. This is followed by a sequential process of determining the most appropriate way to remove or minimise significant effects. The preferred option is to avoid impacts in the first place, for example by redesigning the scheme to retain an important area of habitat, or timing works sensitively. Mitigation measures such as translocation or displacement of populations is only applied as a last resort where significant effects are unavoidable.

When residual significant adverse effects remain after all practicable measures to avoid and/or minimise impacts have been applied, compensation measures are required. Compensation measures include habitat creation in alternative locations that offset unavoidable habitat loss.

Finally, enhancements are proposed that do not relate to a specific impact and effect but provide net gains in biodiversity – taking advantage of opportunities in the design and operation of the proposed development. These measures are intended to ensure that the proposed development contributes towards national and local biodiversity objectives.

2.6 Limitations

Surveys record any fauna that is present at the time of the survey visits. It is therefore possible that reptile species may not have been present during the survey but may be evident at other times of the year and may appear or disappear from the site if habitat conditions change. For this reason, the surveys are considered valid for up to two years. If the habitat conditions change significantly in the intervening period, then it is recommended that the surveys be updated.

Constraints for the survey effort at Church Farm are associated with the 2022 bat logger deployments. These surveys were conducted three years ago (at the time of writing this report) by staff no longer working the Ecology Co-op, as such the static detector data and some of the bat activity results are no longer available. All 2022 survey data included in this report has passed the age threshold to be considered valid and so it is important to note that the 2022 survey data has been included to provide site context, rather than accurate, up to date results.

There were no specific constraints to the 2025 bat activity, habitat or reptile surveys.

3 ECOLOGICAL BASELINE

3.1 Designated Sites

As described in the first PEA written for the site in 2022, the site sits within the River Adur Water Meadows & Wyckham Wood Local Wildlife Site, a non-statutory designated site for nature conservation. Furthermore, 0.5km south of the site lies the South Downs National Park and 1.6km south-east of the site is Beeding Hill to Newtimber Hill, a Site of Special Scientific Interest (SSSI). Details on these designated sites can be found below in Table 1.

As the site lies within the SSSI Impact Risk Zone of Beeding Hill to Newtimber SSSI, Natural England will need to be consulted on the development.

Table 1. Designated sites with 2km of Church Farm

Site name	Designation	Features listed on citation	Proximity
Non-statutory sites			
River Adur Water Meadows & Wyckham Wood	Local Wildlife Site	River Adur Water Meadows and Wyckham Wood LWS covers the floodplain of the River Adur upstream of Bramber. The low-lying fields of cattle and sheep grazed pasture and the network of ditches provide an extensive area of coastal and floodplain grazing marsh habitat. The sward of the grassland is generally dominated by grasses and is not particularly species diverse. Of greater botanical interest is the network of ditches that cross the fields. Where the ditches are not	0km

		shaded by scrub, they are often dominated by growth of Common Reed *Phragmites australis* or other tall emergent species. Areas of open water support a diversity of submerged, floating and emergent plants, including a number of notable species such as Tubular Water-dropwort *Oenanthe fistulosa,* Frogbit *Hydrocharis morsus-ranae* and Water-violet *Hottonia palustris.* Wyckham Wood is a small block of lowland mixed deciduous woodland at the northern end of the LWS. It is an ancient and semi-natural woodland with a canopy of Pedunculate Oak *Quercus robur* and Ash *Fraxinus excelsior*. The LWS is particularly important for birds, with over 100 species having been recorded across the site, including 24 NERC S41 species, and it is particularly notable for wintering waterfowl and waders. Coastal and floodplain grazing marsh and lowland mixed deciduous woodland are both NERC S41 habitats. The site represents some of the most extensive grazing marsh habitat in Horsham district and is typical of many river systems across the county.	
Statutory Sites			
South Downs	National Park	N/A	520m south
Beeding Hill to Newtimber Hill	Site of Special Scientific Interest	Three nationally uncommon habitats are represented: south-east chalk grassland, juniper scrub and calcareous pedunculate oak-ashbeech woodland. The site supports a rich community of invertebrates, especially harvestmen and has some uncommon butterflies and moths. A nationally uncommon plant also occurs. Devil's Dyke is the best known example of a dry chalk valley. The site lies on chalk which is capped	1.6km south-east

		in parts by clay with flints. Most of the area consists of unimproved chalk grassland, with occasional areas of scrub. In places this scrub has developed into woodland, and there are also some areas of mature beech woodland. The plateau of Newtimber Hill has an area of neutral grassland on clay with flints and has a dewpond. A chalk spring arises in a steep valley. Most of the chalk grassland is very rich in plant species with as many as 40 flowering plants per square metre. There are local variations in the composition of the sward according to the locality and the grazing regime. The richest areas are dominated by upright brome *Bromus erectus* and fine-leaved grasses such as sheep's fescue *Festuca ovina* and crested hair-grass *Koeleria macrantha*. Frog orchid *Coeloglossum viride,* round headed rampion *Phyteuma tenerum* and pyramidal orchid *Anacamptis pyramidalis* are among the species occur here. It is a locality of a nationally uncommon plant, the red star thistle *Centaurea calcitrapa*. Other areas are dominated by taller grasses such as tor grass *Brachypodium pinnatum,* cock's foot *Dactylis glomerata* and oat grass *Arrhenatherum elatius.* Two disused chalk quarries also support a rich chalk flora. The neutral grassland consists mainly of Yorkshire fog *Holcus lanatus*, red fescue and gorse *Ulex europaeus*, with wood sage *Teucrium scorodonia,* betony *Stachys officinalis* and bramble *Rubus fruticosus.* Scrub is scattered throughout the grassland and forms dense belts in some areas. It is composed of gorse, hawthorn *Crataegus monogyna*, ash *Fraxinus excelsior,* oak *Quercus robur* and wayfaring tree *Viburnum lantana*. The scrub has invaded the areas of chalk heath which formerly occurred on the plateau. The site supports a small	

		colony of juniper *Juniperus communis* in its most easterly locality on the south downs. The woodland consists of beech *Fagus sylvatica*, oak and ash, with field maple *Acer campestre* and wild cherry *Prunus avium.* Hazel *Corylus avellana*, hawthorn and elder *Sambucus nigra* form a scattered scrub layer over bramble, dog's mercury *Mercurialis perennis* and slender false-brome *Brachypodium sylvaticum.* Yellow bird's nest *Monotropa hypopitys* and bird's nest orchid *Neottia nidus-avis* are also found. In the vicinity of the chalk spring there is an area of willow carr which consists of common sallow *Salix cinerea* and white willow *Salix alba* scrub over nettle *Urtica dioica*, fool's water-cress *Apium nodiflorum* and goose grass *Galium aparine*. This type of habitat is uncommon on chalk in the county and this is the locality of an uncommon cranefly *Gonomyia simplex.* A pond has recently been constructed here. A dewpond on the plateau supports colonies of all three species of newt. The site supports a nationally important assemblage of the *Opilionid* group of *Arachnids* (harvestmen). It is a locality of the nationally uncommon scarce forester moth *Procris globularia* and the adonis blue butterfly *Lysandra bellargus.*	

3.2 Habitats

The site is comprised of cleared bramble scrub, a small stand of blackthorn scrub in the northeastern corner and one individual sycamore *Acer pseudoplatanus* tree in the south of the site (Figure 6).

Figure 6. UKHab map of habitats on site at Church Farm. Produced using QGIS software (version 3.36 Maidenhead)

Immediately north of the site is a field of modified grassland and to the west is more bramble scrub. Immediately southwest of the site is a small parcel of deciduous woodland which is listed as a priority habitat for nature conservation. The woodland is dominated by sycamore and conifer *Pinophyta sp.* trees.

The wider area is dominated by coastal and floodplain grazing marsh, though this habitat does not immediately border the site. Priority habitats nearby the site are shown in Figure 7.

Figure 7. Priority habitats for nature conservation within the locality of the site (outlined in red). Deciduous woodland is shaded green and coastal floodplain grazing marsh is shaded blue.

3.3 Bats

3.3.1 2022 Bat Activity Surveys – Walked Transects

Survey conditions and timings are presented in Table 2. Geographical data for the 2022 transect surveys is no longer available, given how long ago this data was recorded. A summary table of the bat activity recorded on each of the three 2022 surveys is provided in Table 7, Appendix 3.

Table 2. Walked transect metadata: dates, times, temperature, weather conditions (2022 survey data).

Date	Survey start time/end time	Temperature (°C), weather conditions	Surveyors
28/04/22	20:17-22:17 Sunset: 21:17	Max/min temp.: 12–10 100% cloud cover, BF3, light rain.	Sophie Bradfield Jess Stone
13/06/22	21:15-23:15 Sunset: 21:15	Max/min temp.: 12 Unspecified cloud cover, BF2, light rain.	Sophie Bradfield Jess Stone
02/08/22	20:46-22:46 Sunset: 20:46	Max/min temp.: 20-18 0% cloud cover, BF4, dry.	Sophie Bradfield Jess Stone

Survey 1 – 28/04/2022

Bat activity was relatively low, with only 17 total bat records, all of which were common pipistrelle *Pipistrellus pipistrellus* or soprano pipistrelle *Pipistrellus pygmaeus* except one commuting noctule *Nyctalus noctula* and one commuting *Myotis* sp. bat. All recorded bats were commuting except two foraging common pipistrelles in the west of the site.

Survey 2 – 13/06/2022

Bat activity was relatively low, with only 11 bat records, all of which were common pipistrelle except two commuting

Myotis spp. bats. All recorded bats were commuting except foraging common pipistrelles in the south of the site.

Survey 3 – 02/08/2022

Bat activity was relatively low, with only 10 bat records; four common pipistrelle, two soprano pipistrelle, one noctule, one *Myotis* sp. and one barbastelle *Barbastella barbastellus*. All recorded bats were commuting except one foraging noctule in the east of the site and one foraging common pipistrelle in the south of the site.

3.3.2 2025 Bat Activity Surveys – Automated Static Bat Detecting

The results of the automated static bat detector surveys are summarised in Table 3. The majority of passes recorded by the static detector were from *Myotis* spp. (1680 recorded calls), followed by soprano pipistrelle (1575 recorded calls).

Species recorded on site included common pipistrelle, soprano pipistrelle, Nathusius' Pipistrelle *Pipistrellus nathusii,* barbastelle, long-eared bats *Plecotus* sp., serotine *Cnephaeus serotinus* and *Nyctalus* spp.

Table 3. Mean number of passes recorded by the static detector (rounded to nearest whole number) per night.

Location	Date	Common pipistrelle	Soprano pipistrelle	Nathusius' pipistrelle	Barbastelle	*Plecotus* sp.	*Myotis* sp.	Serotine	*Nyctalus* sp.
Western woodland boundary	Autumn (2nd -7th October 2025)	56	283	1	8	3	336	2	8

3.3.3 Pre-existing Records

The SxBRC record search indicate the presence of serotine, noctule, common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, brown long-eared bat *Plecotus auritus,* Daubenton's bat *Myotis daubentonii*, *Myotis* sp., and barbastelle within 1km of the site.

3.3.4 Interpretation

The bat activity surveys indicate that the main areas of importance for the site are the boundaries, particularly those on the west of the site. The static loggers indicate that the western woodland edge border is a very important location for foraging and commuting soprano pipistrelles and *Myotis* species. Additionally, common pipistrelles, *Nyctalus* sp., barbastelle and long-eared bats use this habitat, likely only for commuting purposes due to the lower number of average passes per night. The conservation status of bats recorded at the site is detailed in Table 4, along with their local distribution. Long-eared species cannot be determined from calls alone. However, grey long-eared *Plecotus austriacus* bats are not included within Table 4 because it is considered extremely unlikely that grey long-eared bats use the site, given that the habitats on site are not typical foraging habitats of this species.

The site is considered important to bats at a **local** level. With a score of 17 from CIEEM's bat mitigation guidance 'Assessing the importance of a bat assemblage)[11].

Table 4. Conservation status and distribution of bats recorded on site.[12]

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

[12] The Mammal Society (2020): https://www.mammal.org.uk/science-research/red-list/.

Species	Conservation status England	Distribution in England
Barbastelle	**Vulnerable**	South and central England
Serotine	**Vulnerable**	South and south-east of England
Leisler's *Nyctalus leisleri*	**Near threatened**	Widespread (excluding northern Scotland)
Nathusius' pipistrelle	**Near threatened**	Widespread
Common pipistrelle	Least concern	Widespread
Soprano pipistrelle	Least concern	Widespread
Brown long-eared bat*	Least concern	Widespread
Noctule	Least concern	Widespread
Myotis sp.*	Least concern (common species)	Widespread

*It is not possible to identify the species of Myotis, Nyctalus or Plecotus without droppings for DNA analysis or the capture of a live animal.

3.4 Reptiles

3.4.1 2022 Survey Results

A total of seven visits were undertaken on site between the 6th July and 26th September 2022. Grass snake (peak count of two juveniles) and slow worm (peak count of two adults) were recorded on site. The survey findings, dates, and conditions are presented in Table 5 below.

Table 5 Results of 2022 reptile survey undertaken at Church Farm (cc = cloud cover, BF= Beaufort scale, JSW = juvenile slow worm, AFSW= adult female slow worm, JGS = juvenile grass snake).

Date	Survey start time	Temp. degrees centigrade, weather conditions throughout survey	Surveyor	Results		
				Refugia number	Species	Count
06/07/2022	09:15	Air temp: 16°C. 0% cc, BF2, dry.	Nick Bayne			
23/08/2022	08:45	Air temp: 17°C. 60% cc, BF1, dry.	Nick Bayne			
05/09/2022	09:00	Air temp: 17°C. 90% cc, BF2, dry.	Nick Bayne	4	JSW	1
				7	JSW	1
13/09/2022	09:15	Air temp: 18°C. 90% cc, BF3, dry.	Nick Bayne	4	JSW	6
				7	JSW	1
16/09/2022	10:30	Air temp: 14°C. 30% cc, BF3, dry.	Nick Bayne	4	JSW	5
				9	AFSW	1
20/09/2022	15:30	Air temp: 17°C. 60% cc, BF1, dry.	Nick Bayne	4	AMSW JSW	2 1
				7	AFSW	1
				9	AMSW	1
				10	JSW	1
				11	AFSW	1
26/09/2022	10:00	Air temp: not specified 40% cc, BF1, dry (rain before survey).	Nick Bayne	Not specified	AFSW	1
				Not specified	JGS JSW	1 8

3.4.2 2025 Survey Results

A total of seven visits were undertaken on site between the 24th September and 17th October 2025. Grass snake (peak count of two juveniles) and slow worm (peak count of two adult females and two juveniles) were recorded on site. The survey findings, dates, and conditions are presented in Table 6 below.

Table 6 Results of 2025 reptile survey undertaken at Church Farm (cc = cloud cover, BF= Beaufort scale, JSW = juvenile slow work, AFSW= adult female slow worm, JGS = juvenile grass snake).

Date	Survey start time	Temp. degrees centigrade, weather conditions throughout survey	Surveyor	Results		
				Refugia number	Species	Count
24/09/2025	09:28	Air temp: 13°C. 50% cc, breezy (BF3), dry.	Andy Fry	2	JSW	1
30/09/2025	12:37	Air temp: 17°C. 15% cc, still (BF0) dry.	Lara Hulbert	4	AFSW	1
				6	AFSW	1
02/10/2025	15:06	Air temp: 15°C. 100% cc, breezy (BF3) dry.	Meerabai Kings	5	AFSW	1
				6	AFSW JGS	1 1
				15	AFSW JSW	1 1
				19	AFSW JSW	1 1
07/10/2025	09:25	Air temp: 15.9°C. 100% cc, calm (BF1) dry.	Meerabai Kings	5	AFSW	1
				9	AFSW	1
				18	JGS	1
				21	JGS	1
10/10/2025	09:40	Air temp: 14°C. 100% cc, still (BF1) dry.	Lara Hulbert	4	AFSW	1
				20	AFSW	1
14/10/2025	09:00	Air temp: 14°C. 100% cc, slight breeze (BF2), dry.	Andy Fry	4	AFSW	1
				21	JSW	1
17/10/2025	09:48	Air temp: 13°C. 80% cc, breezy (BF3) dry.	Lara Hulbert	4	AFSW	1
				17	JGS	1
				21	JGS	1

3.4.3 Pre-existing Records

The SxBRC search indicates the presence of four species of reptiles within 1km of the site; slow worm, grass snake, common lizard and adder.

3.4.4 Interpretation

The survey efforts indicate that 'low' populations of slow worm and grass snake are present on site, given that a peak count of <5 adults was recorded for each species (see Table 8, Appendix 4 for the population thresholds). The presence of juvenile slow worms and grass snakes confirms that these are breeding populations. The site is directly connected to suitable reptile habitat, including scrub and woodland to the west and grassland to the north.

These habitats are further connected to grassland and scrub habitats within the wider landscape, providing good connectivity between suitable reptile habitats in the wider area north-west of Upper Beeding. The site is therefore considered to be of **local** importance to common reptiles.

4 IMPACT ASSESSMENT

4.1 Designated Sites

4.1.1 Impact Characterisation

The proposed development lies within a non-statutory designated site, the River Adur Water Meadows & Wyckham Wood Loal Wildlife Site. The site also lies within the SSSI Impact Zone for Beeding Hill to Newtimber Hill SSSI and Natural England will need to be consulted on this matter. The SSSI itself is located 1.6km southeast of the site.

The construction of the proposed development would potentially result in air pollution from machinery and delivery vehicles, and dust deposition that could impact on vegetation growth within the wider LWS.

In the operational phase, the four-house development would likely see a small increase in road traffic and subsequent pollution to the LWS. Occupancy of the residential development could result in slight increased recreation pressure on the LWS, leading to risks such as trampling of vegetation, soil compaction, littering, fly tipping, damage to trees, disturbance to wildlife and increased nutrient levels from dog fouling.

4.1.2 Significance of Effects

The development proposal is not anticipated to result in any significant impacts upon any statutory designated sites given the proximity of the site to the closest designation - Beeding Hill to Newtimber Hill SSSI is 1.6km to the southeast. The impact upon statutory designated sites is therefore considered **negligible**

Whilst the development proposals would result in the direct loss of habitat within the River Adur Water Meadows & Wyckham Wood LWS, it should be noted that the habitats present within the site itself are not considered to be consistent with the features of conservation importance within the designation.

As a result, the additional pressures from the proposed development, in the absence of mitigation, are **likely to pose a permanent negative impact at a local level,** due to a small loss of habitat and potential indirect impacts. Additionally, there is a likely potential increase in visitors to the River Adur Water Meadows & Wyckham Wood LWS that is not considered significant beyond the **site level**.

4.2 Habitats

4.2.1 Impact Characterisation

The proposed development will result in the permanent loss of a small area (approximately 0.46ha) of bramble scrub. No priority habitats will be lost as a result of the development, but the adjacent deciduous woodland and nearby floodplain grazing marsh (both priority habitats) are at risk of increased recreational pressure, as well as

noise, air and water pollution and degradation during the construction phase.

4.2.2 Significance of Effects

The proposed development will result in a permanent loss of bramble and mixed scrub habitat. In the absence of appropriate compensation, the loss of the dense scrub habitat resource would result in a **permanent negative impact that is significant at a site level.**

No priority habitats will be lost, but in the absence of mitigation, the **potential adverse indirect impacts** on the adjacent priority habitats is considered to be **significant up to the local level**.

4.3 Bats

4.3.1 Impact Characterisation

The proposed development has potential to result in disturbance to commuting and foraging bats, both during construction and in the long term after completion, through increased artificial lighting, disruption of commuting corridors and direct loss of valuable scrub habitat that could be an important source of insect prey for bats. The impact of the development on the surrounding habitats such as the adjacent woodland must also be considered, particularly with respect to artificial lighting and gradual degradation of habitat.

The following species were determined to be using the site for commuting and foraging purposes and therefore will be impacted: common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, long-eared sp., *Myotis* sp., serotine, noctule and barbastelle. *Myotis* sp. and soprano pipistrelles were recorded in relatively high numbers at the site, particularly on the western site boundary.

4.3.2 Significance of Effects

Foraging activity at the site comprises mostly common species, with occasional passes of barbastelle and serotine recorded, which are classed as 'vulnerable'. As such, unmitigated, there will be a permanent and irreversible **adverse** impact bats considered significant at a **local level**.

4.4 Reptiles

4.4.1 Impact Characterisation

The 2025 survey results found that 'low' populations of slow worm and grass snake are present on site. There is potential for these species to be killed or injured during the works, posing the need for precautionary measures prior to and during the works.

There will be a permanent loss of suitable scrub habitat for common reptiles as a result of the development.

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4.4.2 Significance of Effects

Unmitigated, the loss of suitable terrestrial habitat within the site will have a permanent and irreversible **adverse**

impact on grass snake and slow worm breeding populations, considered significant at the **local** level, with potential for the killing or injuring of these species if precautionary measures are not adopted during the works.

5 MITIGATION PROPOSALS

5.1 Designated Sites

5.1.1 Impact Avoidance

At the time of writing this report, the adopted Horsham District Planning Framework [13] does not provide specific guidance or policy on Local Wildlife Sites but supports proposals which safeguard existing designated sites and ensure no net loss of wider biodiversity and provide net gains in biodiversity.

As the site lies within the River Adur Water Meadows & Wyckham Wood LWS, the removal of scrub habitat within the LWS is unavoidable for this proposal.

The development should therefore aim to enhance the biodiversity of the Local Wildlife Site, as this will be considered favourably by Horsham District Council. A Biodiversity Impact Calculation[14] and statutory biodiversity metric[15] are provided separately to this report and outline the proposal's net gain in biodiversity.

5.1.2 Mitigation Measures

To reduce pollution and disturbance on the River Adur Water Meadows & Wyckham Wood LWS, the following best working practices must be adopted during the works:

- dust suppression measures such as dampening will be implemented through the use of hoses and sprinklers when there is a risk of elevated dust levels and a risk of deposition onto the adjacent habitats;
- no burning of vegetation or waste materials on site to ensure ash and other particulate matter does not settle within adjacent habitats;
- immediately switching off machinery when not in use, not leaving to idle, as this will result in unnecessary noise and air pollution;
- handling and placing materials with care to reduce noise and vibration;
- using drip trays and spill kits to avoid contaminants leaching into the soil;
- directing surface water run off to the nearest wastewater drain and away from the adjacent habitats, using bunding where necessary;
- storing all materials and vehicles within the development boundary; and,
- ensuring no oil, bitumen, diesel or cement are mixed or discharged, onto the adjacent habitats.

[13] Horsham District Council (2015) Horsham District Planning Framework (excluding South Downs National Park) available online at : https://www.horsham.gov.uk/planning/local-plan/read-the-current-local-plan

[14] The Ecology Co-op (2025) P10959 Church Farm Biodiversity Impact Calculation

[15] The Ecology Co-op (2025) P10959 Church Farm Biodiversity Net Gain Statutory Metric

During the operational phase of the development, local bylaws concerning dog fouling will be enforced and signs will be erected together with dog waste bins to encourage people to pick up after their dog.

5.1.3 Residual Effects

With the implementation of the above measures, the potential residual impact on the River Adur Water Meadows & Wyckham Wood LWS will remain a **permanent negative impact at a local level** due to the inevitable loss of scrub habitat and slight increase in footfall and recreational pressure within the Local Wildlife Site.

5.1.4 Compensation Measures

To compensate for the residual impacts from the development on the LWSs and the SSSI, it is recommended that appropriate financial contributions are given to the respective authorities to go towards future management.

5.2 Habitats

5.2.1 Impact Avoidance

Direct impacts to the adjacent woodland parcel and nearby floodplain grazing marsh will be avoided, as these habitats are not within the construction zone.

5.2.2 Mitigation Measures

The presence of priority habitats within the local area also poses the need for best working methods to be adopted during the works. The measures outlined in section 5.1.1 will also be important in protecting the nearby priority habitats.

The deciduous woodland at the south-western border of the site will require a Heras fencing buffer during the works in line with root protection zones. Construction-phase mitigation methods will be outlined in a Construction Environmental Management Plan (CEMP) along with mitigation and methods for preventing runoff and pollution onto the nearby habitats.

During the operational phase of the development, local bylaws concerning dog fouling will be enforced and signs will be erected together with dog waste bins to encourage people to pick up after their dog.

During the operational phase of the development, it is recommended that a double-staggered hedgerow is used as a buffer between the proposed houses and the existing woodland to protect the woodland. Planting for the double-staggered hedgerow will commence after the construction works are completed and before residents occupy the newly built houses. The double-staggered hedgerow will be comprised of two offset parallel lines of native hedge shrubs. New plantings in each row will be planted at 2-3 plants per linear metre, spaced at roughly 30cm between each plant. Across the two rows, 5-6 plants will be planted per linear metre.

It is recommended that the new proposed hedgerows are planted with at least five native species from the following examples to improve insect diversity:

- hawthorn *Crataegus monogyna*;
- blackthorn *Prunus spinosa*;
- spindle *Euonymus europaeus;*
- dogwood *Cornus sanguinea;*
- wayfaring-tree *Viburnum lantana*;
- guelder rose *Viburnum opulus*;
- beech *Fagus sylvatica*;
- field maple *Acer campestre*;
- wild privet *Ligustratum vulgare*;
- hazel *Corylus avellana*;
- honeysuckle *Lonicera periclymenum;* and
- dog-rose *Rosa canina*.

5.2.3 Residual Effects

The removal of bramble scrub cannot be avoided, but the above measures will protect the nearby priority habitats during and after construction.

5.2.4 Compensation Measures

To compensate for the inevitable loss of bramble scrub, native hedgerows will be planted throughout the site and a small wildflower meadow has been proposed in the southeastern corner of the site. One suitable seed mix for this includes 'WFG8 Hedgerows and Shaded Areas Mix' by Germinal Seeds Ltd, which is comprised of the following species:

- 0.7% Hedge Woundwort (Stachys sylvatica)
- 1.1% Wild Carrot (Daucus carota)
- 2.0% Foxglove (Digitalis purpurea)
- 0.2% Meadow Sweet (Filipendula ulmaria)
- 1.5% Borage (Borago officinalis)
- 0.5% Ramsons (Allium ursinum)
- 0.1% Wood Sage (Teucrium scorodonia)
- 1.0% Bluebell (Hyacinthoides non scripta)
- 0.5% Wood Avens (Geum urbanum)
- 0.5% Hedge Parsley (Upright) (Torillis japonica)
- 0.4% Square Stemmed St. Johns Wort (Hypericum tetrapterum)
- 0.6% Garlic Mustard (Allaria petiolata)
- 0.3% Betony (Stachys betonica)
- 3.0% Corncockle (Agrostemma githago)
- 3.0% Corn Poppy (Papaver rhoeas)
- 0.9% White Campion (Silene Alba)

- 2.0% Red Campion (Silene Dioica)
- 0.7% Dames Violet (Hesperis matronalis)
- 0.5% Cow Parsley (Anthriscus sylvestris)
- 0.5% Forget Me Not (Myosotis arvensis)
- 25.0% Tall Fescue (Festuca arundinacea)
- 25.0% Slender Creeping Red Fescue (Festuca rubra litoralis)
- 15.0% Crested Dogstail (Cynosurus cristatus)
- 10.0% Strong Creeping Red Fescue (Festuca rubra rubra)
- 5.0% Wood Meadow Grass (Poa nemoralis)

5.3 Bats

5.3.1 Impact Avoidance

The valuable western woodland edge boundary will be retained as part of the works, but there will be an unavoidable loss of the scrub habitat which provides a valuable supply of invertebrate prey for foraging bats.

5.3.2 Mitigation Measures

To mitigate for impacts resulting from artificial light, it is important that the proposed scheme incorporates a 'sensitive lighting plan' developed as part of the detailed design, in accordance with the guidelines set out by the Bat Conservation Trust (summarised in Appendix 5). This should include measures to create dark corridors along the boundary vegetation as well as measures to minimise light spill onto all semi-natural habitats, especially along the retained woodland parcel to the west of the site. All street lighting should be directed downwards and light sources that are not attractive to insects should be used. Reflective white line marking should be used in preference to artificial lighting in all non-essential applications.

5.3.3 Residual Effects

There remains a permanent loss of scrub habitat at the site and this will have an **adverse** effect on bats at the **local** level.

5.3.4 Compensation Measures

The proposed plans include hedgerows bordering and in-between the four proposed properties (see Figure 2).

A new proposed hedgerow will cover the northern boundary and will restore a commuting route across the site once fully established. The hedgerows will increase the abundance of insect prey, mitigating for a portion of the loss of the scrub habitat.

It is recommended that the new proposed hedgerows are planted with at least five native species from the following examples to improve insect diversity and encourage foraging opportunities for bats. Section 5.1 details suitable species for the native hedgerows on site.

5.4 Reptiles

5.4.1 Impact Avoidance

There will be a permanent loss of scrub habitat suitable for reptiles, and this cannot be avoided. This will impact upon 'low' breeding populations of grass snake and slow worm.

5.4.2 Mitigation Measures

All vegetation removed for the development should be cut in a two-phase strim under supervision by a suitably qualified Ecological Clerk of Works (ECoW). All strimming and vegetation cutting must be carried out in an east to west direction. This direction will encourage reptiles on site to migrate into the retained woodland, grassland and scrub to the west of the site. Vegetation will first be cut to a height of 15cm, slowly, starting from the eastern boundary of the site towards the western site boundary. A second cut will then be completed reduce the sward to as close as the ground as possible (below 5cm). Any cuttings from the removal of the scrub should be raked up and removed from the site to avoid shelter suitable for reptiles from forming. This must all be carried out when the temperature is above 9°C and reptiles are active, selected areas of suitable reptile habitat will be removed in two passes.

This can be followed by a destructive search, where a small excavator with toothed bucket will slowly strip the top layer of soil. Again, this will need to be removed off-site or stored off the ground on hardstanding to ensure it does not provide suitable hibernacula for reptiles.

Any individual reptiles found will be carefully placed into a high sided plastic bucket with vegetation in the bottom by the ECoW and placed within the adjacent woodland and out of the construction zone.

A repeat survey should be conducted if the development does not commence within two years from the date of this report.

5.4.3 Residual Effects

There will be a residual loss of suitable reptile habitat, which will have an **adverse** impact on reptiles at the **site** level.

5.4.4 Compensation Measures

Due to the loss of suitable scrub habitat for reptiles as part of the development, a reptile hibernaculum should be created and situated along the western or northern boundaries of the site, where the adjacent land is within the same ownership as the site itself. This can be built using logs and branches, piled on top of each other, with grass cuttings, earth and turf laid over the top to provide insulation (Figure 8).

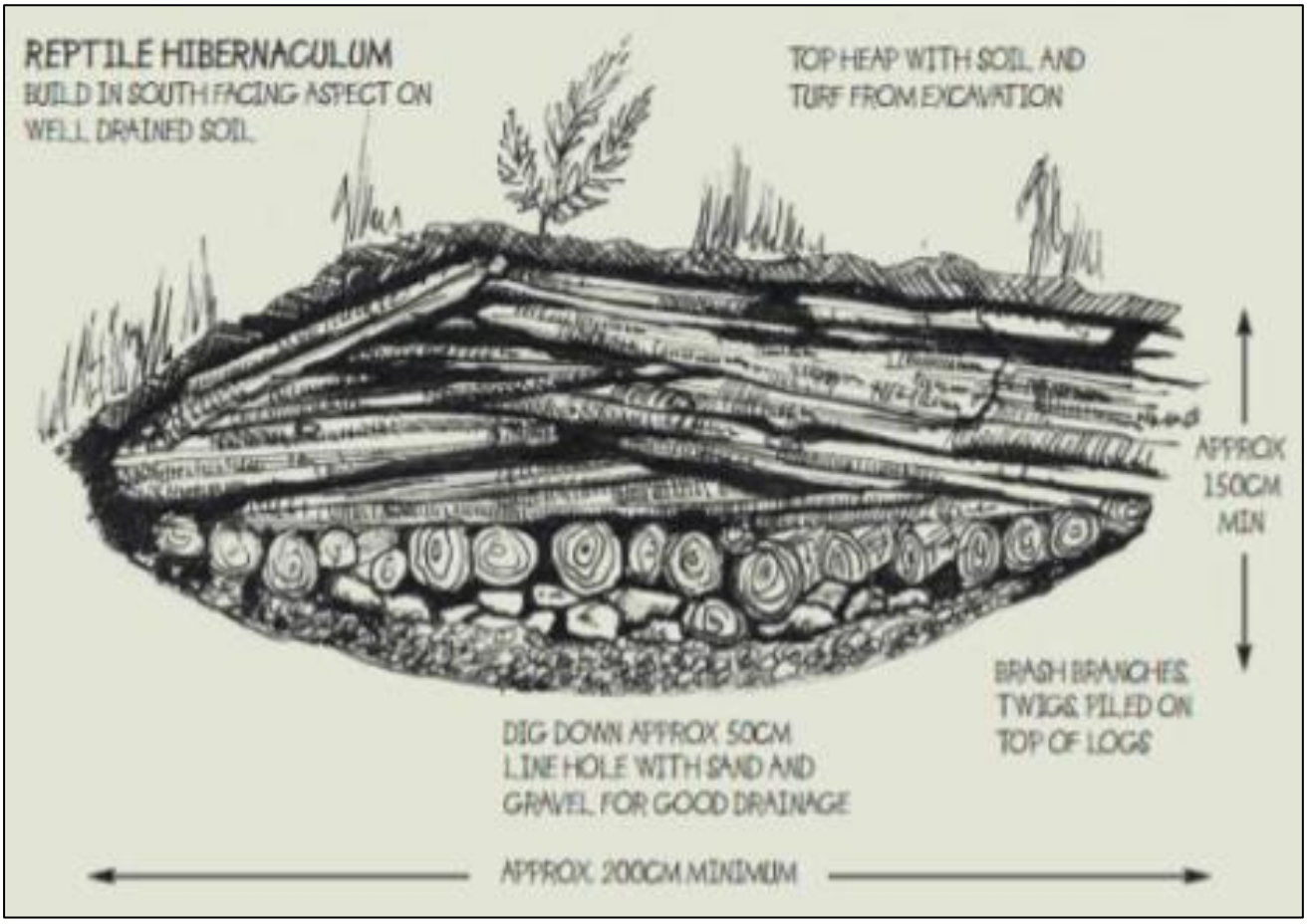

Figure 8. Illustration on how to build a reptile hibernaculum. Image taken from the 'Reptile Habitat Management Guidelines' by Herefordshire Amphibian and Reptile Team and the Herefordshire Nature Trust.

6 OPPORTUNITIES FOR ENHANCEMENT

The developer is encouraged to consider installing bat roosting opportunities onto the new dwellings on site. For example, bat boxes and integral bat roost features (see Figure 9 and Figure 10 for examples) could be installed upon the external faces of the building close to the eaves of the buildings on the south or eastern faces, approximately 5m above ground level.

The developer is also encouraged to integrate bird nesting opportunities onto the proposed dwellings. For example, house sparrow terraces (Figure 11). These boxes must be positioned at a minimum of 2m above the ground, facing north or east. Swift boxes (figure 12) would also enhance the site for red-listed bird species. Swift boxes must be positioned at a minimum of 5m above the ground with clear unobstructed access to the entrance and out of direct sunlight, north or east facing. Swifts are colony breeders and so four swift boxes will be installed per building to encourage occupancy. The chances of occupancy will be greatly increased by playing taped swift calls during the breeding season (May-July).

Figure 9. Left to right, the 2F, 2FN and the 1FS bat boxes produced by Schwegler. These and other brands are available at many on-line wildlife stores. These are constructed of 'woodcrete' (a mixture of cement and woodchip) and are designed to be durable and replicate the stable thermal properties of trees and buildings. They may be attached to trees or buildings.

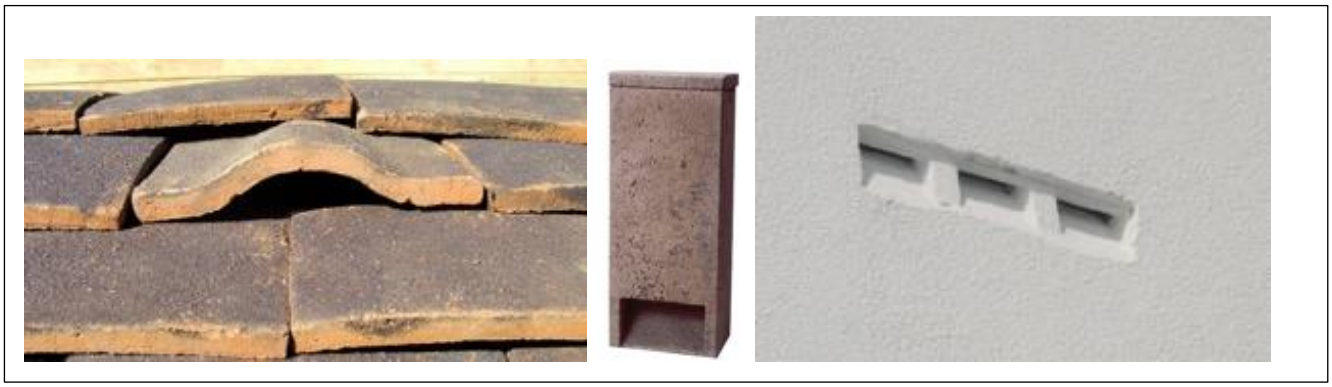

Figure 10. Examples of integral bespoke bat roosting features that may be incorporated into buildings during construction/renovation. From left to right: an example of bat access tile into loft space; the 2FR bat tube; and an example of 2FR bat tubes installed into a house wall in a series of three. Other brands and designs are available.

Figure 11. 1SP Schwegler Sparrow Terrace

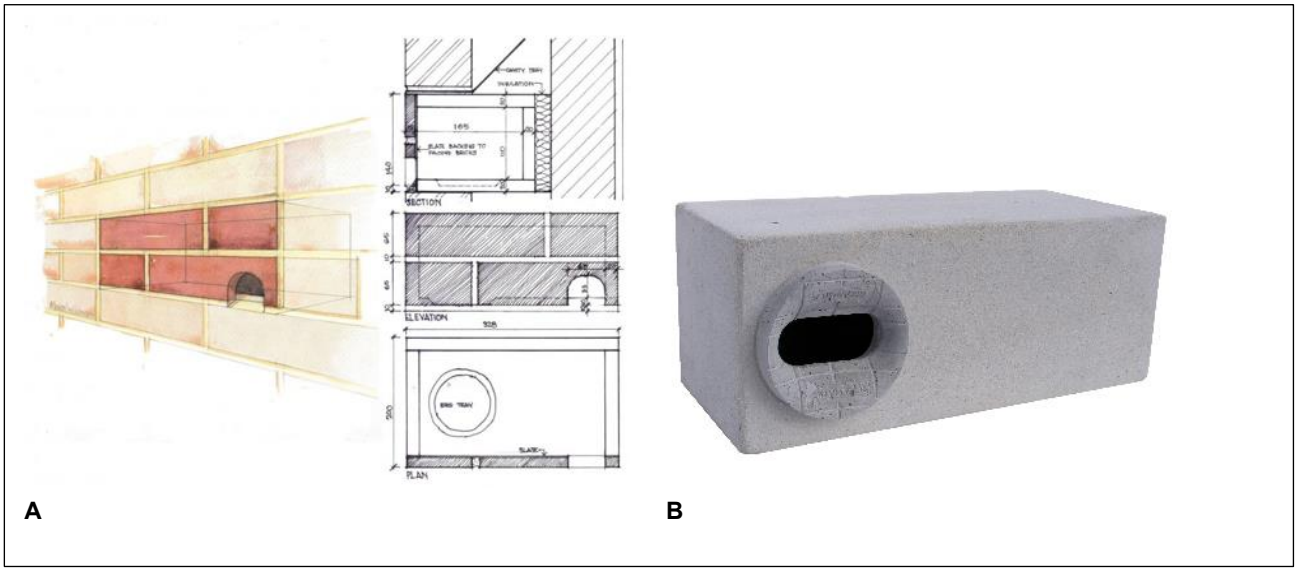

Figure 12. Built in swift features Swift Box – Smooth Brick (A) and Schwegler Lightweight Swift Box Type 1A (B)

7 CONCLUSIONS

The site at Church Farm is situated within a Local Wildlife Site (River Adur Water Meadows & Wyckham Wood LWS) and adjacent to a small parcel of deciduous woodland, a priority habitat for nature conservation. Coastal and floodplain grazing marsh is found in the surrounding wider area, also a priority habitat for nature conservation. A Construction Environmental Management Plan will be necessary to outline measures to prevent damage or pollution to these features, and best working practices must be adopted during the works. During the operational phase of the proposed development, a buffer will be required to protect the woodland from recreational pressures

such as increased footfall of residents and pets. A double-staggered hedgerow is recommended, to be planted using native shrubs.

The bat activity surveys completed to date indicate that the boundaries of the site are regularly used by a few common and widespread species, as well as occasional passes from 'vulnerable' species such as serotine and barbastelle bats.

'Low' populations of grass snake and slow worm were recorded on site. Given the small size of the reptile populations on site and the retention of suitable reptile habitat adjacent to the site, proposed mitigation and compensatory measures are considered appropriate in this instance. Mitigation and compensatory measures have been outlined with regards to these species to ensure that impacts upon these species during the development are minimised.

It is important that no habitat clearance or other site preparation work should be undertaken until planning permission has been granted and all relevant protections for habitats of importance and protected species have been detailed and implemented. Please be advised that any work to remove or modify habitats outside of typical management may undermine a future planning application.

Should you need any further advice on the information provided above, please do not hesitate to contact The Ecology Co-op.

APPENDIX 1 – LEGISLATION AND POLICY

Introduction

The following text is intended for general guidance only and does not constitute comprehensive professional legal advice. It provides a summary of the current legal protection afforded to wildlife in general and certain species. It includes current national planning policy relevant to nature conservation.

The 'Birds Directive', 'Habitats Directive' and 'Natura 2000 Sites'

The Council Directive 79/409/EEC on the Conservation of Wild Birds ("the Birds Directive") sets a framework for the protection of wild birds. Under the Directive, several provisions are made including the designation and protection of 'Special Protection Areas' (SPAs) – areas which support important bird populations, and the legal protection of rare or vulnerable species.

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the "Habitats Directive") directs member states of the EU to take measures to maintain the favourable conservation status of important habitats and species. This requires the designation of a series of sites which contain important populations of species listed on Annex II of the Directive. Together with 'Special Areas of Conservation' (SACs), SPAs form a network across Europe of protected areas known as the 'Natura 2000'.

Annex IV lists species in need of more strict protection, these are known as "European Protected Species (EPS)". All bat species, common dormice *Muscardinus avellana*, otter *Lutra lutra* and great crested newts *Triturus cristatus* are examples of EPS that are regularly encountered during development projects.

The 'Habitats Regulations'

The Conservation of Habitats and Species Regulations 2017, as amended (the Habitats Regulations") is the principle means of transposing the Habitats Directive and the Birds Directive, and updates the Conservation (Natural Habitats, &c.) Regulations 1994 ("the 1994 regulations") in England and Wales.

'Natura 2000' sites, now known as National Site Network sites under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, receive the highest level of protection under the Regulations which requires that any activity within the zone of influence of these sites would be subject to a Habitats Regulations Assessment (HRA) by the competent authority (e.g. planning authority), leading to an Appropriate Assessment (AA) in cases where 'likely significant effects' to the conservation objectives are identified.

For European Protected Species, Regulation 41 makes it a criminal offence to:

- deliberately capture, injure or kill any such animal;
- deliberately disturb wild animals of such species;
- deliberately take or destroy their eggs (where relevant);
- damage or destroy a *breeding or resting place* of such an animal;
- possess, control, sell or exchange any live or dead animal or plant, of such species;
- deliberately pick, collect, cut, uproot or destroy a wild plant of such species.

The Habitats Directive and Habitats Regulations provide for the derogation from these prohibitions for specific reasons provided certain conditions are met. An EPS licensing regime allows operations that would otherwise be unlawful acts to be carried out lawfully. Natural England is the licensing Authority and, in order to grant a license, ensures that three statutory conditions (sometimes referred to as the 'three derogation tests') are met:

- a licence can be granted for the purposes of "preserving public health or safety or for other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment" (Regulation 53 (2) (e);
- a licence can be granted if "there are no satisfactory alternatives" to the proposed action;
- a licence shall not be granted unless the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

Wildlife and Countryside Act (1981) as amended

The Wildlife and Countryside Act (1981)[9] remains one of the most important pieces of wildlife legislation in the UK. There are various schedules to the Act protecting birds (Schedule 1), other animals including insects (Schedule 5), plants (Schedule 8), and control of invasive non-native species (Schedule 9).

Under the Wildlife and Countryside Act (WCA) 1981, all wild birds (with the exception of those listed on Schedule 2), their eggs and nests are protected by law and it is an offence to:

- take, damage or destroy the nest of any wild bird while it is in use or being built
- take or destroy the egg of any wild bird
- disturb any bird listed on Schedule 1, while it is nest building, or at a nest with eggs or young, or disturb the dependant young of any such bird.

Schedule 5 lists all non-avian animals receiving protection to a varied degree. At its strongest, the Act makes it an offence to intentionally kill, injure or take any wild animal listed on Schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturb animals while occupying such places. Examples of species with *full protection* include all EPS, common reptile species, water vole *Arvicola amphibius*, white-clawed crayfish *Austropotamobius pallipes* and Roman snail *Helix pomatia*. Other species are protected from sale, barter or exchange only, such as white letter hairstreak *Satyrium w-album*.

The Act makes it an offence to intentionally pick, uproot or destroy any plant or seed, and sell or possess any plant listed on Schedule 8. It is also an offence to intentionally uproot any wild plant not listed on Schedule 8 unless authorised [by the land owner]. Species on Schedules 5 and 8 are reviewed every 5 years when species can be added or removed.

Measures for the prevention of spreading non-native species which may be detrimental to native wildlife is included in the Act, which prohibits the release of animals or planting of plants into the wild of species listed on Schedule 9 (for example Japanese knotweed *Fallopia japonica*, Himalayan balsam *Impatiens glandifera*, New Zealand Pygmyweed *Crassula helmsii*).

The Wildlife and Countryside Act 1981 (as amended) also prohibits certain inhumane methods of traps and devices for the capture or killing of wild animals and certain additional methods such as fixed trap, poisoning with gas or smoke, or spot-lighting with vehicles for killing species listed on Schedule 6 of the Act (this includes all bat species, badger, otter, polecat, dormice, hedgehog and red squirrel).

Natural Environment and Rural Communities (NERC) Act (2006)

The NERC Act (2006)[10] places a statutory duty under Section 40 on all public bodies, including planning authorities, to take, or promote the taking by others, steps to further the conservation of *habitats and species of principal importance for the conservation of biodiversity* in England (commonly referred to as the 'Biodiversity Duty'). This duty extends to all public bodies the biodiversity duty of Section 74 of the Countryside and Rights of Way (CROW) Act 2000, which placed a duty only on Government and Ministers. Section 41 lists the habitats and species of principle importance. This includes a wide range of species from mosses, vascular plants, invertebrates through to mammals and birds. It originates from the priority species listed under the UK Biodiversity Action Plan (UK BAP) with some omissions and additions.

Environment Act (2021)

The Environment Act sets a target of halting the decline in species through the inclusion of a legally binding 2030 species abundance target. Aiming to restore natural habitats and enhance biodiversity, the Act requires new developments to improve or create habitats for nature (through mechanisms such as mandatory Biodiversity Net Gain), and tackle deforestation. Going forwards, UK businesses will need to look closely at their supply chains as amongst other measures they will be prohibited from using commodities associated with wide-scale deforestation. Woodland protection measures are also strengthened through the Act.

The Act enables the reform of the Habitats Regulations and further improves protection for nature through the establishment of Local Nature Recovery Strategies that support national Nature Recovery Networks. In addition, the Act provides for the production of Protected Site Strategies and Species Conservation Strategies, aimed at supporting the design and delivery of strategic approaches to deliver better outcomes for nature.

Protection of Badgers Act (1992)

The Badger *Meles meles* is afforded specific legal protection in Britain under the Protection of Badgers Act (1992)[11], and Schedule 6 of the Wildlife and Countryside Act 1981 (as amended) (see above).

Under this legislation, it is a criminal offence to:

- intentionally kill, injure, take, possess, or cruelly ill-treat, a Badger, or to attempt to do so;
- interfere with a sett, by damaging or destroying it;
- to obstruct access to, or any entrance of, a badger sett; or
- to disturb a badger when it is occupying a sett.

A licence may be obtained from Natural England to permit certain prohibited actions for a number of defined reasons including interference of a sett for the purpose of development, provided that a certain number of conditions are met. Note that licenses are not normally granted for works affecting badgers between the end of November and the start of July.

National Planning Policy Framework

The National Planning Policy Framework (NPPF 2024)[12] sets out the Government's view on how planners should balance nature conservation with development and helps ensure that Government meets its biodiversity commitments with regard to the operation of the planning system.

Paragraph 192b, states that council plans should "*promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity*."

The Office of the Deputy Prime Minister (ODPM) Circular 06/2005, 2005) [13]. In accordance with the NPPF, it is important that developments should contribute to and enhance the natural and local environment by:

- minimising impacts on existing biodiversity and habitats;
- providing net gains in biodiversity and habitats, wherever possible;
- establishing coherent ecological networks that are more resilient to current and future pressures.

UK Post-2010 Biodiversity Framework

The UK Biodiversity Action Plan (UK BAP), published in 1994, was the UK's response to the commitments of the Rio Convention on Biological Diversity (1992). The UK BAP was replaced by the UK Post-2010 Biodiversity Framework. This framework covers the period 2011 to 2020 and forms the UK government's response to the new strategic plan of the United Nations Convention on Biodiversity (CBD) published in 2010. This promotes a focus on individual countries delivering target for protection for biodiversity through their own strategies.

The most recent biodiversity strategy for England, 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services' was published by Defra (2011)[14], and a progress update was provided in July 2013 (Defra 2013)[15].

'Biodiversity 2020' builds on the Natural Environment White Paper for England – 'The Natural Choice', published on 7 June 2011, and sets out the strategic direction for biodiversity policy for the next decade.

Biodiversity 2020 deliberately avoids setting specific targets and actions for local areas because Government believes that local people and organisations are best placed to decide how to implement the strategy in the most appropriate way for their area or situation.

Birds of Conservation Concern (BoCC)

In 1996, the UK's leading non-governmental bird conservation organisations reviewed the conservation status of all bird species in the UK against a series of criteria relating to their population size, trends and relative importance to global conservation. The lists, known as the 'Red', 'Amber' and 'Green' lists (in order of decreasing concern) are used to inform key conservation policy and decisions. The lists are reviewed every five years and are a useful reference for determining the current importance of a particular site for birds. The most recent review was undertaken in 2021[16] (Stanbury et al, 2015), which provides an up to date assessment of the conservation status of birds in the UK.

APPENDIX 2 - IMPORTANCE OF ECOLOGICAL FEATURES

Table 6. Determining importance of an ecological feature.

Level of importance	Criteria
International	Internationally designated site; Special Protected Area (SPA), Special Areas of Conservation (SAC), Ramsar, Biosphere Reserves; Regularly occurring population of internationally important species listed in Annex 1, 2 or 4 of the Habitats Directive and Annex 1 of the Birds Directive; A viable area of a habitat listed in Annex 1 of the Habitats Directive or area important for maintaining viability listed as in Annex 1 of the Habitats Directive; Areas outside designated sites that are important for supporting and maintaining the viability of the above designated habitats and/or species.
National	Nationally designated sites; Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), Local Nature Reserves (LNR). A sufficiently large population of a species or area of habitat listed as a priority for nature conservation (S41 NERC Act) to make a significant contribution to the national conservation status (e.g. greater than 1% of the national total). A viable or regularly occurring population of a species that is nationally scarce, threatened or declining on a national scale. A habitat type that is nationally scarce, threatened or declining on a national scale.
Regional	A habitat type that is scarce, threatened or declining on a regional scale. A sufficiently large population of a species or area of habitat listed as a priority for nature conservation (S41 NERC Act) to make a significant contribution to the regional conservation status (e.g. greater than 1% of the national total).
County	Locally designated sites; Local Wildlife Sites (LWSs), Sites of Nature Conservation (SNCIs) and Site of Importance for Nature conservation (SINCs). A sufficiently large population of a species or area of habitat listed as a priority for nature conservation (S41 NERC Act) to make a significant contribution to the conservation status of the species at county level (e.g. greater than 10% of the county total). A viable or regularly occurring population of a species that is rare in the county, but may be common and widespread elsewhere, For example, a population at the edge of a species' range. A habitat type that is scarce in a county but may be more frequent elsewhere.
Local/parish	Habitats and species which are scarce in the local area but are sufficiently common and widespread elsewhere that they do not meet the above criteria.
Site/negligible	Habitats with little to no ecological value (e.g. amenity grassland and hardstanding)

APPENDIX 3 – 2022 BAT ACTIVITY SURVEY – WALKED TRANSECT RESULTS

Table 7. 2022 Bat Activity Survey – Walked Transect Results. Stopping points shown in Figure 3. CP= common pipistrelle, SP = soprano pipistrelle, NOC = noctule, MYO – myotis species, BARB= barbastelle

Stopping Point	Time	Species	Bat seen/heard	Activity (number)	Notes/location/direction
Survey 1 – 28/04/22					
2A	2044	CP	H	Commuting	
3	2048	SP	H	Commuting	
3	2051	NOC	H	Commuting	
1	2101	CP	H	Commuting	2 passes
2	2114	MYO	H	Commuting	
2D	2114	CP	S	Foraging	Constant foraging along hedge in west of the site
2	2121	SP	H	Commuting	
2	2126	SP	H	Commuting	
2	2126	CP	H	Commuting	3 passes
2A	2128	SP	H	Commuting	2 passes
3	2133	CP	H	Commuting	
3	2139	CP	H	Commuting	
2	2158	SP	H/S	Foraging	Constant foraging along hedge in west of the site
2A	2209	CP	H	Commuting	
2A	2210	SP	H	Foraging	Constant
3	2211	SP	H	Commuting	
3	2211	CP	H	Commuting	
Survey 2 - 13/06/22					
1A	2140	CP	H/S	Commuting	
1	2200	CP	H	Commuting	2 passes
1A	2205	CP	H	Commuting	
1	2210	MYO	H	Commuting	
3	2219	MYO	H/S	Commuting	
2a	2240	CP	H	Commuting	
1	2247	CP	H	Commuting	
3	2258	CP	H	Commuting	
2a	1106	CP	H	Commuting	
2	2309	CP	H	Commuting	3 passes
2	2315	CP	H	Foraging	Intermittent foraging in south of site
Survey 3 - 02/08/22					
1	2115	CP	H	Commuting	
1	2116	NOC	H	Foraging	11 passes
3	2124	NOC	H	Commuting	
3A	2138	SP/CP	H	Commuting	2 passes
1	2157	CP	H	Commuting	
1	2202	SP	H	Commuting	
13	2207	MYO	H	Commuting	2 passes
3A	2211	SP	H	Commuting	2 passes

3	2219	BARB	H	Commuting	
2	2234	CP	H	Foraging	4 passes

APPENDIX 4 – Reptile Population Thresholds

Table 8. Reptile population thresholds provided by Froglife[16]

	Low population *Score 1*	Good population *Score 2*	Exceptional population *Score 3*
Adder	<5	5 - 10	>10
Grass snake	<5	5 - 10	>10
Common lizard	<5	5 - 20	>20
Slow-worm	<5	5 - 20	>20

Figures in the table refer to maximum number of adults seen by observation and/or under tins (placed at a density of up to 10 per hectare), by one person in one day.

[16] Froglife (1999) Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10, Froglife, Halesworth

APPENDIX 5 - ARTIFICIAL LIGHTING AND WILDLIFE

Bright external lighting can have a detrimental impact upon foraging and commuting bat flight paths, but more importantly can also cause bats to remain in their roosts for longer. Artificial lighting can also cause significant impacts to other nocturnal species, most notably moths and other nocturnal insects. It can also result in disruption of the circadian rhythms of birds, reducing their fitness.

Guidelines issued by the Bat Conservation Trust[17] should be referred to when designing the lighting scheme. Note that lighting designs in very sensitive areas should be created with consultation from an ecologist and using up-to-date bat activity data where possible. The guidance contains techniques that can be used on all sites, whether a small domestic project or larger mixed-use, commercial or infrastructure development. This includes the following measures:

Avoid lighting key habitats and features altogether

There is no legal duty requiring any place to be lit. British Standards and other policy documents allow for deviation from their own guidance where there are significant ecological/environmental reasons for doing so. It is acknowledged that in certain situations lighting is critical in maintaining safety, such as some industrial sites with 24-hour operation; however, in the public realm, while lighting can increase the perception of safety and security, measurable benefits can be subjective. Consequently, lighting design should be flexible and be able to fully consider the presence of protected species.

Apply mitigation methods to reduce lighting to agreed limits in other sensitive locations – lighting design considerations

Where bat habitats and features are considered to be of lower importance or sensitivity to illumination, the need to provide lighting may outweigh the needs of bats. Consequently, a balance between a reduced lighting level appropriate to the ecological importance of each feature and species, and the lighting objectives for that area will need to be achieved. The following are techniques which have been successfully used on projects and are often used in combination for best results:

- dark buffers, illuminance limits and zonation;
- sensitive site configuration, whereby the location, orientation and height of newly built structures and hard standing can have a considerable impact on light spill;
- consideration of the design of the light and fittings, whereby the spread of light is minimised ensuring that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Consideration should be given to the height of lighting columns. It should be noted that a lower mounting height is not always better. A lower mounting height can create more light-spill or require more columns. Column height should be carefully considered to balance task and mitigation measures. Consider no lighting solutions where possible such as white lining, good signage, and LED cats eyes. For example, light only high-risk stretches of roads, such as crossings and junctions, allowing headlights to provide any necessary illumination at other times;

- screening, whereby light spill can be successfully screened through soft landscaping and the installation of walls, fences and bunding;
- glazing treatments, whereby glazing should be restricted or redesigned wherever the ecologist and lighting professional determine there is a likely significant effect upon key bat habitat and features;
- creation of alternative valuable bat habitat on site, whereby additional or alternative bat flightpaths, commuting habitat or foraging habitat could result in appropriate compensation for any such habitat being lost to the development;
- dimming and part-night lighting. Depending on the pattern of bat activity across the key features identified on site it may be appropriate for an element of on-site lighting to be controlled either diurnally, seasonally or according to human activity. A control management system can be used to dim (typically to 25% or less) or turn off groups of lights when not in use.

Demonstrate compliance with illuminance limits and buffers

- *Design and pre-planning phase*; it may be necessary to demonstrate that the proposed lighting will comply with any agreed light-limitation or screening measures set as a result of your ecologist's recommendations and evaluation. This is especially likely to be requested if planning permission is required.
- *Baseline and post-completion light monitoring surveys*; baseline, pre-development lighting surveys may be useful where existing on or off-site lighting is suspected to be acting on key habitats and features and so may prevent the agreed or modelled illuminance limits being achieved.
- *Post-construction/operational phase compliance-checking;* as a condition of planning, post-completion lighting surveys by a suitably qualified person should be undertaken and a report produced for the local planning authority to confirm compliance. Any form of non-compliance must be clearly reported, and remedial measures outlined. Ongoing monitoring may be necessary, especially for systems with automated lighting/dimming or physical screening solutions.

Lighting Fixture Specifications

The Bat Conservation Trust recommends the following specifications for lighting on developments to prevent disturbance:

- Lighting spectra: peak wavelength >550nm
- Colour temperature: <2700K (warm)
- Reduction in light intensity
- Minimal UV emitted
- upward light ratio of 0% and good optical control.

Further reading:

Buglife (2011) A review of the impact of artificial light on invertebrates.

Royal Commission on Environmental Pollution (2009) Artificial light in the environment. HMSO, London. Available at: https://www.gov.uk/government/publications/artificial-light-in-the-environment

Rich, C., Longcore, T., Eds. (2005) Ecological Consequences of Artificial Night Lighting. Island Press. ISBN 9781559631297.

CPRE (2014) Shedding Light: A survey of local authority approaches to lighting in England. Available at: http://www.cpre.org.uk/resources/countryside/dark-skies/item/3608-shedding-light

Planning Practice Guidance guidance (2014) When is light pollution relevant to planning? Available at: https://www.gov.uk/guidance/light-pollution

Institution of Lighting Professionals (2021) Guidance Notes for the Reduction of Obtrusive Light GN01:2011. Available at: https://www.theilp.org.uk/resources/free-resources/

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